DEVELOPING A GAMIFICATION-BASED INTERACTIVE THESAURUS APPLICATION TO IMPROVE ENGLISH LANGUAGE VOCABULARY: A CASE STUDY OF UNDERGRADUATE STUDENTS IN MALAYSIA

ISSA R. MCHUCHA, ZAMHAR I. ISMAIL, ROSE P. TIBOK

Universiti Malaysia Sabah, Malaysia
E-mail: issaramadhan87@gmail.com, zamhar@gmail.com, rose.fuad@gmail.com

Abstract— The acquisition of new vocabulary in a second language requires a series of repeated exposure. With emerging digital platforms and games such exposure can easily be provided. Due to the prevalence and ease of access of mobile technology learners have demonstrated a high degree of dependence on digital tools such as smartphones for learning as compared to the traditional approach. This study aims to explore whether a gamification-based interactive thesaurus app could be used to improve the level of English language vocabulary among students in a public university in Malaysia. Five participants (two males and three females) from four different Faculties were selected as interview participants from an English proficiency class of 22 students. Two of the participants were from the Faculty of International Relations and the other 3 from the Faculties of Forestry, Nature Parks and Recreation, Forest Plantation and Agroforest. Each student was required to respond to a set of eleven open-ended interview questions structured to examine their perception towards digital and mobile learning as well as game-based learning. The findings indicated that students (1) preferred the use of mobile learning over the traditional approach, (2) preferred online platforms rather than mobile apps, and (3) acquire vocabulary through watching movies and listening to music. The study also showed that despite the learners having had experience using thesaurus apps, they had very little knowledge about game-based learning. This suggests that lecturers should focus more on the explicit use of mobile digital technology in language learning. Incorporating gamification in the learning process of a foreign language is a issue that requires in-depth analysis and thought.

Index Terms— Game-based learning, language learning, mobile learning, vocabulary learning strategies.

I. INTRODUCTION

The rapid evolution of digital technology has infiltrated into many aspects of daily life. Advances and progress in this field have brought about simplicity and automation in various sectors such as in industries, businesses and recently in education. Activities which in the past would take days or even months to complete are can now be attended to in a matter of hours or even minutes. Advancement in technological know-how and its application has resulted in increased efficiency of product delivery and also shortened the duration between production to market points. However, in education, incorporating technology in the teaching and learning has encountered various resistance and reluctance with the actual benefits of e-learning an on-going debate in the academic circle. Among these contentions is whether approaches such as e-learning or Computer Aided Learning (CAL) could deliver similar effects as traditional teaching and learning methodologies.

A study by Yaman et al. (2015) for instance argues that technology has become a necessary part of modern life even in the classroom. As opposed to traditional teaching and learning, digital technology provides learners with interaction and social-based learning, and facilitates an environment that contributes towards enhanced motivation in learning a subject. Since the younger generation spends a proportionately large amount of their time interacting with digital tools or games, it is important for educators to realise the value of incorporating technological elements into their teaching and learning (Yaman et al., 2015).

An estimated 72% of American households play computer and video games with 82% of these gamers comprised of youths aged 18 years or older (Entertainment Software Association, as cited in Yunus et al., 2012). Therefore, as research studies have indicated, the idea of incorporating technology into education is ideal. However, despite showing great impact in education, technology itself cannot serve as a means to ensure that pedagogical significance and learning objectives are met. Recent research studies have proposed the concept of integrating gamification in education as a means of boosting specifically the learning experience and motivation.

In this article, an in-depth discussion on the pedagogical significance of using gamified apps in the learning of English language vocabulary is presented.
According to Graddol (2006, as cited in Meyer, 2013), the teaching of English is becoming a growing focus in many developing nations since the language is considered to be a key competence in the Information era. Alemi (2010) reports a growing acknowledgement of the use of games as an effective way to facilitate vocabulary learning and build up classroom motivation. Incorporating gamification could hence bring about improvements in the field of language learning. As this research has demonstrated, the inclusion of a game-based Thesaurus app could attract learners, facilitate motivation and enhance the language learning acquisition process.

II. LITERATURE REVIEW

A. Technology in Foreign Language Learning

Educators have become more aware of the benefits of the emerging mobile technology in terms of the support it could offer learners of a foreign language such as assisting the learning through a self-paced and self-accessed mode. However, as pointed out by Liu et al. (2014), despite the advantages, there are many aspects yet to be investigated to verify the efficacy of employing such technology into teaching and learning. Although there is a lack of scholastic evidence to confirm the usefulness of using such devices in enriching learning, there is awareness that incorporating some technological tools like the iPod into the learning experience could result in very significant improvements despite the challenges posed (Liu, Navarrete, Maradiegue & Wivagg, 2014).

21st-century technology has become an integral part of our lives. As posited by Lin and Nzai (2014), by “…building a digital bridge connecting people around the world, technology has ushered in a new era of special education without limit of time and space.” The presence of smartphones and tablets has broadened the possibility of ease in learning a foreign language. Apps focused on second language acquisition (SLA) are used by many university graduates around the world nowadays (Campos & Freitas, 2015) due in part to the ability of smartphones in creating or providing a means to learn anywhere and anytime for the present generation of learners. Likewise, the availability of many apps as well as internet connectivity has enabled learning and teaching to occur beyond classroom (Kanchana & Prativa, 2015).

Shimodaira et al. (2006) argue that the increased global interest in the learning of English has in fact served to stimulate the use of technology into that aspect of learning and accelerate the development of computer software and desktop applications for learners with electronic dictionaries and thesauruses made available to complement the language learning process (Shimodaira, Shimodaira & Kunifuji, 2006). According to Eaton (as cited in Parvin & Salam, 2015), the digital era has altered the definition of language learning to become vastly different from that of the mid to late 20th century. Language learning in the 21st century “…focuses on cultural knowledge as means to communicate around the globe, rather than…on memorisation, grammar or learning from rote which most of the time the learners won’t be able to get the meaning or significance of the lesson.” Parvin & Salam (2015) concur that the use of technology could be an assistive way towards enhancing language learning.

Technology has become a necessary part of modern-day life even in the classroom with technological tools helping to cultivate a culture of learning (Yaman et al., 2015; Tuan & Doan, 2010). Compared to traditional teaching and learning, the digital technology era provides learners with interactions and social-based learning. However, Bester and Brand (as cited in Yaman, Şenel & Yeşil, 2015) stress that technology should be solely used as an assistive agent to promote and enhance the learning experience as it could or should in no way replace the essence of teachers in the classroom. This research will examine the assistive function of gamification elements incorporated into a smart-phone based language learning apps as the key discussion of this article.

With disruptive technology and numerous resources it is necessary that teachers are aware of how these advances might be used to enhance language teaching and learning. This study however has noticed that the usefulness of games in enhancing motivation and vocabulary acquisition lies in its ability to help teachers create contexts in which the language is both useful and meaningful (Tuan and Doan, 2010).

B. ICT versus English Language Learning

Although many students understand the need and benefits of using ICT to learn the English language, there is a need to educate learners about the rightful use of ICT devices (Yunus, Lubis & Lin, 2009). Students have been found to spend much of their time surfing the internet rather than learning; although technology could bring about learning freedom and enhance collaboration among students, teachers, researchers and specialists, there is a need to ensure this group of users utilise or maximise the proper use of the technology.

More important perhaps is the need to instill awareness of the vast potential of ICT in enabling students learn grammar and vocabulary at their own pace. The gamification element serves as a drawing
point to motivate students to spend more time learning, provides students with richer learning opportunities (Mohamad & Munniandy, 2014) and at the same time turns that learning time into fun moments (Yunus et al., 2009).

As the research has suggested, transforming into a mobile-based approach could be a means of jump-starting or fostering learning motivation and enhancing learning outcomes.

C. Mobile learning (m-learning)
Mobile learning has in recent years become very significant due to an increase in smartphone users, usage and technological enhancement. Hasegawa et al. (2015) argue that there is a discontinuation of learning when it comes to grasping English vocabulary; this could be due either to a lack of motivation or the fact that learners are more focused on the enjoyment element rather than the learning. Hence the need to develop a gamification tool that could sustain the motivation for learning English vocabulary. This premise is supported in the study by the works of Evans (2008) which point to mobile-learning as demonstrating greater effect than textbooks as revision tools with learners finding them more efficient than own notes in helping them learn (as cited in Hasegawa et al., 2015).

D. Vocabulary Learning Strategies
Vocabulary acquisition is an essential part of language learning since it is a main component of language proficiency and determines how well learners read, speak, listen and write (Lai Mei and Wan Azman, 2015). Likewise, according to Noroozloo et al. (2015), words are deemed to be the building blocks of any language with the significant role of vocabulary in expressing our thoughts undeniable. Having limited vocabulary often hinders students from mastering the four language skills. A cohesive and rigorous vocabulary bank is therefore an important attainment in any language as well as the basis of linguistic abilities (Bahadorfar, 2013).

Past research has indicated the first headache or difficulty encountered by students learning a foreign language is usually in remembering words (Bahadorfar, 2013; Hu Hai-peng & Deng Li-jing, 2007). Vocabulary size is an important standard to evaluate a learner’s level of English proficiency; without an adequate vocabulary depository, a second language learner’s conversational fluency and reading comprehension will encounter difficulties (Lai Mei & Wan Azman, 2015; Shen, 2003). This has also been emphasised in the study by Hu Hai-peng and Deng Li-jing (2007) on the application of motivation for students’ vocabulary acquisition in multimedia environment whereby vocabulary is highlighted as an important part of a language as well as the core or basis of linguistic abilities.

Despite this however, the study of vocabulary is oftentimes sidelined in language teaching and learning research. According to Wilkins (as cited in Hu Hai-peng & Deng Li-jing, 2007), “linguists have had remarkably little to say about vocabulary and one can find few studies which could be of any practical interests for language teachers”. Even so, Saengpakdeejit (2014) opines that learners could significantly improve their language competence by developing their ability to use vocabulary learning strategies (VLSs).

In addition, Nayan and Krishnasamy (2015) highlight the usefulness of vocabulary learning strategy as key towards the successful learning of a foreign language. Their study found that learners with limited vocabulary faced difficulty in conveying their message to others or communicating their ideas in the second language. Xhaferi (as cited in Nayan & Krishnasamy, 2015) discusses the shallow and deep strategies employed by these learners; those who skip unknown words would be those who employ the shallow strategies whereas learners who employ deep strategies tend to learn slowly and this in turn helps them retain information.

Vocabulary learning is not only a highly individual task that takes place often outside of the classroom but also one that is continued over many years if not lifelong (Marburg, 2015). In theory, apps - like their desktop predecessor software- can play an important role in supporting this learning process by various means. Although some teachers of English see language games as time consuming, games have a special role in any foreign language teaching programme because they facilitate the learning especially among young learners (Arikan, & Yolageldili, 2011).

E. Gamification
Osheim (2013) defines gamification as a strategy that employs game mechanics, techniques, and theory in areas that traditionally are not set up to function like a game. Prensky (2001, as cited in Osheim, 2013) labels the generation born in the 1990s as the Games’ Generation, a generation which sp...

long-term change in the class” (as cited in Osheim, 2013).

Gamification is a fairly new concept that involves using game elements in non-game contexts (Halvorsen, 2013; Garland, 2015). Garland (2015) reports that despite the fact that gamification has been shown to enhance motivation and learning, there have been opposing views with several studies reporting conflicting findings. Nonetheless gamification typically has a positive effect in the same way that the “use of video games in the educational area has taken a bigger role among kids, adolescents and adults, being considered a relevant element, leaving behind its playful look at leisure” (Nourdin & Quintana, 2015). Therefore it could be deduced that integrating game elements with mobile devices can place learning opportunities at the learners’ fingertips and enable ubiquitous learning experiences (Gunter, Campbell, Braga, Racilan & Souza, 2015).

A study by Halvorsen (2013) investigated the impact of incorporating gamification elements in learning applications and whether these could influence the learning outcomes and user experience. The findings in fact positively supported the idea of applying game-based learning and recommended a need for more scholarly research which could involve bigger test environments and a larger number of participants. Noemí and Máximo’s study (2014) examined the effect of educational games for learning and concluded that the emerging technology had created the need for interactive content with serious games being such educational content. Sawyer (2002, as cited in Noemí and Máximo, 2014) identifies serious games as being simulations of real-world events or processes designed for the purpose of solving a problem. In the study various cases were reviewed to examine the efficiency and influence of such games towards the learning process. The study concluded that serious games had great potential for training because they contained a highly positive effect on the learning process of users.

F. Gamification in English Language Learning

Since English language competency is considered a key aspect in the Information era, the teaching and learning of it is increasingly becoming the focus in many countries (Graddol, 2006, as cited in Meyer, 2013). This growing emphasis has resulted in a proliferation in the computer software market (Scanlon and Buckingham, as cited in Meyer, 2013). Meyer (2013) argues that integrating games has had a long history in foreign language learning whereby a seamless integration could lead to increased motivation and meaningful exposure to the target language. Although the difficulty of integrating games into formal learning is acknowledged, the study indicates there being a larger potential for students to learn from games in their language learning as compared to other academic subjects (Egenfeldt-Nielsen, 2011, as cited in Meyer, 2013). According to Lam (2014), the use of gamification could turn learning into a more interesting and engaging activity and assist in improving students’ level of attention and persistence as well as their attitudes towards language learning. This notion is supported by Dalton’s (2005) report that fewer than five percent (5%) of students are able to endure the stressful nature of formal school training in languages. Due consideration however must be made before gamifying an activity or a lesson to ensure the objectives of learning are achieved and not overshadowed or downscaled.

The Nation (1990, as cited in Lam, 2014) reveals that learning new vocabulary in a second language requires between five to 16 exposures. In such a case then, games help provide this exposure as they involve repeated tries and failure (Lam, 2014); however, the study emphasised that this would only be achieved with the appropriate use of gamification in the learning. There is a need to invent tools or strategies that could help reduce the stress that students experience during their learning. Activities structured as games can provide concrete practice for learners, while reducing the tension and anxiety often encountered during the learning process. Appropriate use of game elements in the classroom could result not only in enhanced motivation and learning experiences but also facilitate accuracy and fluency in language learners (Dalton, 2005).

The emergence and growth of gamification in education is as a direct result of proliferation in e-learning software on mobile devices. This includes the use of game elements in non-game contexts to engage users (Sauerland et. al, 2015). Although gamifying a lesson has been shown to have a positive impact on increased motivation among learners, further investigation is necessary to examine whether this leads to effectiveness.

A study by Bao (2015) found language learning applications significantly increasing over the last several years. However, since most of the apps developed were not able to effectively meet the learners’ objectives, they were therefore perceived as ineffective. On this basis, this study proposes gamifying language learning apps as a means of improving motivation, inculcate enjoyment of the learning among learners, and at the same time help attain learning outcomes and objectives.
G. Justification for use of Gamification

Gresten and Baker (2000, as cited in Alemi, 2010) argue that the standard method of presenting up to 20 or more new words that students are expected to learn at any given time is not an effective way to help them acquire or develop vocabulary.

Flores (2015) states that a factor for measuring the competence of learners in the 21st century is acquisition of a second language. The integration of technology in second language (L2) learning helps motivate users in their effort to achieve fluency. Although gamification is a relatively new concept in education, it has in fact been successfully applied in the business world. Ramsi (2015) stresses that game-based learning supports a multi-modal learning environment and various forms of learning strategies such as exploration, interactivity and active participation. Although current educational methods are adopting new technologies, the overall learning infrastructure and assessment methods still do not properly support cyber learning (Ramsi, 2015).

There is a growing interest in the application of modern game mechanics to other areas. A study by Crow (2015) suggests that using games can assist students acquire vocabulary within a shorter period of time and thus improve their learning experience. The study also supports the belief that gamification could effectively be used to influence and digitise the language learning process. Although the framework of the study is not based on English language learning, the issues and findings explored in the paper are useful and supportive towards this current research.

Martinson and Chu (2008: 478, as cited in Talak-Kiryk, 2010) believe “playing games teaches us how to strategise, to consider alternatives, and to think flexibly”. According to Talak-Kiryk (2010), games can (1) enhance teaching, practice and reinforce a foreign language; (2) assist in creating a constructive classroom environment conducive to learning; and (3) help students draw their own meanings based on their learning experiences by allowing them to rectify their mistakes and improve on previous learning.

“...Most people who have learned a language and tried to use it for their daily tasks are aware of how insufficient vocabulary retards their communication” (Raines, 1985, as cited in Muthusamy et al., 2013). In their study Muthusamy et al. (2013) evaluated the effects of using language games in English language vocabulary acquisition with two types of games - computer-based and paper-based - compared. Their findings provided evidence that computer-based games had better impact on students’ vocabulary enhancement compared to paper-based games.

The educational values and potential of video games to initiate effective and enjoyable teaching, and its capacity to create and sustain engaging learning environments and enjoyable teaching conditions are highlighted in the studies by Papastergiou and Moreno (2009; 2008, as cited in Rosman et al., 2013).

Lee Su Kim (1995, as cited in Stojkovic & Jerotijevic, 2011) points to a common perception that all learning should be serious in nature, and that if the learning involves fun and laughter, then it is not really learning. While it might be possible to learn a language while enjoying oneself, this would only occur by using educational games in the teaching learning process as “games are a successful encouragement for students to interact, communicate and sustain the effort of learning and they provide a meaningful context for language use, generate fluency, lower anxiety and introduce fun and relaxation” (Stojkovic & Jerotijevic, 2011).

According to Maria and Othman (2015), one of the major aspects that inhibit second language (L2) learners from acquiring new vocabulary is the nominal time devoted to vocabulary instruction.

III. OBJECTIVE OF THE STUDY

The study aims to investigate whether the use of a gamification-based interactive thesaurus application could improve the level of English language vocabulary among students in a public university in Malaysia.

IV. METHODS OF THE STUDY

An interview was conducted with five undergraduate students registered in an English language proficiency class in Universiti Malaysia Sabah. The one and half hour session comprised participants - two men and three women - from the diverse Faculties: International Relation, Forestry, Nature Parks and Recreation, Forest Plantation and Agro Forest. The participant sample was selected from a class of twenty two students with the main criteria being a readiness to participate in the interview. A set of eleven open-ended questions was proffered. Based on the interview, varying perceptions and opinions were obtained regarding the research topic.

The responses were then transcribed and analysed using the standard template analysis method. The first question pertained to knowledge on using ICT and digital technology in learning. All the interview participants were found to be well acquainted with usage of digital learning platforms. Four out of the five
students agreed that digital platforms were very helpful and convenient and could assist them as an alternative learning method. One student however argued that it was difficult for students to learn by means of digital technology particularly in a country like Malaysia where technology advancement and internet connectivity were still relatively low.

The participants were asked about their experience of using digital platforms to support their learning. One of them felt the traditional way of learning was more convenient since some students did not own or could not afford technological tools such as smartphones. However, the other students supported the notion that digital platforms were essential and impactful in learning. The students related their experiences using language apps such as Ginger App (an app that checks and corrects grammar), Google Translate and other learning community platforms. One of the students voiced his preference for the Google platform rather than mobile apps.

Despite these opposing opinions and preferences, the students had knowledge of the learning platforms and were aware of their benefits towards learning. On the question of whether to use learning platforms or devices in their learning, the students were unanimous in their answer: that they used learning platforms only when given assignments by lecturers. One of the students added that learning tools became handy when there was a need to obtain additional information or strengthen or fill in missing gaps in their understanding of subject matter. In terms of their perception on mobile learning over traditional learning approach, one student preferred the traditional learning approach whereas the rest chose mobile learning as being more effective in providing learning convenience and encouraging studying. Additionally, one student shared her views that despite the convenience delivered by the platforms, over-dependence on mobile learning could produce unexpected or negative outcomes, and inculcate negative learning habits.

In terms of their knowledge and experience in gamification, none of the students was aware of this element as far as learning was concerned. Nevertheless, when enquired of their preference on the use of mobile apps or games to learn a foreign language, one student opted for traditional learning methods. Another student had heard of mobile apps being helpful during assignments. The students agreed that using mobile apps for learning a foreign language was beneficial especially in the current era where proficiency in English is repeatedly emphasised.

With regards to choice of apps used to learn a foreign language, two students preferred Google Engine and Google Translate as well as the online Oxford dictionary rather than mobile apps. Other apps mentioned were Ginger app, thesaurus app and word puzzle. To the question on strategies used to improve their English vocabulary, three students shared that their vocabulary range was acquired through watching movies and listening to music. Two students enhanced their vocabulary depository through reading online novels and using the Google platform.

On the aspect of criteria for choosing which language apps to download, three students admitted that they had never used any specific app for learning English except Google. The reason was because they would normally use computer apps rather than mobile apps. For the other two students, the only criteria when deciding which app to download was (1) whether it was free, or (2) whether it was indexed at the top listing on the particular app store. In terms of experience on using thesaurus apps, two students had never used any while the other three had in the past used thesaurus apps such as those available from online sources and Google play.

V. FINDINGS AND DISCUSSION

Digital platforms and e-learning play a vital role in education particularly in the learning of English. The interview revealed that most of the students being aware of the benefits that digital platforms could offer. All the respondents had experience in using digital platforms to support their learning. Perhaps notable here is that (1) almost all of them perceived the practice of the mobile learning approach as integral since it can bring about learning motivation and convenience, and (2) there was a prevalent positive response or attitude among the students towards using games and apps in language learning. They were familiar with the idea of using apps to assist the learning process and provided examples of apps that they had interacted with to support their own learning process.

Where learning strategies are concerned, it has emerged that most of the students watched movies and listened to music as their primary method for improving their English vocabulary. The interview found the average student would target apps which are either offered for free or indexed at the top in the app store before deciding on their choice of downloads. Three students out of the five had had experience on using either thesaurus apps or online thesaurus platforms which point to them having adequate or sufficient understanding on the role of learning tools in language learning. The interviews revealed that not
all of the students were aware or had sufficient knowledge regarding gamification.

REFERENCES


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