

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

<http://dx.doi.org/10.35381/r.k.v7i1.1677>

Vocabulary skills and virtual tools in students of A2 Universidad Católica de Cuenca

Habilidades de vocabulario y herramientas virtuales en estudiantes A2 Universidad Católica de Cuenca

Liliana Maribel Carmona-Chica
liliana.carmona@ucacue.edu.ec
Universidad Católica de Cuenca, Cuenca, Cuenca
Ecuador
<https://orcid.org/0000-0002-2629-2756>

Antonio Lenín Argudo-Garzón
alargudog@ucacue.edu.ec
Universidad Católica de Cuenca, Cuenca, Cuenca
Ecuador
<https://orcid.org/0000-0003-4741-5935>

Recibido: 15 de octubre 2021
Revisado: 10 de diciembre 2021
Aprobado: 15 de enero 2022
Publicado: 01 de febrero 2022

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

ABSTRACT

The effect of the e-learning tools "Kahoot" and "Wordwall" on the learning of new vocabulary content in university students was examined. Explanatory type of experimental and control group. Data were collected through pre- and post-tests and a perception survey throughout this period. Accordingly, they were amused by the application of "Kahoot" and "Wordwall" in English class, as these platforms draw students' interest during the learning process, creating a pleasant environment for learning and teaching vocabulary effectively. In addition, they like competitive activities, so these interactive games motivate them to participate in the class.

Descriptors: Open educational resources; educational technology; language instruction. (UNESCO Thesaurus).

RESUMEN

Se examinó el efecto de las herramientas de aprendizaje electrónico "Kahoot" y "Wordwall" en el aprendizaje de nuevos contenidos de vocabulario en estudiantes universitarios. Tipo explicativa de grupo experimental y control. Los datos se recogieron mediante pruebas previas y posteriores y una encuesta de percepción a lo largo de este periodo. En consecuencia, les divirtió la aplicación de "Kahoot" y "Wordwall" en la clase de inglés, ya que estas plataformas llaman el interés de los alumnos durante el proceso de aprendizaje, creando un entorno agradable para aprender y enseñar vocabulario de forma eficaz. Además, les gustan las actividades competitivas, por lo que estos juegos interactivos les motivan a participar en la clase.

Descriptores: Recursos educativos abiertos; tecnología educacional; enseñanza de idiomas. (Tesaurus UNESCO).

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

INTRODUCTION

Developing active language learning environments is a crucial element for the support of L2 learners (Jafari & Chalak, 2016). Besides, smartphones are increasingly becoming a regular part of our daily lives. In terms of language teaching, the use of these applications has opened new windows of opportunity, innovatively shaping the way instructors teach and students learn (Basal et al. 2016). Moreover, the role of vocabulary in learning a foreign language is inevitable. Rich vocabulary will help students master English and its four significant skills, covering listening, speaking, reading, and writing. (Asyiah, 2017). However, English language learners encounter that vocabulary is the main barrier to accessing the English books' information and understanding of the class. However, it is not just about knowing the words but having a depth of knowledge of the word. Students need to comprehend the new words in context. They should know how to use them precisely since vocabulary may contribute to the success of language skills (Octaberlina & Rofiki, 2021) in language learners.

Another important aspect is that vocabulary knowledge depends on how much the learner is involved in the learning process of acquiring new content; higher involvement will induce better retention of the words. Furthermore, nowadays, Gamification is possible through technology, which plays an essential role in providing language learners with a valuable learning experience (Castillo-Cuesta, 2020). Thus, adding fun will make the learning and training process much more enjoyable and compelling. Also, an individual can connect to online games at any time and any place via the internet (Şimşek & Direkci, 2019), allowing access to the e-Learning tools.

Besides, teachers and students have experienced a significant change in education since the COVID-19 pandemic; therefore, this has focused on utilizing e-Learning tools and platforms for effective student engagement (Rashid & Yadav, 2020). Thus, teachers should not take a step back and return to teaching with traditional methods. Now, more than never, including technology in the classroom to teach and practice English vocabulary must be considered indispensable.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

So, for everything it was mentioned before, this study considered the importance of complementing both key facts together, the significance of learning English vocabulary, and using online resources to get a better result when learning English as a second language.

Consequently, it was considered two online games because of their importance when teaching a second language. Firstly, "Kahoot," which has been used to stimulate students' English as their foreign language more effectively, actively, and interestingly and can be accessed by teachers to use in foreign language classrooms (Yürük, 2019). Secondly, the interactive "Wordwall" provides a positive learning experience, multiple game types, scores, and challenges. Also, it offers intrinsic motivation and persistence to achieve desired goals and ranks through healthy competition promoted in games. (Hasram et al., 2021).

Therefore, this study was aimed to present these educative online games to teach and expand vocabulary knowledge in A2 students from the Catholic University of Cuenca to improve their fluency and communicative skills in the English language. So, this led to the core question of this study: Do online games help English language students to learn vocabulary effectively? If so, how is this possible?

To answer this question, it is essential to consider the variables. Referring to an independent variable, there is the use of websites and online games during the application of the method. On the other hand, the dependent variables for this study were vocabulary and speaking skills.

Finally, the main objective of this study was to evaluate if online games have any significant effect on the vocabulary retention of A2 students. This main objective led to specific goals which were to analyze students' perceptions after applying online games as a vocabulary teaching technique, to assess participants to know if there were recommendations or suggestions which could improve the application of gamification tools, and to analyze the use of the online games "Wordwall" and "Kahoot" as practical tools to develop vocabulary knowledge in English language learners.

THEORETICAL FRAMEWORK

Piaget's Theory of Cognitive Development is based on how an organism adapts to its environment and is controlled through mental organizations (Lefa, 2014). As this theory is about adaptation to the environment, I related this fact with the use of gamification tools to teach vocabulary, since nowadays students have adapted to the technological age, and it helps improve the vocabulary second language acquisition. Piaget described two processes used by the individual in their attempt to adjust: assimilation and accommodation (Huitt & Hummel, 2003). These processes are used during life as the person increasingly adapts to the environment more complexly. Assimilation refers to adjusting the new information into the learner's existing knowledge, then the learner's cognitive structures are extended to what the learner already knows (Lefa, 2014). Thus, by presenting the e-learning platforms 'Kahoot' and 'Wordwall', the participants integrated them to practice vocabulary acquisition. Young adults like technology and nowadays they use it to do lots of activities such as socialization, entertainment, communication and learning about different topics.

Consequently, it is essential to guide students to learn a second language through the adaptation of using online resources to acquire new knowledge. On the other hand, accommodation refers to adjusting and reshaping students' previous ability to receive further information (Lefa, 2014). Therefore, students had to adapt and sometimes change cognitive structures to accommodate the new knowledge.

Additionally, Piaget states that knowledge derives directly from sense experiences (Baker et al. 2007). Thus, learners get more knowledgeable by thinking about new experiences and comparing them to old experiences. Then they construct the new knowledge based on new information. That is why Piaget emphasizes the opportunities that allow learners of different cognitive levels to work together and encourage less mature students to advance to create understanding (Lefa, 2014). So, teachers should let students classify and group information to facilitate assimilating new information with previous knowledge.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

Moreover, there is a relationship between learning and behaviour/attitude, which reflects the substantial differences in acquiring knowledge. These behaviours account for the degree to which learning benefit is attained among learners (Ohn et al., 2018). Therefore, it is essential to examine the theory behind active learning through an online gamified platform. The Gamified Learning theory implies that Gamification does not affect learning directly but stimulates a learning-related behaviour in a mediating or moderating process (Zaric et al. 2021). So, Gamification has had a positive impact when a pedagogical design supports the game and has been shown to promote various skills in students (Pacheco-Velazquez, 2020). Also, one of the teachers' efforts is to engage students in the class by providing active learning, and this is the gamification theory purpose since the application of Gamification does not create games but generates game-like environments to promote participation among students when executing tasks (Ohn, et al., 2018).

LITERATURE REVIEW

Second Language learning

With the growing demands associated with globalization, more and more people are deciding to familiarize themselves with other languages (Mohammed, 2020); therefore, the need for learning a new language pushes the education system to enhance its teaching methods. Besides, English is used as a global language facilitating communication between people whose first languages (L1s) are not English for international communication purposes (Haidar & Fang, 2019). For instance, this reality emphasizes the need to help learners of foreign and second languages become linguistically competent and pragmatically competent in order not to sound impolite or inappropriate in the target language (Sanchez-Hernandez & Baron, 2021).

Vocabulary learning

The frequency of word exposure in teaching materials, along with corrective feedback, has often been identified as an influential variable in the learning of vocabulary in a foreign language (Calvo-Ferrer, 2021). So, effective vocabulary instruction emerges from direct

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

education, repeated exposure, contextualizing words, and opportunities for word interaction and active engagement (Kingsley & Grabner-Hagen, 2018). Consequently, the varying vocabulary activities are essential if learners want to practice all the aspects of word knowledge. They need innovative learning methods like educational games, which offer more than just fun and play in the classroom. Also, there is a strong link between vocabulary knowledge and language learning. The value of vocabulary knowledge cannot be denied in comprehending and learning a second language (Katemba, 2021).

Technology and Gamification in EFL teaching

Interactive multimedia technology empowers the educational process using increased interaction between teachers and the students (Rajendra & Sudana, 2018). Applying technology inside the classroom has taken an essential role in improving teaching techniques. Also, multimedia technology allows students to be active participants in the learning process since the interaction between the teachers and students increases. In addition, Gamification uses game elements such as quests, challenges, levels, and rewards to motivate and engage students in the classroom (Kingsley & Grabner-Hagen, 2018). Nevertheless, with the rapid increase in the number of native technology users, a need exists to investigate how to integrate technological tools in the formal processes of teaching and learning (Green et al. 2019), due to, the lack of teacher's instruction to master the use of educative online tools. So, for that reason is essential to develop technological literacy in teachers and students through the cultivation of technical capability, technological understanding, and technological awareness (Lee et al. 2019).

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

E-learning tools in Second Language Learning

Teaching large classes interactively has always been a challenge to language teachers. Thus, the utilization of online tools makes the class more interactive and this plays a great role to the most considerable extent in helping students learn English interactively and collaboratively. (Mwakapina et al. 2016)

Some limitations or disadvantages can be that it is costly since students should have the equipment to have access to the online platforms. However, it gives opportunities for students' self-assessment and peers assessment during the interaction improving their learning process meaningfully. Also, in terms of language teaching, the use of e-learning tools has opened new windows of opportunity, innovatively shaping the way instructors teach and students learn (Basal et al. 2016).

METHODOLOGY

EFL learners have problems in learning vocabulary. The teachers should have adequate teaching methods to attract the students' attention. One of the teachers' efforts to engage the students is applying ESA (engage, study, and activate). (Katemba & Sinuhaji, 2021) So, to verify the impact of online games, this study needed a wide range of data to analyze the results. Consequently, it was necessary to use mixed methods to gather qualitative and quantitative data information. In quantitative research was provided specific, measurable, and numeric indicators are easy to define and to communicate their results about the vocabulary knowledge in the participants chosen for this study. Also, quantitative research is often used in experimental methods, which were applied in this study to evaluate if the online games are effective in teaching new vocabulary to English learners or not. Later on, qualitative research helped examine data stored as words or as attached reports about difficulties and perceptions while learning English vocabulary through online games.

About participants, 30 students were part of this study, male and female in the age of 18 to 25 years old who were selected from the Catholic University of Cuenca. These

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

participants were divided randomly into two groups: the experimental and control groups. The control group studied vocabulary in traditional classes using word repetition, memorizing, and word translation techniques. In contrast, the experimental group experienced vocabulary learning by applying educative online games in the platforms "Kahoot" and "Wordwall." Something important to mention is that the researcher of this study was in charge of both groups, so it was not necessary to require another teacher to be in the order of the experimental or control group.

After having selected a possible group of participants, it was necessary to get consent from the English department headmaster to do the research. Then, the participants were informed about the purpose of the investigation before applying any instrument. The participants knew that the research was to improve the teaching process and that it would not be involved any personal aspect, so their participation was anonymous; no names were revealed during the research.

Another important consideration was to ensure that participants do not feel pressured to participate and feel motivated to be part of this study since it was applied a pre-test and a post-test.

The pre-test applied at the beginning of the research consisted of a multiple-option test with specific vocabulary according to the level of the participants to measure their vocabulary knowledge before using the gamification tools. This pre-test was over twenty-five points, and through the utilization of this instrument, statistical data was gathered, which the accuracy and reliability of results were measured easier. Following, Wordwall and Kahoot were included in each vocabulary lesson with the experimental group, whereas traditional teaching methods continued in the control group. Then, a post-test with the same value as the pre-test was employed to evaluate students' vocabulary skills after the intervention of the online games. For qualitative research, a survey to know students' perceptions were applied to explore the experience of using educative online games; students shared their perceptions and observations on their learning. Lastly, to do

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

the data analysis, it was applied a t-test to compare the two groups, the experimental and the control group.

STATISTICAL ANALYSIS

The JASP program generated descriptive and inferential statistics (Gross-Sampson, 2019). The descriptive statistics used were Minimum, Maximum, Mean, and Standard deviation (SD). To choose the inferential statistics, the distribution of the data was evaluated with the Shapiro-Wilk's Test of Normality (if $p > 0.05$, then there is normality), applied to the differences between the post-test and the pre-test. Both the experimental group ($p = 0.073$) and the control group ($p = 0.063$) found a normal distribution of data. Consequently, to verify that the post-test average is higher than the pre-test average, the Paired Samples T-Test was used (yes $p < 0.05$, then there is post-test $>$ pre-test). The results are plotted with rainclouds plots which illustrate the results with a diagram of points representing the note of each student who participated in the study, before and after the intervention.

RESULTS

The results are divided into two sections. The first section is divided into four parts. The first one is a general description of the obtained results. The next one is related only to the results of the experimental group. The third one regards the control group. Finally, the last one corresponds to a comparison between the control and the experimental group. Table 1 it is described the general results related to the mean. The experimental group obtained 16 points (SD 2.82) in the pre-test and 20 points (SD 3.42) in the post-test. On the other hand, the control group obtained 13.6 points (SD 2.41) in the pre-test and 15.3 points (SD 2.13). Consequently, there is a higher difference in the experimental group than the control group.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

Table1.
Descriptive results.

Grupos	N	Minimum	Maximum	Mean	Standard deviation
Experimental pre-test	15	9.0	18.0	16.0	2.82
Experimental post-test	15	13.0	24.0	20.0	3.42
Experimental difference	15	3.0	7.0	4.73	1.28
Control pre-test	15	10.0	20.0	13.6	2.41
Control post-test	15	12.0	20.0	15.3	2.13
Control difference	15	0.0	3.0	1.73	0.88

Source: Surveys.

According to the experimental group, students obtained 16 points (SD 2.82) before the application of the platforms (Kahoot and Wordwall) and increased 4.73 points after the six weeks of the implementation of the online tools obtaining 20 points (SD 3.42) in the post-test. A Paired Samples T-Test was used to assure that the post-test was significantly higher than the pre-test [t (df 14) = -14.32; $p < .001$]. Figure 1 shows how each student has increased their vocabulary knowledge level from the pre-test to the post-test using the platform.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

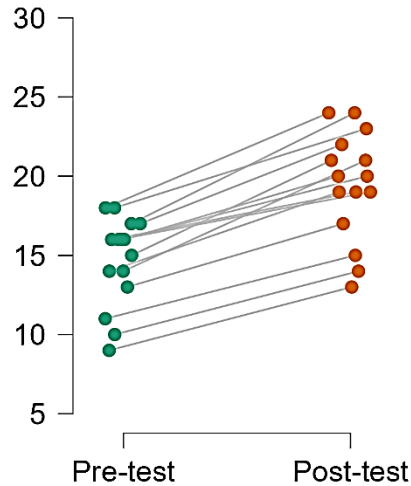


Figura 1. Rainclouds plots of the Experimental Pre-test and Post-test.
Elaboration: Authors.

Regarding the control group, students obtained 13.6 points (SD 2.41) in the first measure (pre-test) and, after six weeks working with traditional methods, achieved 15.3 points (SD 2.13) in the post-test, increasing only 1.73 points. A Paired Samples T-Test to assure that the post-test was significantly higher than the pre-test was used [t (df 14) = -7.60; $p < .001$]. Figure 2 shows how each student has increased their vocabulary knowledge level from the pre-test to the post-test without applying the platforms.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

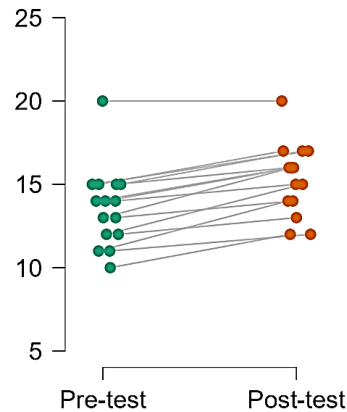


Figure 2. Rainclouds plots of the Control Pre-test and Post-test.
Elaboration: Authors.

Finally, it was compared the difference obtained from post-test and pre-test in both groups. An Independent Samples T-Test proved that the difference of the experimental group (Mean 4.73; SD. 1.28) is higher than the difference obtained in the control group (Mean 1.73; SD. 0.88), this result is considered significant [t (df 28) = 7.47; $p < .001$]. Figure 3 illustrates the position of the total points achieved by each participant. The box and Whiskers diagram shows how a whisker location does not touch the box of the other one; therefore there is a visual significant difference too.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

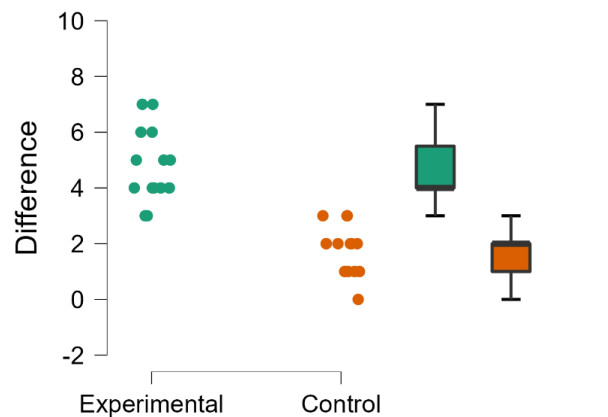


Figure 3. Rainclouds plots of the Difference between Pre-test and Post-test.
Elaboration: Authors.

The second section contains the results of eight questions applied to the students to analyze their perception regarding the use of the platform (Table 2). The criteria to select the highest and lowest perception is related to the order of the maximum agreement option of the scale because all of the items have obtained a positive perception. The highest perception is related to the teacher's feedback: "I appreciated the corrective feedback from the teacher." item. While the lowest perception of the program corresponds to the self-confidence: "Using online games helped me become more confident in my learning" and "Online games gave me the confidence to complete the activities" items. The other items are located in the intermediate position.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

Table 2.
Students' perception results.

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I enjoyed using online games to learn.	5%	0%	11%	25%	59%
Using online games helped me become more confident in my learning.	4%	0%	15%	30%	51%
Online games had a positive effect on my study behaviour.	2%	0%	17%	28%	53%
Online games gave me the confidence to complete the activities.	5%	2%	13%	29%	51%
Interacting with online games helped me remember my English vocabulary better.	2%	0%	13%	21%	64%
I appreciated the corrective feedback from the teacher.	0%	0%	12%	21%	67%
Using online games to test my vocabulary was more fun and less stressful.	5%	2%	7%	20%	66%
I would like online games to be implemented in future courses.	0%	2%	7%	25%	66%

Elaboration: Authors.

PROPOSAL

After analyzing the results obtained in this research, it is proposed the application of two online tools during the teaching and learning process to reinforce vocabulary learning. Furthermore, considering the new reality, which is to be surrounded by technology daily, teachers should see this as an advantage to enhance students learning process.

So, new teaching methods, innovation, and the use of online platforms allow teachers to be better spreaders of knowledge, to have motivated and willing students in their classes. For these reasons, it is recommended to add the following elements to the style.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

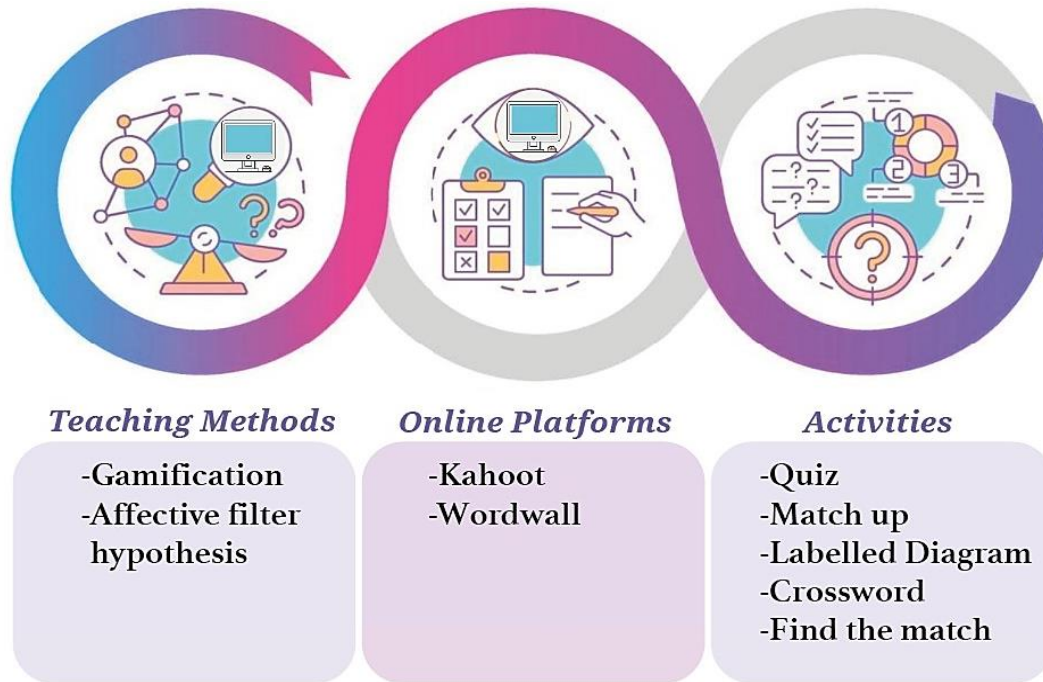


Figure 4. Online Games Proposal Methodology.
Elaboration: Authors.

TEACHING METHODS

Gamification: at the first phase, the teacher will introduce gamification tools in the learning process. Thus, traditional methods like repetition, word translation, flashcards, or learning new words by heart are replaced by using two online platforms: Kahoot and Wordwall. These e-learning tools will guarantee a successfully teaching-learning process where students will be determined and eager to be part of the class.

Affective filter hypothesis: according to Krashen, anxiety and lack of motivation can cause poor performance when acquiring a second language (Krashen, 2013). Therefore, the use of online tools motivates students to be active part during the class and stimulates

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

their participation. Krashen believes that students' negative emotions are like filters that filter comprehensible language input. If students produce negative feelings in language learning, these negative emotional factors will filter out part of the comprehensible input (Chen, 2020). Moreover, with the use of gamification tools, the class sensation gets relaxing and welcoming to teach new vocabulary content.

ONLINE PLATFORMS

Kahoot: this learning tool provides a positive atmosphere in the class; students feel engaged and eager to participate. Also, as the majority of university students have an intelligent mobile, there is no problem for them to connect to the different activities on this platform. Also, there are some options or activities to play on this platform, including uploading videos, pictures, and music to animate students with their thinking or simply providing upbeat energy to the quiz (Llerena-Medina & Rodríguez-Hurtado, 2017). Furthermore, after each activity, giving feedback to the students is possible, so it helps a lot to clarify students' doubts regarding the class.

Wordwall: this online platform can assist and enrich pupils' experience in acquiring English language vocabulary (Hasram et al., 2021) through colourful pictures and interactive educational games, which help retain students' attention. Additionally, it is important to mention the easy access to this platform. Students need only click on a link to be part of these online games. Also, different educative games enhance students' participation by completing interactive tasks, which help to internalize new vocabulary.

ACTIVITIES

In the platform Wordwall, there are some options that the teacher can apply in the learning process; they are easy and quick to create.

Quiz: this activity on Wordwall, allows students to complete multiple-choice questions about any topic. The teacher can create the quiz or only use the ones which are already

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

on the platform since they give the option to edit them without any problem. These quizzes are an excellent option to practice vocabulary. Moreover, these quizzes can be applied as a formative or summative assessment as formative assessment different short tasks were used after each vocabulary topic, to reinforce students' learning. However, complete tasks were utilized after finishing a curricular unit.

Matchup: students drag and drop keywords next to their definition. They can practice vocabulary by completing these matchup activities. The teacher can design colourful questionnaires to call students' attention. You can add pictures and/or words to the cards, and you can search for images from right inside Wordwall, so it's no extra work to add images. Thus, this activity is beneficial for learning and practicing word definitions/ meanings and reviewing material learned in the class.

Labeled diagram: learners drag and drop pins corresponding to pictures or definitions to match them with the correct area. They are easy and quick to complete, and they can be used as a warm-up in a new class about the vocabulary studied in the previous one. To verify if learners are studying, it is possible to set up a time limit to avoid cheating while they complete the activity.

Crossword: in this interactive game, students use clues to add words to solve a crossword puzzle while practicing vocabulary topics. Furthermore, students practice their reading skills because they have to read and understand the clues to complete the crossword. Students like doing crosswords because they are seen as a challenge; it is advisable to reward the winners to help keep the students concentrated on the task.

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

Find the match: students are presented with questions or statements, and they have to choose the correct answer by tapping the corresponding option to complete the idea. Also, it is possible to show a different number of pictures where students have to match with the corresponding pair. Besides, adding some extra incorrect options turns the activity into a challenging task.

CONCLUSIONS

According to the perceptions' survey carried out at the end of this research, students were satisfied with the utilization of the online platforms "Kahoot" and "Wordwall", they enjoyed the process and were thankful because of the teachers' feedback that was possible to do when an activity ended. So, it is important to highlight regarding these eLearning tools, the immediate feedback that the teacher can give, showing the students their mistakes in a friendly way; therefore, they don't feel any tension or anxiety that traditional assessments create. Also, it was evidenced that the experimental group where were utilized the eLearning tools showed higher vocabulary learning than the control group; the students took advantage of the teaching method, and their vocabulary knowledge improved significantly.

So, the availability of new technologies around the education process has contributed to facilitating the process. Nowadays, teachers have to look for new and interactive ways to teach and motivate students to learn. Thus, this research had the purpose of showing the use of two interactive platforms, which are "Kahoot" and "Wordwall." Consequently, it was evidenced that "Kahoot" and "Wordwall" are excellent online tools for teaching university students who are eager to use their mobile phones, tablets, or laptops during the class to practice new content. Furthermore, these eLearning tools are perfect for practicing vocabulary in a language class since they create a positive environment in the classroom and increase motivation and entertainment in the students. Highly motivated individuals persist at the task, aspire to high-performance levels, and return to the task time and time again voluntarily (McInerney, 2020).

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

FINANCING

No monetary.

ACKNOWLEDGMENT

I would like to express my gratitude to my students from eighth grade who participated in this research. Along with that, I wish to thank to the Católica de Cuenca University for allowing me to train as an English teacher in a better way and also to obtain a master's degree.

REFERENCES CONSULTED

- Asyiah, D. N. (2017). The vocabulary teaching and vocabulary learning: Perception, strategies, and influences on students' vocabulary mastery. *Lingua Scientia Jurnal Bahasa*, 9(2), 293–318. doi:[10.21274/ls.v9i2.701](https://doi.org/10.21274/ls.v9i2.701)
- Basal, A., Yilmaz, S., Tanriverdi, A., Sari, & Lutfiye. (2016). Effectiveness of Mobile Applications in Vocabulary Teaching. *CONTEMPORARY EDUCATIONAL TECHNOLOGY*, 7(1), 47-59. doi:[10.30935/cedtech/6162](https://doi.org/10.30935/cedtech/6162)
- Calvo-Ferrer, J. R. (2021). Effectiveness of Type of Feedback and Frequency on Digital Game-Based L2 Vocabulary Acquisition. *International Journal of Game-Based Learning*, 11(3), 38-55. doi:[10.4018/ijgbl.2021070103](https://doi.org/10.4018/ijgbl.2021070103)
- Castillo-Cuesta, L. (2020). Using digital games for Enhancing EFL Grammar and Vocabulary in Higher Education. *International Journal of Emerging Technologies in Learning (IJET)*, 15(20), 116-129. doi:[10.3991/ijet.v15i20.16159](https://doi.org/10.3991/ijet.v15i20.16159)
- Chen, C. (2020). The application of affective filter hypothesis theory in English grammar teaching. *Journal of Contemporary Educational Research*, 4(6), 71-74. doi:[10.26689/jcer.v4i6.1294](https://doi.org/10.26689/jcer.v4i6.1294)
- Baker, E. McGaw, B., & Peterson, P. (2007). Constructivism and Learning. *International Encyclopaedia of Education* 3rd Edition, 1-11. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.473.9095&rep=rep1&type=pdf>

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

- Green, A., Anderson, D., & Alfadil, M. (2019). Connecting to the digital age: using emergent technology to enhance student learning. *Education and Information Technologies*, 25(3), 1625-1638. doi:[10.1007/s10639-019-10035-z](https://doi.org/10.1007/s10639-019-10035-z)
- Haidar, S., & Fang, F. (. (2019). English language in education and globalization: a comparative analysis of the role of English in Pakistan and China. *Asia Pacific Journal of Education*, 39(2), 165-176. doi:[10.1080/02188791.2019.1569892](https://doi.org/10.1080/02188791.2019.1569892)
- Hasram, S., M. Nasir, M. K., Mohamad, M., Daud, M. Y., Abd Rahman, M. J., & Mohammad, W. (2021). The Effects of WordWall Online Games (WOW) on English Language Vocabulary Learning among year 5 pupils. *Theory and Practice in Language Studies*, 1059-1066.
- Huitt, W., & Hummel, J. (2003). Piaget's Theory of Cognitive Development. *Educational Psychology Interactive*, 1-5.
- Jafari, S., & Chalak, A. (2016). The Role of WhatsApp in Teaching Vocabulary to Iranian EFL Learners at Junior High School. *English Language Teaching*, 9(8), 85-92. doi:[10.5539/elt.v9n8p85](https://doi.org/10.5539/elt.v9n8p85)
- Katamba, C. V. (2021). Can ESA Method Through Quizizz Games Enhance Vocabulary Knowledge? *International Journal of Game-Based Learning*, 11(3), 19-37. doi:[10.4018/ijgbl.2021070102](https://doi.org/10.4018/ijgbl.2021070102)
- Katamba, C. V., & Sinuhaji, G. V. (2021). Can ESA Method Through Quizizz Games Enhance Vocabulary Knowledge? *International Journal of Game-Based Learning (IJGBL)*, 19-37. doi:[10.4018/IJGBL.2021070102](https://doi.org/10.4018/IJGBL.2021070102)
- Kingsley, T. L., & Grabner-Hagen, M. M. (2018). Vocabulary by Gamification. *The Reading Teacher*, 71(5), 545–555. doi:doi.org/10.1002/trtr.1645
- Krashen, S. (2013). Second language acquisition. *Cambridge University Press*, 4-5. http://www.sdkrashen.com/content/articles/krashen_sla.pdf
- Lee, C., Yeung, Seeshing, A., Cheung, & Wai., K. (2019). Learner perceptions versus technology usage: A study of adolescent English learners in Hong Kong secondary schools. *Computers & Education*, 13-26. doi:[10.1016/j.compedu.2019.01.005](https://doi.org/10.1016/j.compedu.2019.01.005)

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

- Lefa, B. (2014). The piaget theory of cognitive development :an educational. *Educational Psychology*. <https://acortar.link/RCcG0H>
- Llerena-Medina, E., & Rodríguez-Hurtado, C. (2017). Kahoot! A Digital Tool for Learning Vocabulary in a language classroom. *Revista Publicando*, 441-449.
- McInerney, D. M. (2020). *Helping Kids achieve their best: Understanding and using motivation in the classroom*. New York: Routledge.
- Mohammed, A. (2020). Effectiveness of virtual reality game in foreign language vocabulary acquisition. *Computers & Education*, 2-13. doi:[10.1016/j.compedu.2020.103893](https://doi.org/10.1016/j.compedu.2020.103893)
- Mwakapina, J. W., Mhandeni, A. S., & Onesmo S, N. (2016). WhatsApp Mobile Tool in Second Language Learning: Opportunities, Potentials and Challenges. *International Journal of English Language Education*, 4(2), 70-90. doi:[10.5296/ijele.v4i2.9711](https://doi.org/10.5296/ijele.v4i2.9711)
- Octoberlina, L. R., & Rofiki, I. (2021). Using Online Game for Indonesian EFL Learners to Enrich Vocabulary. *International Journal of Interactive Mobile Technologies (IJIM)*, 15(1), 168-183. doi:[10.3991/ijim.v15i01.17513](https://doi.org/10.3991/ijim.v15i01.17513)
- Ohn, M. H., Yusof, S., Lansing, M. G., Ravindran, B., Nisar, K., Mchucha, I., . . . Ohn, K. M. (2018). Gamified Online Active Learning Theory. *International Conference on Artificial Intelligence in Engineering and Technology (IICAET)*, 1-4. doi:[10.1109/IICAET.2018.8638463](https://doi.org/10.1109/IICAET.2018.8638463).
- Pacheco-Velazquez, E. (2020). Using Gamification to Develop Self-Directed Learning. *Proceedings of the 2020 International Conference on Education Development and Studies*, 1-5. doi:[10.1145/3392305.3396899](https://doi.org/10.1145/3392305.3396899)
- Rajendra, M., & Sudana, M. (2018). The influence of interactive multimedia technology to enhance achievement students on practice skills in mechanical technology. *Journal of Physics: Conference Series*, 1-5. doi:[10.1088/1742-6596/953/1/012104](https://doi.org/10.1088/1742-6596/953/1/012104)
- Rashid, S., & Yadav, S. S. (2020). Impact of Covid-19 Pandemic on Higher Education and Research. *Indian Journal of Human Development*, 14(2), 1-4. doi:[10.1177/0973703020946700](https://doi.org/10.1177/0973703020946700)

Liliana Maribel Carmona-Chica; Antonio Lenín Argudo-Garzón

Sanchez-Hernandez, A., & Baron, J. (2021). Teaching second language pragmatics in the current era of globalization: An introduction. *Language Teaching Research*, 1-15. doi: [10.1177/13621688211064931](https://doi.org/10.1177/13621688211064931)

Şimşek, B., & Direkci, B. (2019). The Investigation of the Relationship between Online Games and Acquisition of Turkish Vocabulary. *International Journal of Instruction*, 12(3), 69-88. doi:[10.29333/iji.2019.1235a](https://doi.org/10.29333/iji.2019.1235a)

Yürük, N. (2019). Edutainment: Using Kahoot! As A Review Activity in Foreign Language Classrooms. *Journal of Educational Technology & Online Learning*, 2(2), 89-101. doi:[10.31681/jetol.557518](https://doi.org/10.31681/jetol.557518)

Zaric, N., Roepke, R., Lukarov, V., & Schroeder, U. (2021). Gamified Learning Theory: The Moderating role of learners' learning tendencies. *International Journal of Serious Games*, 8(3), 71-91. doi:[10.17083/ijsg.v8i3.438](https://doi.org/10.17083/ijsg.v8i3.438)