

Game On! Development And Evaluation Of Computer Games For ESL Classroom

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Abstract: Technology has become a necessity in everyone's lives and in the education field, technology plays an assisting role, whereby the teaching and learning sessions are usually accompanied by technology. Despite using technology in education, the English as a Second Language (ESL) learners still portray a decline in their English language competency due to lack of vocabularies, which inhibit their proficiency in speaking and writing. Hence, it is important to identify the most suitable tool in teaching ESL vocabularies to learners, starting at a young age. In this 21st-century era, games are becoming popular, especially among teenagers, which resulted in the term gamified-learning. Therefore, the aim of this paper is to design, develop and evaluate the effectiveness of using PowerPoint games in improving ESL learners' vocabularies. An empirical study involving 37 Malaysian lower secondary school students was carried out, whereby a pre-test and post-test were given prior and after three interventions respectively. Then, a survey and document analysis were carried out to triangulate the data. The findings from the post-test showed a massive improvement in learners' vocabularies. The results from the survey portrayed that learners have positive perceptions of gamified-learning. This shows that gamified-learning is effective and positively accepted among ESL learners. This paper implied that teachers should modify their teaching methods, to suit the current generation, which can be done by incorporating games into the lesson. Future research can focus more on the different genres of games suited to the different level of students.

Index Terms: Education, English as a second language (ESL), gamified-learning, motivation, vocabulary, teaching and learning, technology-enhanced language learning

1 INTRODUCTION

The technological advancement in this era has aided many tasks [1]. The revolution has created many opportunities for technology to embed itself into various industries as it is practical and efficient [2], [3]. The education industry has proved its loyalty towards technology as many teaching and learning sessions are complemented with technology due to its assisting and motivating nature [4], [5], [6]. One of the tools well-known among younger learners is the gamified-learning, which could be beneficial in the education sector [7]. Technology has been widely used in education. Despite countless controversies on whether technology will bring negative or positive effects to the learners, it still made its debut in the education field with tremendous applause [8]. However, upon graduating, the learners of English as a Second Language (ESL) still have problems in their communicative competence as it is not up to the standard of employers [9]. One reason for this issue is that learners were not well-equipped with ESL vocabularies when they were in school [10]. The teaching of vocabulary is usually associated with the traditional method of teaching, but learning in the 21st-century era should be related to technologies because younger learners are more technology-savvy [11]. The incorporation of technologies will further motivate them to learn better. Therefore, this paper aimed to design, develop and evaluate the effectiveness of using PowerPoint games in improving ESL learners' vocabularies.

2.1 Vocabularies in Language Learning

Vocabulary is one of the most important elements in language learning and having a wide vocabulary range is crucial because it will help in understanding the written and spoken language [12]. To ensure the students' understanding on the words, it is important to have effective vocabulary instruction such as direct instruction, repeated exposure, contextualising words, and opportunities for word interaction and active engagement [13]. PowerPoint Presentation is a type of presentation software (PS) that allows operators to show coloured texts and images with simple animation and sound. It also helps to create audio, visual as well as audio-visual effects in the classrooms while teaching and can be exceedingly effective in attracting and sustaining students' attention [8]. Games can also be created in PowerPoint, which can be efficient to teachers due to its nature as it does not need any internet connection.

2.2 Games in Education

With the current advancement of technology, games are not only used as a form of entertainment but also for educational purposes [4]. Games in education changed the nature of learning, from teacher-centred to a more student-centred approach [14]. Gamification is a new term which brings the meaning of games in education [13] and it includes the game elements, which are embedded into non-games' applications and are hypothesized to bring positivity in learners' attitude and behaviour [15]. In the education field, it is more known as gamified-learning, whereby teachers modify the teaching aids and include games' principles [13]. In order to ensure games are well created for educational purposes, the gamified-learning theory should be taken into account. Gamification which involves the integration of game elements in a non-game context has become a tremendously popular method that can improve classroom instruction at a relatively low cost [16]. The use of games in general and gamification, in particular, has been considered as one of the most prominent and effective instructional methods in language learning. Gamification is used to motivate students and increase their engagement as well as their motivation during the learning

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process [17]. It is also said to be one of the most enjoyable, engaging and effective methods in language learning [18].

2.3 Gamified-Learning Theory

The gamified-learning theory as shown in figure 1 was proposed by Landers and Landers [19]. This theory focused on two variables, which are the game characteristics (D) and the instructional content (A). These two variables contribute to another variable known as behaviour or attitude (C), which could affect the learning outcomes (B). According to Landers and Landers [19], the gamified-learning theory proposed two processes known as the mediating process and the moderating process. The mediating process is a direct process whereby game characteristic (D) and instructional content (A) will determine the behaviour or attitude (C), which affects the learning outcomes (B). This shows that the variable of behaviour and attitude acts as a mediator. The second process is the moderating process. This process used the variable of behaviour or attitude (C) as the moderator variable, which explains the strength between variables of game characteristics (D) and instructional content (A) towards the learning outcome (B). Using these two processes, researchers can further create educational games according to the variables, which could improve the learning outcomes of learners.

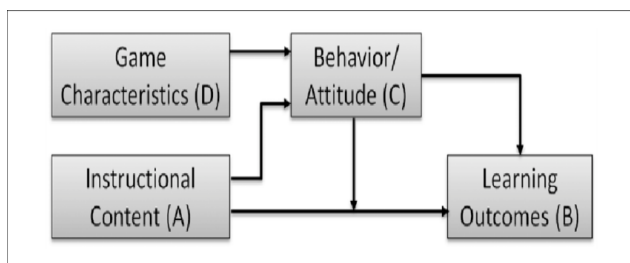


Fig. 1. The gamified-learning theory

2.4 Benefits of gamified-learning

Gamified-learning is beneficial in various aspects of education. One of the benefits of gamified-learning is that it improves ESL learning. Learners showed improvement in ESL learning when games are used such as in grammar [14]. In ESL learning, particularly vocabulary is not easy for someone who takes English as a second language. The integration of the gamification concept in language learning also provides a room for improvement with the use of different types of resources that create other forms of learning which include audio and images [20], [21]. Gamification produces positive outcomes and gives a strong impact on the learners' attitude and behaviour. In education, motivation is considered as a noteworthy element [15]. It is used to explain the students' attention and effort in learning as well as their dedication to participate in activities [22], [23]. There are multiple other factors that can contribute to the outcomes or even a failed language learning such as anxiety, motivation, attitude and abilities [24]. Researchers suggest that a gamified environment for language learning could increase the learners' motivation, engagement and provide them with the freedom to fail without fear in learning [17]. Games' ability to be able to hold attention for hours seems like the perfect role model for a good teaching and learning session [25], [26]. The gamification concept also aims to increase the intrinsic and extrinsic

motivation of the students through the promotion of acknowledgement to the users by completing activities that carry on the achievement of a goal [20]. Engagements involved in academic activities is the most important element. Without engagements, learners would not be able to work [18].

3 METHODOLOGY

Three games using PowerPoint were designed and developed based on the gamified-learning theory. An empirical study participated by 37 lower secondary students in Malaysia was conducted, employing a pre-test and a post-test. The pre-test consisted of 30 multiple-choice questions related to vocabularies and was given to participants before the interventions. After the pre-test, the first intervention was carried out in the same class session. The second and third interventions were carried out in the second and third class sessions respectively. Once the third intervention was completed, the post-test, consisting of 30 multiple choice questions was given. To further triangulate the data, document analysis and a survey were carried out. The survey gathered the perceptions of learners towards gamified-learning. There were 10 items on the questionnaire, which were adapted from Ismail et al. [27] with a Cronbach Alpha value of 0.80. On the questionnaire, there were two sections, which were the background of learners, consisted of gender and the main language used at home, and their perceptions towards gamified-learning. The questionnaire employed a 4-point Likert scale, with the range of 1 to 4, with strongly disagree, disagree, agree and strongly agree respectively. Data were analysed and tabulated using descriptive statistics, which were analysed using the Statistical Package for Social Sciences (SPSS) version 23. The three games were designed and developed using hyperlinks in PowerPoint, embedding audios and media, such as pictures, soundtracks and animations. The first game was created based on the Pokemon theme as shown in figure 2, while the second game was designed and developed based on the combination of Harry Potter and Yu-Gi-Oh as shown in figure 3. Finally, the third game was a boss battle game, whereby the boss was created based on the character in the Avengers, Thanos as can be seen in figure 4. All games were designed and developed using quizzes in the form of games.



Fig. 2. Game 1 sample

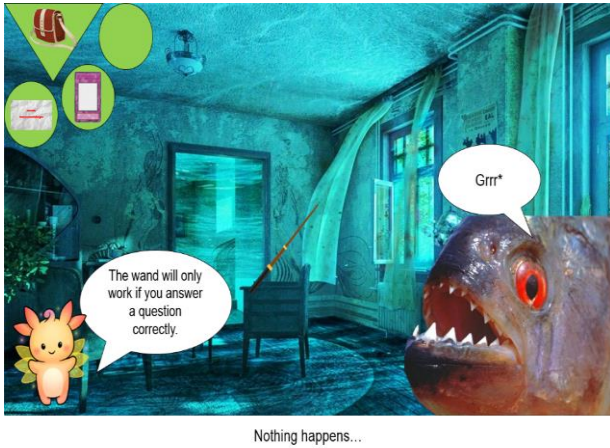


Fig. 3. Game 2 sample

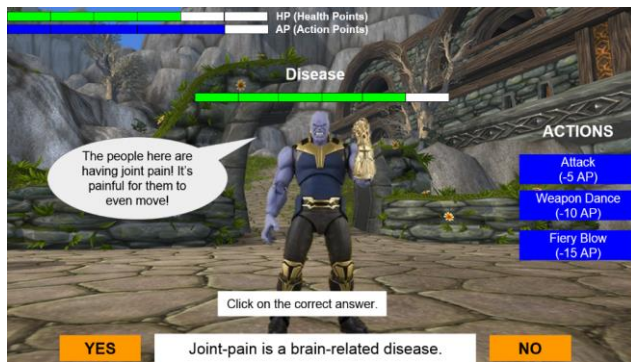


Fig. 4. Game 3 sample

4 RESULTS

This paper aimed to design, develop and evaluate the effectiveness of using PowerPoint games in improving ESL learners' vocabularies. Table 1 showed the effectiveness of gamified-learning towards improving ESL learners' vocabulary. Table 2 showed the results of the perceptions of learners towards gamified-learning in improving their ESL learning.

TABLE 1

PRE-TEST AND POST-TEST RESULTS

| Grades | Marks | No. of students | |
|--------|--------|-----------------|-----------|
| | | Pre-test | Post-test |
| A | 85-100 | 0 | 3 |
| B | 70-84 | 1 | 16 |
| C | 60-69 | 1 | 9 |
| D | 50-59 | 4 | 7 |
| E | 40-49 | 9 | 2 |
| F | 0-39 | 22 | 0 |

Based on table 1, it can be seen that there was a massive improvement in learners' ESL vocabulary, whereby their post-test results improved drastically. The results portrayed the results based on the Malaysian Education Grading System. According to the results, none of the learners received the grade A in pre-test but there were three in post-test. For the pre-test, 22 of them received grade F, which was a fail grade. However, in the post-test, none of them got a grade F. This huge improvement showed that the interventions carried out were successful in improving learners' ESL vocabularies.

TABLE 2

LEARNERS' PERCEPTIONS OF GAMIFIED-LEARNING

| Items | Percentages (%) | | | |
|---|-------------------|----------|-------|----------------|
| | Strongly disagree | Disagree | Agree | Strongly agree |
| 1. Like to attend class | 0.0 | 0.0 | 37.8 | 62.2 |
| 2. Concentrate fully | 0.0 | 18.9 | 62.2 | 18.9 |
| 3. Respond positively | 0.0 | 5.4 | 73.0 | 21.6 |
| 4. Stressful tool | 54.1 | 37.8 | 5.4 | 2.7 |
| 5. Appreciate teachers | 2.7 | 0.0 | 62.2 | 35.1 |
| 6. Understand English vocabulary better | 5.4 | 18.9 | 62.2 | 13.5 |
| 7. Interesting. | 0.0 | 2.7 | 43.2 | 54.1 |
| 8. Do not help my thinking skills | 37.8 | 48.6 | 10.8 | 2.7 |
| 9. Easy to understand. | 0.0 | 8.1 | 56.8 | 35.1 |
| 10. Opportunity to explore learning. | 0.0 | 0.0 | 62.2 | 37.8 |

Table 2 depicted the results from the survey of learners' perceptions of gamified-learning. According to the table, it can be seen that learners positively accept the usage of games in aiding their ESL lessons. This can be seen in the results, where learners agreed that they would like to attend the class if games are used (100%) because games give them the opportunity to explore their own learning (100%). They also mentioned that they will appreciate teachers more if games are incorporated in the ESL lessons (97.3%) as games are interesting (97.3%). Plus, learners respond positively to gamified-learning (94.6%) because games are not stressful (91.9%) and they are easy to use (91.9%). Games also help learners to think about their own learning (86.1%), make them concentrate better (81.1%) and improve their ESL vocabulary learning (75.7%).

5 DISCUSSION

Based on the results of the post-test and survey, learners' ESL vocabulary improved as a result of gamified-learning. This is supported by previous studies which showed that gamified-learning is able to ensure the success of a lesson [14], [21]. This is related to the fact that games are motivating and encouraging. Games are designed with the inclusion of audio and images which are undoubtedly easy for learners to understand the content and in return improve their learning [20]. The fun nature of games, which spark learners' interest and lengthen their attention span caused the learners to gain more input. Interested learners are more inclined to explore their own learning, which is said to be more beneficial in language learning [13]. When learners independently learn, they will remember better. Gamified-learning also promotes a natural learning environment due to the fact that there are many fun elements in a game [7]. This causes learners to naturally learn something, which benefits them massively as they are less stressed in learning [13], [14], [21]. Less stressed learners are more engaged in the learning [21], [23], [24], which is much valued in this 21st-century learning era. Due to the fun and engaging games, learners tend to stay focus and participate actively in the learning, which in return promote their ESL vocabulary learning. This is supported by various researchers, who placed the importance of motivation in

ensuring successful language learning [14], [17], [18], [26]. Learners' retention in learning is valuable in a lesson. Through gamified-learning, their focus are maintained [25]. This is because they feel the need to cooperate with their peers or independently solve the tasks to complete the game [20]. Aside from feeling motivated to complete the game, they tend to learn better and the outcomes are positive.

6 CONCLUSION

This paper aimed to design, develop and evaluate the effectiveness of PowerPoint games in improving ESL vocabularies. The results showed that gamified-learning is indeed beneficial as it improves the learners' vocabularies. Some reasons associated with the improvement lie in the motivating and engaging nature, fun and interesting and it allows learners to explore their own learning. In designing and developing the games, it is crucial to refer to the gamified-learning theory to ensure that the games created will be able to improve learning and bring a positive outcome. The implication of this paper is to encourage teachers to modify their teaching methods by incorporating games, for a fun and natural learning environment. In the future, studies can look into different genres of games, which could suit different level of learners. Thus, gamified-learning can be the key to solve issues related to learners' motivation in the ESL classroom.

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