

THE EFFECT OF GAME-BASED APPLICATION IN IMPROVING
STUDENTS' ENGAGEMENT TOWARDS LEARNING
MALAY LANGUAGE IN PRIMARY SCHOOL

REVATHY TIAGARAJAH

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School of Education
Faculty of Social Sciences and Humanities
Universiti Teknologi Malaysia

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DEDICATION

This thesis is dedicated to my beloved family members, especially my mother who always loves, cares and supports me unconditionally throughout these days. It is also dedicated to my mother, who taught me that even the largest task can be accomplished. It is also dedicated to my supervisor and lecturers who guided me towards the road of success.

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ABSTRACT

Game-based applications play a significant role in improving student engagement in lessons in this era of globalisation. Students at Tamil schools are having difficulty acquiring the Malay language. To address this issue, the Wordwall application was utilised. Students will engage with the characteristics stated in 21st century learning through the Wordwall application. As a result, the purpose of this study was to see if the Wordwall application could help students become more engaged in the Malay language. There are certain concerns in this study that are centred on the student's engagement. The main focus is on effect of game-based application (Wordwall) in learning Malay language, which is based on four factors, such as behavioural engagement, cognitive engagement, Psychological engagement and academic engagement. This study also investigates students' perception on game-based learning through Wordwall application. Furthermore, the study investigates the relationship between the Year 4 pupils' overall performance before and after using game-based learning through Wordwall application in Malay language and the influence of game-based application (Wordwall) towards learning Malay language. Pre and post tests, questionnaire, and student's engagement instrument were used to conduct quantitative research on 33 respondents who were Year 4 students at a school in Batu Pahat district. Because there are significant differences between the mean of the pre-test scores and post-test scores for the Malay language achievement test, whereby results showed that students' engagement increased after the Wordwall application. Overall, WordWall application should be used on a daily basis because they cannot only improve student engagement but also allow students to play while learning and improve student motivation.

ABSTRAK

Dalam era globalisasi, permainan berdasarkan aplikasi memainkan peranan yang penting dalam meningkatkan penglibatan pelajar. Pelajar sekolah tamil menghadapi masalah dalam penguasaan matapelajaran Bahasa Melayu. Bagi menyelesaikan masalah ini, aplikasi Wordwall digunakan dalam matapelajaran Bahasa Melayu. Melalui aplikasi Wordwall ini, pelajar akan melibatkan diri dengan ciri-ciri yang digariskan dalam Pembelajaran Abad Ke21. Maka, kajian ini dijalankan untuk mengkaji penggunaan aplikasi Wordwall dalam meningkatkan penglibatan pelajar dalam matapelajaran Bahasa Melayu. Dalam kajian ini terdapat beberapa isu difokus untuk meningkatkan penglibatan peajar. Fokus utama terhadap kesan pembelajaran berasaskan aplikasi dalam Bahasa Melayu adalah berdasarkan empat elemen iaitu penglibatan tingkah laku, penglibatan kognitif, penglibatan psikologi dan pencapaian. Kajian ini turut mengkaji persepsi pelajar terhadap kaedah pembelajaran berasaskan permainan melalui penggunaan aplikasi Wordwall. Selain itu, kajian ini mengkaji hubungan antara penglibatan pelajar dalam ujian pra dan pasca Bahasa Melayu dengan pengaruh gamifikasi terhadap prestasi Bahasa Melayu. Instrumen kajian ini melibatkan ujian pencapaian pra dan pasca, soal selidik persepsi dan 'student engagement instrument' yang dijalankan dengan menggunakan kajian kuantitatif ke atas 33 orang responden yang merupakan pelajar tahun 4 di sebuah sekolah di daerah Batu Pahat. Dapatan kajian mendapati penglibatan pelajar meningkat selepas menggunakan aplikasi Wordwall kerana terdapat perbezaan signifikan antara min bagi skor ujian pra dengan min skor ujian pasca dalam ujian pencapaian Bahasa Melayu.. Secara keseluruhan, aplikasi Wordwall perlu diaplikasikan dalam proses pengajaran seharian kerana ianya bukan sahaja dapat membantu meningkatkan penglibatan pelajar malah dapat memberi keseronokan kepada pelajar untuk bermain sambil belajar dan seterusnya dapat meningkatkan motivasi pelajar.

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LIST OF ABBREVIATIONS

ICT	- Information and Communication Technology
MOE	- Ministry of Education
MDE	- Mechanics-Dynamics Emotions
SPSS	- Statistical Package for Social Science
SEI	- Student Engagement Instrument
HLTS	- High Level Thinking Skills

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CHAPTER 1

INTRODUCTION

1.1 Problem Background

In Malaysia, 21st century skills that correspond to local context have been identified by the Ministry of Education (MOE), Malaysians can compete internationally. This is in the objectives of the national curriculum which is to produce students who are balanced, resilient, passionate, curious, prescient, informative, patriotic, possessive thinking and communicating skills and team work (Azizah Mat Ail, 2015). 21st century learning is one of the important aspects emphasized in the Malaysian Education Development Plan 2013-2025. The Ministry of Education Malaysia launched 21st century learning initiative in 2014 and expanded its implementation throughout the country from 2015. 21st Century Learning is not only based on table layout and use of tools such as traffic light, reward, parking lots only, on the other hand, larger than that. This means that the learning and facilitation process must be based on the 4C concept of Communication (communication), Collaboration (collaboration), Critical thinking (critical thinking) and Creativity (creativity) (Norhailmi Abdul Mutalib, 2017). Therefore, this indicates that 21-Century skills emphasizes student-centered learning processes and their engagement in Learning and Facilitation.

The pedagogical skills of a teacher that need to be possessed in the 21st century are learning and innovation skills, information skills, media and technology, as well as life skills (Preliminary Report of the Malaysian Education Development Plan 2013-2025, 2012). Among the two skills that are closely related to the rapid development of technology are learning and innovation skills, as well as information, media and technology skills. This also shows that teachers in the 21st century need to change with the circulation of information technology. There are three elements contained in information, media and technology skills, namely information literacy, media literacy

as well as technology, information communication literacy (Education Transformation Bulletin, No. 4/2015). This shows that technology is an important component in teaching process, especially in the national education system. Therefore, teachers' teaching methods need to change to suit the development of cyber technology and access to the Internet that is increasingly advanced. This is because, conventional teaching methods such as chalk and talk alone do not succeed in attracting students but instead require more dynamic and creative methods with teaching content relevant to current developments (Education Transformation Bulletin, No. 4/2015).

And then, all parties directly involved with the world of education need to be prepared to implement educational transformation. Even changes in education should always be with the development at the times or a step forward. Teachers need to be prepared to accept change and be able to manage change efficiently and effectively so that PdPc becomes more meaningful and meet the needs of students (Education Transformation Bulletin, No. 4/2015). 21st Century Learning and Facilitation has characteristics that are different from traditional education. One of the goals of the 21st century PdPc is to produce students who are highly productive, skilled in communication, have High Level Thinking Skills (HLTS) and skilled in the use of Information and Communication Technology (ICT) (Education Transformation Bulletin, No. 5/2015) . Today, the 21st century teaching and facilitation is student-centered and the teacher's job is to ensure that students' engagement in carrying out an activity either inside or outside the classroom. Teachers play a role as facilitators and need to guide students to be prepared for teaching and able to continue their own learning.

One of the features of 21st century learning is active learning that is the students' engagement more actively either through discussion activities with friends or the use of computers (Norhailmi Abdul Mutalib, 2017). 21st century skills emphasize the use of technology in line with the development of education in Malaysia. In the past, literacy skills only included reading, writing, and counting but nowadays 21st century literacy skills involve digital literacy skills (Official Portal of the Department of Information Malaysia, 2011). Therefore, the teaching process involving game-based learning will be more interactive because it involves interaction

between teachers and students and students with students. With this, active learning occurs because students will build their own knowledge (Carr et al., 2015).

Furthermore, the technology, information and communication literacy skills contained in 21st century skills have fulfilled the seventh stages in the Malaysian Education Development Plan 2013-2025, which is to utilize ICT to improve the quality of learning. Therefore, teachers in Malaysia need to make changes in terms of practice and implementation in the teaching process during covid-19 pandemic to respond to PPPM recommendations using a virtual learning environment. MOE has announced to implement online learning during covid-19 pandemic. Before this telecommunication devices such as smartphones and gadgets online application platforms were banned from being brought to school, but now the world of education is in cyberspace and done at home.

The global crisis due to the outbreak of covid-19 pandemic not only causes learning and teaching to be conventionally delayed, but also makes teachers' tasks more challenging when they need to adapt to new life norms and habits that require the teaching process to be implemented online. In the new millennium that prioritizes lifelong learning skills, there is no choice but to take advantage of online educational technology and applications. The current educational context requires teachers to master and have information and communication technology (ICT) literacy for good quality education.

For sure, in the practice of social distance, human interaction needs to be further strengthened through telecommunication devices. Mainly, virtual learning should be continued using a variety of approaches, either synchronous learning or asynchronous learning. Learning tools used can be customized according to learning needs; for those with internet access can take classes using Microsoft Teams, Facebook live or Google Classroom. Learning can also be implemented through various chat applications, game-based learning applications that allow students and teachers to discuss learning at any time. Most teachers have used a game-based learning application known as Wordwall.

This game-based learning application known as Wordwall is an enrichment application that is an additional activity in learning provided with the concept of game-based learning that can indirectly increase student motivation. Through the Wordwall application, teachers can engage their students in fun, improve thinking, provide interactive quizzes and monitor student performance instantly. In addition, students can also do self-learning by using quizzes and games in Wordwall. Therefore, it is seen with the existence of a new application that Wordwall will be able to improve ICT skills as well as students' literacy skills through active student involvement in the Learning process and Facilitation.

1.2 Problem Background

Problem background related to Game-based learning, Malay language and Students' engagement. Stated in the following subchapters.

1.2.1 Problem background of Game-based Learning

Nowadays, teachers are encouraged to use games in learning. However, teachers are not taking the effort to use games in learning. In the context of education, a game-based learning approach that use in game elements can stimulate and provide motivation to its practitioners so that teaching can be integrated in the form of games (Hussain et al., 2014). Approaches that use in game methods in the teaching and learning process makes the learning more fun and interactive (Cugelman et al., 2013). The main purpose of learning in game is to stimulate students' engagement (Kiili et al., 2014). In addition, this active learning approach will also be able to create interesting experiences for players (Schell, 2014), encourage learning and solve the problems (McGrath et al., 2013) as well as build skills through each stage of the game (Pappas, 2013).

The approach of game-based learning is different from traditional teaching. Traditional teaching using chalk and talk has been identified as the cause of students being weak in academics and producing students who are less engaged towards teaching conducted by teachers in the classroom (Vespanathan Supramaniam, 2015).

Indirectly, the weakness of students in mastering an academic skill also affects low achievement in school. This statement is supported by the findings of the resources obtained in the Education Development Master Plan (2001-2010) that 62% of teachers still use traditional teaching methods such as combined methods, mixed approaches and blackboards with chalk and talk, even teachers it also does not use different method to increase students' engagement in teaching process.

Futhermore, teachers should design lessons that increase students' engagement in teaching. For example, create the activities that use game-based learning. This is stated by Ab Halim Tamuri and Siti Muhibah Haji Nor (2015) who argue that the growth of the technology today, students are more likely to choose a game-based learning approach. For example, teaching that involves students browsing websites and video shows as one of the activities that interest them the most. This indicates that active learning will occur if a student has autonomous power over their own learning. This is because they will be engaged in the teaching process and subsequently being able to make decisions about their learning outcomes. Students' can also interact in groups to develop their ideas based on the topics learned (Ab Halim Tamuri and Siti Muhibah Haji Nor, 2015). Thus, the game-based learning process is a process that makes learning activities enjoyable with the students' engagement in gaining their own knowledge. The objective of learning process may be achieved completely by the students with this kind of learning process.

1.2.2 Problem Background of Malay Language

In mastering the mother tongue of an Indian student, having no choice, they will strive to master their first language to enable to communicate with the people around them. In other words, all native speakers are motivated to master their mother tongue. While in the second language, the individual himself chooses whether their wants to try to master a language other than mother tongue. Despite being forced to learn a second language, not all students will be successfully motivated to learn.

According to Fong Chew (2016), all for native speakers of Malay is a mastery of the new language concepts while the language has been dominated since natural. In

learning second language, which is for students who are non-native speakers learn Malay, the formation of concepts learned is something new and different from the native language into everyday speech. This situation will cause problems in second language learning. Therefore, second language teaching should be planned and implemented naturally and not too formal. Emphasis should be placed on a living cultural and social context that allows the language to be heard and spoken often.

1.2.3 Problem background of Students' Engagement

One of the main features in game-based learning is to ensure students' engagement in learning activities. According to Frederick (2004), student engagement is a form of student behavior that feels tied to school activities and manifested in behavioral engagement, cognitive engagement and emotional engagement. The main constraint to students' engage in learning is when it involves a large number of students in a class. If this happens, students' couldn't followed the learning process properly, in fact the situation will contribute to student dropout (Fredricks, 2004). According to Fredricks et al. (2004), also argue that students' engagement with academic achievement is interrelated. If students' engagement in the learning context occurs, then their academic achievement also increases. If it's not happen, then students will have problems in lessons. That can be overcome by providing activities that engage each student with PdPc process. Students engagement can be seen from various aspects whether in terms of behavior, effective and cognitive (Parsons and Taylor, 2011; Taylor and Parson, 2011). Behavioral engagement can be provided through game-based learning. Students' engagement is necessary to provide an opportunity for each student to carry out more learning activities in the classroom (Krauss and Boss, 2013).

Psychological engagement refers to students' emotions and feelings towards something, such as during a learning session or their attendance at school (Anisa Saleha 2015; Haslina et al. 2015). In school, students' sense of belonging is described as a feeling of togetherness towards teachers and peers. It gives a picture of the feeling of happiness and determination for students' to perform in activities and other tasks entrusted to them. Some students' are not happy and comfortable with teaching and learning process. In addition, students are not ready to plan, evaluate and understand

ideas. Cognitive engagement refers to cognitive strategies that involve the intellect and mastery of students in planning, evaluating the content learned, understanding ideas and mastering complex skills. Students who demonstrate a willingness to accept challenges, rational when solving problems and assessing the importance of learning in school will prepare for life for the future (Halimah et al. 2013; Zalizan et al. 2014; Anisa Saleha 2015; Hanita et al. 2018). Students' who show behavior engagement in school activities show a comfortable feeling of being in the school environment. This is because students' feel they are part of the school. Students' consider school to be a fun place. The positive perception that students have makes students always enthusiastic in every activity that takes place in school.

1.3 Problem Statement

Ministry of Education Malaysia (MOE) has encouraged teachers to use various type of teaching to improve the quality of education at this covid-19 pandemic. However, most of teachers never use game-based learning method in online teaching. According to online learning through game-based application (Wordwall) should not take place like traditional methods. The characteristics of traditional learning involve one-way communication, teacher-centered and examination-oriented. This method is different from virtual learning that is more student-centered. Students are engage in problem solving given through exploration, discussion and thinking at a high level. However, Johari and Fazliana (2011) found that many teachers still have problems in the use of game-based activities in teaching process.

Through the game-based application (Wordwall), teachers need to think of more innovative and effective methods to increase students' engagement. Therefore, with the role of today's educators who undergo a transformation from a carrier and channel of information to a manager, coach and facilitator (Zarina, 2010). Therefore, as a recipient innovation, teachers play an important role in the implementation of this virtual learning and should make a paradigm shift towards the growing use of technology. Teachers who use game-based learning (Wordwall) with the right techniques and methods can help to increase students' engagement.

After that, all subjects should be taught in schools by using game-based learning (Wordwall) mainly for Bahasa Melayu. In fact, the rapid advancement in the field of technology has brought many changes to the methods of teaching language. Article 152 enshrined in the Malaysian Constitution declares Bahasa Melayu as the official language, national language and the language of instruction in all schools. The development of basic education in Malaysia has been established that the Malay Language is a subject that must be passed by students in UPSR. As a result, all students need to master the Bahasa Melayu subject to get exam certification. Therefore, among the major challenges faced by teachers who teach Bahasa Melayu is to ensure that students obtain credits in these subjects.

Furthermore, most of students' are unable to complete their activities that given by teacher. There is a tendency for the lack of full students' engagement in learning in the classroom is considered by students to be normal, because they think they cannot. Students' has not been involved mentally and emotionally elsewhere, if things happen continuously, eventually students will experience disaffection. Skinner and Belmont (1993) describe student disaffection as a result of lack of behavior engagement and cognitive engagement. Dissatisfied students' are usually characterized by passive attitude, lack of hard work, and easy to give up in the face of challenges. They become bored, depressed, anxious, or even angry about their presence in class. They are also lonely at the opportunity to learn or rebel against teachers and classmates, as a result of further students' being dropout (Reschlt & Christenson, 2006).

The above phenomenon, is a low reflection of students' academic engagement and learning that is not in favor of students. This condition has not been fully realized and is still underestimated by various parties such as teachers and students themselves as responsible people. If low academic engagement is not immediately addressed and improved, then it will have a negative impact on the personality and academic quality of students. Such a condition is certainly very worrying and not beneficial for students, teachers as well as the government and the state, so it requires an intervention in learning.

Among the steps to ensure this goal is achieved is to change the way teachers teach in the classroom such as applying effective learning strategies through active learning methods. It can be implemented by using technology in the teaching process itself (Nelson Jingga and Anuar Ahmad, 2015). It is hoped that this study can provide awareness of the potential for active learning through a game-based learning approach as an effective method as well as provide an injection of encouragement to teachers to use Wordwall. Apart from that, it also aims to create fun and make the teaching and learning process more meaningful and interesting.

The results of the analysis conducted on previous studies related to the use of Wordwall shows that there are many studies that have been done to identify challenges, implementation problems, level of use and knowledge among teachers on this Wordwall platform, but few studies show that how best to use Wordwall in the PdPc process effectively. But, during the covid-19 pandemic, most teachers began to use this Wordwall application as a creative teaching method. Therefore, can increase the students' engagement through a game-based learning approach. This is because apart from doing the task given by the teacher, students can choose any game in the Wordwall application to play after answering the quiz. This application is seen to be able to attract students' interest and increase student motivation in the subjects learned in school.

Thus, this study will integrate game-based learning while using Wordwall in PdPc. It is hoped that this study can have a positive impact to all peoples, including students and teachers. In addition, through this study is also expected to help teachers design a more active teaching and learning by implementing game-based learning features in the classroom. Therefore, it can increase student engagement to the maximum and in turn improve achievement in academic.

1.4 Research Objectives

In this study, researcher investigate the effect of game-based application in improving students' engagement towards learning Malay Language in Primary School. Specifically, the objectives of the study follow as;

1. To determine the effect of game-based application (Wordwall) in learning Bahasa Melayu based on the aspects of:

- Behavioral engagement
- Cognitive engagement
- Psychological engagement
- Academic engagement

2. To identify students' perception on game-based learning through Wordwall application in Bahasa Malayu.

3. To examine the relationship between the Year 4 pupils' overall performance before and after using game-based learning through Wordwall application in Bahasa Malayu.

4. To determine the influence of game-based application (Wordwall) toward learning Bahasa Melayu

1.5 Research Question

There are four research questions were stated to study the effect of game-based application in improving students' engagement towards learning Malay Language in Primary School .

RQ 1 : What are the effect of game-based application (Wordwall) in learning Bahasa Melayu based on the aspects of:

- Behavioral engagement
- Cognitive engagement
- Psychological engagement

- Academic engagement

RQ 2 : What are students' perception on game-based learning through Wordwall application in Bahasa Malayu?

RQ 3 : What is the relationship between the Year 4 pupils' overall performance before and after using game-based learning through Wordwall application in Bahasa Malayu?

RQ 4 : What are the influences of of game-based application (Wordwall) toward learning Bahasa Melayu ?

1.6 Conceptual Framework

Conceptual framework means a form of framework that briefly describes the concept and form of study. It can also be based on any existing theory or formed on its own based on previous studies. This conceptual framework will also be a guide to the study implemented. For this study, the conceptual framework specifically focuses on Wordwall application that integrate game-based learning features outlined by Sailer et al., (2017). Figure 1.1 below is the conceptual framework of this study.

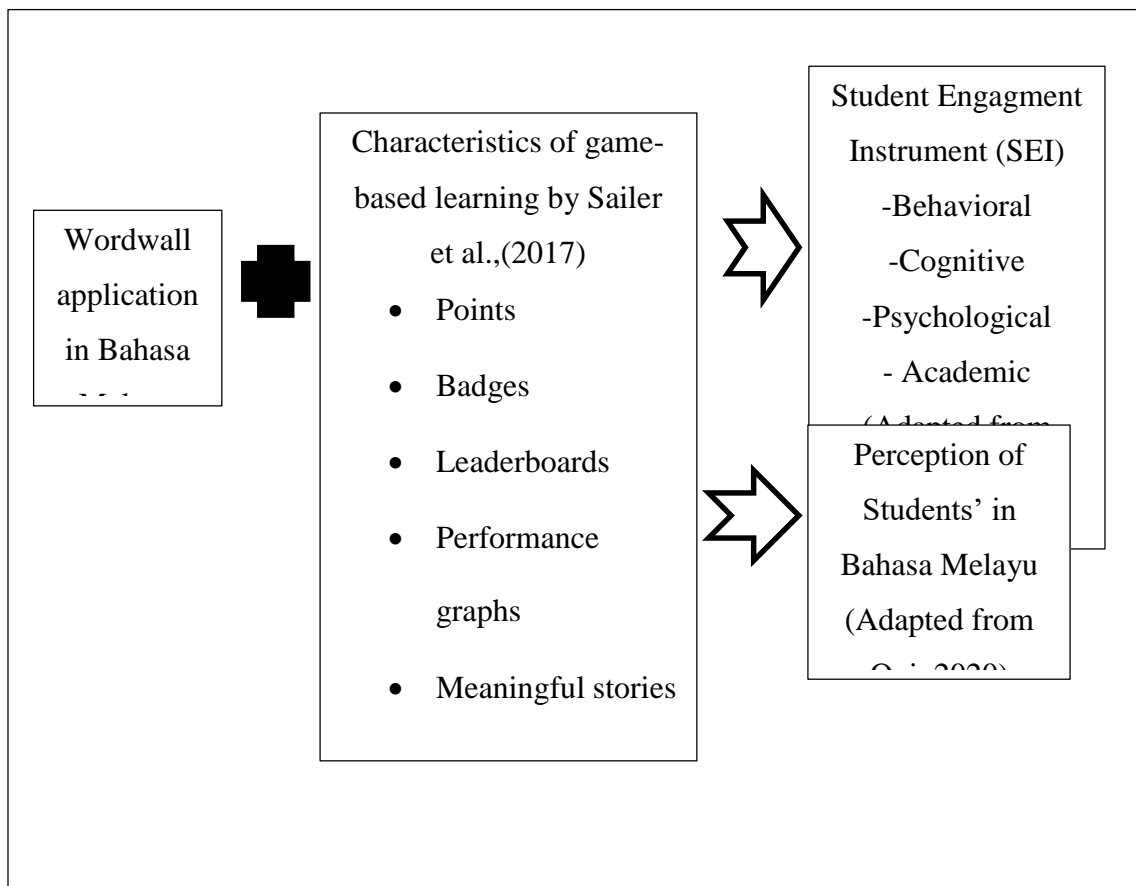


Figure 1.1 : Conceptual Framework

Refer to the figure above, the Wordwall application is the main platform to the PdPc in Bahasa Melayu. It integrates seven game-based learning features outlined by Sailer et al., (2017). The seven features of game-based learning design are points system, badges, leaderboards, performance graphs, meaningful stories and teammates. All seven features of this game-based learning will be used by students during the PdPc process through the Wordwall application. After students' completed exploring the learning process Wordwall in Bahasa Melayu, will be measurable students' engagement, academic achievement and students' perceptions use of the Wordwall application can also be evaluated.

1.7 Scope of the Research

This study is important to study the effect of game-based application in improving students' engagement towards learning Malay Language. Although Bahasa Melayu is seen as an easy subject, but difficult to master without learning approach or right strategy (Syahida Nadia Zakaria, 2015). Teachers need to have the skills to choose the teaching and learning approach wisely so that the chosen approach is appropriate to the abilities and students' background to achieve the planned teaching objectives (Syahida Nadia Zakaria, 2015). Therefore, active learning methods by using game-based learning approaches need to be applied in teaching and learning so that students' are able to master a topic better especially through the use of technology. It's not only help teachers in planning the best learning process using Wordwall applications but it's help increase students' engagement in learning.

1.8 Significance of the study

This study aims to provide important information to all people whether to those engage in the process of curriculum formulation, curriculum implementers consisting of teachers in identifying teaching and learning innovation practices that can be implemented through Wordwall applications especially by applying game-based learning. Therefore, this study is expected to benefit;

1.8.1 Teacher

This study gives an ideas to teachers to use Wordwall application in the PdPc process. So teachers can expand the use of the application to teach and guide students' and increase students' interest in the Bahasa Melayu subject. In addition, through this study, it is hoped that teachers will realize that students' are more interested in being engage than passive in teaching and learning sessions.

1.8.2 Students

Through this study, it is hoped that students' engagement will increase in the PdPc process through the use of Wordwall application. This is because students will be actively engage in the game that have been provided in the Wordwall application that has been designed especially to learn Malay Language.

1.8.3 Ministry of Education

With the findings obtained from this study, it is hoped that the ministry can encourage teachers to use Wordwall application so that it can be fully utilized by teachers and students' in the teaching and learning process. The Ministry of Education can also conduct related Wordwall application workshops for educators so that they are really skilled, efficient and confident in using Wordwall application in the PdPc process in school.

1.9 Limitation of the Research

This study is limited to Year Four students studying in a primary school in Batu Pahat District. For this study, researchers involved students of a class only to learn Bahasa Melayu using Wordwall application. Through this study, students' will learn BahasaMelayu which is one of the aspects of grammar-based Secondary School Standard Curriculum. Therefore, this study can only be concluded to the selected students' only and can't be generalized to all students'.

1.10 Definition of Key Term

This study involves several terms as described below;

1.10.1 Wordwall

Wordwall application is one of the application launched in 2015 as a fun method of learning through games. The Wordwall application offers free content and

additional functions for students' to answer quizzes, play interesting games and it can measure student performance from time to time. Therefore, in this study, the researchers will use the Wordwall application for Bahasa Melayu.

1.10.2 Game-based learning

According to Tan Wee Hoe (2016), game-based learning is a student-centered learning that allows students to learn, build skills and cultivate a positive attitude through the game environment provided specifically for educational purposes. Through this learning, students' will be engage in teaching and learning process by gain their own knowledge of a topic studied. In this study, game-based learning refers to Wordwall application that have game design features that have been stated by Sailer et al., (2017) namely points, badges, leaderboards, graphs performance, meaningful stories and teammates.

1.10.3 Engagement

Engagement is the fact or condition of being involved with or participating in something. Students' engagement is the backbone of a successful teaching and learning. Through the students' engagement can identify their behavior engagement, cognitive engagement, psychological engagement and achievement in the subject. In this study, students' engagement is very important to analyze the effect of Wordwall application in Bahasa Melayu.

1.10.4 Perception

According to the Fourth Edision Dewan Bahasa dan Pustaka Dictionary, perception refers to a picture or shadow in the heart or mind. It also carries the meaning of views or perceptions. In this study, the perception refers to the views of students' on the use of Wordwall application in the teaching and learning of Malay language.

1.11 Summary

In chapter 1, researcher have discussed about the problem background as well as the problem statement that led to the formation of research objectives and research questions. After that, the research conceptual framework has also been sketched so that the whole study concept can be seen. In conclusion, researchers have described issues related to previous studies to support the importance of conducting studies through a game-based learning approach using Wordwall application. The next chapter will be discuss on previous studies related to students' engagement through game-based learning using technology especially through Wordwall application in teaching and learning.

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