

Percepciones de estudiantes universitarios al utilizar una aplicación móvil de ejercicios de vocabulario de inglés.

College students' perceptions towards the use of efl vocabulary learning exercises in an app

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Abstract

Learning a new language in an EFL context usually means exposure to the target language only during English classes within a limited amount of time. This is continuously forcing teachers to find innovative ways to provide meaningful lessons to their students in order to catch their attention and take advantage of the short period of time to expose learners to the target language. The use of technology plays an important role in the new perspectives and approaches of education. The aim of this research is to explore the perception of a segment of students' population towards the use of technology in English language classes, at University of Guayaquil. For this, the prototype of an app, specially designed for acquisition of vocabulary, was used to exposed students to the target language. In this, mixed method pre experimental research, 152 students from four different classes belonging to level A1, enrolled in engineering majors provided answers to this study in order to obtain data about engagement, motivation, and enrichment of the learning experience using the prototype app. The tools for collecting data were Likert scale questionnaire and open-ended questions in a structured interview. The findings show a positive attitude from students to the implementation of this kind of technology, that since it is an app, it may be easily added to their smartphones for practicing acquisition of vocabulary in the target language, within English classes, or in their autonomous hours.

Keywords: CALL, independent learners, EFL, vocabulary, AR app

Resumen

Aprender un nuevo idioma en un contexto de inglés como lengua extranjera generalmente significa exposición al idioma de destino solo durante las clases de inglés dentro de un período de tiempo limitado. Esto obliga continuamente a los profesores a encontrar formas innovadoras de brindar lecciones significativas a sus alumnos para captar su atención y aprovechar el corto período de tiempo para exponer a los alumnos al idioma de destino. El uso de la tecnología juega un papel importante en las nuevas perspectivas y enfoques de la educación. El objetivo de esta investigación es explorar la percepción de un segmento de la población estudiantil hacia el uso de la tecnología en las clases de idioma inglés, en la Universidad de Guayaquil. Para ello, se utilizó el prototipo de una aplicación, especialmente diseñada para la adquisición de vocabulario, para exponer a los estudiantes al idioma de destino. En esta investigación preexperimental de método mixto, 152 estudiantes de cuatro clases diferentes pertenecientes al nivel A1, matriculados en carreras de ingeniería, brindaron respuestas a este estudio con el fin de obtener datos sobre el compromiso, la motivación y el enriquecimiento de la experiencia de aprendizaje utilizando la aplicación prototipo. Las herramientas para la recolección de datos fueron un cuestionario escala Likert y preguntas abiertas en una entrevista estructurada. Los hallazgos muestran una actitud positiva de los estudiantes ante la implementación de este tipo de tecnología, que al ser una aplicación, puede ser fácilmente agregada a sus teléfonos inteligentes para practicar la adquisición de vocabulario en el idioma de destino, dentro de las clases de inglés o en su autonomía. horas.

Palabras clave: CALL, estudiantes independientes, EFL, vocabulario, aplicación AR

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Introduction

The use of technology is something which has become part of daily life, and the field of education is not the exception. Everyday teachers within classroom must continuously talk to their students about avoiding use their smartphones during classes. Usually smartphones distract students, and in some educational institutions are even banned. This situation turns even more complicated in remote or virtual learning. But what if instead of banning smartphones teachers turn them into an ally? That is the premise that support this research. Different studies show the powerful and positive impact of the use of technology in the educational field, from its influence in affective elements in students' behavior through remarkable learning outcomes (Lai & Bower 2019). The use of technology in the acquisition of languages has demonstrated effectiveness in different indicators, reducing the affective filters and catching students' attention with relative ease. Through the pass off the years it has changed from CALL computer assisted learning to MALL mobile assisted learning, (Bahrani, Tam, & Zuraidah 2014). Both, CALL and MALL have the capability to provide meaningful experiences in the learning process adding a special and innovative element such as gamification. The element of gamification included often in different learning apps and platforms plays an extremely important role in students' motivation. Recently, in the Ecuadorian context different researchers are exploring the use of technology in combination of gamification elements enhancing student's perception and motivation toward the acquisition of new languages (Díaz & Bajaña 2020). In this research, students were exposed to a prototype app designed for the acquisition of vocabulary in a target language. The prototype app includes elements of gamification and nonlinguistic representations. The aim of this research is to explore the perception of a segment of students' population towards the use of this kind of technology in English language classes, at University of Guayaquil. The context of this study is developed in virtual and remote classes, trying to promote among students autonomous in learning through the use of this app, within English classes, and also during their free time in a spontaneous way.

The purpose of learning a language is to be able to communicate one's ideas to others. The beginning of this L2 acquisition path is to build vocabulary, because, a learner needs at least a repertoire of words to convey himself. Therefore, it is pivotal that this lexicon can be developed by using the best techniques possible so pupils can retain and then, retrieve this words as they are progressing in the use of grammar and the development of other skills. In the classroom instruction, vocabulary can be taught implicitly or explicitly. However, there are some advantages when deciding which the best one for designing lessons is. For Hedgcock and Ferris (2018), "[r]esearch in L1 and L2 acquisition, psycholinguistics, and reading development consistently demonstrates that explicit vocabulary learning contributes positively to language learning, cognitive development, and the emergence of successful reading skills" (p. 122). Likewise, Agustín and Canga (2020) mention that "the explicitness of the instruction and its integration in regular teaching have become key issues that we most certainly need to bear in mind when proposing a strategy training program" (p. 55). Moreover, it can be indicated that explicit vocabulary teaching is more relevant in the EFL context than in the ESL one. That is because in the first one there is little or null exposure to L2 from the environment, but, in the second, students can pick words up from the surroundings outside the classroom, such as from labels in the supermarket or stores. Those benefits might not be limited to reading skills, Alfadil (2020) mentions that "[t]he importance of the vocabulary to foreign language learners has focused on effective vocabulary teaching strategies that have lead to an increase in the acquisition of vocabulary, especially in writing development as well as writing performance" (p. 2). The cornerstone for acquiring linguistic competence in L2 is based on the lexicon. This represents a key element in the language that Richards explains this importance as following:

No amount of grammatical or other type of linguistic knowledge can be employed in communication or discourse without the mediation of vocabulary. Indeed, vocabulary and lexical

expressions can sustain a great deal of rudimentary communication without -much support from other aspects of the language system. (as cited in Schmitt, 2000, xi)

Once the role of the lexical knowledge in L2 acquisition is understood, effective vocabulary teaching becomes more critical for instructors. Therefore, strategies and techniques are required to be designed at their best in a way that students acquire as many lexical units as possible in the starting stage of Second Language Acquisition (SLA). For achieving the best results in a word knowledge, Webb argues that increased repetition of this is beneficial and suggests that more than ten encounters with the word helps its full knowledge (as cited in Bueno-Alastuey & Nemeth, 2020, p.1409). It is necessary not only to identify the word but to understand it completely and that is part of a set of processes that the mind going through as interacting with the word in isolation or in context. AccordiJng to Heidari (2024) “[d]ePTH/breadth vocabulary knowledge is a prominent strand playing a core role in the ultimate performance of learners” (p.3). For Zhang and Lu (2015),“Breadth knowledge is fundamental in that knowing the form and meaning of a certain number of words is a prerequisite for unassisted comprehension of spoken and written discourses” (p. 742). In the other hand, depth vocabulary knowledge entails other dimensions. “Syntagmatic relations are the linear relations a word may have with other words in the same sentence (e.g. desk-study, desk-book, and desk-pen). In contrast, paradigmatic relations are hierarchical and characterized by class inclusion (e.g. bird-animal, bird-sparrow)” (Janebi Enayat & Babaii, 2018, p. 2). In order to learners to acquire words in this deep sense, quality is essential. “High lexical quality representations are built over many encounters with words, and include accurate representations of the word’s spelling and sound and precise, flexible semantic knowledge” (Dickinson , et al., 2019, p. 342). Those are aspects to take into account when working in vocabulary instructional strategies planning for ensuring real learning happened.

The fact that L2 vocabulary has different components that are to be considered in instruction so learning can be effective might make the task of strategies designing challenging

for instructors. However, technology comes to help them in this matter. “L2 vocabulary learning approaches must be tailored to address specific aspects of vocabulary knowledge, as well as individual learners’ needs. One way this can be accomplished is through the use of technology specifically designed to target vocabulary development” (Yang, LiJen, Eslami, & Moody, 2021, p. 466). It is able to process and transfer digital text, sound and video so it can become a rich tool to integrate learning approaches to promote the development of lexical knowledge (Elgort, 2018) . From having this kind of combination allowed by the use of technology, there are some advantages for learning vocabulary. For instance, the Cognitive Theory of Multimedia Learning points that “A multimedia instructional message is instructional material consisting of words (e.g., printed text or spoken text) and graphics (e.g., illustrations, photos, animation, video, or immersive virtual reality) intended to foster new knowledge or skills in a learner” (Mayer, 2024, p. 16). Giving multiple chances to the students to have those planned and purposeful encounters with the lexical units that are target of instruction are indispensable. For those to be meaningful and more likely to be store in their memory, the linguistic representation, the word, must be presented with non-linguistic representations what Mayer’s theory named as graphics, which keep their minds engage in the activity since this appeals to their visual reception. Adding to this kind of instrument, a game design for enhancing their likely to get their attention, can result in better levels of engagement. Furthermore, about this positive effects of using games, Vnucko and Klimova (2023) note that

[i]nstructional digital games provide adults with more motivation when the goals are clearly stated and when they do not feel overwhelmed by the learning process. Additionally, control over game progression may in turn increase their activity and engagement by offering a personalized experience. (p. 2-3). This has a great impact in the environment in which the students are learning, because as they are playing games they are less afraid of making mistakes and they know they can try once again being more careful when trying to choose the correct choice. Dinçer and Dinçer (2021) “[t]he power of serious games to aid in knowledge development stems from their ability to

affect the learner's current mental process, drastically improves the learner's experience in order to integrate the experience in the game environment" (p. 51). Strategies designed in a mobile app can be shaped by instructors based on aspects that appeal learners' senses, promote their engagement and motivation while learning vocabulary and offers an environment that feels safer and a learning experience that is worthy to spend time on.

Methods and materials

This pre experimental research was implemented using a quantitative and qualitative approach. A group with a total of 152 students were part of this study carried out during three weeks at University of Guayaquil. All the students received the same treatment and were exposed to the vocabulary guess game and augmented reality app elaborated specially for this research. The tools for collecting data after the treatment were Likert scale questionnaire and structured interview. Likert scale questionnaire is one of the most reliable tools for collecting data in a relatively short period of time, it is very practical and may be perfectly combined with other qualitative tools such as structured interviews (Nemoto & Beglar 2014). In order to provide also a qualitative approach to this research, students who participated in this study answered questions in a structured interview. Interviews are a formidable way to collect data about those aspects which are not easily observable such as motivation and attitude (Marvasti & Freie, 2017).

The design of the methodology of this research aims to know A1 student's perceptions about the design of the games for learning vocabulary through an app with includes AR features. The games have as a purpose to increase pupils 'motivation by offering them engaging activities for their minds so they can increase their lexicon in a more natural way rather than using translators or bilingual dictionaries.

The participants are four groups of beginner learners aged 18-25, and enrolled in engineering majors. They take English courses aside from their study plans as a requirement for

obtaining their Bachelor's degree. The groups were divided by class codes and the number of participants in each group varies. Table 1 illustrates that three groups were taken English 1, which represents the 67.8% of the sample; and one group was in English 3 (32.2%).

Table 1. Number of participants

Group	Class Code	Number of students enrolled	English class
1	S1.1	35	English 1
2	S1.2	41	English 1
3	S1.15	27	English 1
4	S3	49	English 3
Total number of students		152	

Games

The researchers with the help of a group of investigators from another faculty developed a pilot AR app to review English using a technological tool. This app was designed to be used anywhere and allow learners study at their own pace. It is meant to be used for Android only. The installation requires students to download an *apk* file via a shared link. The games are called Memory game, Guess Game, and Choose the correct. They all enhance vocabulary acquisition and practice.

Memory Game

This game utilizes illustrations aimed to tailor students' needs which are beginners in the English Language Program. These images allow pupils make connections between the linguistic representation, in this case the words or expressions, and the non-linguistic representations, the visual aids. Daily Routine Verbs are shown to exemplify this process in an undemanding approach for the students. Once they have created the visual-word connections, they are presented with a

new exercise where the same cards are shuffled and they can practice identifying the correct verb for each picture.

As they make progress in the game, the picture expands and reveals more details on the action and add sentences with complements as footers. This leads students recognize Subject-Verb structures. Therefore, they can decode first a verb and then a structure. Learning verbs with more than one word can be difficult to assimilate for minds in which their native language refers to the same action using just one word. It makes it harder when they have learned that mastering a new language means to translate word-by-word. This kind of activity supports them in making sense that Spanish and English are different languages that have their own rules.

Figure 1. Screenshot of sentences with complement in Memory Game Round 3



Guess Game

This game supports students grasping pronunciation and targets lexicon related to the parts, rooms and objects in a house. For gripping their attention, this employs AR right from the

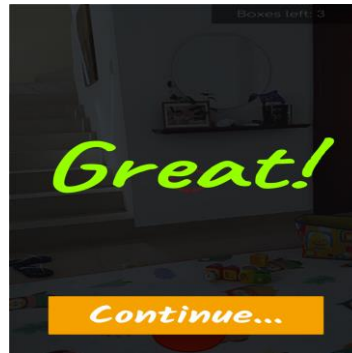
start. The students are presented with a home screen where they can see what the camera on their cellphones sees, a red shooting dot, a red button at the bottom of the screen and a label at the right top of the screen that shows the number of boxes they have to find.

Figure 2. Screenshot of Guess Game home screen.



Guess game help students review vocabulary learnt in the unit by using geopositioning in a different and fun way. Students must use their phones and move them around the room to find a yellow shooting box that once it has been shot at, it shows a riddle and a text box where students can add the answer. If the answer is correct, the students see a positive message (Picture 3) and continue on playing the game. When they go back to the home screen, the counter at the right top of the screen will show less boxes to find. The anticipation of looking for an object in their surroundings that can only be seen using their cellphones is engaging enough to make an individual play the game for a long period of time. This activity promotes both physical and intellectual exercise in the way that participants are not only learning, but they are also moving.

Figure 3. Screenshot of a correct answer in Guess Game.



The riddles in the game were created to foster pronunciation awareness and vocabulary acquisition. The words were carefully selected to form rhymes and to match the glossary. The rhyming words found in the example shown in figure 4 are box-lock and fresh-get. The puzzles also include higher-tier words that force students to look up certain terms in order to understand the phrase. Hence, it increases their vocabulary. In the example shown in figure 5, the words remain, nape and retains are not common for beginners. The creation of this activity was challenging as the riddles must have a combination of rhymes and different tier-level words to fulfill its objective.

Figure 4. Screenshot of a riddle in Guess Game.

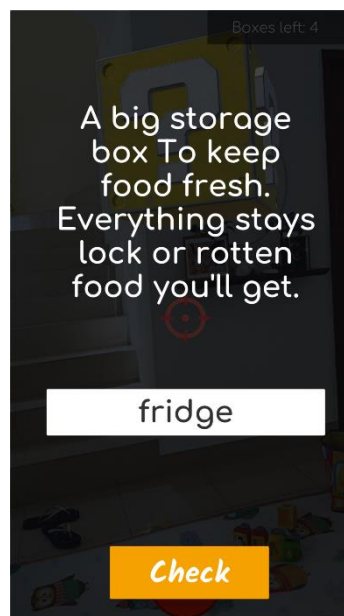
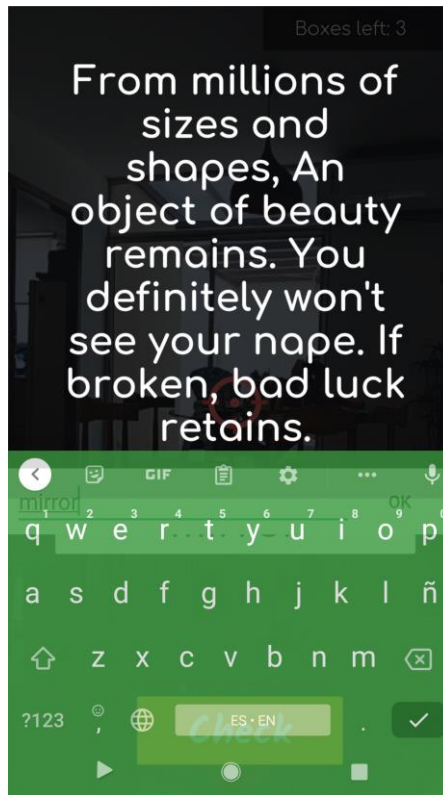


Figure 5. Screenshot of another riddle in Guess Game.



Choose the correct

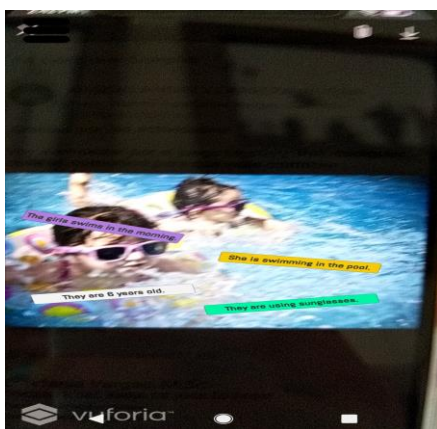
Similarly, to the games previously described, this one aims to practice vocabulary in English and incorporates a new feature: grammar correction. It requires the use of a set of images that once the students capture them with their cellphones, they see four sentences describing the picture. The purpose of this RA game is that participants identify the sentence that has no mistakes. Hence, the name: Choose the correct. The players have to tap on the sentence that they think is appropriate. If the answer is correct, then a happy face will be shown. If not, they will see what the mistake was and the solution.

Figure 6. Concept art of Choose the correct.



This game incorporates valuable aspects from a beginner's point of view since it emphasizes on vocabulary and grammar. The use of pictures creates comprehensible input and reinforces familiar words. Thus, they are not learning more, but they are practicing with what they already know. Error correction is being used to build up their grammar knowledge on word function and sentence structure. When a learner is able to correct an error, it implies that he has mastered a grammar rule. That is when learning happens. Instead of learning the rules and create sentences, the process happens backwards. The student recognizes the mistake and uses the grammar rule to correct it.

Figure 7. Screenshot of Choose the correct.



Assignments

Students were asked to do complementary assignments in addition to playing the games. In the case of Memory Game, they were asked to use the sentences from the game with the connectors and, but, and or. This extra activity aimed to help students elaborate more on constructing sentences. The instructions for guess game stated that the students must read the riddle aloud and identify the words that rhyme to build on a document where they can add a new word for each similar sound. Additionally, they had to identify new words and look them up.

A different approach was used for the last game where a lesson plan was created to gather students' responses. The class was divided in 4 main stages. During the first part, the participants were asked to scan 10 pictures, select the correct sentence and keep track of their answers. In the second part, the class was divided into small groups to play an activity similar to Jeopardy where students answered grammar related questions and won points for every right answer. In the third part, the students were asked to repeat the same activity in stage1, but with different pictures. During the final part, they answered a survey.

Data collection instruments

Due to the different attributes of the selected games, the data collection was divided in two parts.

Section One: Information is gathered from a survey and interviews focused on Memory and Guess Game.

Section Two: Information is gathered from the results of a survey focused on Choose the correct game.

Section One

For collecting data of students' attitudes about these game-base activities, a Likert-scale questionnaire was employed. The questionnaire was designed by the authors, and it contains 8 items (see table 1). The Likert scale is one of the most reliable ways to obtain information about

attitudes (Balasubramanian 2012). The scales go from 1 being the minimum and 5 the maximum in the following way: Strongly Agree (5) Agree (4) Neutral (3) Disagree (2) Strongly Disagree (1). The perception of students toward this app is evaluated in three different areas: motivation, engagement, and enrichment of the learning experience. Items 1 and 4 focus on students' engagement. Items 5 and 2 evaluate motivation experienced by learners when using the app. Items 3 and 6 assess if the tasks have provided students with a rich learning experience through the design of the activities. Finally, questions 7 and 8 focus on the app itself and how to improve it.

Table 2: Survey questionnaire - Section One

<i>ms</i>	<i>Items</i>	<i>Descriptions</i>
1		I enjoy playing "Memory Game" activities.
2		I feel that Memory Game help me to review vocabulary in an effective way.
3		Among these options, I think that the aspect that was the most useful for practicing vocabulary in Memory Game was: (Select all that apply).
4		I keep on playing Guess Game even when I had completed the threes assigned activities.
5		I feel that Guess Game help me to review vocabulary in an effective way.
6		Among these options, I think that the aspect that was the most useful for practicing vocabulary in Guess Game was: (Select all that apply)
7		If technical difficulties are overcome, I will use all these activities to practice vocabulary in my English language classes.
8		In the case I disagree with statement 7, I will not use the activities in the future because: (Select all that apply).

Structured interviews were also implemented in this research. The questions aimed to measure students' perceptions toward the use of the games to practice vocabulary in the app developed for Android smartphones. Similarly, to the survey, the interview explore the same themes: Motivation, Engagement and Enrichment of the learning experience. The questionnaire consists of 5 open-ended questions as its main goal is to let students express themselves freely in order to compile the most data. Table 4 shows the questions classified by each theme.

Table 3: Interview questionnaire - Section One

ENGAGEMENT	
	<i>How did you feel while playing the games?</i>
	<i>In your opinion, what were the characteristics in the games that made you feel that way?</i>
MOTIVATION	
	<i>What were the attributes of the games that caught your attention?/ What did you like the most about each game?</i>
ENRICHMENT OF LEARNING EXPERIENCE	
	<i>In what ways do you consider the app was useful for your learning experience?</i>
	<i>Do you consider the extra activities were helpful as part of the learning experience? Why/ Why not?</i>

Section Two

For collecting data of students' perception towards Choose the correct game, a survey was employed once the students finished the class session to collect information about their experience before and after using this game. The questionnaire contains 9 items (see table 5). The first 4 were related to the Pre-test. Questions 5, 6, 7, and 8 aimed to obtain answers after

completing the Post-Test. The last question was meant to gather a general feeling about the game.

Table 4: Survey questionnaire - Section Two

Before the lesson	
	<i>How many pictures did you get right in the first attempt?</i>
	<i>What were the pictures' number in which you got the first attempt right?</i>
	<i>In general, was it easy to recognize the errors?</i>
	<i>If you did not get it right in the first attempt, did you keep playing to find the answer?</i>
After the lesson	
	<i>How many pictures did you get right in the first attempt?</i>
	<i>What were the pictures' number in which you got the first attempt right?</i>
	<i>After reviewing grammar in class, was it easy to recognize the errors?</i>
	<i>If you did not get it right in the first attempt, did you keep playing to find the answer?</i>
Final Thoughts	
	<i>How would you improve the game?</i>

Results

The use of technology in learning environments is something that has become an important component in many educational institutions around the world. However, in countries such as Ecuador, the use of technology is something that many teachers and students are recently discovering. The implementation of this pilot study tries to provide other options to the traditional teaching methods applied in the Ecuadorian context. The AR app used in this study could become, in a near future, an instrument that allow to students to take control of their own learning process, in and outside the classroom always available in their smartphones. Due to the implementation of emergency remote teaching since 2020 in Ecuador, as a result of sarscov-2 pandemic, many students have found in their smartphones the most important tool to continue their learning process in different academic levels. The development of this AR app pursues that students interact with new words in English language creating mental representations through illustrations that contribute to increase their vocabulary.

Table 5: Results from the survey

Items	Mean	SD
1	3,90	0,90
2	4,18	0,78
4	3,53	1,21
5	3,99	0,9
7	4,09	0,91

According to table 6, it is possible to observe a positive general perception of students toward the app of this pilot study. The app showed to students two different sections. The first of these sections is focused on the capability of learners to memorize words in English language connecting them to images, however AR is not part in this section of the app. The second section of the app was focused on an interactive guessing game which implemented AR. In Item 1, it is possible to find that students felt highly engaged when they were asked to solve memory games through the app (M=3,90). This result is superior in comparison to item 4 related to the guessing game phase (M=3,53), however in both phases students showed to be truly involved during their experience using the app. About the motivation of students in which they consider the tasks useful for learning purposes, the result of item 2 (M=4,18), related to memory game, shows that this phase of the app had a gently bigger impact over the results of item 5 related to the guessing game phase (M=3,99). Through these items it was found that students felt motivated and willing to use the app. Item 5 is key to know how motivated the students were, most answers are positive about the effectiveness of the app in providing support to the review of vocabulary and new words in English language. About Item 7, it can be mentioned that results obtained through this item show that most of the students would like to keep on using it for building vocabulary in their L2. (M= 4,09), that despite of the app does not run properly in old Android system versions. Overall, the averages are from 3,53 to 4,18 which is an indicator of students' positive perceptions toward the tasks for ELF lexicon. Items 3 and 6 look for knowing which task feature enriches the most the experience of the game-based activity. In the Memory Game, Use of pictures/images and Memorization are the most selected choice. For the Guess Game, the favorite features are Identify words that rhyme among them and Read the words in context.

Section One- Interviews

Regarding the interviews, the students that were selected had an overall positive attitude towards the activities created for the RA app to learn English. All of them agreed that they felt

good while playing the games. One student mentioned feeling in awe to be able to play and learn English at the same time. Another student acknowledges being thrilled when understanding a phrase. In general, they felt that the mechanics were easy to follow and fun to play.

In accord with their answers, the aspects that made Memory game engaging were the use of comprehensible input and the time limit set to memorize the pictures, and, in the case of Guess Game, were finding and shooting the boxes, plus the rhythm in words. They liked that the pictures helped them concentrate to internalize the vocabulary. Someone else said that was able to remember words that has been forgotten. Altogether, they pointed out that while Memory game focus on words revision, Guess game is valuable for vocabulary acquisition due to the use of more elaborated phrases.

Every interviewee expressed that the complementary activities were an important part of the learning process, especially in the case of Guess Game. Since, once they have looked up the new definitions, they were able to guess the riddles and learn new words along the way. A different person spoke of strengthening knowledge. This person mentioned that the lack of language exposition outside the classroom is a problem and that activities like the ones employed, help them reduce that gap.

However, they also brought up the inaccuracies found while playing the games. In their opinions, the games lack of sound effects, missions to complete, and there were multiple technical errors. They believed that those glitches sabotage the advantages the games possess. This statement is worth to consider if this study is eligible for further examination.

Section Two- Surveys

The purpose of the survey was to identify if there were changes resulted from the lesson instructed by the teacher. With that in mind, there were questions from 1 to 4 to identify the first encounter with tasks on the app without receiving any kind of instructions. Then, questions 5 to

10 were established to collect information about how students did in the second encounter with the tasks after being taught with the grammatical topic related to them. Therefore, a comparison of results was done.

About the number of the correct sentences they selected in the first attempt, in both periods: before-the-lesson and after-the-lesson, it was key to compare if there was an improvement that can be seen as an impact of the lesson delivered. According to the results, there was a trend that more sentences were chosen rightly after the class. After the lesson, 64% of the participants chose between 5 to 10 correct ones; while, 63,6% of them selected between 1 to 5 right sentences in the first encounter previous the lesson.

Figure 8. Number of correct sentences selected in the first attempt

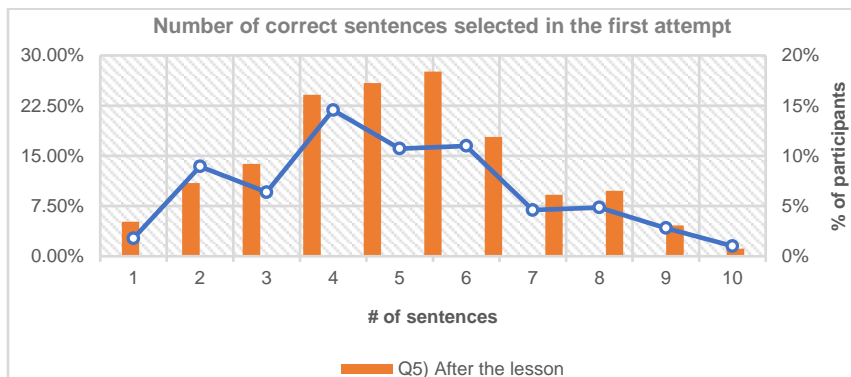


Table 6. Number of correct sentences selected in the first attempt

Number of correct sentences selected in the first attempt	N	
	1) Before the lesson	5) After the lesson
0	,68%	,45%
1		

	3,41%	,28%
2	,58%	,20%
3	1,84%	6,09%
4	6,09%	7,24%
5	6,48%	8,39%
6	,90%	1,88%
7	,28%	,13%
8	,21%	,51%
9	,53%	,07%
10		,77%

To identify the sentence with less level of difficulty for the pupils before and after the lesson, questions 2 and 6 were designed to be compared. Among the 10 sentences that were in the task, number 2, number 6, and number 7 were the most difficult at the beginning, but, after the lesson more learners overcame the difficulties and got them right. The other sentences kept similar results in the comparison, except sentence number 1 that was marked as the easiest one before the lesson.

Table 7. Sentences selected right in the first attempt

Sentence selected right in the first attempt	Q2) Before the lesson	Q6) After the lesson
1	13,94%	9,44%
2	8,26%	10,03%
3	9,81%	9,00%
4	10,67%	10,77%
5	10,15%	10,91%
6	6,54%	9,00%
7	9,12%	12,24%
8	11,70%	10,62%
9	8,26%	7,96%
10	11,53%	10,03%

Based on the responses obtained in question #6 related to how easy to identify the mistakes in the sentences was after the teacher's instruction, it was 71,65% of the participants that agreed with that. However, only 53,26% found this error identification task easy at the beginning of the lesson, which was revealed by answers of question # 3.

Figure 9. Student’s opinions on how easy was to identify the mistakes

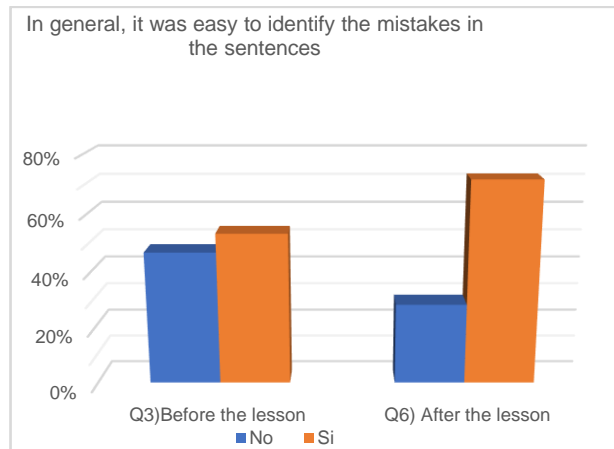


Table 8. Opinion on how easy was to identify the mistakes

In general, it was easy to identify the mistakes in the sentences	Q3)Before the lesson	Q6) After the lesson
No	46, 74%	28,3 5%
Si	53, 26%	71,6 5%

Above 80% of the students kept on trying selecting other choices when working on getting the right choice in both situations: before and after the lesson. Here it can be mentioned that this kind of activities promote students’ autonomy since they are challenged to win the game and get engaged as they are learning how grammar rules work.

Figure 10. Student’s opinions on keep on finding the right answer.

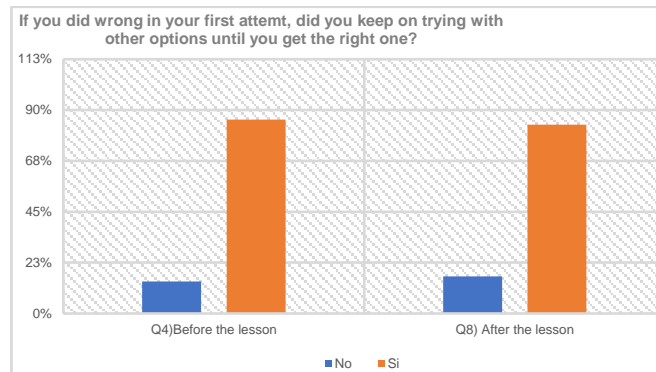
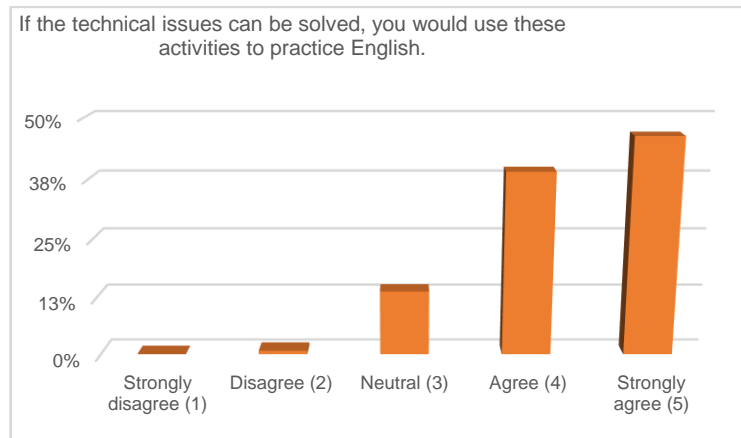


Table 9. Opinion on keep on trying to find the right answer.

If you did wrong in your first attempt, did you keep on trying with other options until you get the right one?	Q4) Before the lesson		Q8) After the lesson	
	No	Si	No	Si
No	14,	16,	18%	48%
Si	85,	83,	82%	52%

Around 85% of the participants agreed that they would like to use these activities to keep on practicing English. Only 13% indicated that they felt neutral about this.

Figure 11. Student's opinions on keep on using the app to practice English.



Conclusions

Learning a new language brings some challenges for adults especially in countries in which that language is not spoken. Due to the lack of exposure to the foreign language, learners need to find ways to practice and process words and sentences. In order to meet those needs, a group of researchers developed an augmented reality app to help students to learn English through a technological tool that can be used anywhere and let them to go at their pace. Instead of using translators or bilingual dictionaries as alternatives to promote vocabulary acquisition, the researchers created games to boost students' vocabulary and increase their motivation towards learning English. The games conducted in this investigation offer engaging activities meant to be developed naturally in their environment. This paper evaluated engagement, motivation and enrichment of the students' learning experience by employing a Likert scale questionnaire and open-ended questions to measure their opinions. They were given instructions on how to complete vocabulary activities utilizing an AR app, as well as supplementary exercises. During the class sessions, they were asked to complete a survey regarding their participation.

The findings of this research suggest that students have positive attitudes towards the game-based activities proposed for EFL vocabulary development by using a mobile app. They

perceive these tasks as useful for their L2 learning as they enjoy the time they spend going along the pictures that lead them to associate with phrasal verbs or while moving their smartphone to hit a floating box to have a guess to work on. This kind of mobile apps with tasks designed to engage L2 students in their own independent learning process and that provide rich customized elements for making more likely for them to store the new lexicon in their long-term memory for retrieving easily in the future are needed to be fostered in L2 programs as pupils are immersive in the technological world and are used to electronic devices. There are some studies related to the design of apps for learning English language vocabulary, however, most of them are not considering challenges faced by Spanish native speakers in an EFL learning environment, which are key for having more effective tools for them. Those kinds of situations should be considered when developing apps for language acquisition and are suggested to be explored in further research.

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