



Student Acceptance on Game to Support Teaching and Learning

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ABSTRACT

Nowadays, teaching and learning (T&L) is one of the most challenging activities faced by educators around the world. Delivering good course content will not necessarily encourage student to join the class until the end. Some students might “disappear” in the middle of the session, leaving the teacher “talking” to the table and chair. Therefore, an interactive approach such as gamification should be implemented in parallel with existing classroom teaching. This paper discusses the student’s acceptance of using game to increase their understanding on Enterprise Resources Planning (ERP) topic. After the students attended the face-to-face lecture, they are given a task to implement ERP using a game called Hay Day. The students were given a questionnaire to assess their acceptance in terms of performance expectancy, effort expectancy and attitude. The findings show that students are very positive towards Hay Day as a tool for their learning. They agree that Hay Day game is easy to use and very useful to increase their understanding on ERP topic. This finding confirms that the use of game is a good alternative in to support T&L.

Key words: Gamification, Hay Day Game, Blended Learning, Teaching & Learning, Enterprise Resources Planning.

1. INTRODUCTION

Gamification is a concept of using computer game to facilitate teaching and learning (T&L). Game was initially developed for fun and entertainment. However, the innovations and the wide use of information and communication technology (ICT) in T&L have encouraged educators to employ the game concept. The game in nature can attract students of the various background to participate. Thus, employing game in T&L can encourage active participation from the students. Furthermore, ICT is an integral part of the educational process [1].

This approach of teaching is viable as teaching these days are more challenging. Educators nowadays facing various

challenges such as in applying student-centered learning, supporting students with higher order thinking skills (HOTS) and facing students’ undesired behaviours [2]. Therefore, teaching required a lot of efforts to make it more interesting and gain students’ interest. On the other part, student should “enjoy” their learning, motivated to attend the lecture hall and be able to participate in the learning activities [3].

The games that are used in T&L can be distinguished into two categories [4]: special purpose games which have been developed with an educational purpose and Commercial-Off-The-Shelf games that have been developed for entertainment purposes, but that are being deployed in an educational context.

Gamification approach can be implemented along with existing blended learning approach that emphasis on the use of ICT to complement face-to-face learning. Previous studies have shown that blended learning have a positive effect on students’ participation and improving their performance [5, 6].

The aim of this study is to assess students’ acceptance of using game in conjunction to their face-to-face learning. In this study, an online game that is Hay Day has been adopted to teach Enterprise Resources Planning (ERP) topic. The elements provided by Hay Day provide a magnificent experience to students to learn, practice and understand ERP.

2. RELATED STUDIES

Blended learning refers to the teaching approach that combine two or more learning approaches such as online and face-to-face. Blended learning is supported by the ICT as the main backbone. The Internet and world wide web are the main medium for communication and knowledge sharing. These technologies enable the creation of the online platform such as learning management system (LMS) to facilitate the T&L activities. The course content and the activities conducted online are aimed to support or replace the face-to-face teaching [7]. E-learning also promote less travelling, thus can reduce education cost as well [8]. In addition, world wide web provides huge collection of

electronic documents that are searchable over the Internet [9]. Most of these resources are free and open access. Besides that, Internet and cloud computing technology enable the use of cloud storage that make document storage, retrieval, and sharing became much easier [10].

Gamification is a concept of using computer games elements in T&L is another ICT approaches that is beneficial for T&L. A survey by [11] reveal that majority of the empirical research on gamification in 2011 to 2015 (first half) was conducted in the domain of education and learning. This shows that gamification has been one of the popular approaches applied in education. Kusuma et al [12] collect and review articles on gamification in education from 2009 to 2018. They classified the articles into four domains applications: generic, STEM, history, and language. STEM stands for Science, Technology, Engineering, and Mathematics. Kusuma et al also found that most of their surveyed articles were from 2014 to 2017. Another review of literature by Sudarmilah et al [13] shows that game is one of the effective tools to educate students on disaster mitigation. This shows that gamification in education has been a major interest in T&L in those years.

Example of the studies that deployed games in T&L are [14] and [15] deployed games to teach mathematics, [16] in factory management education, and [17] in teaching software engineering. These studies demonstrate that gamification approach is beneficial to facilitate T&L.

Gamification also can increase student's motivation and interest towards learning [11]. It has been progressively accepted as one of the best approaches to increase users' engagement or motivate learning [18], improve students' achievement [19] and minimizes distraction and boosts the learning curve [20].

In gamification approach, students who has achieve certain level will be rewarded. The reward can be displayed through various techniques such as progress bars, achievements board, in-app currency and leaderboards [21]. This approach can increase student's motivation to earn points and improve their ranking in the classroom. Thus, make learning more interesting.

Penfold [22] listed seven popular e-learning platform that using gamification to attract student interest. The seven platforms are; 1) Duolingo, 2) McDonalds, 3) LIFESAVER, 4) City Witness, 5) Train4TradeSkills, 6) Heineken, and 7) Noble Prize. These platforms applied interactive elements in gamification such as point systems and leaderboards, voting system, collaboration, realistic simulation, progression, dynamic feedback, and sound effect. Figure 1 shows the example if e-learning 'City Witness'.

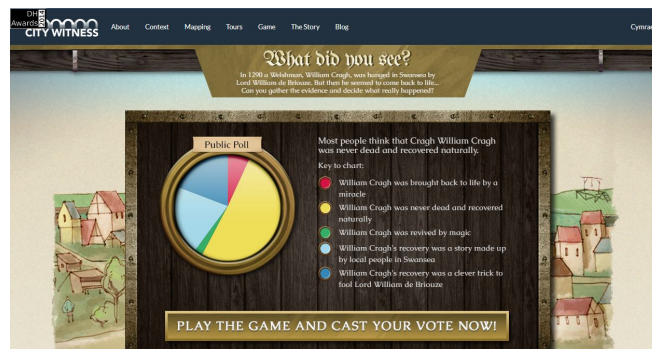


Figure 1: Example E-Learning "City Witness" (<http://www.medievalswansea.ac.uk/en/game/>)

3. METHODOLOGY

The respondents are students who are taking Manufacturing Information System and Operation in the first semester 2017/2018 (A171). In this study respondents were requested to play a game that is related to the ERP topic. The ERP is one of the main topics in Manufacturing Information System and Operation. ERP is somewhat difficult to understand as it involves planning and decision making. Usually, ERP is implemented at the middle and high level of organization management.

The game used in this study is Hay Day (Figure 2). Hay Day is a freemium mobile farming game developed and published by Supercell. Hay Day was released for iOS on 21 June 2012 and Android on 20 November 2013. The game is suitable to demonstrate planning and decision making to increase the production of a farm based on the limited resources.

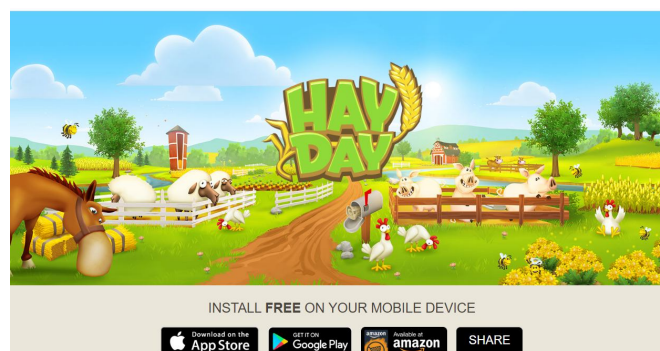


Figure 2: Hay Day Game

After attending the class lecture on ERP topic, the students were asked to play Hay Day. Students were advised and briefed about the game and how to play it. Students were also reminded that they are supposed to apply their knowledge on ERP while playing the game. After completed several levels students were given a questionnaire to access their acceptance of Hay Day as a learning tool. The questionnaire applies 7-likert scale, that range from 1 (Very poor) to 7 (Exceptional). The feedback from the questionnaire were analyse using frequency analysis.

4. FINDINGS AND DISCUSSION

The respondents’ feedback is rescaled into three groups poor (1-3), fair (4), and good (5-7). The findings in Table 1, Table 2 and Table 3 shows respondents’ acceptance of Hay Day as a learning tool. The respondents’ acceptance of Hay Day as a learning tool is measured based on performance expectancy (Table 1), effort expectancy (Table 2), and attitude (Table 3) toward using the gamification.

As shown in Table 1, most of the respondents have good expectancy that Hay Day game is beneficial and useful for their learning. Only 20% have fair judgement on Hay Day. In term of topic understanding, all respondents agree that hay Day is a great tool that enables them to understand what they have learnt better.

Table 1: Performance Expectancy

	Poor (%)	Fair (%)	Good (%)	Average
1. I would find the Hay Day Game useful in my learning	0	20	80	5.4
2. Using the Hay Day Game enables me to understand my learning more quickly	0	0	100	5.8
3. Using the Hay Day Game increases my learning	0	20	80	5.4
4. If I use the Hay Day Game, I will increase my chances of getting a good grade in my learning	0	20	80	5.2

Hay Day has been played by millions of users worldwide. Therefore, Hay Day is easy to play and the operations procedure on how to work on the farm are clearly described when the users open the game at the first time. This is confirmed when most of the respondents give good feedback on the effort expectancy questions. This is shown in Table 2.

Table 2: Effort Expectancy

	Poor (%)	Fair (%)	Good (%)	Average
1. My Interaction with the Hay Day Game would be clear and understandable	0	0	100	6
2. It would be easy for me to become skilful at using	0	20	80	5.4

the Hay Day Game				
3. I would find the Hay Day Game easy to use	0	0	100	5.8
4. Learning to operate the Hay Day Game is easy for me	0	20	80	5.6

The respondents also agree that Hay Day is a good choice of game to support their learning on ERP topic. The respondents also agree that their learning is fun and more interesting compared to existing classroom learning. This is shown in Table 3.

Table 3: Attitude toward using the technology

	Poor (%)	Fair (%)	Good (%)	Average
1. Using the Hay Day Game is a good idea	0	0	100	6
2. The Hay Day Game makes my learning more interesting	0	0	100	6
3. Learning with the Hay Day Game is fun	0	0	100	6.2
4. I like learning with the system /gamification technology	0	0	100	6

5. CONCLUSION

Overall, the respondents give positive response towards Hay Day with average score more than 5. The respondents agree that the use of Hay Day is very useful and can increase their understanding on ERP. Furthermore, Hay Day is easy to use where they must spend less effort to learn and use Hay Day. The findings also reveal that the respondents have positive attitude towards Hay Day and gamification approach in T&L.

The findings of this study confirm that gamification is one of the potential approaches in T&L. Gamification makes T&L fun, enjoy and interesting. Thus, students have better learning experience and able to visualize the learning concept better than traditional approach. This finding is in line with [19, 23, 24] where Hay Day have substantially positive effect on the students learning and performance.

The Hay Day game is a network-based game program. The program can only be used in a network environment. Therefore, the university support is required to allow the usage of this game under the university network facility.

Currently, the university policy prohibited the access to any online games as this action can cause negative implication on the university internet services. The university should consider online games as one of the innovative strategies to improve students learning.

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