DIGITAL GAMES IN DIGITAL LEARNING ENVIRONMENT; WHAT MAKES THEM EFFECTIVE IN EMBODYING VOCABULARY MASTERY?

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ABSTRACT
The rapid development of technology has triggered several changes in the realm of education which significantly contribute to language instruction. One of the changes is the integration of digital games in vocabulary learning. Digital games, either online or offline, have become inseparable from students' daily life. A number of students playing games are exceptionally growing in many countries. Due to this fact, the researchers and practitioners have been stimulated to investigate the effects of digital games on language learning, particularly in vocabulary learning. Thus, a lot of studies have been carried out to find out the effectiveness of this integration. This paper aims to discuss the aforementioned studies as the insights to give empirical evidence on how digital games enhance students' vocabulary mastery and what makes them effective to be used in the learning process. Besides, it also attempts to succinctly delineate the challenges, the threats that might occur during the learning process, and some considerations to be noted by the teachers such as the selection of the games, the tasks, and the rules in using the technological devices.

Keywords: Digital games, vocabulary mastery.

INTRODUCTION
Technology and human's life have been two inseparable elements in the world nowadays. Rapid technological development has assisted human beings to reach easier and dynamic lives. In realm of education, technology has played a significant role in this modern era as teaching medium or teaching and learning's assistance. In language learning in particular, the existence and development of information and communication technology has been found to be helpful both for teachers and language learners.

In educational milieu, the integration of technology in classroom practice has been originated since decades ago. In language teaching particularly, the introduction of utilizing technology is signified by the establishment of language laboratories since it was first developed in 1961 in Great Britain (Stern, 1983). Nowadays, where language learning sources are only a click away, technology (mainly the internet) has turn to become a powerful learning tool (Wijayani as cited in Cahyono, 2015). Many researchers have conducted studies to prove how technology can help language educators to enrich their students' language learning experience. Among other topics related to the implementation of technology in classroom setting, blended learning is widely discussed by either language learning researchers or practitioners.

Language teaching and learning practice has placed information and communication technology at the heart of classroom activities in order to elevate the effectiveness of language

teaching and learning process (Zhao, 2003). The implementation of the mixture of conventional and virtual classroom is getting popular in line with the progress of communication and information technology. Additionally, it is communication and information technology which makes it possible to have distance classes via internet. Learners do not have to come to a traditional classroom, but sitting in front of their computers and carry out activities similar to ones in conventional classroom. The integration of technology in the classroom activities is not considered only as an attractive idea in foreign language teaching and learning, but also as a necessity in this globalized technological period (Alberth, 2013).

Language teachers, both digital and non-digital natives, utilize computer and internet in accomplishing their works (Brown & Lee, 2015). Using computer programs and sources from the internet for classroom activities where students are familiar with these devices is beneficial for teachers in term of saving their time and energy. For students, on the other hand, they do not necessarily depend only upon teachers and learn to study independently. In the era where teachers are expected to perform in the classroom more as facilitators for their students, technology of computer and information are excellent media.

As it has been discussed aforementioned, technology (especially information and communication) serves as teaching and learning media. The use of information and communication technology for teaching and learning has been common among plethora of teachers. The way they employ technology to assist their teaching and learning might be various in terms of different computer programs and internet applications. It is obvious that many popular technological applications are possible to be made useful for teachers and learners. One of them is virtual games.

Digital games are potential sources of second or foreign language input for learners (deHaan, Reed, Kuwada, 2010). It is apparently because English digital games, for instance, provide original language input for non-native speaker gamers. Moreover, it is believed that learning through digital games can enhance learning motivation as well as proficiency (Chik, 2011). In case of developing vocabulary mastery, digital games have a great potential to help language learners (deHaan, Reed, Kuwada, 2010). Put in short, studies on learning a foreign language, especially English, through digital games have indicated many positive results which can help language learners to improve their ability, particularly in term of vocabulary mastery which is the main focus in this article. This article will also present the empirical evidence that digital games are effective in vocabulary mastery both as intramural and extramural activity. Additionally, reviewing some research related to this topic will reveal the rationales behind the effectiveness of digital games.

DIGITAL GAMES AND VOCABULARY MASTERY ENHANCEMENT

Through the history of English language teaching, vocabulary has received a great deal of attention from teachers and researchers. As well as other linguistic components, vocabulary is one of basic constituents a language learner should master in order to be able to use the language being learned. Mastering vocabulary is considered to play a major role in the success of a learner's language learning (Alemi, 2010)

Brown and Lee (2015), provides a brief history of English vocabulary teaching in some different periods. They highlight that traditional language teaching methods devoted their time focusing on vocabulary learning through lists, definition, written, and oral drills. However, as the emphasis of language learning shifted to natural and authentic classroom activities, space

for vocabulary learning has been decreased. Teachers, as they took role more as facilitators in the classroom, rarely lead their students to vocabulary learning focused classroom activities.

More recent studies show that vocabulary needs to be given systematic attention to create better learning outputs (Brown & Lee, 2015). Therefore, since the end of twentieth century, English teachers have revitalized vocabulary teaching in a more organized way. .

In this digital learning environment, the teachers are challenged to cope with the advancement of technology. There are many new computer applications and software available to use in language learning. Many researchers have noted the importance of technological integration in language learning process. Besides, many practitioners, especially in the developed country have come to know the benefits of incorporating technology in language learning and have applied it as well. One of the applications is digital games which becomes a tool and media of vocabulary learning.

Games have been quite popular in engaging the learners to learn vocabulary (Yip et al, 2006; Honarmand et al, 2015; Taheri, 2014, Lucht & Heidig, 2013). As it is delineated aforementioned, digital games which involve computer, internet and other technological devices have been a better alternative to teach vocabulary in recent years since it is tedious to teach vocabulary using traditional ways, especially for learners who grow up in the digital age and live in digital environment (Yip et al, 2006).

Concerning the types of games played, people who are not familiar enough with digital games would simply categorize them into online and offline games. In playing online games, people must have internet connection. Conversely, playing offline games do not need internet connection since these type of games only need to be downloaded and saved in a computer. This categorization is not necessarily wrong; however, it is still considered to be too general. Dickey, as cited in Sylven & Sundqvist (2012), specifically categorizes the games into two multi – and single player. One example of multi-player game which is mostly preferred by boys is multiplayer online role- playing games (MMORPGs). The multi-player games usually need internet connection to play since the player needs to interact to another player during the games, while single player can be online or offline. An instance of popular single player game which is mostly played by girls is *The Sims*.

Additionally, Kinzie and Joseph (2008) precisely categorized the games based on the modes of the game. According to them, there are six activity modes of games; Active, Explorative, Problem Solving, Strategic, Social, and Creative Play. They further explained that each of these modes determines different activities the players engage in. Active mode, for instance, requires the players to be active in the game, for example, to be a shooter, soldier, etc. In Explorative mode, the players are challenged to explore or have a virtual adventure in an unknown place where they have to learn new environment and study about it.

Knowing the modes of the games used enable the teacher to plan, design or choose the appropriate games for the students. Looking at the advancement of technology in this era, many preferences of games are available in the internet or any other search engines.

GAMES SELECTION

There are two possibilities of obtaining games; selecting the available games and designing particular games for the purpose, in this case, of education. Nowadays, abundant of game preferences are available in many websites. Compete cited in Leith (2016) provides six

reputable sites which are most visited. They are IGN, GameFAQs, GameSpot, GiantBomb, GamerDNA, and MobyGames. The teachers' job, therefore, is to select the appropriate games which suit the intended learning objective and outcome.

In selecting the suitable games, a number of researchers propose a framework for game evaluation. One of the frameworks is suggested by Panoutsopoulos et al (2014) who provides six evaluation dimensions, namely game content and goals, in-game support, interaction, realism, credibility, and acceptability. Game content deals with information presented for game user and goal deals with the task provided. Game-support is related to feedback provided from the game provider and taking the form of visual display of information, prompts, warning or suggestions for further actions. Interaction is dealing with negotiation of ideas in game environment. Realism is about the simulation which perceived the real world situation. Credibility is perceived the value of game in facilitating and achieving the intended learning outcome. Acceptability is related to the use of the game whether it is easy to understand or not, it provides enjoyment or boredom, etc. This framework is expected to assist the teachers in selecting and adapting the games.
Although preferable games are available in various websites, it is possible for the teachers to create their own. However, this option is time and money consuming. Besides, providing games is usually done by professionals who are expert in ICT field. HOPSCOTCH is an example of game designed for educational purpose adopted from a famous children's outdoor game in which they hop on a series of numbered squares in the sequence of their numbers (Lucht et al, 2013). Lucht et al (2013) further explain how to play the game; "when playing the game, the player receives questions presented on a monitor and is asked to enter the solution by jumping on the sensor mat." Additionally, in term of learning vocabulary, they are asked to translate the German word into English. The number of the letter is presented in the monitor and they just need to jump in sensory mat. This is mostly appropriate used for elementary students. Thus, designing own games needs professionalism in ICT and requires much effort. Selecting the available games, therefore, could be the best option.

GAME- BASED LEARNING IN LEARNING VOCABULARY

The popular approach to integrate games into teaching and learning is known as Games Based Learning; some others call it digital game based learning. In some countries with high social prosperity, such as Sweden, Japan, Finland and Netherland, this approach has been presumably common (Sylven and Sundqvist, 2012). It emphasizes the extensive integration of games into learning instruction. Tang et al (2009) precisely define digital game-based learning as "the use of computer games that possess educational value of different kind of software application that use games for learning purposes such as learning support, teaching enhancement, assessment and evaluation of learners." To achieve the certain objective of learning, the activities are provided by the teachers. Games give the enjoyment and fun. The rationale behind the integration of learning activities and games is that to provide interesting and motivating learning experience which could enhance the higher achievement in learning (Lucht et al, 2013). It is more than just a media employed to interest the students.

Additionally, there have been a number of studies carried out to probe the effectiveness of games in language learning, particularly vocabulary learning. Jere-Folotiya et al (2014) conducted an experimental research which aimed to examine the effectiveness of desktop computer or cell phone based phonics games, called GraphoGame, as supplementary resource for literacy instruction in Zambian public schools. GraphoGame was designed in Finland to help students who had reading difficulties. In this study, the game was installed in students' cell phone and used under the teachers' supervision. Besides, there were a number of tests

administered, including vocabulary test to investigate its effect toward vocabulary achievement. The result showed the significant improvement on students' literacy, including vocabulary mastery, in experimental class.

Besides, Yip et al (2006) conducted an experimental study in which the experimental class was taught by playing online games in two reputable websites. Another experimental study by Zafar et al (2014) tried to find out the effect of computer game in students' performance. Suh et al (2012) also investigated the effect of MMOG called *Nori School* for elementary students in Korea. The results indicated positive result in which the students' scores in experimental group significantly higher than control group.

Moreover, non- experimental research has similarly succeeded providing the empirical evidence of effectiveness of games in vocabulary enhancement. One breakthrough research related to gaming and L2 proficiency and vocabulary was conducted by Sylven and Sundqvist (2012). They investigated the time spent playing games either online and offline as their extramural activity and their L2 proficiency, including vocabulary mastery. The study showed that there was a positive correlation between time-spent in playing game and the vocabulary mastery. The students who spent time more were more fluent in English compared to those spent less time playing game. The test conducted also involved the vocabulary mastery test in which the result displayed the increasing vocabulary mastery in experimental group.

WHAT MAKES THE GAMES EFFECTIVE IN VOCABULARY LEARNING?

A game is not a completely new way of teaching vocabulary. A lot of studies investigating the role of games in improving the students' vocabulary have been increasingly discussed. In the past years, the researchers investigated the effect of traditional games to vocabulary mastery. Most of the research showed positive results. In more recent years, digital games have received much attention from researchers and practitioners. Since then, there has been much follow-up research abovementioned investigating the effectiveness of digital games (online and offline) toward vocabulary mastery.

Reviewing the studies aforementioned, visual simulation presented in online and offline game will give more opportunity to the students to learn vocabulary successfully. Schmidt cited in Yip (2006) added that visual simulation is not only useful for normal students, but also for students with learning difficulties. Furthermore, interactivity in the authentic situation has been pointed out as the key to successful vocabulary mastery. Besides, it gives aids to the teachers and learners significantly: they provide teachers with authentic materials (de Haan, Reed, Kuwada, 2010), lists of corpora (Brown & Lee, 2015), and authentic pronunciation and spelling. It is plausible to state that with the digital games, students are exposed to authentic learning sources and have the opportunity to reach a native like language ability (Saville-Troike, 2006).

Playing digital games or virtual games, is considered fun by the learners in which they learn the rules of the games, become somebody else, enter totally different environment, interact with other players, etc (Sylven & Sundqvist, 2012). They learn English automatically and willingly during the interaction in the games. When it is compared to learning situation at school, it is totally different in which they learn English because they have to.

Moreover, the emphasized importance of digital games in learning instruction is to motivate, to engage the students in learning as well as to provide the pleasure, excitement and enjoyment

in learning (Zafar et al, 2014; Zheng et al, 2015). The learning process can take place in formal and informal setting.

THE CHALLENGES OF USING GAMES

Integrating technology into learning must leave challenges for the teachers to be dealt with. They should be aware of the possible threats that could happen during the process of learning because of bringing the mobile devices to the class. The use of technological devices such as laptop, cell phones, i-pad in the classroom gives blur boundaries between learning and playing (Brown et al, 2015). The teachers need to consider this issue. The extensive use of these devices should be under teacher's supervision. If it is necessary, the teachers make a strict rule for students who cannot control the use of their technological devices during learning process. Another challenge is developing the task related to the games. It is quite tricky since it demands the teacher's creativity. Then, excellent internet connection is necessarily needed when the game used is online.

CONCLUSION

One of the portraits of technological integration in language instruction is utilizing online and offline games to assist teachers in running their classroom activities. Online and offline games also make it possible for language educators to teach language components, such as vocabulary. This practice is found to be more popular nowadays because students of this millennial era are closely tight to technology. The use of online and offline games in classroom activities can enhance the mastery of vocabulary since students encounter more enjoyment and have much more fun in learning compared to conventional classroom activities.

Some people might say "it is impossible"; however, there are a lot of studies that prove the usefulness of the digital games in enhancing students' vocabulary mastery. The integration is surely not easy. Most importantly, it demands the teachers' creativity in integrating the games into the vocabulary learning. Besides, there are several considerations to be noted by the teachers: the choice of the games, the tasks, and the rules in using the technological devices. Even though, it looks difficult to be done in Indonesia, it is absolutely possible by planning, preparing, managing it well. Hopefully, it gives a new insight for Indonesian's teachers in teaching vocabulary.

REFERENCES

Alberth, A. (2013). Technology-enhanced teaching: a revolutionary approach to teaching English as a foreign language. *TEFLIN Journal 24(1), 1-13*

Alemi, M. (2010). Educational games as a vehicle to teaching vocabulary. *MJAL, 2(6), 425-438*

Bogden, (2014). *Blended learning: bringing personalized education to scale*. Virginia: National Association of State Boards of Education

Brown, H. D. & Lee, H. (2015). *Teaching by principles: an interactive approach to language teaching*. New York: Pearson

Chik, A. (2011). Learner autonomy development through digital gameplay. *Digital Culture & Education, 3(1), 30-45*

deHaan, J., Reed, W. M., & Kuwada, K. (2010). The effect of interactivity with a music videogame on second language vocabulary recall. *Language learning & Technology, 14(2), 74-94.*

Deterding, S., Sicart, M., Nacke, L., O'Hara, K., & Dizon, D. (2011). Gamification: Using game-design elements in non gaming contexts. *In procedings of the 2011 Annual Conference Extended Abstract on Human Factors in computing System*. 2425-2428. Vancouver, BC. Canada.

Honarmand, R., Rostampour, M.,& Andorahimzadeh, S.J. (2015). The Effect of Game Tic Tac Toe and Flash Card on Zero Beginners' Vocabulary Learning. *International Journal of Educational Investigation*, 2(3), 27- 41.

Jere-Folotiya, J., Chansa-Kabali, T., Munachaka, J.C., Sampa, F., Yalukanda, C., Westerhom, J.,Richardson, U., Serpell, R.,& Lyytinen, H. (2014). The Effect of Using a Mobile Literacy Game to Improve Literacy level of Grade One Students in Zambian Schools. *Education Tech Research Dev*. 62, 417-436.

Kinzie, M,B., & Joseph, D. R.D. (2008). Gender Differences in game activity preferences of middle school children: Implications for Educational Game Design. *Educational Technology Research & Development*, 56(5/6), 643-663.

Leith, Alex. P., Ratan, R.A., & Wohn, D. Y. (2016). The (De)evolution Games: A Content Analysis of the Representation of Evolution through Natural Selection in Digital Games. *J Sci Educ Technol*. 25, 655-664.

Lucht, M., & Heidig, S. (2013). Applying HOPSCOTCH as an Exer Learning Game in English Lessons; two exploratory studies. Education *Tech Research Dev*. 61, 767-792.

Saville-Troike, M. (2006). *Introducing second language acquisition*. New York; Cambridge University Press

Stern, H., H. (1983). *Fundamental concepts of language teaching*. Oxford: Oxford University Press

Suh, S., Kim, S.W., & Kim, N.J. (2010). Effectiveness of MMORPG-based instruction in elementary English education in Korea. *Journal of Computer Assisted Learning*, 26, 370-378.

Sylven, K.S & Sundqvist, P. (2012). Gaming as extramural English L2 Learning and L2 proficiency among young learners. *ReCall*. 24(3), 302-321.

Taheri, Marzieh. (2014). The Effect of Using Language Games on Vocabulary Retention of Iranian Elementary EFL Learners. *Journal of Teaching and Research*. 5(3), 544- 549.

Tang, S., Hannegan, M., & El-Ralibi, A. (2009). Introduction to game-based learning. In T. Connolly, M. Stansfield, & L.Boyle (Eds), Games based learning advancement for multi-sensory human computer interfaces: Technique and Practices (pp1-17). Hersey: Information Science Reference.

Wijayani, P., W. (2015). The emergency of being digital natives in English language teaching. In B. Y. Cahyono (ed.), *English teacher professional development*. Malang: State University of Malang Press.

Yip, F.W.M., & Kwan, A.C.M. (2006). Online Vocabulary Games as a Tool for Teaching and Learning English Vocabulary. *Educational Media International*. 43 (3), 233 – 249.

Zafar, B., Mueen, A., Awedh, M.,& Balubaid. (2014). Game-based learning with native language hint and their effect on student academic performance in a Saudi Arabia Community College. *J. Comput. Edu*. 1(4), 371-384.

Zhao, Y. (2003). Recent development in technology and language learning: a literature review and meta-analysis. *CALICO Journal*, 21(1), 7-27.

Zheng, D., Bischoff, M., & Gilliland, B. (2015). Vocabulary learning in massively multiplayer online games: context and action before words. *Education Tech Dev*, 63, 771-790.