THE EFFECTS OF GAMIFICATION ON
VOCABULARY LEARNING AMONG ENGLISH AS A
FOREIGN LANGUAGE (EFL) UNDERGRADUATES IN
A MALAYSIAN PRIVATE UNIVERSITY

JACQUELINE THOMAS PEREIRA

SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

The aims of this study were: to evaluate the effectiveness of gamification on the learning and retention of vocabulary among undergraduates, to evaluate the effectiveness of game elements: leader boards and rewards, in retaining students' vocabulary, and to understand students' perspectives of gamification.   In this quasi-experimental study, the sequential mixed method was used. There were three groups of students, one control ($n=18$) and two experimental groups (Group 1 $n=19$, and Group 2 $n=20$), from mixed backgrounds and nationalities. Data was collected quantitatively through pre, post and delayed post vocabulary tests, and qualitatively using semi structured interviews. A questionnaire, observation checklists, Moodle analytics and activity completion form were used as instruments. The data from these instruments were used to triangulate the quantitative and qualitative data. The quantitative data was analysed using descriptive and inferential statistics: t-tests and ANOVA and the qualitative data was analysed thematically. Quantitative results showed that the experimental groups' vocabulary increased significantly compared to the control group where the alpha values for both vocabulary sets were *p<.01*.   With regards to the elements used, for set 1 there was a statistically significant difference between both groups $t(26.77)=3.59$, $p=.001$, with the group that used Leaderboard obtaining a higher mean. For set 2, there was no significant difference between both groups; $t(27.68)=1.96$, $p=.060$. The vocabulary retention was significantly better for the experimental groups; Set 1 ($X^2(2) = 21.62$, $p < .001$), Set 2 ($X^2(2) = 33.66$, $p < .001$) but no difference between the game elements used : set 1 (t(36)=1.22,$p=.231$,$d=.40$, 95%CI [-1.43, 5.76]), set 2 (t(36)=,542, $p=.591$, $d=$ .00, 95% CI [-2.54, 4.40]). Although the experimental group participants were able to recall the words learnt, they still made some mistakes. Through the interview, gamification was found to be generally interesting and motivating, although rewards was more motivating than the use of the leaderboard. This study implies that gamification can be an alternative pedagogy to assist in learning and retaining vocabulary regardless of the game element used.

KEBERKESANAN GAMIFIKASI TERHADAP PEMBELAJARAN PERBENDAHARAAN KATA DALAM KALANGAN MAHASISWA DI SEBUAH UNIVERSITI SWASTA DI MALAYSIA

ABSTRAK

Matlamat kajian ini adalah: untuk menilai keberkesanan gamifikasi terhadap pembelajaran dan pengekalan perbendaharaan kata dalam kalangan mahasiswa, untuk menilai keberkesanan elemen permainan: *leader board* papan ketua dan ganjaran, dalam mengekalkan perbendaharaan kata pelajar, dan untuk memahami perspektif pelajar tentang gamifikasi. Dalam kajian kuasi eksperimen ini, kaedah campuran berurutan digunakan. Terdapat tiga kumpulan pelajar, satu kumpulan kawalan (n=18) dan dua kumpulan eksperimen (n=39), daripada latar belakang yang pelbagai dan kewarganegaraan berbeza. Data dikumpul secara kuantitatif melalui ujian kosa kata pra, pasca dan pasca tertunda, dan secara kualitatif menggunakan temu bual separa berstruktur. Soal selidik, senarai semak pemerhatian, analisis Moodle dan penyiapan aktiviti digunakan sebagai instrumen. Data daripada instrument ini diguna untuk membuat triangulasi data kuantitatif dan kualitatif. Data kuantitatif dianalisis menggunakan statistik deskriptif dan inferensi: ujian-t dan ANOVA dan data kualitatif dianalisis secara tematik. Keputusan kuantitatif menunjukkan perbendaharaan kata kumpulan eksperimen meningkat dengan ketara berbanding kumpulan kawalan di mana nilai alfa bagi kedua-dua set perbendaharaan kata ialah $p<.01$. Berhubung dengan elemen yang digunakan, bagi set 1 terdapat perbezaan yang signifikan secara statistik antara kedua-dua kumpulan $t(26.77)=3.59$, $p=.001$, dengan kumpulan yang menggunakan *Leader board* memperoleh min yang lebih tinggi. Bagi set 2, tidak terdapat perbezaan yang signifikan antara kedua-dua kumpulan; $t(27.68)=1.96$, $p=.060$. Pengekalan perbendaharaan kata adalah jauh lebih baik untuk kumpulan eksperimen; Set 1 ($X2(2) = 21.62$, $p <.001$), Set 2 ($X2(2) = 33.66$, $p <.001$) tetapi tiada perbezaan antara elemen permainan yang digunakan : set 1 ($t(36)=1.22$, $p=.231$, $d=.40$, 95%CI [-1.43, 5.76]), set 2 ($t(36)=,542$, $p=.591$, $d= .00$, 95% CI [-2.54, 4.40]). Walaupun peserta kumpulan eksperimen dapat mengingat kembali perkataan yang dipelajari, mereka masih melakukan beberapa kesilapan. Melalui temu bual, gamifikasi didapati menarik dan memberi motivasi secara amnya, walaupun ganjaran lebih memotivasikan daripada *leaderboard*. Kajian ini memberi implikasi bahawa gamifikasi boleh menjadi pedagogi alternatif untuk membantu dalam pembelajaran dan mengekalkan perbendaharaan kata tanpa mengira elemen permainan yang digunakan.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CG	Control Group
DVD	Digital Video Device
EAP	English for Academic Purposes
EFL	English as a Foreign Language
ESL	English as a Second Language
ETV	English Technical Vocabulary
EXG1	Experimental Group 1
EXG2	Experimental Group 2
IELTS	International English Language Testing System
IEN	Intensive English
L2	Second Language
LFP	Lexical Frequency Profile
LLS	Language Learning Strategies
LMS	Learning Management System
MUET	Malaysian University English Test
PTE	Pearson Test of English
SPSS	Statistical Package for Social Sciences
SLR	Self-Regulated Learning
TOEFL	Test of English as a Foreign Language

VKS   Vocabulary Knowledge Scale

VLS   Vocabulary Learning Strategies

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CHAPTER 1

INTRODUCTION

1.1   Introduction of the study

This chapter introduces the study which focuses on the effects of gamification, specifically the use of two game elements, on the improvement of vocabulary use and retention among undergraduates. The chapter consists of the background of the study, the problem statement, research objectives, research questions and hypotheses. It also includes the significance of the study.

1.2   Background of study

In the 21ˢᵗ century, education has become borderless in which a student can be born and raised in one country but end up furthering his or her studies in a different country. Beyond

facing cultural adaptations when entering an English language dominated system, many find themselves advancing their tertiary education in the midst of struggling with the language. They get through lectures barely understanding what is happening without a digital translator. However, in order to enter these institutions of higher learning, potential students have to fulfil certain requirements, one of which is mastering the English language. Many institutions require their students to have a certain level of English proficiency either through the International English Language Testing System (IELTS), Test of English as a Foreign Language (TOEFL), Pearson Test of English (PTE) or Cambridge English, Linguaskill or the Malaysian University English Test (MUET). This is to ensure that the students are able to understand lectures, participate in class discussions, write their assignments and reports, and present their assignments verbally.

The generation of learners attending universities these days is very different from those of generations past. This group, known as generation Z, require very different learning methods because they use the internet and social media so often that it has become a part of their daily lives and socialisation (Szymkowiak et al., 2021). They are also known as digital natives as they have never lived life before the internet. It is not that they are smarter or know more than the previous generations, it is just that they are able to get information fast from a variety of sources. It is imperative to understand the changes in the educational landscape within the last 50 years in order to cater teaching techniques towards the evolving generation of learners.

The undergraduates in the researchers' university are required to get an IELTS band of 5 and above to enrol in the programmes of their choice. The current students who are enrolled in the Intensive English course, are of the net generation. Therefore, the researcher had decided to explore the use of gamification to help the students learn vocabulary needed for the IELTS writing task 1.

This study focuses on the writing component of the IELTS, more specifically Task 1. There are two tasks in the writing component of the Academic test. Topics which are general and suitable for those enrolling for undergraduate or postgraduate studies are chosen. In Task 1, test candidates have to write a report based on given graphs, tables, charts, or diagrams. They are asked to describe, summarize, and explain data, describe the stages of a process, how something works, or describe an object or event. On the other hand in Task 2, an essay in response to a point of view, argument, or problem is required (Nushi & Razdar, 2021). The writing component is only one hour; 20 minutes for task 1 and 40 minutes for Task 2. Between the two tasks, the candidates have found that it is easier to get good scores in Task 2. Table 1.1 shows a summary of the two tasks required in the IELTS writing component.

Table 1.1

Summary of the Tasks for IELTS Writing

	Task 1	Task 2
Time	20 minutes	40 minutes
Minimum word count	150 words	250 words
Task requirement	Candidates write a report interpreting data contained in a diagram, table, chart or graph.	Candidates write a short essay or general report in response to an argument or problem
Assessment Criteria	Task achievement, Coherence and Cohesion, Lexical resource, Grammatical range and accuracy	Task response, Coherence and Cohesion, Lexical resource, Grammatical range and accuracy
Weightage	One-third overall	Two-thirds overall

Adapted from https://takeielts.britishcouncil.org/take-ielts/test-format. Copyright by IDP British Council.

The researcher has found that her students find it more difficult to answer task 1 questions. Task 1 is more difficult because of the specific vocabulary to describe trends and the specific report writing mechanics needed to complete the task. This observation is echoed by Nguyen (2022) who reported that one of the difficulties of the students among her students is inadequate lexis for describing data in task 1. Therefore, this study is about helping students to increase their score for the task by helping them to learn and use the vocabulary that is required for Task 1 correctly, specifically vocabulary related to describing graphs, as this is the more common question. Another point to be mentioned here is that, although this study may seem to be practising teaching to test, task 1 writing is very much applicable to what the students need to know when they study in university.

In this university students have to complete a final year project which requires students to do a mini research and write a report. Therefore, the skills that are taught to the students help them to answer IELTS task 1 prompts and also prepares them to write reports in their respective courses. This is supported by Lewthwaite (2007) who found that a majority of both teachers and students in his study found the writing task 1 questions to be useful and related to what they study in their chosen programmes. Pearson (2021) also stated that the vocabulary used to describe, compare and explain visual data is commonly used in cross disciplinary academic writing in universities.

1.3 Vocabulary learning strategies in the 21st century

In order to investigate the usefulness of gamification as a vocabulary learning strategy, learners' use of vocabulary strategies needed to be analysed. Language learners use various techniques and strategies to help them in their comprehension and production of a language (Oxford, 1994) and good language learners use a variety of strategies to help them master language skills (O'Malley et al., 1985). According to Cohen (2014), language learning strategies are how learners of a language use available methods to help them with various tasks from the very beginning of learning to advanced stages of the learning process.

One of the subcategories of the language learning strategies is the vocabulary learning strategies (Nation, 2001), that have been divided into categories by several scholars (Gu & Johnson, 1996; O'Malley & Chamot, 1990; Oxford, 1990; Schmitt, 2000), and basically these categories are determination, social, memory, cognitive and

metacognitive. With all these strategies for learning vocabulary, learners still find it a problem to master vocabulary and instructors find it difficult to teach it. Students need to write and present in the programmes they enrolled for, and they have to use vocabulary that is suitable for academic purposes. Students have problems writing academic essays and reports mainly because they do not have the ideas about the content and how to make sure of appropriate vocabulary for the topics given (Mo, 2012). In a study to identify challenges faced by Vietnamese EFL English major students, conducted by Lam et al. (2020), it was found that among other difficulties, insufficient academic vocabulary was a main concern.

Another reason writing academic essays is challenging is because students are not exposed to academic discourse while they are in school (Giridharan, 2012). They are not taught to think in and use academic language. According to Nagy and Townsend (2012), academic language is language that is specific, in writing and speech, to areas of specialisation and aids in communicating and thinking. They elaborate further to say that it is specialised because of the use of technical terms to explain abstract ideas and phenomena which is not common in social or casual conversations. Furthermore, these words are not used in daily conversational discourse (Corson, 1997). This is also supported by Fang and Park (2020) who state that academic language is very different from language used when socialising with friends and family. The differences are vocabulary, grammar and discursive features. Knowing the importance of vocabulary, some issues that arise are:

i.   whether vocabulary learning strategies are being taught to and used by our students.

ii. the possibility of learners of today requiring different methods that employ these strategies.

iii. the traditional methods and strategies used may not be motivating and engaging enough for the current generation.

In this study, the focus is on teaching and learning vocabulary that needs to be used in report writing and more specifically IELTS writing task 1. The researcher investigated the use of gamification as a strategy to help students learn, recall and retain the target vocabulary. The students of today are digital natives (Kesharwani, 2020; Prensky, 2001b) who have been brought up to be comfortable with technology. This is also mentioned by Helsper and Eynon (2010), however they are of the opinion that there are other features that need to be considered. Due to the familiarity with technology these students are not passive learners like the previous generations (Taylor, 2010). Dastane and Haba (2023) further explain that this generation is comfortable with complexity as they grew up with a lot of information and computer programmes. These learners need to be challenged. They are also known as the games generation, the generation who plays video games and are engrossed in them. So, educators need think of ways to engage them for example by using game elements that keep them engaged and to play games repetitively without giving up even though they 'die' or fail to achieve their goals. These elements motivate them to keep trying repeatedly.to improve on their game scores. Some of the elements used in games are leaderboards, rewards, avatars, feedback and quests.

1.4　Teaching and learning in the 21st century

Twenty-first century education has changed mainly due to the evolution of technology. The accessibility of the computer and its applications have created a new breed of students. It started with generation Y, progressed onto generation Z and presently it is at generation Alpha (α). These generations have grown up with technology at their fingertips especially gen Z and α (dos Reis, 2018). Transcending time-centric generations is Generation C: C standing for connect, communicate, and change. This class of fluent digitalists are characterised, not by age, but by how familiar they are with technology, mobile communication reliant, and their need to stay in touch with society. (Friedrich et al., 2010). They have predicted the change in how the coming corporations will operate and how we consume (data and products). Generation C spends more than 6 hours consuming data from a decentralised system of sources beginning from work to shopping to healthcare. They are essentially born in the 1990s, meaning universities have started seeing them trickle in for 10 years now, and the ones set deeply into the Gen α paradigm have made their appearance since before 2020. Ali (2018) in a study carried out among first year university students, has found that the use of technology in academic is desirable among the sample so he recommends the adoption and adaptation of technology by tertiary educators to suit these digital natives. The researcher is following the logic of these paradigm shifts to determine how the new set of generations' habits have cultivated their own style of absorbing content.

According to Prensky (2001b), these young people are what he has termed as digital natives: young people who have grown up immersed in the usage of technology. Although there has been much research debunking or criticising Prensky's views (Bennett et al.,

2008), it is still popular with some educators (De Bruyckere et al., 2016). Digital natives are the new generation of students, but they are not all familiar with the notion of using technology in education and especially among Asian students. According to Tran et al. (2020), there are many factors that influence how learners adapt to technology: socio-economic status, parents' education, gender and even locality. A study conducted in Malaysia has found that although students found technology useful in teaching English, they would not voluntarily use them unless pushed by their teachers (Thang et al., 2014).

This research is based on the concept that instructors can use elements of digital or video games which is claimed to motivate and encourage users. These digital natives are currently being taught in schools and institutions of higher learning by digital immigrants (Prensky, 2001b): those of us who have had to learn how to use and work with technology. Rosen (2011) in his article on the iGeneration states that from his and his colleagues' research on thousands of teenagers and his personal observations, they have come up with a new term for these young people who were born in the 1990s and beyond; the iGeneration indicating their familiarity with iTunes, iPods, iPhone etc. From his point of view, these young people do not question the existence of technology because for them it is just part of life. For them w.w.w. does not stand for the world wide web but whenever, wherever, whatever. He goes further to point out that teachers should not teach with technology but use it to convey content more efficiently and effectively. He points out that technology can engage this generation so he recommends that we take advantage of it to refocus education.

What used to be powerful and efficient content messaging to us, has become more complex and multifaceted over time because of the type of information processed. So we need to ask ourselves if the present 21st century learners are being taught with the right methodology and strategies. Another point to ponder on is whether we, the older generation, are using the 'language' that the digital natives use or whether they are being taught in the way we were taught.

As cited by Barnes et al. (2007), Glenn (2000) noted this generation of internet users have very different needs when it comes to creating personal, meaningful learning experiences. These needs are learning opportunities which are self-directed, many different forms of feedback, environments which are interactive and the opportunity to choose assignments. This statement was made more than 20 years ago, referring to the first wave of Netizens. In the time that has passed since, a grand 4 seconds from an attention span initially at 12 seconds has been shaved off. These traits are not changing, as they are strengthening. Zenios and Ioannou (2018), state in their paper that although traditional education and curriculum design theorists like Vygotsky put much emphasis on collaboration and the use of tools in learning, there is yet a long way to go in adapting and practising the exploitation of new technologies.

As acknowledged, considering the time and difficulty factors that cause students to lose momentum in their learning, the mediating variable in this study is their motivation to learn. A good analogy is using a battery-operated control to switch on a device. You could press the key as hard as you want, knock it on the table if you have to, but if the device is

not receiving the signal, the key simply will not work. However, there are no strategies in the past 50 years of the evolving educational landscape that have revisited methods of learning than there have been to teaching: the signal receiver of the device. Lessons need to be well formed in order for the listener to intercept them.

In this study technology was used to convey the lessons to the students and students had to use their devices to complete the tasks given to them. Vocabulary activities used in this study were uploaded onto the Learning Management System (LMS) used by the university. Some of the gaming platforms used were Kahoot!, vocabulary.com, Quizlet, Hot Potatoes, word search and crossword puzzles.

Teachers or instructors today have to bridge the gap between us, the instructors who are from the previous generation, and the students of the new generation and teach this new generation in the language they know: using technology. But with technology use being so wide, we need to know which media they could easily be reached by. We also need to know what can be used to motivate and engage them. As this generation is also known as the games generation, the researcher is looking to use gamification as a strategy to motivate and engage her students who belong to this new generation to learn, recall and use the target vocabulary. In this study, gaming concepts were used to motivate and engage students into spending more time on vocabulary tasks given. When more time is spent on vocabulary tasks, students will be exposed to the correct use of the target vocabulary, which in turn will help them to remember the words.

In an extensive research by Wilkinson and Houston-Price (2013), on 165 children, it was found that the children were able to retain new, difficult vocabulary in their long-term memory due to repeated exposures. This finding needs to be extended to older learners to investigate if it applies to them too. According to Nation (2001), frequent exposure to words, through vocabulary tasks and activities, help young adults to also retain vocabulary. Through the use of some elements of gamification: leaderboards, points and rewards, the researcher wanted to investigate if students could be motivated to do the tasks and activities given to them, which will repeatedly expose them to the target vocabulary and inevitably help them to learn and retain the vocabulary.

Çakmak et al. (2021) conducted a study on 76 pre-intermediate English for Foreign Learner (EFL) learners on vocabulary development using a vocabulary learning software. There was a pre and post-test carried out on an experimental group and a control group consisting of 38 participants each. The Mnemosyne software used by the experimental group enabled interactions between the participant and the programme and multiple exposures through practice. The result was a significant increase in vocabulary learnt by the experimental group compared to the control group. One of the authors' conclusions was that the instant feedback provided by the software helped the participants. Another was that because corrections were only seen by the participant, which reduced their fear of making mistakes, thus lowering the affective filter, which according to Krashen (1984) promotes acquisition of a language. In a study conducted in Saudi Arabian university, on the use of technology to teach vocabulary, it was found that technology use helped to lower the affective filter thus enabling learners to learn stress free (Hassan Taj et al., 2017).

1.5 Games in the classroom

With the advancement of technology, teachers, educationists and researchers have been looking at the use of computers in the classroom, and this has moved on to the incorporation of the internet, video games and computer games. These were introduced into classes to motivate students in the hopes that motivated students will be engaged and thus learning will ultimately take place. Griffin and Butler (2005) deconstruct the motivational process saying that playing a game gives meaning to students' performance and they are actively involved in the learning process. Through experience gained, students learn to make better decisions to become better players, which in turn motivates them to play more and gain the benefits of taking part in games.

Researchers have been intrigued by the amount of time, the intensity of focus and attention that is given to video games and computer games. Educators hope for the day when students would spend as much time on their lessons as they do on video games. Research has been carried out to explore how this interest in video games and digital games can be harnessed and used effectively in class (Kirriemuir & McFarlane, 2003). Lieberman (2010) in his article suggests four methods to incorporate video games in teaching; use games which teach content, use games with a narrative, encourage students to create games and use game-like elements. In this century, when this generation, also known as the games generation (Prensky, 2007), has grown up with video games, it is logical to see how game mechanics can be used to teach them.

Acquah and Katz (2020) in their systematic literature review on the effectiveness of digital games on the learning of a second language between 2014 and 2018 concluded that digital game-based learning is an effective second language teaching tool. It can be used to engage and motivate students. 70% of the literature included in this review were positive for language acquisition, affective states and participatory behaviours. They concluded that though more research needs to be done on how to design effective games and how to implement them, digital learning games may revolutionise the learning environment.

Games have been used in teaching and learning for many centuries. People were taught in various ways before print became popular about two centuries ago. At present, there are many types of methods using games for example: serious games, game-based learning, simulation, and gamification.

1.6 Gamification

Gamification is a trend that is rapidly being used in education. This term was first introduced in the business world to reward customer loyalty and employees. Some famous brands that have used gamification concepts are Starbucks, Nike+, Foursquare, Nissan Leaf, Get Glue, Fitocracy and Mindbloom (Hamari, 2017) and according to Dichev and Dicheva (2017), gamification entered the mainstream vocabulary only in 2010.

In the past 13 years, the term gamification has become popular among educationists. There must be strong reasons why education researchers have been driven to explore the use of gamification in class. According to Werbach and Hunter (2012), not only does gamification use game elements and designs in non-game contexts, it also helps to motivate and relax learners (as cited in Flores, 2015). Farber, (2015) supports this by saying that the implementation of game mechanics with appropriate educational objectives makes learning more engaging. 62 % of the participants in Tsymbal's (2018) study responded that they felt relaxed and confident during the gamified English training sessions. As Toppo (2015) said, in his observation of young people playing video games, their anxiety level is lowered because they can fail and try a number of times and they are not judged. This in fact helps them to try without giving up and finally succeed to overcome the obstacle in the game. This is in line with Krashen's affective filter theory (1982) where the lower the filter, the more learning takes place.

Gamification has been defined by several researchers, for example by Deterding et al. (2011) as the use of game elements in non-game situations. These elements are rewards, levelling, ranking, leaderboards, challenges, timing and badges. According to Hamari et al. (2014), it is the creation of gameful experiences or as Werbach (2014) puts it, it is where activities are made more game-like (as cited in Dichev & Dicheva, 2017). Gamification, as Simões et al. (2013) explain, is the use of certain elements of video games in non-game applications. So, in this study the researcher has decided to use the definition given by Deterding et al., (2011) as it explains best how gamification is applied in this study.

In this researcher's university, the undergraduates come from various countries. All of them have learned English as a second or foreign language and as they are generation Y learners, they need a more challenging and enjoyable way to learn academic vocabulary. This is supported by a study conducted by Demir and Sönmez (2021), on the instructional expectations of this generation of students. They found that generally student preferred teaching and learning of language through technology. They conclude that teachers in the 21st century need to equip themselves with digital technology. More specifically, the students the researcher teaches are here to study English so that they can sit for IELTS at the end of the course, and they need to obtain the vocabulary required to answer the Task 1 writing question within a short period of time. In order to ensure that learning takes place quickly this researcher had wanted to explore the gamification of vocabulary activities in order to improve the academic or low frequency vocabulary required to answer the Task 1

writing question in IELTS.

Since the present generation needs to be taught in an engaging manner, new methods and tools have to be used which appeals to them. Gamification is said to increase student motivation and engagement in learning (Alsawaier, 2018; Iaramenko, 2017), which is predicted to improve the learning of vocabulary among the participants of this study through the increased time that is spent on vocabulary tasks. Boudadi and Gutiérrez-Colón (2020) conducted a meta-analysis on empirical studies published between 2011 and 2019. They found that although most of the studies were positive for gamification, there was not enough to prove inter connections with learning outcomes.

As Prensky (2007) said, the old method of training and schooling does not interest younger people, not because they cannot pay attention, they just choose not to. So, educators need to find ways and means on how to motivate and engage them. Gee (2003) said that motivation drives learning and if games are highly motivating to many people, we can learn how motivation is created and sustained, from them.

In this study, the researcher wanted to investigate the effects of gamification on the learning of vocabulary by comparing the effects of two game elements; leaderboards and rewards. The researcher used an online tool to create a simple leaderboard to keep the score of students as they gain points for the activities they did. The researcher wanted to investigate if this game element or the issuance of rewards could be used to motivate and engage students to spend more time on vocabulary tasks and activities given and which element was more effective. The motivation was via points and leaderboards or rewards given to the participating groups.

1.7   Motivation and engagement

When the topic of improving methods of teaching and of learning arise, the areas of motivation and engagement cannot be avoided. Motivation and engagement are important in the process of learning (Collie & Martin, 2019). In order for students to put in the effort to learn well, they need to be motivated and engaged (Prensky, 2010). When students are motivated, they become engaged and this engagement promotes learning. Prensky (2005) considers motivation and engagement to be the prerequisites to learning. The ultimate

achievement of a teacher is to have a motivated learner (Huizenga et al., 2009). There are two types of motivation: intrinsic and extrinsic. Extrinsic motivation is when one is induced to perform by rewards or punishments based on success or failure of a task, whereas intrinsic motivation is when one is motivated internally: either because the task is enjoyable or because one understands the value of the task (Lin et al., 2003). Ryan and Deci (2020) state that when a learner plays, explores and performs activities out of curiosity, the behaviour exemplifies intrinsic motivation. They explain that extrinsic motivation is where people complete activities for reasons apart from their inherent satisfaction.

In school, grades are obviously the source of extrinsic motivation, on the other hand intrinsic motivation is connected to interest in the content of the subject, process of enjoying challenges or understanding that progress is being made and being content is being mastered (Dicheva, et al., 2018; Lin et al., 2003). Therefore, it is important to know which type of motivation is more beneficial. According to Lin et al. (2003), extrinsic and intrinsic motivation is complementary to some level especially when extrinsic motivation is at a moderate level and intrinsic motivation at high levels. Kotera et al. (2023) support this by stating that extrinsic and intrinsic motivation are complementary, and that extrinsic motivation is thought to develop into intrinsic motivation. In their study they conclude that encouraging self-compassion among students will increase intrinsic motivation.

Garris et al. (2002) have described motivated learners as enthusiastic, engaged and focused. They are genuinely interested in and enjoy what they are doing and at the same time they work hard and are persistent. They are also self-determined and complete tasks

on their own without depending on rewards. In addition, this group of people may be easy to describe but difficult to find or create. These students also deal with difficult situations which arise, without getting bored, frustrated or confused (Ornstein, 1995). Wallace and Leong (2020) also characterise motivated learners as people who have a strong inclination to achieving their goals by putting in a lot of effort. In their opinion, low motivated learners have low desires to learn, dislike the subject or are negative towards the subject and put in little effort in achieving their goals.

For effective learning to be achieved, students have to show interest and be actively engaged (Nayir, 2017). In order to achieve this, they must be highly motivated and interested in class which is dependent on how motivating the tasks given to them are. According to Philp and Duchesne (2016), in their article exploring student engagement, they state that although engagement is an overused term with very little principled understanding, there is an intuitive understanding that it is integral to learning. They said that engagement consists of various levels; cognitive, social, emotional, and behavioural which are interdependent and influence each other. In this study engagement is a mediating variable that is recognised by the researcher to mediate the influence of the independent variable (game elements) on the dependent variable (vocabulary test scores).

There are students who find it difficult for some reason to concentrate in class. Because of their inability to focus, they start to find ways to amuse themselves. For example, by doodling, daydreaming, playing with their mobile devices in class or worse, they disrupt the class (Ornstein, 1995). Ornstein goes on to say that over time these students

find the work progressively getting difficult and, in the end, they just give up. Junior high school students displayed other more serious disruptive behaviours like shouting, chatting with friends, ignoring the teacher and not doing given homework, to name a few (Atmojo, 2020). In a study conducted on 10 graduate students (Xie et al., 2022), five said that they adopted avoidance coping to fight boredom in class. They were doodling, working on more interesting assignments or leaving the classroom.

In class, to avoid classrooms from becoming disruptive due to demotivated students, and students getting low grades because they are not engaging with lessons, teachers have to come up with various teaching and learning methods that appeal to the students. Participants in Xie et al.'s (2022) study even went so far as to say that it was the responsibility of the instructors to motivate and create a lesson that will help students to focus and learn.

In the researcher's classes, many of the students lose motivation because they find that obtaining the IELTS band they require is not easy. One of the reasons for this is that they are of low proficiency, but they expect to do well in the IELTS test in a short period of time (Roza, 2019). In the researcher's university the students enrol in the Intensive English course after completing a University English entrance test and a majority of them score a band 4.5 or less. When they join the course the instructors find that they cannot speak or write grammar error free simple sentences. In the short time students have to improve their bands by a .5 score, they lose motivation because they feel it is a losing battle. If they were given some kind of motivation to keep practising the activities given to them

and to spend more time on those tasks or activities, this researcher believes that they would improve as was concluded by Landers and Landers (2014). It is also supported by the findings of Roza (2019) where the teachers who taught test preparation courses thought that it was important to make learning fun for the students. Therefore, gamification and specifically the use of leaderboards and rewards was practised in the chosen classes. With the rewards, points and friendly competition gained while attempting and completing the activities, the researcher wanted to investigate if students would be motivated to spend more time on vocabulary tasks given.

1.8   Statement of the problem

University students face problems when furthering their studies because they are not exposed to the vocabulary or they lack the vocabulary that is needed to do well in assignments and exams (Giridharan, 2012; Li, 2022; Townsend et al., 2012). In this day and age of technological advancements, it has been found that students of the 21st century who have grown up using technology need more stimulating ways to learn (Boholano, 2017; Taylor & Parsons, 2011) compared to the traditional methods as they would not be satisfied with traditional teaching methods (Sadeghi, 2019).

In Malaysia, the entry requirements for local and international students are different. Malaysian students can use the Malaysian equivalent to the O or A levels English score or the Malaysian University English Test (MUET) to enrol into their chosen undergraduate course. However, international students need to possess a required band or

score from a recognised English test as mentioned above. The most common English test taken by candidates as the entry requirement at the researcher's university, is IELTS, except for those entering the American Degree Programme.

In the researcher's university, students have to obtain a minimum of an Academic Module IELTS band 5 to enrol in the degree courses. Students who do not have the necessary English requirements, enrol in the Intensive English Course (IEN) which prepares them to sit for IELTS in three months. Unfortunately, many of the students come in with a very low proficiency level which may only be equivalent to an IELTS band 4 or lower. This is not a problem if the students were motivated enough to work on their own to improve themselves. However, in many cases, the students lose what little motivation they have during the course of the programme because they cannot cope with the level of English in IELTS. These students have to sit for a placement test which will separate students who get bands 4 and below and 4.5 and above into two classes: level 1 and level 2. The placement test consists of a reading and writing test. In the reading test, there are two passages and the writing test is a composition of a minimum of 250 words. From the researcher's observation, the entrance test tends to demotivate the students even further, what more for a course that is called Intensive. There are students who enter the lower-level class, thinking that they have been wrongly placed.

Some of the students of the Intensive English programme (IEN) had sat for IELTS prior to coming to Malaysia but only managed to get a band 4 or 4.5. They feel that getting an increase of a .5 is an easy task. But some sit for IELTS multiple times and still do not

improve, and others actually obtain a lower band. From the observation of the researcher, many of these students managed to get the band they obtained in the first place, because they memorised answers to the Writing and Speaking questions. They listen for or read key words and answer without analysing the question well.

This researcher is more concerned with the writing component of the IELTS, more specifically Task 1. Although the students are in the programme for a minimum of 12 weeks, many of them find it difficult to obtain the required band due to the writing component, especially task 1. The main reason being the lack of knowledge of the specific vocabulary needed to describe the graphs. There are two tasks in the writing component. Task 1 requires candidates to describe a non-linear graph or diagram in a minimum of 150 words and Task 2 is an essay question which has to be answered in a minimum of 250 words. The writing component has to be answered in one hour. Between the two tasks, the researcher has observed that candidates have found that it is easier to get good scores in Task 2. It was found that Task 1 is difficult because of the specific vocabulary needed to describe trends and the specific report writing mechanics for IELTS writing Task 1. Therefore, this researcher is looking to help students to increase their score for the task by helping them to learn, retain and use the vocabulary that is required for Task 1 correctly, specifically vocabulary related to describing graphs, as this is the more common question. Another point to be mentioned here is that, although this study may seem to be practising teaching to test, task 1 writing is very much applicable to what the students need to know when they enter university. Lewthwaite (2007) found that a majority of both teachers and

students found the writing task 1 questions to be useful and related to what they will study in their chosen programmes.

The activities and tasks given to students in class or as homework, are perceived as too difficult for them, therefore over time they lose interest and do not attempt the exercises and activities. In addition, the traditional method of teaching which involves lectures and practice exercises, are not motivating or engaging enough (Prensky, 2007). From observation, the researcher's students prefer a quick solution to gaining the vocabulary needed. Without practising or spending time on the tasks given, they find it difficult to learn the vocabulary that is required to answer the writing task 1 question. When they do attempt the exercises, they do so just to complete the exercises given by the end of the semester without engaging with the exercises. This can be seen through the analytics in the LMS which shows the time spent on exercises and the attempts made on each exercise. The students do not bother to try to improve their scores even though they are given up to 3 attempts. Without engaging and spending time to do the tasks, they are unable to recall, retain and use the words that they need.

Another reason why students do not put in the effort to attempt or complete the tasks and activities given could be because the marks given for these exercises, which are accumulated into grades at the end of the semester, do not help them in any way to progress to the programmes they want to enrol in. They fail to realise that the activities can help them to do well in IELTS and to get the required band which will help them to get into the programme of their choice.

When weak students start to fall back on their studies due to their inability to cope with the lessons, they start to lose motivation. Less motivated language learners are less likely to succeed (D'Orazzi, 2020). He further explains that there is a risk of demotivated learners dropping out of universities. According to Ornstein (1995), these demotivated students often lose their self-esteem and do not ask for help from teachers or peers due to the fear of being looked down on, which is one of the reasons cited by D'Orazzi in his study conducted in Australia.

Motivating and engaging students to spend time on tasks are the main problems faced by this researcher. Therefore, she had wanted to implement a method to solve this problem and she found gamification to be an interesting method to employ. In studies conducted on improving motivation and engagement among students, it was found that in applying game elements to various subjects, many students have shown an increase in motivation (Dichev & Dicheva 2017). Harnessing the motivational properties of games played online is highly sought after by training professionals which enhances learning and accomplish instructional objectives (Garris et al., 2002). These researchers focused on the correlation between instructional strategies, motivational processes and learning outcomes.

However, there are also studies that conclude that caution should be practised when implementing gamification (Hanus & Fox, 2015). In their study they found that the experimental group actually decreased in intrinsic motivation as well as in their performance in the final examination. According to another research (Erickson et al., 2018), there are many considerations to be made before deciding to gamify a lesson,

activity or module. Some of them are; students' needs, appropriateness and proper planning. This is also supported by Oe et al. (2020) who conclude, in their study that proposes a framework for implementing gamification in higher education, that gamification requires careful planning, and a reviewing process to make it an effective teaching method.

Literature also shows that most of the research on gamification uses many different game elements and it is not easy to state which game element actually motivated the student (Dicheva et al., 2015). So, in this study, the researcher has compared the effects of using two game elements: leaderboards and rewards. According to a systematic review conducted by Bai et al. (2020), the majority of the studies in their review used multiple game elements and only three mentioned only one game element. No mention was made

about studies comparing game elements.

In addition to the inconsistent results from various studies, there is also a lack in the number of empirical studies which were conducted on the effects of gamification on the learning of languages and vocabulary in particular. According to Boudadi and Gutiérrez-Colón (2020), their meta-analysis of relevant empirical research published between 2011 and 2019 revealed that there are still very limited studies in the field of second language acquisition. Another finding is that although results are positive in terms of motivation and engagement, studies showing clear interconnections with learning outcomes are very few.

The researcher takes a look at the big picture in terms of the effects of using elements of gamification in order to increase students' levels of motivation. This research was conducted to examine if the use of gamification, specifically leaderboards and rewards, could motivate and engage students to spend more time on completing vocabulary activities which will promote the learning and retention of the target vocabulary needed specifically in this study; to answer Task 1, graph description, in IELTS writing.

1.9   Research objectives

The research objectives of this study are:

1. to investigate the effects of gamification on vocabulary scores between the experimental groups and the control group.

2. to identify whether leaderboards or rewards significantly increased the students' learning of the target vocabulary as can be seen when pre and post-tests are compared.

3. to investigate the effects of gamification on the retention of vocabulary

4. to identify whether leaderboards or rewards significantly increased the students' retention of the target vocabulary as can be seen when post-tests and delayed post-tests are compared.

5. to explore the effect of gamified vocabulary activities and tasks from the students' perspectives through a questionnaire and interview.

1.10   Research questions

The aim of this research is to explore the effects of gamification, specifically two game elements on time spent on task and learning vocabulary. Therefore, the research questions for this study are as follows:

1. What are the effects of gamification on vocabulary scores between the   control and experimental groups?

    a.   Is there any significant difference between the pre and post-test mean score of the control group, and the experimental group for vocabulary set 1 and 2?

    b.   Is there any significant difference between the post-test mean scores of the experimental groups and the control group for vocabulary set 1 and set 2?

2. To what extent are rewards significant compared to leaderboard in increasing vocabulary scores between the experimental groups?

3. What are the effects of gamification on retention of vocabulary between the control and experimental groups?

    a.   Is there any significant difference between the immediate post- and delayed post- test mean scores of the control group and the experimental groups for vocabulary set 1 and 2?

    b.   Is there any significant difference between the delayed post-test scores of the experimental groups and the control group for vocabulary sets 1 and 2?

4. To what extent are rewards significant compared to leaderboard in retaining target vocabulary between the experimental groups?

5. How do the experimental group participants perceive the gamified vocabulary activities?

The data collection for the first four questions are quantitative and were analysed using inferential statistics, therefore the null hypotheses below were tested.

Research question 1

1. There is no significant difference between the pre and post test results of Experimental Group 1 for vocabulary set 1

2. There is no significant difference between the pre and post test results of Experimental Group 1 for vocabulary set 2

3. There is no significant difference between the pre and post test results of Experimental Group 2 for vocabulary set 1

4. There is no significant difference between the pre and post test results of Experimental Group 2 for vocabulary set 2

5. There is no significant difference between the pre and post test results of the Control Group for vocabulary set 1

6. There is no significant difference between the pre and post test results of the Control Group for vocabulary set 2

7. There is no significant difference in the vocabulary post-test scores between the Experimental Groups and the Control Group for vocabulary set 1.

8. There is no significant difference in the vocabulary post-test scores between the Experimental Groups and the Control Group for vocabulary set 2.

Research Question 2

9. There is no significant difference in the vocabulary post-test scores between the Experimental groups in the vocabulary post-test set 1

10. There is no significant difference in vocabulary post-test scores between the Experimental groups in the vocabulary post-test set 2

Research Question 3

11. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 1 for Experimental group 1

12. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 2 for Experimental group 1

13. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 1 for Experimental Group 2

14. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 2 for Experimental group 2

15. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 1 for the Control group

16. There is no significant difference between the mean scores of the post-test and delayed post-test of vocabulary set 2 for the Control group

17. There is no significant difference between the mean scores of the delayed post-test of vocabulary set 1 between the Experimental groups and the Control group.

18. There is no significant difference between the mean scores of the delayed post-test of vocabulary set 2 between the Experimental groups and the Control group.

Research Question 4

19. There is no significant difference between the mean scores of the delayed post-test of vocabulary set 1 between the Experimental groups

20. There is no significant difference between the mean scores of the delayed post-test of vocabulary set 2 between the Experimental groups

1.11   Significance of the study

This study is significant to many different areas. The benefits are given below for the different groups. The present study may provide a useful contribution to the current body of knowledge on the use of gamification in education, especially language education and more specifically learning vocabulary.

1.11.1 Instructors

In addition, it explores the effects of gamification on the learning and retention of vocabulary and it can provide teachers with some insight on how to help motivate and engage students to learn vocabulary in a short period of time.

The researcher is of the opinion that the results of this study can help teachers to decide on the appropriate means to teach vocabulary either with or without gamification.

The results can also help to determine if gamification can be used as a vocabulary learning strategy.

The researcher opines that this study can help instructors to understand how best to motivate students especially during this time of post- pandemic when many classes are being held online. Instructors need to be prepared to know how to motivate and engage students in the event of a fully online class in the future due to a catastrophe as in the past two years.

The findings of this research can also contribute to the understanding of methodologies and strategies to be used with the teaching of students from the present generation who are very technologically savvy. A systematic literature review conducted by Zhang and Hasim (2023) in the last six years prior to 2023 showed that most of the forty studies showed a usage of a wide range of digital environments, varied levels of education, various research design methods and over a wide range of ESL areas like vocabulary, grammar, reading, listening, writing and grammar. The research also showed the drawbacks and benefits of gamification, students and teachers perspectives. There is a lack in the literature about the comparison of game elements in the learning of English as a Second Language (ESL) vocabulary, therefore the findings of this research can add to the body of knowledge on this subject area.

1.11.2 Language learners

The findings of this study may help change the behaviour of students who are lagging and motivate and engage them in the learning process and help them to become independent learners. They can also learn the importance of spending time on completing tasks given which would help them to memorise and retain vocabulary learnt.

1.12   Operational definitions

The following terms are operationalised based on the definitions in literature and how they are consistently referred to in this study.

1.12.1 Gamification

Gamification is a recent phenomenon, which is an umbrella term for game-like elements which are used in non-game contexts (Deterding et al., 2011). The game elements and techniques are like leaderboards, badges and immediate feedback and these increase the users' participation and motivation.

In this study, the game elements compared are leaderboards and rewards. A leaderboard was used to keep the score of the points collected by the participants for the first half of the intervention. In the next half, the points collected were used to exchange for rewards like extra time to complete an assignment or even be converted into marks

which will be added to their grades for the semester. The points given to students were to encourage good behaviour and discourage bad ones related to attempts and completion of vocabulary activities and tasks.

1.12.2 Vocabulary

Vocabulary, according to Nation (2001), can be categorised into three categories which are; high frequency words, specialised vocabulary and low frequency words. In this study the target vocabulary identified was low frequency, which includes academic words. Low frequency words are a large group of words that occur infrequently. These words can be found in texts on a specific theme. In the case of this study, the target vocabulary can be found when describing graphs and in writing reports. Some of the words and phrases are like: *rise, dramatic fall,* and *decline.*

1.12.2.1 Vocabulary sets

The target vocabulary consisted of words that were chosen from IELTS books and were words which were quite common in writing task 1. The words were taught to the participants in two sets: vocabulary set 1 and vocabulary set 2. All three groups were taught the target vocabulary over 8 weeks. Both sets consisted of 20 words each which were randomly placed in each set.

1.12.3 Motivation

Motivation is one of the most effective factors that a learner needs to learn in a second language (L2) (Brown, 2000). In education, part of the role of an instructor is to manage learner motivation (Buckley & Doyle, 2016). In most cases the main objective of motivating students is to increase their effort, persistence and performance. Motivation as is mentioned in this study is when students show interest to attempt the vocabulary activities and tasks that are given to them during the semester. It also can be seen when the participants take the effort to complete the activities and tasks given and they persist to improve their scores in order to get the points awarded for each activity and task.

1.12.4 Engagement

Student engagement is known as the involvement and interest shown by students to their learning and how much they are connected to their lessons, institutions and to other learners (Axelson & Flick, 2010). Fredricks et al. (2004) define engagement in three ways: behavioural, emotional and cognitive. Behavioural engagement is when students participate in activities, and it is important in obtaining academic outcomes. Emotional engagement constitutes students' reactions to their environment including classmates, teachers and institutions and it influences the students' willingness to perform, and cognitive engagement is when students take the initiative and strive to understand and master complex ideas and difficult skills. In this study, students are considered to be engaged, when they show an interest to complete the activities and tasks given

(behavioural), they interact positively with teachers and classmates (emotional) to complete tasks given and when they understand, use and retain the target vocabulary correctly (cognitive).

1.12.5 Points

The participants of both the experimental groups were given points for the various activities they attempted and completed. These points were used to show their ranking on the leaderboard or to enable them to exchange the points for rewards according to the group they were in. The participants were given the information on how many points were earned for each activity and stage of completion at the end of each week through Moodle.

1.12.6 Leaderboard

The leaderboard used in this study was taken from a free website. It showed the rankings of the experimental group students according to the points they collected from attempting and completing the vocabulary activities which were uploaded onto the university's LMS platform and the ones given to them in class.

1.12.7 Rewards

Experimental group participants were given the opportunity to exchange points they obtained from attempting and completing activities given to them according to the group they were in and during the appointed phase. The rewards were related to their course like an extra day to submit any given assignment. A certain number of points were required in order to be qualified for an exchange.

1.12.8 Independent learning

One of the graduate capabilities of the researcher's university is that students become independent learners and it is one of the main features of higher education (Hockings et al., 2018). Literature (Meyer et al., 2008; Murad & Varkey, 2008; McLinden & Edwards, 2011) shows that independent learners:

- are responsible for their own learning

- choose and set objectives for themselves

- decide what, when and how to learn

- monitor own progress

- enquire and critically evaluate

- evaluate and reflect on what has been learnt

This researcher also sees the term self-regulation to be a synonym for independent learning as the definition is when someone takes actions to work towards a goal set

(Bandura 1986, as cited in Miller and Brickman (2004). The researcher also recognises that the terms self-directed learning and autonomous learning are sometimes used interchangeably with independent learning (Lau, 2017) because the definitions given, point basically to learners being aware of their goals and taking action on their own learning. In this study, independent learning was measured by how many IELTS task 1 questions were attempted and completed independently, and which game element encourages them to be more independent learners. This variable was explored by the questions asked in the interview scheduled, and in the questionnaire given to participants.

1.13 Summary

Vocabulary learning is a basic component of foreign language acquisition. Unfortunately, without a good grasp of the vocabulary that will be used when listening to lectures, writing reports, presenting and having discussion in universities, students will find it difficult to cope with lessons. This is because over time they will become demotivated and lose interest in lessons, which can lead to them dropping out of the course. In this study, the focus was on the vocabulary that needs to be learnt, retained and used correctly in the writing of Task 1 of the IELTS test. The main reason for this is that the students need to get a minimum of a band 5 to enter the programme they want to enrol in, and they find task 1 to be more difficult than task 2 because of their lack of the specific vocabulary needed to describe graphs.

With the advent of technology and the current trend of gamification in the education field, it is hoped that teachers will be able to use game elements to introduce an element of fun into lessons. Gamification has been touted as an avenue to encourage a positive change in behaviour. As the current generation is also known to be the game generation (Prensky, 2007), it is presumed that when teaching them through a medium which they understand, learning will take place.

This chapter has shown the gap in the teaching and learning of vocabulary among the digital natives. The instructors of this generation need to improve and innovate on the techniques used in order to motivate and engage them to help them learn, retain and use the target vocabulary via time spent on vocabulary activities.

The next chapter studies research that has been carried out in this field and theories which support the use of gamification in education.