

Online Game-Based Learning Enhance ESL Learners' Vocabulary Learning: Benefits and Challenges

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Abstract

Vocabulary is an essential element in learning language for English Second Language (ESL) learners, it plays important roles in language learning and it is challenging in learning the vocabulary. Not only how the words are spelled but the knowledge on the meaning of the words are important too. Therefore, in learning vocabulary, there are multiple ways, strategies and techniques used by the educators to help ESL learners master the vocabulary. Online game-based learning is one of the techniques that is recently mainly used by educators. As some games are integrating with the use of technology, it not only brings fun in language learning but also changes the old style of vocabulary learning and makes the learning more meaningful. There are a lot of benefits and also challenges of online game-based learning in learning vocabulary. Hence, this paper reviews the benefits and the challenges of using online game-based learning as one of the ways to enhance ESL learners' vocabulary learning. This paper could be a source of reference by educators who might use online game-based learning in their language lessons especially in vocabulary. Future researches can be done by looking into some innovations that using online game-based learning that helps the other language skills such as listening, speaking, reading and writing

Keywords: Vocabulary Learning, Online Game-Based Learning, Benefits, Challenges, English as Second Language (ESL) Learners.

Introduction

Vocabulary is one aspect of languages that plays an underlying foundation and important role in four language skills namely speaking skill, listening skill, reading and writing skill. By learning vocabulary, it helps ESL learners to comprehend, understand and communicate verbally or nonverbally in English well. According to Alqahtani (2015) it is very crucial for language learners to learn vocabulary which is a critical part of foreign language learning. Moeller et al (2009) stated that by learning vocabulary, it allows language learners to use all forms of oral and also written communication. It is agreed and parallel with the statement by Rohmah (2017) that learning vocabulary helps to promote fluency, improving academic achievement and boost up thinking and communication skills as words are known as medium in reasoning,

analysing, inferring and evaluating. However, D' Silva (2019) also stated that Malaysian ESL learners had limited vocabulary of English language and that led to ESL learners' level of proficiency in language learning. This is unarguable as based on the study conducted by Lateh et.al, (2018) mostly ESL learners unable to acquire even the minimum word level. This is supported based on finding on local ESL primary school learners who have low vocabulary repertoire (Wang and Yamat, 2019). The limitation of ESL learners' vocabulary mostly because of lack of motivation and interest in language learning as English always seem as hardcore subject. ESL learners are not able to understand the language lesson well. According to Kumalasari (2018), it resulted from lack of vocabulary and the monotone in language teaching method and technique applied in the language lesson. It is in line with research made by Ting and Kee (2019) that stated the limited vocabulary repertoire of ESL learners is due to a lack of interest in vocabulary learning as the strategies and traditional method of learning used by the teachers. Language learning now is moving fast due to the use of technology in teaching and learning methods, strategies and approaches. During the lockdown, online learning tools such as Google Classroom, Zoom, MS Teams, YouTube, and other similar platforms were used, emphasising the importance of new technology usage in maintaining the teaching and learning process (Masfarizan & Yusoff, 2020). Online game-based learning is one of the methods that seem to suit the demands of language learning nowadays. According to Chapman and Rich (2019) in line with Kessler (2018), these digital native learners are more efficient in using technology, and online game based learning is becoming more popular in education. Unarguably, technology and online are integrated with pedagogical activities able to motivate, encourage and boost up learners to be active in the learning process. (Alex, 2019). Well- designed games in learning vocabulary are extremely useful as they allow language learners to enjoy the learning and also practise the language skills which lead to fun and meaningful learning. Putting aside the old techniques of "Spelling Bee" and long lists of words to be memorised for the next class, by using online game-based learning, it is more interactive and fun besides being able to stimulate the ESL learners' memory retention and suit with our technology's generation of users. According to Anyi (2018) in the study, digital games are effective in vocabulary acquisition. There are numerous researches and studies on the usage of digital games that enhance the vocabulary learning, however the ESL learners' poor vocabulary level is still crucial in the academic world. Despite the benefits and advantages of online game-based learning that enhance vocabulary learning, there are some challenges in online game-based learning. Therefore, this paper is going to review the benefits and challenges of integrating online game-based learning in teaching and learning vocabulary.

Literature Review

Online Game Based Learning

According to Trybus (2015), online game-based learning is referring to the usage of some gaming principles and integrating and applying them in real-life settings especially in language learning lessons that engage with the users who are the ESL learner. Online game-based learning is one of popular ways of engaging learners in language learning (Schultz & Fisher, 1988). Online game-based learning can be done online and offline, digital and non-digital. Zin et.al (2009) stated that digital games are an interactive technology that make the learning process interesting, fun and effective especially to the young learners. Kim (2015) stated that online game-based learning can be effectively used in enhancing learning and teaching in language learning. Yet, online game-based learning needs to be well designed games with well applied learning objectives and aims. Through well designed games in language learning,

it helps language learners to have fun learning, besides motivating their self-learning and also improving problem solving skills to a better extent. Online game-based learning has significant impact in teaching and learning where it makes language learners to apply collaboration, cooperative, creative and communication also known as 4C in 21st century learning. Language games, it appears, enable students to successfully learn the target language in a non-threatening learning environment (Morthy and Abdul Aziz, 2020). According to Barab et.al (2019) online game-based learning may promote students' learning practice, also using games in classes is advantageous for students. It can be utilised at about all language levels and ages. Online game-based learning in this current education life is moving along with the changing times. The usage of technology in creating online game-based learning has changed the environment especially in language teaching and learning contexts. Yordming (2017) in his research stated that in a language teaching environment, the usage of technologies will be a huge turn of ordinary activity of language learning to more favourable activities in an online game-based learning form which can stimulate the ESL learners to be more vibrant in ESL teaching and learning process. This is in line with Godwin-Jones (2014) that stated, online based learning is gaining so much interest from different ranges of ages from young learners to adolescents. Therefore, teachers and language educators shall acknowledge, implement and make use of online game-based learning in ESL classrooms, especially young learners that are synonymous with this digital and technology era in their daily lives. Hence, the digital online game based learning should be highlighted and recommended to be considered as aid in ESL classrooms for a better quality of the learning.

Vocabulary Learning

According to Wehmeier et.al (2005), vocabulary can be defined as the words of a particular language. In order to learn language and master the four main skills of language namely listening, speaking, reading and writing skill, it is important that vocabulary is essential to develop the students' competencies as well as their comprehension and production (Bai, 2018). Dakhi and Fitria (2019) stated in their research that vocabulary is the heart of linguistic skills because it contributes to the development of receptive and productive skills. Alqahtani (2015) concluded that lexical knowledge is central to communicative competence and the acquisition of a second and foreign language, and a lack of vocabulary knowledge is an obstacle to learning. As vocabulary is a basic layout and a foundation key element of language acquisition (Banacha & Tongtep, 2021), deficient vocabulary creates learning difficulties and poor English proficiency (Ocampo & McNeill, 2019). Vocabulary mastering for ESL learners needs a good skill on the part of an individual to process the words of a language (Rivers, 1989); knowing words is important for ESL students. In this respect, Nation (2012) has emphasised that the knowledge of a term involves recognizing the form, meaning, and use of the term. The form is divided into three parts: spoken form, written form, and word parts. The concepts, referents, and associations comprise meaning; finally, structural functions, collocations, register, and frequency comprise use.

According to Pignot-Shahov (2012) that stated the receptive knowledge is being able to understand a word in its spoken or written form, and productive knowledge means to be able to use a word correctly in a written work or a speech". Pignot-Shahov (2012) also stated that learning a word productively entails teaching it productively, and that receptive vocabulary knowledge is the same. Learning ESL vocabulary is certainly challenging. Learning vocabulary items is more than just memorising them; it is also important to understand how to apply them in appropriate situations and to broaden one's vocabulary knowledge. (Susanto, 2017).

Susanto (2017) also added that vocabulary acquisition entails more than just memorising a word's spelling and pronunciation; it also includes dimensions such as pronunciation, meaning, word formation, collocations, and so on. As a result, students must employ vocabulary learning strategies that are appropriate for their age, level, and needs. Putra (2016) concluded in his study that with more effective teaching strategies in the ESL class, the better the ESL learners' linguistic skills become. The path to acquiring vocabulary involves noticing, retrieving, and creatively using targeted words (Kanellopoulou et al., 2019; Moody et al., 2018). When learners encounter unfamiliar words, noticing them directs the learner to learn. Next, the more often words are retrieved, the higher the likelihood of the words embedding deeply in learners' minds (Atikah & Rezki, 2018; Boers et al., 2017). Anggrarini (2018) reviewed the data that 40% of vocabulary learning activity is listening and repeating so as to root the words in the learner's mind. The last stage, creative use, could be achieved when the learners were exposed to words after stages one and two or when the words were used differently from their previous encounter with the words. ESL teachers and educators should consider these factors and train the ESL students to use effective strategies and resources for learning new words in the target language at the same time help them to learn, improve and master their vocabulary.

A past study done by Andreani & Ying (2019) has resulted that the game application that they developed in their research has met the need of the ESL learners in their vocabulary learning. They had concluded that the ESL learners agreed that the game called "Pow Pow" has motivated the learners in learning English vocabulary. The game application is also able to attract the ESL learners' interest at the same time improving their vocabulary skill in language learning. Ahmed et al (2022) in their study that using Kahoot as online game based learning tool towards vocabulary learning has resulted that both group of ESL learners which are EG (experimental group) and CG(controlled group) got the same marks during their pretest however experimental group (EG) showed increment in their performances after using Kahoot as learning tool. Findings from research made by Putri (2019) also showed the same result which Kahoot is an online online game based learning that helps the ESL learners' outperformed in their vocabulary posttest. According to Zaen et.al (2022), the findings showed that through Word Wall which is one of the online game based learning platforms, the ESL learners were very eager in learning vocabulary and helped them to comprehend some difficult vocabulary easily.

Benefits of Online Game Based Learning in Vocabulary Learning

In a digital world as our education system is moving fast parallel to the demand, online game-based learning has been a hot topic among educational stakeholders. According to Figueroa (2015), the demand for more technologically oriented teaching strategies corresponds to the requirements of the new generation of digital native language learners. The online game-based learning also incorporates some elements that help in motivating and engaging the language learners in learning language such as reward- and- points system (Darejah & Salim, 2016). As it is perceived as an enjoyable factor in language learning, the use of online game-based learning has received a lot of attention. According to Ashraf et al. (2014), online game-based learning, such as online games, create a fun learning environment, particularly for young learners. Since vocabulary learning is a long process, engaging learners in fun and relaxing but meaningful and motivating activities may aid language learners in learning and mastering their new words. According to Barab et. al (2009) online games can facilitate learning experience with the usage of game elements, games thinking and games mechanics

where the ESL learners are able to experience a more fun learning environment compared to passive traditional learning. Another advantage of online game-based learning is that participants can express a preference for online games over face-to-face interaction, giving them autonomy in their learning (Yip and Kwan, 2006). This leads to a positive motivation for the ESL learners to take charge of their learning. According to Haddad (2016), learners who have a degree of autonomy in their learning are essential for fostering enhanced vocabulary in learning. Online game-based learning also supports the acquisition of 21st century skills. According to Chiappe et al (2013), online game-based learning improves learners' problem-solving abilities, critical thinking abilities, and collaboration abilities. This statement was then agreed by Ahmed et al (2022) which mentioned that games bring big impact to the ESL learners and it is also the most significant benefit. Some of the skills of the ESL learners including their memory skills, association, linguistic and more are able to be developed through games. Games based learning can be a powerful tool as it is simple and versatile to help the ESL learners in their vocabulary learning.

Zhao and Huang (2020) concluded that learning motivation has a positive and significant impact on learning performance. Through online game based learning, it helps in boosting the ESL learners' motivation in learning vocabulary. There are some studies that focused on the positive impact of online game based learning towards learners' motivation as motivation is a key to learning, and game - based learning can help motivate students (Batson and Feinberg, 2006). When the ESL learners are engaged and motivated, they perform better in their learning. Students are encouraged to participate in these activities, which may be more motivating for learning than traditional classroom activities. Online game based learning not only provided fun in learning, at the same time, the rewards, the challenges and other elements used in the online games able to create more participation from the learners during the lesson, building up their interest and be more focus and all these can contribute to the outcomes of the learning besides the learners' performances. This is parallel with the finding from the study by Dabbous et al (2022) where students who were more motivated to participate in game based learning were performing better in terms of learning outcomes, as clearly reflected based on the higher mean of the final exam scores.

There are some past studies that showed online game based learning in vocabulary learning did improve the ESL learners themselves. Based on the findings in study by Zirawaga et.al (2017) online game-based learning also instils other skills such as sportsmanship, creativity and peer collaboration. All these advantages are in line with the objective of four C's in our education system based on 21st century learning. Yudiniseva (2015) stated that online game-based learning also helps in strengthening learners' social relationships. It improves gradually as the learners communicate with other learners in the language learning process. According to the research by Ahmed et al (2022), online online game based learning or vocabulary games help them to socialise as they are responding to each other in completing the tasks given where at the same time improving their social interaction. Besides, the learners are cooperating with each other in order to complete the task or gaining new vocabulary words are able to enhance their collaboration and communication.

Challenges of Online Game Based Learning in Vocabulary Learning

Despite the benefits and the advantages of digital online game based learning, there are some barriers and challenges that somehow contribute to the integration of online game-based learning in vocabulary learning. Teachers' readiness in integrating, implementing, using and incorporating digital online game based learning in ESL teaching and learning is one of the

challenges. Marklund et al (2016) stated that with few guidelines to the ESL teachers and educators as online game based learning materials are quite laborious and require quite technical knowledge and skills lead to difficulties during the process of incorporating games into their ESL teaching environment. Talib et al (2016) also agreed that to plan a lesson with game based, the teachers and educators need to have skills such as technological and gaming knowledge and be able to adapt and choose the suitable elements of games to aid in learning. However, some ESL teachers and educators opt to not integrate digital games in learning and choose the old style of learning environment because they may not be able to guide and assess the learners. Besides, not all subjects or lessons are available and some need to be designed and developed which require the ESL teachers to spend time and ideas to create. Jong et al (2015) mentioned also in their study where somehow the educators and teachers are hesitated in adopting online game based learning elements in their lesson plan or teaching and learning classroom because of lack they did not feel convincing about the concept of the online game based learning and the potentials to improve the learners' understanding. In addition, before designing an educational tool especially game based, the teachers and educators need to thoroughly understand the objectives and the goals of the learning, the content and also assessing the learners.

Not only to mention about the teachers' readiness, the ESL learners' readiness is also one of the challenges to embrace technology into their language learning. Even though the learners are now in the era of technology, not all learners are suitable to use specific online game based learning materials. Same goes for the learners, some are quite familiar with all the elements and features where they find that games in learning are fascinating and gaining their interest in learning, but some might feel disturbing and experience difficulties comprehending the features. In line with Boverman et.al (2018) that stated learners that are not used to the gamified lesson have problems to adjust themselves to online games in learning. They may feel that games in learning are not able to help them but wasting time during the lesson. Too much screen time which results in vision problems and headache as they are exposed to the screen of computer monitor and also smartphone also some reasons that influence their readiness.

Lastly, the biggest challenge is the facilities in the learning environment. Lack of basic and essential facilities such as computers, smart phones and Internet connections are the factors that demotivate the ESL teachers and educators in adopting online games based learning in their ESL lessons. Poor infrastructure and very few resources are challenges that need to be faced by most stakeholders in educational institutions. Recently, the historic disruption of the COVID-19 pandemic led to school closures and change to online learning, the same problems related to the Internet connectivity and appropriate facilities have arisen. This has been an obstacle to implementing online game based learning in language learning. Zainuddin et al (2020) in their study had mentioned the reason online game based learning is not very successful is because of the elements in the game, the instructional design and also some technical issues. They mentioned that the classroom issues and also some technological problems which are internet connectivity and numbers of working computers are barriers in games based learning.

Recommendation

Online game based learning indeed brings a new path in teaching and learning. English is always known as a difficult subject to learn and to learn the basic core of the English language, which is vocabulary, demands new approaches. Games based learning brings some fun and

pleasure besides increasing motivation levels of the ESL learners which can be achieved by applying games based learning approaches in the language classroom. Vocabulary is very important for the learners to learn and to master. Therefore, by designing or developing online game based learning is necessary in learning language as by playing games, the ESL learners are allowed to have fun at the same time practicing the language. Games based learning can be considered as a good way in teaching vocabulary based on the benefits toward teachers, learners and language learning. It not only gives a good impact towards language learning but also enhances the educational process while also meeting the needs of the current generation.

In order to overcome the challenges in integrating online game based learning ESL learning especially in vocabulary learning, the teachers should be given more exposure about the online game based learning. With more sharing of knowledge through online seminars or online courses that are affordable might attract the teachers to join and gain knowledge. Some ESL teachers have different levels of proficiency in handling computers and other technology gadgets, through courses and sharing. It might help in their readiness to get used with online game based learning not only to complement their lessons but also as a primary tool for instruction (Mohamad et.al., 2019).

Online game based learning is known as a medium of engagement and able to motivate ESL learners in learning. By fostering autonomous learning to the ESL learners help them to take charge of their own learning besides being able to explore more other resources and elements in learning that suit their own level. It is also important in enhancing their vocabulary learning in ESL classrooms. According to Landers et.al (2017), the online game based learning elements aim that learners would engage in a meaningful learning process at the same time achieve the objective of learning. The infrastructure and other technical resources can be amended through cooperation from all the stakeholders in providing better Internet connectivity, offering learning tablets or other suitable equipment to let learners utilise and improve themselves through online game based learning. It is not to attract their interest in ESL learning but also to produce a better generation of learners that are technologically literate.

Conclusion

This study aims to review the advantages and the challenges of using online game-based learning as one of the ways to enhance ESL learners' vocabulary learning. As a conclusion, online game based learning has a positive impact on ESL vocabulary learning. ESL learners are able to enjoy the lesson and learn many new words, improving their vocabulary learning and also decrease their worries and anxiety during ESL lessons. Not only learners, ESL teachers are also able to develop new skills in ESL teaching by using online game based learning at the same time creating a nice atmosphere and positive vibes during language learning period. In today's virtual world, it is extremely crucial that all relevant parties in the education system acknowledge the abilities of online game based platforms as learning aids to improve education for learners of varying levels. Changes can happen and begin in the classroom with educators who eventually drive Malaysia's educational system to a better level so that learners can become proficient in the English language and excellent people. The benefits and challenges of online game based learning in vocabulary learning that were discussed in this paper are hoped able to contribute to some new ideas, clear insight and views for the educators about the positive impact of the online game based learning towards learning vocabulary and learner's motivation beside encourage more online game based learning that can be developed to help ESL educators and learners not only in vocabulary learning but also

the other language skills in English. At the same time improvising the challenges mentioned where the stakeholders and the administrators are able to join hands together and take some initiatives and efforts to provide, support and supply better facilities that can be fully utilised by ESL teachers and learners in learning.

References

- Ahmed, A. A. A., Sayed, B. T., Wekke, I. S., Widodo, M., Rostikawati, D., Ali, M. H., & Azizian, M. (2022). An Empirical Study on the Effects of Using Kahoot as a Game-Based Learning Tool on EFL Learners' Vocabulary Recall and Retention. *Education Research International*, 2022.
- Alex, A. B. (2019). READING HABITS OF TODAY'S GENERATION. *International Journal on Global Business Management & Research*, 8(2), 69-74.
- Alqahtani, M. (2015). The importance of vocabulary in language learning and how to be taught. *International journal of teaching and education*, 3(3), 21-34.
- Andreani, W., & Ying, Y. (2019). "PowPow" interactive game in supporting English vocabulary learning for elementary students. *Procedia Computer Science*, 157, 473-478.
- Anggrarini, N. (2018). Activities in teaching English vocabulary. *English Journal of Indragiri*, 2(2), 30-42. Available at: <https://doi.org/10.32520/eji.v2i2.235>.
- Anyi, C. L. (2018). Evaluating the Effectiveness of Digital Online game based learning in Second Language Vocabulary Acquisition.
- Atikah, D., & Rezki, A. (2018). Repetition facilitates retrieval opportunity in vocabulary learning. *IOP Conference Series. Earth and Environmental Science*, 175(1), 1-7. Available at: [10.1088/1755-1315/175/1/012148](https://doi.org/10.1088/1755-1315/175/1/012148).
- Bai, Z. (2018). An analysis of English vocabulary learning strategies. *Journal of language Teaching and Research*, 9(4), 849-855.
- Bancha, W., & Tongtep, N. (2021). Enhancing Vocabulary Memorization and Retention through LMS and MultiEx Game Platforms among Thai Tertiary Students. *International Journal of Learning, Teaching and Educational Research*, 20(10).
- Boers, F., Warren, P., Grimshaw, G., & Siyanova-Chanturia, A. (2017). On the benefits of multimodal annotations for vocabulary uptake from reading. *Computer Assisted Language Learning*, 30(7), 709-725. Available at: <https://doi.org/10.1080/09588221.2017.1356335>.
- Chapman, J., & Rich, P.J. (2019). Identifying Motivational Styles in Educational Gamification. *HICSS*.
- Dabbous, M.; Kawtharani, A.; Fahs, I.; Hallal, Z.; Shouman, D.; Akel, M.; Rahal, M.; Sakr, F. The Role of Game-Based Learning in Experiential Education: Tool Validation, Motivation Assessment, and Outcomes Evaluation among a Sample of Pharmacy Students . *Educ. Sci.* 2022, 12, 434. <https://doi.org/10.3390/educsci12070434>
- Dakhi, S., & Fitria, T. N. (2019). The principles and the teaching of English vocabulary: A review. *Journal of English teaching*, 5(1).
- D'Silva, V. (2019). Challenges in Students' Mastery of English. *News Strait Times*.
- Godwin-Jones, R. (2014). Chasing the butterfly effect: Informal language learning online as a complex system. *Language Learning & Technology*, 22(2), 8-27. <https://www.nst.com.my/news/nation/2019/10/531486/challenges-studentsmastery-english>

- Jong, M. S. Y., & Shang, J. (2015). Impeding phenomena emerging from students' constructivist online game-based learning process: Implications for the importance of teacher facilitation. *Journal of Educational Technology & Society*, 18(2), 262-283.
- Kanellopoulou, C., Kermanidis, K. L., & Giannakoulopoulos, A. (2019). The dual-coding and multimedia learning theories: Film subtitles as a vocabulary teaching tool. *Education Sciences*, 9(3), 210.
- Kee, L. L., & Ting, J. C. W. (2019). Using vocabulary journals to improve vocabulary learning among primary school pupils in Malaysia. *Journal of English Education*, 4(2), 108–120. <https://doi.org/10.31327/jee.v4i2.1111>
- Kumalasari, R. (2018). *THE EFFECT OF USING THE GUESS-THE-WORD GAME IN LEARNING VOCABULARY TO SEVENTH GRADERS OF SMP NEGERI 2 JABON* (Doctoral dissertation, Universitas Muhammadiyah Sidoarjo).
- Landers, R. N., Bauer, K. N., & Callan, R. C. (2017). Gamification of task performance with leaderboards: A goal setting experiment. *Computers in Human Behavior*, 71, 508515.
- Lateh, N. H. M., Shamsudin, S., & Raof, A. H. A. (2018). Receptive vocabulary levels of Malaysian university students. *LSP International Journal*, 5(1).
- Marklund, B. B., & Taylor, A. S. A. (2016). Educational Games in Practice: The challenges involved in conducting a game-based curriculum. *Electronic Journal of e-Learning*, 14(2), pp122-135.
- Maslan, M., & Nor, M. Y. M. (2020). Kebolehlaksanaan Pentaksiran Bilik Darjah (PBD) Secara Atas Talian Sepanjang Perintah Kawalan Pergerakan (PKP) di Daerah Sentul, Kuala Lumpur. *Webinar Seminar Nasional Pendidikan 2020*, 1(1), 213-218.
- Moeller, A. K., Ketsman, O., & Masmaliyeva, L. (2009). The essentials of vocabulary teaching: From theory to practice.
- Moody, S., Hu, X., Kuo, L. J., Jouhar, M., Xu, Z., & Lee, S. (2018). Vocabulary instruction: A critical analysis of theories, research, and practice. *Education Sciences*, 8(4), 180.
- Morthy, D. K., & Aziz, A. A. (2020). The Use of Language Games in Enhancing ESL Learners' Sentence Construction. *Sciences*, 10(9), 16-32.
- Ocampo, R., & McNeill, A. (2019). The relationship between vocabulary size and reading comprehension performance of 12th Grade Thai EFL learners. *Ocampo, R. & McNeill, A. (2019). The Relationship Between Vocabulary Size and Reading Comprehension Performance of 12th Grade Thai EFL Learners. Journal of Social Sciences*, 29(19), 32-41.
- Pignot-Shahov, V. (2012). Measuring L2 receptive and productive vocabulary knowledge. *Language Studies Working Papers*, 4(1), 37–45.
- Putri, A. R. (2019). e effectiveness of using Kahoot game to improve students' vocabulary comprehension a quasi-experimental research of seventh grade students of SMP n 15 SEMARANG in the academic year of 2019/2020. *Under Graduates thesis, UNNES, Semarang, Indonesia*.
- Rohmah, R. A., & Kamalia, Z. (2017). Teaching Translation. *English Focus: Journal of English Language Education*, 1(1), 17-23.
- Schultz, M., & Fisher, A. (1988) Games for all reasons: interacting in the language classroom (Reading, MA, Addison-Wesley).
- Susanto, Alpino. (2017). The Teaching Of Vocabulary: A Perspective. *Jurnal KATA*. 1. 182. 10.22216/jk.v1i2.2136.
- Talib, N., Yassin, S. F. M., & Nasir, M. K. M. (2016). Assessment Study Computer Programming Based on Creative Problem-Solving Approach of "Grounded Theory". *Journal of Advanced Research in Social and Behavioural Sciences*, 5, 25-38. [Paper reference 4]

- Trybus, Jessica. (2015). "Game-Based Learning: What it is, Why it Works, and Where it's Going." New Media Institute. Accessed April 6. <http://www.newmedia.org /game-basedlearning--what-it-is-why-it -works-and-where-its-going.html>.
- Tuzun, H., Barab, S. A., & Thomas, M. K. (2019). Reconsidering the motivation of learners in educational computer game contexts. *Turkish Journal of Education*, 8(2), 129-159.
- Wang, F., & Yamat, H. (2019). Identifying English vocabulary levels of Malaysia year 5 primary school students. *International Journal of Academic Research in Business and Social Sciences*, 9(12), 62-76.
- Yordming, R. (2017). Teachers' perspective towards digital teaching tools in Thai EFL classroom. *International Journal of Language, Literature and Linguistics*, 3(2), 45–48
- Zaen, F. N., Miftakh, F., & Purnamasari, I. (2022). The Use of Wordwall Media to Enrich Students Vocabulary Size in EFL Class. *Jurnal Ilmiah Wahana Pendidikan*, 8(19), 127-136. <https://doi.org/10.5281/zenodo.7165499>
- Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. (2020). The impact of gamification on learning and instruction: A systematic review of empirical evidence. *Educational Research Review*, 30, 100326.
- Zhao, Q., and Huang, X. (2020). Individual differences in response to attributional praise in an online learning environment. *Educ. Technol. Res. Dev.* 68, 1069–1087. doi: 10.1007/s11423-019-09720-0
- Zin, N. A., Jaafar, A., & Yue, W. S. (2009). Digital Game-Based Learning (DGBL) Model and Development Methodology for Teaching History. *WSEAS Transactions on Computers*, 2(8), 322-333
- Zirawaga, V. S., Olusanya, A. I., & Maduku, T. (2017). Gaming in education: Using games as a support tool to teach history. *Journal of Education and Practice*