Education Games as A Strategy to Increase Intrinsic Motivation in Learning Cost and Management Accounting

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Received Date: 03 June 2020

Accepted Date: 01 July 2020

Available Online: 30 November 2020

ABSTRACT

Academicians play a crucial role in students' empowerment and enthusiasm for learning to achieve better grades in their studies. The existence of various modes of learning such as e-learning, on-line games, blended learning and group project allow students to engage in their learning process. However, despite these alternatives, little benefit is expected if students are not motivated to learn their subject matters. Therefore, the objective of this paper is to investigate the effect of intrinsic motivation among students in learning cost and management accounting course via education games. Two games known as "Smart Costing Game" and D'Bees Game for Fun" had been developed to help students in learning basic cost classification during cost and management accounting course. The data were gathered using an online survey based on intrinsic motivation inventory and analyses were done using descriptive statistic. Results demonstrated that a majority of students agreed that the games were found to be able to increase their interest, providing useful and effective learning activity, motivating and engaging in learning the course. These games also enabled students to develop their soft skills, problem solving and analytical skills at the early year of their learning experience at universities. Given the general critics of cost and accounting educators who were always textbook oriented, these findings have significant implication to increase the intrinsic motivation among students in learning accounting courses.

Keywords: *Education games, cost and management accounting, cost classification, intrinsic motivation.*

INTRODUCTION

Academicians or lecturers play a crucial role in students' empowerment and enthusiasm for learning to achieve better grades in their studies. The existence of various modes of learning such as on-line, games, blended learning, group project and others allow the students to engage in their learning

process. However, despite these platforms, nothing can be changed if students are not motivated to learn the subject matters. Learning accounting courses among university students at fundamental level or first semester often encounter challenges especially for those who are without any accounting background or not majoring in accounting which will result in the lack of interest in their studies. According to Valerio (2012) the creation of a supportive learning environment can assist in the development of successful learners in the classroom, where students want to learn for the enjoyment of learning, a hub of intrinsic motivation. Prior studies suggested that attitude in learning is considered prominent and it influences the academic achievement (Cai, Chiang, Sun Lin & Lee, 2017; Tarng, Ou, Yu, Liau & Liau, 2015; Riaz, Rambli, Salleh & Mushtaq, 2010). Therefore, it triggers a challenge to researchers as accounting educators to develop strategies to increase the intrinsic motivation among students in learning accounting courses. In this context, this research will focus on education games as a strategy to increase intrinsic motivation in learning cost and management accounting. The research question will focus on how game-based learning can influence students' intrinsic motivation in terms of interest or enjoyable, perceived competence, perceived choice and pressure/tension effort, value or usefulness and relatedness.

The remainder of this paper is structured as follows: Section "Literature review" discusses the studies on motivation, intrinsic motivation, self-determination theory and intrinsic motivation inventory, game-based learning for cost and management accounting. The next section is "Methodology" which explains both the research process, the games employed, data collection and followed by the "Finding" section which presents our discussion of results. Finally, key conclusions and recommendations are summarized in the "Conclusion" section.

LITERATURE REVIEW

Motivation

Motivation is defined as the process to make a start, guides, and maintains goal-oriented behaviours (Gopalan; Bakar; Zulkifli; Alwi & Mat, 2017). Basically, it leads individuals to take action to achieve a goal or to fulfil a need or expectation. According to Cook & Artino (2016) motivation is a wisdom that always finds ways to go downhearted and nurture apprehension and tautness in human mind and judgements in which with the positive motivation; people can restore the positivism energy and apply it in performing tasks. Thus, in learning process, positive motivation can certainly influence students' interest and desire to achieve better results in their studies. Despite the existence of numerous theories relating to motivation (Ryan & Deci, 2000; Eerde & Thierry,1996; Frymier & Shulman, 1995; Bandura,1989) our discussion only focuses on Intrinsic motivation and Self-determination theory. This is because the students are expected to be more driven by internal factors instead of external rewards for them to excel in their studies. The following section will elaborate further.

Intrinsic motivation

Prior study by Deci & Ryan (2008) defined intrinsic motivation as the doing of an activity for its inherent satisfactions rather than for some separable consequence. When intrinsically motivated, a person is moved to act for the fun or challenge demanded rather than because of outside drives, pressures, or rewards. Factors that motivate student may vary depending on the activity or task he or she involved in. Tohidi & Jabarri (2012) asserted that motivation that is driven by an interest or enjoyment in the task itself and exists within the individual rather than relying on any external pressure. Research has found that it is

usually associated with high educational achievement and enjoyment by students' evaluation theory. Students are likely to be intrinsically motivated if they: attribute their educational results to factors under their own control (e.g., the effort expended); believe they can be effective agents in reaching desired goals (i.e. the results are not determined by luck); and/or are interested in mastering a topic rather than just rote-learning to achieve good grades. Lázaro et al. (2017) argued that lectures must strive to build intrinsic motivation in their students by stimulating them to be interested in the activity leading to learning. They contended that games are highly attractive activities to students and the students will boost their motivation towards learning the subject. Therefore, in this paper, the researcher will focus on game-based learning as a strategy to increase intrinsic motivation in learning cost and management accounting.

Self-Determination Theory

Self-Determination Theory (SDT) mainly recognises the interaction between three elements of student learning namely motivation, emotions and their development (Monteiro, Vera, Mata, Lourdes,Peixoto & Francisco, 2015). Previous studies such as Ryan & Niemiec (2009), Deci & Ryan (2008), Boiché, Sarrazin, Gouzet, Pelletier, & Chanal (2008) and Filak & Sheldon (2003) highlighted that SDT provides a framework that is useful in examining the reasons why students engage in activities and how contextual factors and regulatory processes associated either with interactions or to the characteristics of tasks can interfere. On the other hand, Filak & Sheldon (2003) suggested that students will find educational experience to be interesting, challenging, and intrinsically motivating when they are permitted some autonomy through providing them with opportunities to succeed (i.e., competence) and by removing rigid walls (i.e., relatedness).

Intrinsic Motivation Inventory

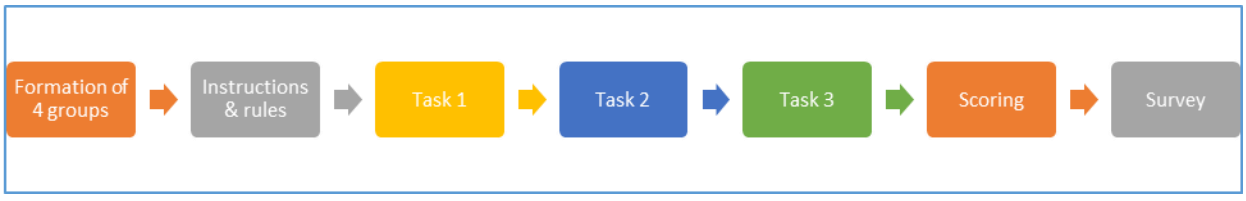
Monteiro, Mata & Peixoto (2015) used an instrument in their research called Intrinsic Motivation Inventory which determines the levels of intrinsic motivation as the outcome of a set of subscales: Interest / Enjoyment, Perceived Competence, Effort, Value / Usefulness, Pressure / Tension, Relatedness and Perceived Choice. Detailed explanation of the IMI instrument are as follows: - The Subscale Interest / Enjoyment is the most direct measure (self-report) of intrinsic motivation. This subscale assesses the interest and inherent pleasure when doing a specific activity. Perceived Choice and Perceived Competence are theorized as positive predictors of intrinsic motivation and are related to the SDT innate psychological needs of autonomy and competence. Perceived Choice evaluates how individuals feel they engaged in one activity because they choose to do it and Perceived Competence measures how effective individuals feel when they are performing a task. Pressure/Tension, conceived as a negative predictor of intrinsic motivation, evaluates if participants feel pressure to succeed in an activity. Effort is a separate variable which is important when taking into account motivation in specific issues and contexts. It assesses the person's investment of his/her capacities in what he/she is doing. The Value / Usefulness subscale embodies the idea that people internalized and developed more self-regulatory activities when experience is considered as valuable and useful for them. Finally, Relatedness refers to the degree of a person's feelings connected to others and is used in studies where interpersonal interactions are relevant (SDT, n.d.). Therefore, to investigate an intrinsic motivation level among students in learning cost and management accounting course, we adopt the IMI instrument.

Game based learning for Cost and Management Accounting

Previously, students learnt basic cost and management accounting course in traditional learning environment which focusing on formal lecture, tutorials and text-book oriented. This course usually covers the basic cost elements and terminology such as material, labour and expenses, cost accounting system and decision making. (Kasim et al., 2018; Lucey, 2017; Das, 2013; Drury, 2011). The course is offered for accounting program and in many other social science programs at university or college as a part of the curriculum to educate students to become an entrepreneur or better decision maker in the future. However, inflexible learning and teaching environment are no longer suitable for today's generation since they are so much accustomed to online activities. It is quite difficult to attract them in class and focus on subject matter without blended learning activities. On top of that, teaching cost and management course for non-accounting student is quite challenging too due to their anxiety of accounting subject. Yet due to this perception, the student motivation is affected. Study by Lawson et al., (2014) found that even in advanced managerial accounting courses which are required for accounting majors, students' interest is often low because accounting programs also encouraged students to pursue careers in audit or tax, unless if they want to become management accountant. Nevertheless, if the learning experience at foundation level is not appealing and undesirable, this will discourage them from studying any other accounting courses.

Apparently, motivation to learn any course within accounting field are still being influenced by students' perception, action and desired. Recent study by Buil, Catalán, & Martínez, (2019) asserted that business simulation games are one of the most effective tools for motivating and engaging players actively in the learning experience. Their study explored the impact of intrinsic motivation and engagement on the development of generic skills and perceived learning. The finding suggested strong support for the use of business simulation games in management training as a tool to promote intrinsic motivation among players, foster engagement, develop skills, and increase learning in the field of management. Hence, the existence of various tools of teaching and blended learning such as on-line, videos, games, Instagram, Facebook, wee-chat, tele conference, group project and others allow the students to engage in their learning process and interest. Therefore, to change student perception and mind set in learning Cost and Management Accounting course, we have invented two games which are known as Smart Costing Game and D' Bees Game for Fun to make them attentive in learning this course.

The objective of Smart Costing Game is to enables students to classify costs according to cost function and subsequently use the cost figures to compute total costs, profit and selling price while in the D Bees Game for Fun, it enables students to properly classify costs according to cost behavior and finally use the cost figures to compute total costs. A series of game sessions were executed in class with students from two programmed; Bachelor in Administration Science and Bachelor of Corporate Administration. Both programs are from Faculty of Administrative Science and Policy Studies at Universiti Teknologi Mara Kampus Seremban. During each session the following procedures were followed as shown in Figure 1:



Source: Abdul, Kasim & Daud (2019)

Fig 1 Smart Costing Game and D Bees Game for Fun Activates

As shown in Figure 1, the activity for each game is divided into three tasks. In task one, each group/individual must observe the items available in each business setting (pictures) which consists of 15 to 25 items (pictures) that represent various types of costs. Each group/individual must find those pictures. Then, classify it according to the appropriate classification of cost by placing each picture in the relevant cost folder (task one). Next, in task two, each group/ individual must prepare a cost statement with an appropriate title and sub-heading such as direct material, direct labour, production overheads and non-production overheads or compute cost behavior such as fixed cost, variable cost, semi-fixed cost and semi-variable cost. Finally, in task three, each group/ individual is required to calculate total costs or total selling price and profit for the business.

At the end of the game session, the answer sheets are collected, and scoring is done accordingly. Lastly, the students are required to complete a survey in order to assess their responses to the game via online survey.

RESEARCH METHODOLOGY

A replication of questionnaires based on Intrinsic motivation inventory (IMI) was used for this study which determines the levels of intrinsic motivation as the outcome of a set of subscales: Interest / Enjoyment, Perceived Competence, Effort, Value / Usefulness, Pressure / Tension, Relatedness and Perceived Choice. (Monteiro et al., 2015; Deci & Ryan, 1982). The data obtained from the questionnaire were analysed by calculating the mean for each question. The (R) after an item is to highlight the reverse scores of the participant's responses on that item. Table 1 shows the scale used to specify the motivational level.

Table 1: Mean Score of Motivational Level

Scale	Mean range	Motivational Level	Score range
5	Strongly agree	Highest	4.50 - 5.00
4	Agree	High	3.50 - 4.49
3	Moderate	Moderate	2.50 - 3.49
2	Disagree	Low	1.50 - 2.49
1	Strongly Disagree	Lowest	1.00 - 1.49

The participants in this study are non-accounting students who enrolled in the Cost and Management Accounting course at one of the public universities in Malaysia. The course is taught among students in their second semester in the Faculty of Administrative Science and Policy Studies. This study used a survey method for collecting data from a total of 93 participants out of population of 236 who took part in the Smart Costing Game and D Bees Game for Fun. Each participant was required to answer the online survey form.

The survey instrument consists of four (8) sections: section 1 – demographic; section 2 – Interest / Enjoyment; section 3 – Perceived Competence; section 4 – Effort; section 5 – Value / Usefulness; section 6 – Relatedness and section 7 – Games evaluation. In sections 2 to 7, the respondents were asked to respond

by choosing the most appropriate answer to a series of questions using a Likert scale ranging from 1- Strongly Disagree to 5 – Strongly Agree. The last section 8 is open ended questions. The data was then analyzed using frequency statistics. Consistent with prior research Cronbach's alpha was used to test reliability of the scales and sub-scales. All the scales and sub-scales had acceptable internal consistency, 0.958 which is above 0.64 (Kintu, & Kagambe, 2017).

RESULT AND DISCUSSIONS

As shown in table 2, the predominant respondents were females 92.6% (86 out of 93 participants) who had participated in this game and the remaining respondents were males (7 out of 93 participants). 89.4% of the respondents were students of Bachelor of Administrative Science (AM228) and only 10.6% were from the Bachelor of Corporate Administrative (AM225). Both were from the Faculty of Administrative Science and Policy Studies.

Table 2: Participants' Gender

Gender	Percent, %
Female	92.6%
Male	7.0%
Total	100.0%

Interest/ Enjoyment

Table 3 shed light on how the Smart Costing Game and D' Bees Game affected the student's behaviour in learning cost and management accounting in classroom. The average mean score of (4.08) indicates that the students had an enjoyable experience and fun in costing lessons by using the games. The students found that the costing games are interesting and able to clinch their attention towards learning costing lessons. This is coherent with Ramli et al., (2017) who emphasized that students nowadays found gaming and simulations interesting. Tactfully, this will change their perceptions about learning accounting course which is not that difficult and dull. Notwithstanding, the games are also able to repudiate claims that accounting educators are mind-numbing, boring and too textbooks oriented.

Table 3: Mean Score of Interest/Enjoyment

No	Items	Mean	Motivational level
1	I enjoyed doing this costing game very much	4.39	High
2	This costing game was fun to do	4.41	High
3	I thought this was a boring costing game (R)	3.45	Moderate
4	This costing game did not hold my attention at all (R)	3.95	High
5	I would describe this costing game as very interesting	4.27	High
6	I thought this costing game was quite enjoyable	4.09	High
7	I enjoyed doing this costing game very much	4.39	High
	Average mean score: 4.08		High

Perceived Competence

Table 4 showed that the students felt the games have improved their competence and their skills in cost classification. They also highly satisfied with their performances after completing the games tasks (mean=3.65). According to Tohidi & Jabarri (2012) motivation in education can have several effects on how students learnt and how they behaved towards subject matter. It can direct behavior toward particular goals, lead to increased effort and energy, increase initiation of, and persistence in activities, enhanced cognitive processing, determined what consequences are reinforcing and lead to improved performance. Since students are not always internally motivated, they sometimes needed situated motivation which is found in environmental conditions that the teacher creates. Knowing that majority of students do not have any prior exposure in accounting course, it is thus vital for the accounting educators to make an easy and comfortable learning experience at fundamental level. Once they engage in these activities it will foster self-confidence in learning accounting course. This is justified from the result which had shown that only minority of the students felt that they could not performed in the activities. Thus, the games were found to be more effective and motivating than traditional teaching.

Table 4: Mean Score of Perceived Competence

No	Items	Mean	Motivational Level
8	I think I am pretty good at this costing game	3.63	High
9	I think I did well at this costing game, compared to other students	3.29	Moderate
10	After working at this costing game for a while, I felt competent	3.72	High
11	I am satisfied with my performance at this task	3.65	High
12	I was skilled at this costing game	3.40	Moderate
13	This was a costing game that I could not do very well (R)	3.29	Moderate
	Average mean score:3.50		High

Effort/ Importance

As shown in Table 5, it revealed that the students were highly motivated to achieve the objective of these activities which they were able to classify the cost correctly and accurately according to the cost function and cost behavior (average mean=3.88). They had tried very hard and were enthusiastic to complete the task in order to achieve a good outcome (mean=3.94). As a result, these activities proposed that educators do not have to force them to learn the subject matters hardly because they themselves are very eager to do it. Once the students are interested in any particular course or task indirectly, they will perform better in their studies. This in line with Ferreira, Cardoso, & Abrantes (2011) asserted that effort, the main indicator of motivation, is only used if the student believes in his ability to succeed. In order to motivate students, it is essential to develop teaching strategies that depart from their current condition, placing them in the process as active agents. The students should feel encouraged to apply their cognitive schemes and to reflect on their own actions in the educational process, developing their knowledge and their ways of thinking.

Table 5: Mean Score of Effort/Importance

No	Items	Mean	Motivational level
14	I put a lot of effort into this	3.94	High
15	I did not try very hard to do well at this costing game (R)	3.59	High
16	I tried very hard on this costing game	3.95	High
17	It was important to me to do well at this task	4.18	High
18	I did not put much energy into this	3.73	High
	Average mean score: 3.88		High

Value/Usefulness

As revealed in table 6, the students found that these games were very useful in learning cost and management course. The games were highly perceived as important tools to increase their understanding on classification of cost with the mean score of 4.25. This is similar with previous research by Rajashekar & Bellad (2016) in Physiology field of study where their result of using card games verified significant improvement in the students' academic performance and their ability to analyses and retain knowledge for longer periods.

Item number (23) I think doing this costing game could help me to excel in ACC416 course with a mean score of 4.24, indicated that that these activities could help them to achieve better grades and performances. The students also willing to play these games because of the values that the games possessed in learning cost and management accounting (mean =4.28). According to Ryan & Deci (2000) emphasized that intrinsically motivated students are thought to seek out challenges, to extend and exercise their capabilities, and to explore and learn, compared with extrinsically motivated students who seek rewards such as grades, ego enhancement and social recognition.

Table 6: Mean Score of Value/Usefulness

No	Items	Mean	Motivational level
19	I believe this costing game could be of some value to me	4.28	High
20	I think that doing this costing game is useful for learning ACC416	4.30	High
21	I think this is important to do because it can give me more understanding in classifying costs	4.25	High
22	I would be willing to do this again because it has some value to me	4.23	High
23	I think doing this costing game could help me to excel in ACC416 course	4.24	High
24	I believe doing this costing game could be beneficial to me	4.23	High
25	I think this is an important costing game	4.18	High
	Average mean score: 4.24		High

Relatedness

Finding in term of relatedness in these activities indicated that the desire to have an interaction and personal relationship with other people in learning is high (average mean = 4.21). Item 26 (mean = 4.29) and 27 (mean =4.23) shows that the students chose to interact with peer more often and to keep it that way in the future. The games provided an opportunity for them to communicate and interact with others in their learning process. Even though learning online become a norm nowadays, this finding suggests that we should not disregard the effectiveness of face to face group discussion. Simulation and offline education games are equally important and still relevant as a strategy in developing students' soft skill. Research done by Holmes & Rasmussen (2018) asserted that although today's undergraduate students are more social-media savvy than any previous generation, that does not guarantee that the use of social media will be successful or well received by students. Smith (2016,) found that students viewed social media "as a double-edged sword" which means that the faculty-student social media interactions were perceived as awkward. On the other hand, Guay et al. (2019) asserted that teachers fostering affectionate and warm relationships with their students fulfilled the psychological need for relatedness, which in turn promotes intrinsic motivation. These game activities are also able to build trust and cooperation among the students and indeed these notions are required from them at their workplaces later. Hitherto, our findings proposed that game-based learning is a successful strategy in mounting students' motivation as well as a useful tool for teaching and learning for this course.

Table 7: Mean Score of Relatedness

No	Items	Mean	Motivational level
26	I would like a chance to interact with my team members more often	4.29	High
27	I would really prefer to interact with my team member in the future	4.23	High
28	I feel like I could really trust my team members	4.14	High
29	It is likely that my team member and I could become friends if we interacted a lot	4.23	High
30	I feel close to my member	4.16	High
	Average mean score: 4.21		High

Pressure/Tension and Perceived Choice

Pressure/tension conceived as a negative predictor of intrinsic motivation. The items evaluate the feeling of pressure to succeed in an activity. There were mixed feelings among the students due to different level of knowledge and understanding about the course. As shown in table 8, the students felt highly nervous and relatively felt moderate level of pressure in doing the tasks (average mean= 3.44). Additionally, the students were highly engaged in the activities because they chose to do it (average mean =3.59). Although, it was their choice, the students still felt the pressure in completing the tasks. According to Matute & Melero (2016) this may be due to the highly competitive nature of the game or the inherent pressure of decision-making in a limited time. Despite advantages over the use of game-based learning other researcher claimed that simulations can create anxiety and frustration in players which can have a negative effect on their learning (Doyle & Brown, 2000). On top of that, this frustration can be compounded by team conflict and freeloading of some participants (Adobor & Daneshfar, 2006). Thus, it is good if the educators know the

students' background as this can also help them to apply appropriate teaching methodology and control the learning environment.

TABLE 8: MEAN SCORE OF PERCEIVED CHOICE AND PRESSURE/TENSION

No	Items	Mean	Motivational level
31	I did not feel at all nervous about doing the costing game (R)	3.65	High
32	I felt tense while doing the costing game	3.38	Moderate
33	I felt relaxed while doing the costing game (R)	3.99	High
34	I was anxious while doing the costing game	3.17	Moderate
35	I felt pressured while doing the costing game	3.02	Moderate
36	I felt that it was my choice to do the costing game	3.98	High
37	I did not really have a choice about doing the costing game (R)	3.06	Moderate
38	I felt like I was doing what I wanted to do while I was working on the costing game	3.74	High
	Average mean score Pressure/Tension: 3.44		Moderate
	Average mean score Perceived Choice: 3.59		High

CONCLUSION

In conclusion, education games are found to be an effective tool in increasing students' intrinsic motivation towards learning cost and management accounting course. In this study, the majority of the participants do not have any exposure in accounting education and as such, it is of importance to accounting educators to design an effective learning environment and methodology that can increase their interest and desirability in learning activities. Based on the above results and discussion, it had also demonstrated that the majority of the students agreed that the Smart Costing Game and D' Bees Game for Fun were found to be able to increase their interest and enjoyment, providing useful and effective learning activity, increase motivation and engaging in learning cost and management accounting course. Given the general critics of accounting educators who were always textbook oriented, these findings have significant implication to increase the intrinsic motivation among students in learning accounting courses. On top of that, these games also enabled students to develop their soft skills such as communication which can be seen through their interactions with the other group members while playing the games. These games also allow the students to apply an analytical skills and problem solving at the early year of their learning experience at universities. It is recommended that educating the students using games can be effective as well as interesting. However, the limitation of this study is it cannot be generalized as the scope of the study is only limited to a set of subscales in IMI Instrument and it is descriptively analyzed.

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