

Using “Hay Day” Game to Support Students Learning

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Abstract

Game based learning is one of the innovative approaches to complement classroom teaching. It utilizes game related technology and features to support and facilitate students learning. This paper discusses the deployment of game in teaching 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. Hay Day game simulate the agricultural activities, where students can apply ERP concept to manage the resources in their farm in order to obtain optimum production and profit. Student’s feedback on their experience applying ERP on Hay Day game is recorded using a set of questionnaires with 7-likert scale. At the end of the course the students take the final examination which including the ERP topic. The marks for that topic is taken and compared with previous semester students. The findings show that students are very positive towards Hay Day as a tool for their learning. Furthermore, their achievement on ERP topic is superior compared to the previous semester.

Keywords: Game Based Learning, Hay Day, Blended Learning, Teaching & Learning, Enterprise Resources Planning

Introduction

To date, teaching is one of the challenging tasks faced by most of academician. In line with the current practice in teaching and learning (T&L) academician nowadays facing various challenges such as in applying student-centred learning, succouring students with higher order thinking skills (HOTS) and facing students’ undesired behaviours (Kasim & Abdurajak, 2018). Therefore, teaching required a lot of efforts in order 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 (López-Fernández et al., 2019).

Game based learning and gamification are another innovation in T&L, where students can learn in a fun and interactive ways. In T&L context, gamification refers to a set of activities and processes to increase students’ learning by applying the characteristics of game elements. The games that are used in T&L can be distinguished into two categories (All et al., 2016): 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.

Game can be implemented along with existing blended learning approach that emphasis on the use of information & communication technology (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 (Yamin & Ishak, 2017; López-Pérez et al., 2011).

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.

Related Studies

A survey by Koivisto & Hamari (2019) 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 (2018) 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. 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 Faghihi et al (2014) and Ke (2013) deployed games to teach mathematics, Müller et al (2016) in factory management education, and Alhammad & Moreno (2018) 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 (Koivisto & Hamari, 2019). It has been progressively accepted as one of the best approaches to increase users' engagement or motivate teach (Rodrigues et al., 2019), improve students' achievement (Yildirim, 2017) and minimizes distraction and boosts the learning curve (Kayimbasioglu et al., 2016).

Methodology

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 Operation and Manufacturing Information System course. 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 1). 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 in order to increase the production based on the limited resources.

The respondents are students who are taking BJIP2053-Operation and Manufacturing Information System in the first semester 2017/2018 (A171). Students were given questionnaires to measure students' knowledge on ERP transaction and their attitude towards Hay Day as a learning tool. The questionnaires apply 7-likert scale that range from 1 (Very poor) to 7 (Exceptional). The feedback from both questionnaires were analyse using frequency analysis.

In measuring the impact of the study on students' academic performance, students answer for ERP topic from the final exam question were extracted. The mark obtained by the students were compared with the previous semester students.

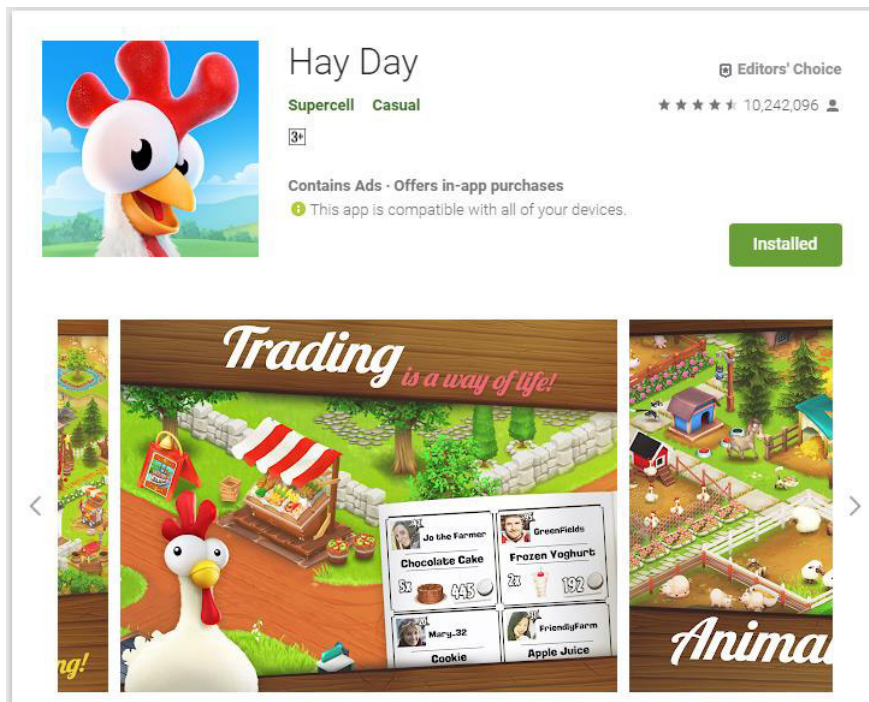


Figure 1. Hay Day Game

Findings & Discussion

In the analysis, the respondents' feedback is rescaled into three group's poor (1-3), fair (4), and good (5-7). The pre-test analysis is shown in Table 1 and Table 2. Table 1 shows respondents' ERP transaction skills performed through Hay Day. The findings show that most of the respondents' skill are good with average score more than 4.

Table 1
ERP Transaction Skills through Hay Day Game

	Poor (%)	Fair (%)	Good (%)	Average Score
1. How would you rate your ability to accomplish transactions to procure inventory in Hay Day Game?	0	40	60	4.6
2. How would you rate your ability to accomplish transactions to set (and change) prices and sell products in Hay Day Game?	0	40	60	4.6
3. How would you rate your ability to accomplish transactions to collect from customers?	0	0	100	5.2
4. How would you rate your ability to accomplish transactions to pay for purchases (accounts payable) in Hay Day Game?	0	40	60	4.6

The respondents were found to have positive attitude on Hay Day and learning ERP through Hay Day. As shown in Table 2, 60% of the feedback are good with average score more than 5.

Table 2
Attitude

	Poor (%)	Fair (%)	Good (%)	Average Score
1. Your attitude/feeling about Hay Day Game	0	40	60	5.2
2. Your attitude/feeling about Hay Day Game's ease of use	0	0	100	5.6
3. Your attitude/feeling about integrated business processes	0	20	80	5.6
4. Your attitude/feeling about Enterprise Resource Planning	0	0	100	5.6

The impact of this study is measured by comparing the students' final examination result from the current semester with the previous batch. Table 3 shows that in all students can answer the ERP questions very well, where out of 10 marks the lowest mark obtained by the students is 6/10 with the average of 7.2/10 marks for all students. This achievement is superior when compare to previous batch in A162 session. In A162 session, only few students able to get mark for this question with the largest marks obtained 5/10 marks and with average 3.75/10 marks for all students.

Table 3
Comparison of examination result for semester A162 & A171

	A162	A171
Min	0/10	6/10
Max	5/10	8/10
Average	3.75/10	7.2/10
Median	5/10	8/10

Discussion and Conclusion

The findings of this study confirm that game is one of the best approaches applied in T&L. Game 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 Xia & Hamari (2019) in which Hay Day have substantially positive effect on the students learning needs that is on ERP topic.

This study also illustrate that students gain better marks on their ERP questions compared to previous semester. This finding is in line with Yildirim (2017) where employing game approach in T&L give positive impact on students' achievement.

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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