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Incidental Vocabulary Acquisition through mobile Game-Based learning

TRABAJO DE TITULACIÓN.

Autor: Granda Pinta, Michael Alessandro

Directora: Solano Jaramillo, Lida Mercedes, Mgtr.

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Autor: Michael Alessandro Granda Pinta

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DEDICATION

I dedicate this thesis to four beloved people who mean so much to me. First and foremost, to my mother Rosa Elena whose love for me knows no bounds and teaches me every day the value of hard work. Thank you so much “Nena” I really appreciate all your effort, dedication and patience. Next, my father Luis Medardo who loves me and has been in every step I have given in my life. I also want to mention my sister Adriana, without her I would not be able to accomplish my goals. Last but not least, I dedicate this to my maternal Grandmother Matilde, she will always be very important to me.

Michael Alessandro

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Michael Alessandro

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ABSTRACT

Incidental Vocabulary Acquisition through mobile Game-Based learning is a study that evaluates the influence of the Duolingo app in vocabulary acquisition from private and public schools of the city of Loja. The research was conducted using an experimental methodology, so that participants were divided into experimental and control group. Qualitative and quantitative approaches were also applied in order to obtain the most reliable results; the participants were 94 students from 4th grade of elementary school, who were assigned in parallels to either the control or experimental groups. Firstly, a diagnostic vocabulary test was employed to both groups, control group followed the regular book-based lessons, and meanwhile the Duolingo app was used for experimental group. At the end of 10 lessons, both groups took a post-test. Results showed that through the use of Duolingo app, the learning and retention of vocabulary were improved. Learners exhibited a high level of individual participation in each lesson with the language application; additionally, they demonstrated to be independent learners when using Duolingo, not only in class but also outside the classroom.

Keywords: Acquisition, Duolingo, EFL (English as a foreign language), incidental vocabulary, learning.

RESUMEN

Aprendizaje incidental de vocabulario basado en juegos es un estudio que evalúa la influencia de la aplicación Duolingo en la adquisición de vocabulario en una escuela pública y privada de la ciudad de Loja. La investigación se llevó a cabo siguiendo una metodología experimental, de modo que los participantes fueron divididos en grupos experimental y de control. Luego de que toda la información fuera recolectada, los métodos cualitativo y cuantitativo fueron aplicados de tal manera que se obtuvieron los resultados más confiables; los participantes fueron 94 estudiantes de 4to grado de educación básica, quienes fueron asignados en paralelos para el grupo control y experimental. Primeramente, una evaluación de diagnóstico fue aplicada a ambos grupos, el grupo control continuó con el uso de su libro en clases, mientras, Duolingo fue aplicado con el grupo experimental. Luego de 10 lecciones, los estudiantes tomaron una post-evaluación. Los resultados demostraron que a través del uso de Duolingo el aprendizaje y retención de vocabulario mejoró. Los estudiantes exhibieron un alto nivel de participación individual en cada lección aplicada con Duolingo; adicionalmente, demostraron ser aprendices independientes, dentro y fuera de clases.

Palabras clave: aprendizaje de vocabulario, Duolingo, inglés como una lengua extranjera, vocabulario accidental

INTRODUCTION

Over the years, in the teaching field better methods and approaches have been implemented in order to help EFL learners acquire the language in a faster and effective way. The integration of technologies into the classroom has helped not only teachers but also students to foster learning and teaching processes. This adoption of technology into the classroom, is one of the most asserted variations in education, but can be a frustrating process if teachers do not know how to implement it correctly. In fact, teachers have the challenge to involve innovative methods and integrate the most suitable forms of technologies for giving students better learning opportunities. In this way, mobile devices have been included as suitable technologies to be applied in the learning process.

It can be said that this technology will never replace the wisdom and guidance of teachers in the classroom, but it can be very useful to improve some areas and skills of the language; this might be the case of Vocabulary. For EFL classes, vocabulary is essential in language production. It allows learners to communicate effectively in an oral and written way. In fact, Wilkins (1972) declares that it is undeniable the importance of vocabulary in language learning, that is to say, without vocabulary, any language acquisition can occur. Furthermore, learners can acquire vocabulary in different ways. Actually, Robinson (2001) classifies vocabulary acquisition in two types: Intentional and Incidental. Certainly, mobile devices can be considered a great incidental learning tool, because they are a great source of substantial information and have changed the way we teach and learn (Pavlik, 2015).

Despite the great potential of mobile devices, Ecuadorian curricula have never adopted this technology into EFL classes. Reasons might be obvious such as lack of technological devices in schools, or the confusion produced at the moment of choosing applications that actually work for EFL learners. Such integration of mobile devices can be helpful for learners that show a deficiency in vocabulary acquisition, especially for students who are not willing to get involved in classroom activities due to shyness and lack of confidence. For these reasons, most of the learners avoid communication in the target language, and the ones who try are not able to get the best results due to the gaps in the learning of vocabulary.

Given these points, the following research was pretended to demonstrate the effectiveness of vocabulary acquisition through the use of the Duolingo app in public and private schools where any mobile app has never been used before. The alternative was to incorporate this technology and improve vocabulary achievement among English language learners. This was an attempt to identify the most suitable way of vocabulary learning to positively impact EFL

learners from private and public schools. Furthermore, the Duolingo app was described to be used for vocabulary, and produce the needed results for this study.

The following research questions were proposed: What are the main differences in vocabulary achievement using the Duolingo app and conventional lessons?

What is the impact of the Duolingo app on vocabulary retention? In this way, these research questions fulfilled the main objective of the present research.

In order to support the development of this investigation, some studies were analyzed to compare and contrast the findings obtained at the end of this research. One of these studies was conducted by Guaqueta and Castro-Garces (2018) in Colombia with the purpose of using apps as a didactic tool for vocabulary building. At the end of the study, researchers concluded that: “using apps for language learning produced positive feedback from learners”. In other words, students categorized apps as a much more dynamic and fun way to learn vocabulary. Besides, they showed more interest in the language because they learned topics they liked and integrated them to their reality.

Another study was conducted by Ansari and Tripathi (2017), who investigated and evaluated the effectiveness of mobile learning apps and its impact in students’ life in high schools. They concluded that mobile learning apps can be very useful in the educational environment. Furthermore, they considered that mobile technology has increased among students’ learning, and also mention that learners are very related, and able to use this technology.

The last study was conducted by Damyanov and Tsankov (2018), with the aim of establishing the main obstacles and challenges of this technology in education; researchers concluded that learners exhibit a high level of preference for mobile devices, so that it is essential to look for opportunities for their use for educational purposes, even though there is a tendency to complete ban them in schools. Researchers believe that mobile devices are breaking social barriers. For them, it is imperative to include this technology into educational pedagogy and produce more dynamic lessons.

Having said this, the present research is divided into three chapters. The first chapter is a careful selection of previous information necessary to support the scientific character of this research. The second chapter describes the applied methodology, including the participants as well as the steps followed by the researcher to fulfill the main goal. Finally, the third chapter presents the analysis of all the data collected through the use of tables, and graphs obtained from the applied research instruments. At the end of this study, information related with the effectiveness of Duolingo app to learn vocabulary will be presented, as well as the benefits that

EFL learners will receive from the use of mobile technology in the classroom.

After all the mentioned facts, the present research has great importance for the involvement of mobile technology and the use of language learning apps in the classroom. It will work as a base for further research on the field. As mentioned before, previous research on the use of apps have been conducted, but any research has been focused on the area of vocabulary. The main beneficiaries of this study will be teachers from elementary public and private schools who can take this research as a base for teaching vocabulary through the use of the Duolingo app or any other language learning app.

Finally, some limitations were presented while conducting this research. The most notable limitation was observed at the public school because the institution did not have mobile devices which were not the case at the private school; this lack of mobile devices forced the researcher to work with the desktop version of the Duolingo app at the English laboratory. There were not enough computers available to work individually with each learner so that they had to work in pairs using the app. Then, despite learners demonstrated a high level of participation, for the lessons 9 and 10, it was visible their discouraged because they had the impression that all the lessons were similar. In fact, the Duolingo app reviews lessons when a long period of time has occurred which can be demotivating for learners.

CHAPTER I: LITERATURE REVIEW

Vocabulary learning has always been an issue many language learners have struggled with; for this reason, researchers and linguistics have conducted research in order to find out the best ways to help learners to acquire vocabulary. In this first chapter, the most relevant topics related to vocabulary language acquisition have been analyzed, from the most common definitions and teaching techniques used for EFL classes, to relevant information about mobile devices applied in language classes, as well as an overview of the mobile app used in this research, and a concluding inquiry of the latest studies on the field.

Vocabulary in Language Acquisition

One of the most important bases for language acquisition is vocabulary, without hesitation, it is considered primordial for many linguists and renowned researchers. The four skills of the English language: read, speak, write and listen are directly connected to vocabulary; in this way, learners will be able to communicate clearly while they speak and write. Indeed, the storage of vocabulary will affect the way they talk, their practice of reading, their commitment at writing and of course how they perceive sounds. In the words of linguist Wilkins (1972) grammar blanks can really difficult progress, but a very poor vocabulary will produce no progress. In other words, learners with rich knowledge of grammar but zero vocabulary will not be successful at communicating in the target language. In fact, the majority of language researchers refer to vocabulary as impossible to avoid and mandatory to teach in any language class. If this does not occur, learners simply lose the communicative skill.

Likewise, Sanosi (2018) asserts that linguists have a unanimous agreement that vocabulary is a very important aspect of language acquisition. It can be affirmed that without an adequate volume of vocabulary, it is difficult for language learners to communicate or even express themselves properly. For these reasons, there has been a long debate about the best methods for vocabulary instruction and several suggestions concerning vocabulary acquisition.

For various linguists, language learning must never be disconnected from the vocabulary. It is essential for learners of a new language to acquire its lexicon. With this in mind, specialists in the subject have proposed some very diverse concepts for vocabulary. For instance, Richards and Renandya (2002) have advocated vocabulary as a central element of language learning since it is the foundation of the four basic skills. In a like manner, learners might feel frustrated to practice the language outside the classroom, having fewer opportunities such as: talking to an English native speaker, listening to songs, reading literature or watching films if they are missing extensive vocabulary and the right strategies for learning it.

Likewise, Brown (2001) holds the position that vocabulary is about a group of words for a given linguistic system used for mastering communication among its users. As a matter of illustration, he mentions the alphabetical line followed by vocabulary. As can be alleged, vocabulary is usually interpreted as a list of terms with long definitions in different positions which are typically collected from various situations by learners. In this context, Brown presents the argument of what learning vocabulary implies. For him, discerning the context means understanding how often a word occurs, the many possible connections with other words, its suitability for the different circumstances, its syntactic role, its viable prefixes and suffixes, and the importance of its semantic properties. Brown concludes that Lexicon is principal to first and second language acquisition, but their processes might be different.

In this concern, Crumlish (2018) considers that second language acquisition occurs in five key stages. The first stage is called Silent or receptive phase where learners dedicate time to learn vocabulary from the new language, since this is the base for further language acquisition. They might also practice saying new terms. In this stage, a second language learner does not produce their new language with functional fluency or comprehension. For this reason, it is essential to continue providing rich, meaningful language modelling through visual vocabulary models to help the words that they are hearing. The second stage named early production, involves learners beginning to collect new words. They may also start to say some terms and may even begin forming short phrases of early word combinations.

The third stage is called speech emergence or production, at this phase; learners have collected several thousand words. They begin to communicate by combining these learned words into short phrases and sentences. Learners start to read and write in their second language at this stage. Fourth stage is named intermediate fluency where learners begin communication in complex sentences. This is a critical stage for allowing more connections in the new language and true conversations start to emerge. Learners begin to think in their second language and look back to their learning process. Last stage is entitled as continued language development or fluency which may last an extended time; learners may continue to develop their new language and achieve accuracy with increasing complexity and the use of social pragmatics to express ideas and feelings.

Eventually, second language learners will use their knowledge for intercommunication, having to use vocabulary storage and formulate different trends of meanings. Under these circumstances, Nation (2000) points out a record of the various classes of information which a learner should comprehend before using vocabulary, such as: the definition of the word, the structure of the word, the pronunciation of the word, the morphological form of the word, the

many possible collocations of the word, the common use of the word, the relationship of the word in whole messages, and finally the incidence of the word.

According to Hebert and Kamil (2005), vocabulary meaning has several connotations. For instance, educational trainers use the word to refer sight-word glossaries, meaning learners' automatic identification of printed terms, meanwhile; for some other, this term is associated with listening vocabularies about spoken language. For teachers involved in disciplines, the term might refer to academic vocabulary that is to say for a language teacher this includes formal terminology in a given language. However, vocabulary boundaries are not only restricted to definitions on dictionaries. It goes much farther than simply statements, is a whole learning process which takes a great effort from learners; it includes getting to know synonyms and antonyms of the words, the link among words and the correct application of the words in written and spoken messages (Snow, Griffin & Burns, 2005).

Given these points, vocabulary would never own a single definition, but it must be understood that vocabulary is a listing of terms required at every language system which defines aspects of meaning in given contexts, ways of representation, usage of terms, and of course pronunciation and spelling.

Teaching and Learning EFL Vocabulary

English as a foreign language has vocabulary learning as a core element. Alqahtani (2015) points out that a language teacher must not translate words in order to teach vocabulary. EFL teachers should let learners listen carefully to new words first isolated and, then with sentences to grasp the meaning by the context. Equally, learners should practice the word orally so they can remember it better. Language trainers must be able to apply key strategies for teaching vocabulary. For example: definitions, synonyms, antonyms, dramatizations, pictures and drawings, realia, among others.

In recent years, linguists have argued about the most effective way to teach vocabulary. For Laufer (2017) there are two tendencies; the first tendency is called 'vocabulary-through-input' while the second one is entitled as word-focused instruction. The essence of these tendencies can be described as follows. Some language researchers believe that the best way to acquire a great volume of vocabulary is by the consumption of large quantities of material. Other linguists proclaim that in order to meet new words foreign language learners would have to acquire about a million words per year, which is an unrealistic goal. Besides, the foundation of this argument is word-focused instruction. Laufer also states that the best option might be in the middle; this means large consumption of material is possible, and some word-focused tasks can also be quite effective.

Furthermore, Grauberg (1997) advocates that learning vocabulary is a formation habit. That is to say, learners start associating the symbols or words with their meaning which should be used as many times as possible to enhance the learning. Moreover, according to the same author the process of learning vocabulary involves four stages; first, discrimination which is based on learner's ability to differentiate sounds, vowels and consonants. Second, similar words like cognates or false cognates which are used in the four English skills, then, understanding meaning of words and phrases by its definition, generally presented by the references or associations to the word in the target language and its first language equivalent. Finally, remembering the words which are not linked to a single definition or a unique context. In fact, words should be practiced in several contexts to make sure these are internalized in the learners' vocabulary storage.

As stated before, learning vocabulary involves more than just mere presentation, if only this step was needed, meanings would not be repeated or remembered. In fact, words are not ensured until they have been practiced several times, and completely absorbed by learner's storage. Actually, the vocabulary is fully integrated when students can use it with the same fluency they use their native language (Grauberg, 1997).

Hiebert and Kamil (2005) have classified vocabulary in two different types. The first type is related to oral vocabulary which is a list of words learners use while they are speaking or reading orally. The second type, is print vocabulary which are the words used when learners write or read silently. The same authors have also proposed two types of knowledge for words. The first type is called productive vocabulary that is defined as the listing of words implemented at writing and speaking; so it is used in a daily basis, then, receptive or recognition vocabulary as the second type. In this category, learners figure out meaning according to the context when listening and reading. Such words are not very well known by learners because its frequency of repetition is lower than the first category. Learners might know the meaning of these words, but the many possible sub-definitions or grammatical uses might have been ignored for them.

According to Mora and Sao (2001), there are some important aspects of the lexicon which must be taken into account for vocabulary teaching.

Firstly, words from related meaning should be separated knowing the boundaries between conceptual meanings. Secondly, most of the words have some various meanings which might be related in some way. Then, the various meaning of a single word might not be related, in fact; they might work for very different contexts. After that, similar pronunciation which does not mean same meaning or spelling as false cognates, also, the denotation and connotation of the words when a speaker is using the affective meaning given by the attitude or emotional

state; following with the use of formal words which must be recognized by the style, context and topics, as well as, geographical differences, finally, the translation in conceptual and literal meaning, grammar rules, and of course the pronunciation.

Furthermore, Gairns and Redman (1986) have added some items related with meaning of words, and its formation. They pointed out meaning relationships which might be useful for teaching vocabulary. For instance, synonyms of the word intelligent which is similar to the Spanish word can be useful to explain the meaning of clever, bright or smart. In the same way, antonyms help teaching the opposite of words. Similarly, hyponyms help learners to understand general concepts like school, college are hyponyms of education. Colors, for example: white, black, yellow are co-hyponyms. Lastly, superordinates can be used to teach general concepts that cover specific areas, as education is the superordinate of school, college.

Additionally, word formation is based on the creation of a new word that can usually be broken into their component, no matter if it is just one word or a word formed of some smaller portions. The formation of a word can include several aspects. One of these aspects is affixes which means creating new words by adding prefixes and suffixes, like: lonely + less = loneliness. Another aspect is back formation which is the opposite of affixes, removing the affixes from formed words like cook from cooker. Then, blending which consist on words created by getting older words together. There are also two ways of blending: The first is acronym, formed by the initial of the words in a phrase like NASA which means National aeronautics and space administration. The second way of blending is clipping, parts of words to make a shorter version, like rest from restaurant.

Moreover, word formation includes three main aspects. First, words or phrases adopted from other languages for instance brother from the Germanic “bruder”. Secondly, compound words like thunderstorms which mean creating by joining together older words; lastly, neologism which is a complete new word like bitcoin.

As mentioned before, learning vocabulary can be challenging. In this concern, many linguists have wondered about the amount of words learners need to know before they can actually manage to communicate successfully in a foreign language. They consider that firstly, learners should be aware of the number of words they know in their first language. In fact, linguist Paul Nation, John Read and Robin Goulden came up with a test involving 50 words, from simple items but they quickly became more difficult, for example the word “oleaginous”. Their theory is that learners count how many of the 50 words they understand and multiply by 500, so that they are able to estimate their total English vocabulary for native speakers (Sagar-Fenton & McNeill, 2018).

According to Webb (2016), it is incredibly difficult for a language learner to ever know as many words as a native speaker. Currently, native speakers know 15,000 to 20,000 word families in their first language. Word family is a root word and all its inflections, for example: run, running ran; blue, bluer, bluest, blueish, and so on. Unfortunately, someone who can hold an adequate conversation in a second language might not know 15,000 to 20,000 words. Webb found that people who have been studying languages in a traditional setting often struggle to learn more than 2,000 to 3,000 words, even after years of study. The key is learning the most frequently-used words in a language. The most effective way to be able to speak a language quickly is to pick 800 to 1,000 word families which are the most frequently used in a language. Furthermore, to understand dialogue in a film or TV a learner will need to know 3,000 most common words, as well as 8,000 to 9,000 words for reading novels, newspapers, and so on.

In addition, Budden (2015) suggests that in order to acquire vocabulary learners should take risks and speak the language whenever they can. He believes that reading is also important and recommends children's books and comic books in the foreign language, as well as the consumption of foreign language media. Besides, Budden claims that the best option to learn a new language is to immerse oneself in the culture of this language through the use of free foreign language podcasts and apps. He compliments that learners should get feedback from native speakers or language trainers, and concludes that they should not worry about making mistakes.

After all the mentioned points, it can be said that teaching and learning EFL vocabulary has some diverse reactions. Linguists follow different tendencies which do not allow have an agreement in vocabulary acquisition, but they all approve that the most important words learners should know are the most frequently-used in the target language.

Mobile Devices in EFL Teaching and Learning

In the words of Alshammari (2018), teachers and learners often have different attitudes towards the use of mobile devices (MD) for learning. He considers that "teachers have a well-founded negative perception of the use of mobile devices at schools and collages" because they have observed how students change their attention from classes to sneak into their devices. Having said this, teachers have assumed that these objects are distractors for the learning process. Despite of this, many learners have indicated that they used mobile devices for a wide range of useful tasks, but many teachers still believe they are primarily used to socialize. As can be seen, this argument has produced opposite attitudes about the utility of mobile device for learning between students and instructors. Alshammari also claims that students have become

addicted to this technology; they consider devices as essential elements of social life, while most teachers tag them as being unnecessary to learning.

In this regard, there are some language researchers who do not consider indispensable the use of technology. This is the case of Gates (2014) who reflects that mobile devices are not mandatory tools for teaching procedures. He claims that teachers are more important when learners are working together, and no technological device can motivate better than these language trainers. For him, it is not essential to include these devices into the classroom, because the instructors provide the necessary input, and might help learners to use technology for extra-curricular activities.

For Berry and Westfall (2015), there are two typical responses from teachers concerning the use of mobile devices in the classroom. The first response is the prohibition of these from the classroom, and the second is to incorporate them in the learning process, even though positive results have been reported when mobile devices have been forbidden from classrooms, but other teachers and language trainers consider that bans and even smart devices rulebooks are obstructive and pointless. Berry and Westfall have also reported that there are positive impacts of mobile devices in the classroom. It can be said that learners have combined these devices into their normal routine and the academic life, for example, reading through concepts at google, searching additional material and taking pictures of classroom panels or making videos of science projects for documentation and exams.

Similarly, Forkosh-Baruch and Meishar-Tal (2016) have observed the aspects that might be the foundation for teachers to prohibit mobile devices in their classrooms or to integrate and support them in the teaching procedures. According to these authors, the more language trainers knew about how to use mobile devices in their classrooms, the more likely they were to exhibit a positive attitude of response and the less likely to show a negative reaction. Nevertheless, most of teachers do not seem to be predisposed to integrate mobile devices in the classroom.

After all the mentioned facts, Al-Emran, Elsherif & Shaalan (2016), claim that there are positive attitudes from new generations of teachers at educational settings concerning mobile devices. In fact, positive responses from language trainers towards the use of MD are significantly related to their level of familiarity. Though, they believe that these devices in learning procedures should be embraced by all instructors regardless their age, academic rank, teaching experience and level of mobile device management. Besides, young and older learners own or have used these devices, so that including them in the teaching and learning of a foreign language might be the most asserted educational change of the recent years. Due to this

increasing popularity of mobile devices, teachers have been influenced to adopt them into the classroom.

Before implementing this technology into the classroom, Nadeak (2015) mentions some factors to be taken into account for teachers to obtain the best result when using mobile devices. First, instructors must be aware that using this technology requires expertise, attention, interest, motivation and a certain level of maturity from learners. Secondly, background factors must be analyzed; this means that, not all the learners might be aware of how to use mobile devices due to family's economic condition and home atmosphere. Thirdly, School factors are also important, such as: teaching methods, curriculum, discipline guidelines, availability of learning tools, learning time and building situation. Finally, community factors which include friends and forms of social life must be examined.

Regarding the use of MD in curriculum, Herrera, Milagros and Sandoval (2014) assert that technological advances have pressed programs to incorporate the use of electronic devices in the classroom. This kind of technology has impacted teaching procedures thanks to telecommunications and the use of internet as an incredible source of information which is more accessible with a faster connection everywhere and anywhere. In fact, the worldwide sales of personal portable devices such as laptops, tablets, and specially cellphones have never been so popular, incorporating them into our daily life and of course educational contexts.

In this concern, Goundar (2011) explains the great advantage of portable technology which mobile devices represent, and invites teachers to include MD for educational purposes. In fact, learning through portable devices is not a recent concept. Traxler (2005) defines Mobile Learning (ML) as any educative income where technological devices are the main source of information which should be handed individually to learners.

Similarly, Dube (2015) explains mobile learning as the power to learn anywhere at any time without permanent physical connection to cable networks. In the same way, mobile devices allow learners to study with materials and at the same time communicate with classmates, teacher or instructors (Jiang & Zhao, 2016). Mobile learning is based on the use of mobile devices as an educational instrument to interact with learning materials no matter the time or place.

It is important to mention that the impressive spread of mobile technologies has demanded a new approach related to the language learning field and teaching area known as mobile-assisted language learning or the acronym MALL. According to Kukulska-Hulme and Shield (2008), mobile-assisted language learning is considered a better option than computer-assisted language learning thanks to its use of personal, portable devices that enable new ways

of learning; it also provides a superior level of continuity to access and interaction across different contexts of use. Palalas (2011) also highlights that mobile-assisted language learning (MALL) can facilitate second language teaching and learning by carrying it out to the real world.

As mentioned before, MALL deals with the use of mobile technology in language learning. Students might not always have to study a second or foreign language in a classroom. Mainly because they may have the opportunity to learn it by simply using mobile devices when they may have the desire and no matter the place they are (Dashtestani, 2015). Reactions to mobile technology are generally positive which indicates the increasing use of MALL in the teaching practices. As can be seen, MALL is fastly getting an important place in language learning contexts, since its availability of tools at schools as well as learners' homes, being an interesting alternative to other forms of learning a second language (Stockwell & Hubbard, 2013).

Furthermore, it is very impressive the many task that can be performed through the use of applications for mobile devices. The presence of language learning apps in smartphones is more and more actively used. The potential of these apps can help develop communicative activities inside and outside the classroom. As a result of this mobile era, young generations exhibit a great management of mobile devices; if learners are good at their smartphones, it is reasonable that language teachers can make a great use of this technology to reinforce language learning (Motteram, 2013).

In addition, one of the best qualities of a portable device is its ability to exchange text and multimedia between users which is greatly enhanced through the availability of many free apps that facilitate these exchanges. In general, teachers can take advantage and explore the different applications of smartphones and therefore employ them to boost students' learning competence inside and outside the English language classes. For example, apps like Duolingo, Mesmerize and Spelling city are very successful on a regional or global scale and can be used for teaching EFL learners. The functional services of all these apps, besides the free managing, extend to group chats, learning vocabulary, practicing pronunciation with audio and video (Rouse, 2017). Having said this, free apps allow users to practice a second language without the help of a teacher or classroom. All these functions make free apps a remarkable instructional tool to enhance students' learning competence inside and outside EFL classes. It is actually a positive tendency to take advantage of the latest mobile technology, especially the language learning apps which generate interest and motivate students. Its major advantages make it possible for language learning apps to be popularly used as a helpful tool in EFL classes. In the

following paragraphs, three features of mobile devices and language learning apps have been described.

Availability.

Learners are more and more available to use mobile phone technology in EFL classes. For many people, mobile phones are a part of modern life. It seems that mobile phones are used everywhere by everyone. Mobile phones are relatively cheap and increasingly powerful, especially when more and more smart mobile phones become popular (Gupta & Tisdale, 2009). There is an enormous range of smartphone systems and models, and technology is always advancing. More and more various types of language learning apps are developed and operated in smartphones. Many of them can be downloaded and used free of charge. One of the best advantages of using apps is that learning is a tool that students have discovered first and it has become very popular among their peers. These are not tools that are forced upon students by their teacher for the purpose of study, but tools that form a part of their everyday lives. This factor, along with the ease of implementation, makes it very much available and feasible as an effective learning tool in EFL classes.

Capability.

As a basically communicative tool, apps were originally designed to facilitate communication and interaction between people. It is this natural quality that makes apps better fulfill the objectives of communicative language teaching. The free language learning apps use can overcome students' negative feeling about class participation because it may deal with interesting, real-world topics and they feel very safe and confident when controlling their own technical device to respond and learn. One way to gradually make shy students more assertive and participatory is to not require them to stand up and act in front of the whole class. With a language learning app project, hesitant and uncommunicative students have the option of training their language in a non-threatening and private setting where they feel comfortable. With more and more time and experiences, students can get accustomed to speaking and acting in front of an audience. With the free language learning apps in smartphones, the teacher assigns specific language tasks which students need to accomplish through exercises for language acquisition (Venkataraman & Ramasamy, 2018).

Creativity.

Mobile learning and language learning apps are a great product of creativity in high technology. The Use of these apps is adding value to every language class. There are no fixed rules, no unified forms, no same steps and no set lines. Technology is advancing, the content is updating, the idea is refreshing, and everything is changing and improving. With time and efforts,

both teachers and students are making more creative and effective collaboration in EFL classes, which greatly boosts communicative competence in English language. It offers numerous choices for students with different interests and abilities. According to Harmer (2007), instructors must create suitable settings and appropriate methods and materials to fit the different cognitive or affective needs of students. And this is a strong rationale for considering individual differences in aptitude, attitude, motivation and learning styles. With the great advantages listed above, free language learning apps and smartphones can be effectively applied in EFL classes. A series of activities are developed ranging from simple exercises to more complex and advanced content.

Given these points, it can be said that mobile devices have generated criticisms and positive comments from educators. These changes might produce difficulties according to some authors, but the best response is to embrace mobile devices into the classroom, however teachers should consider factors before implementing this technology.

Duolingo

In November 2011, Luis Von Ahn and Severin Hacker created the most popular language learning app named Duolingo. "Free language education for the world" is the catchphrase used for the company. Duolingo official website counts around 300 million users registered all over the world. It offers several languages for Spanish speakers as well as others for non-Spanish speakers. It can be used at mobile devices like smartphones, tablets, and laptops. In the computer version, the app has more areas than the mobile version.

The tree, which contains skills, each represented by a node that changes color from grey indicating that a skill has not been started, to a red, blue or green to mean that the lessons have been started within the skill, to gold pointing that all the lessons and vocabulary for that specific skill have been mastered. The gold color can turn back to another color if Duolingo establishes that you need to go back and review those lessons because you have forgotten the vocabulary or because enough time has concurred (Munday, 2015).

Duolingo works similarly to a social network. You can follow other students, and other people can follow you. The activity section shows not only what you and the people you follow accomplish in Duolingo, but also if you or they have made a comment in the discussion area. In this area, users can post discussions about topics that interest them. A discussion will also be created if there are questions about any of the activities completed during the lessons. The discussions are divided according to the language you study. Discussions are voted up or down, so the more popular ones are more visible. It is also the area where the creators or moderators of Duolingo post important messages to the community.

Another area is the immersion section, which is for more advanced students. Anyone can upload a public document in any language and the community can start translating it. Users can offer suggestions for better translations or can just make general comments. The Lingots are the currency that Duolingo uses to reward its users. You get lingots when you complete a skill or have several days in a row using the site. With lingots you can buy things like a progress quiz, which shows you on a scale of 0 to 5 where you currently stand in your progress.

The mobile version of Duolingo does not have these many areas. It is limited to the tree and the Lingot Store, although you still can see information about the people you follow. In the tree area, students can perform different types of activities. Once learners click on a skill, they are presented a number of lessons for that particular skill. Following is a list of the most common activities in each lesson just taking into account that the app is constantly being modified.

The first activity is about writing a vocabulary word after seeing a picture that represents it. Secondly, learners are invited to translate a sentence into their native language. It is important to mention one of the best features of Duolingo when new words are presented for the first time, the user can click over the word to see its meaning at any task. Another activity indicates learners to translate a sentence into the language being studied. Then, a dictation task is presented for user to write a sentence they hear in the speakers or headphones. Other activities invite users to pronounce a sentence using the voice recognition software which grades pronunciation as correct or incorrect. Important to mention, is the immediate feedback after each task, that is to say, Duolingo checks if a user does not complete a task or delivers a wrong answer, the app will require the learners to re-do the task as many times as needed to complete it successfully. Next activity involves matching pairs of words with its translation in the target language. Finally, learners are required to order scrambled words to form a sentence or choose from three sentences in the target language to match with a sentence in the learners' language.

Activities generally take five to ten minutes. This time may vary, however, since new activities are added if users make mistakes. Duolingo incorporates some elements to motivate and engage learners. Some examples are the lingots as awards given when you complete a skill; the inclusion of a weekly punctuation, where you can compete against peers to see who has the highest points; the completion bar, which appears when a user is completing a lesson, to indicate how close they are to finishing it, etc. These elements make the app more enjoyable, although the exercises themselves are quite traditional.

As can be seen, even though Duolingo is presented as a very modern-looking gaming app, in reality most of the activities necessary to complete the lessons are very traditional and are based on translation, dictation, and pronunciation. In fact, there is already some criticism of

the app within the language learning research community. Krashen (2014) points out his disapproval of the Vesselinov and Grego (2012) study, in which they equated 34 hours of Duolingo to a university language course, that language learning is different from language acquisition. Krashen states that the activities presented in Duolingo involve conscious learning. In his opinion, conscious learning does not lead to language competence.

It is also interesting to point out that although the translation and dictation exercises used by Duolingo take learners back to the old days of the grammar-translation method, research shows that they do work. Hall, Graham and Cook (2012) consider that there is in fact a revival in the role of translating. According to them, “the argument is that in many contexts, translation is a natural and effective means of language learning, develops an important skill, answers students’ needs and preferences, and protects students’ linguistic and cultural identity.”

In the case of dictation, research shows that it may also be beneficial. In his study, Kuo (2010) used dictation to help students decode words that they heard on the radio. The dictation exercises helped students facilitate their listening and enhanced their comprehension. Nation and Newton (2009) also consider dictation a valid language learning tool. They believe that dictation is most useful if it involves vocabulary presented in different scenarios, important, when there is opportunity for repetition. The Duolingo dictation activities consist of very short sentences in which vocabulary is placed in different contexts, repetition is constant, and each sentence always comes with the right response at the end so that students are informed of their mistakes.

Another aspect that has been traditionally forgotten in language courses is pronunciation exercises. Research indicates the validity of such exercises. Kissling (2018) examined the role of repetition exercises focusing on form with experiments in a Spanish course. They state that through repetition, learners focus on form which have measurable benefits for L2 speech processing. Such exercises are presented in Duolingo, for learners to read the sentences using voice recognition software to check pronunciation.

In the following section, various studies have been included. These studies are closely related with the topic of this research. Such information will help to conduct and validate the information generated in this project. The most updated studies have been chosen from renowned authors whose research studies were published on known academic journals.

Al Yafei and Osman (2016) investigated the impact of using mobiles phones and its benefits to vocabulary learning, and retention. Two groups of students were selected. The first group received the vocabulary exercises with the use of worksheets, while the second group received the vocabulary exercises through a mobile application named Ko-Su. The results

indicated that there was no significant difference in vocabulary achievement between students who learned vocabulary through mobile phones and students who learned vocabulary with the worksheets. However, the group who used the mobile app outperformed the control group in the delayed post-test. Based on the findings of this study it can be argued that mobile phones can provide effective platforms for extending the students' learning landscape.

Zhang (2016) conducted a research on free messaging apps to enhance the communicative competence of learners. Zhang based his work on two activities: Oral training activity and Group video project. The first activity consisted on learners being assigned a topic or a question which they must respond with several detail within a limited time. For the second activity, learners were assigned topics to produce a video drama to share with peers through messaging apps for comments and discussion. At the end of the research Zhang claimed that free messaging apps have many ideal functions for exposing students to communicative interaction on their language-learning process, which as a result served as a remarkable tool to enhance students' communicative competence in EFL classes. Students proved to be more competent in communication and proficient in language skills. They not only developed the notion of learner autonomy, but also were aware of the great chance to practice their English outside the classroom, which is great motivational factor and a big step along the language learning journey.

Rezaei, Mai and Pesaranghader (2014) investigated the use and effectiveness of mobile applications in English vocabulary learning. The research studied intermediate-level English learners' performance before and after using mobile applications that were introduced as an intervention. It examined whether multimedia programs affect the vocabulary learning in the second language acquisition. The results revealed positive change in learners' performance and the analysis indicated that using the applications helped enhance learning of vocabulary, confidence, class participation and that, students had a positive tendency toward the use of multimedia in education. Although the results cannot be generalized, it can still be concluded that instructors can enhance students' knowledge of vocabulary through using multimedia aids. The findings of the study support the idea that using mobile applications helps vocabulary acquisition to reach more general conclusions. When mobile applications were presented, learners showed more motivation to learn vocabulary since it helped visualize the definitions in a meaningful manner.

Montrieux, Vanderlinde, Schellens, De Marez (2015) investigated teachers' and students' perceptions regarding the impact of using tablet devices for teaching and learning purposes. This study was conducted with teachers and students in a secondary school that had

implemented tablet devices since 2012. The general finding of this study shows that the use of tablet devices in the classroom had an impact on both teaching and learning practices. The results suggest that teachers can be divided into two categories: the innovative teachers and the instrumental teachers. Innovative teachers have transform classes from a teacher-centered to a learning-centered approach. They have changed their teaching style by transforming lessons in conformity with the advantages tablet can offer. Instrumental teachers seem to use the device just as an electronic book. The difference between the two groups had consequences for both the way courses are given and how students experience them. In general, the introduction of tablet devices involves a change in the way students learn, as the devices provide interactive, rich media, and exciting new environments. The results of this study indicated that curriculums should consider introducing technical and pedagogical support in order to facilitate both teachers' and students' understanding of the full potential of this kind of technology in education.

Roussel and Galan (2018) investigated the use of clicker and its impact in a legal German lecture, given to French students of Law in which the learning focus was both language and content. Participants who attended the entire course were tested. Firstly, students took a preliminary questionnaire involving questions on legal terminology and on course content. During the 10 weeks of semester, the lecturer administered all questions during regular courses. Each session was conducted alternately with or without clickers. Students answered half of the questions about language and content using clickers, whereas the other half used traditional conditions with volunteers raising their hands to answer. At the end of the study, students took the same initial questionnaire as a post-test. The clicker group outperformed the non-clicker group concerning legal terminology. The findings demonstrate that the use of this technology liberates learners from pressure while they are learning new terminology and content.

Isbell (2018) developed an online research applied to understand social interaction of an online community for learning Korean. Data collection took place over seven weeks and included observation of a forum, observation of a chatroom, and an open-ended questionnaire. Findings revealed that native language was avoided by learners who used the second language most of the times to interact in the online platform. English was used 93% of the time on the forum, and 81% of the time in the chatroom. Other findings report the high level of participation from learners who were willing to actively interact for learning about linguistic forms. This online community had rules designed to promote learning on a socially equal and organized web platform, and a strong consolidation of community work between language learners and language experts.

All the previous information has helped the author to continue with the following steps of this research. It was important to include detailed information from reliable sources that will serve as base for the scientific character of the study. In the following section, the applied method of this research has been described.

CHAPTER II: METHOD

Setting and Participants

The present research was carried out in a private and a public school from the city of Loja. The total amount of participants consisted of 94 students, 57 females and 37 males who are beginners of English as a Foreign Language from 4th grade of elementary school. The age of learners ranged from 7 to 8 years old.

Procedure

Based on the general objective of this research, the data collection was obtained through the correct application of scientific methods and approaches. In this way, it was important to use a varied set of sources to successfully support the research process. In the following paragraphs, the steps of this research process are going to be described.

The first step of the present study was the careful collection of previous information from different authors in books, journals, and other sources to correctly support the theoretical foundation of this research. All this information was included in the chapter of the literature review. Additionally, the most recent studies published on educative journals were analyzed to compare and contrast the findings of this research.

This study was carried out based on the experimental methodology, that is to say “the researcher manipulates one variable, and controls the rest of the variables. It has a control group, the subjects have been randomly assigned between the groups, and the researcher only tests one effect at a time” (Blackstad, 2008). In this research process, participants were randomly divided into two groups, control group and experimental group. In the experimental group, the researcher manipulated their learning process through the use of a language learning app to measure their vocabulary retention. The qualitative and quantitative approaches were also used in this study. Qualitative approach helped to understand learners’ perceptions towards mobile technology through the use of surveys and observation, and quantitative approach helped to establish the main differences among control and experimental groups through the use of diagnostic and post-tests which was crucial in the development of this research. The collection of the data was possible through the use of three instruments, two surveys and a vocabulary test.

Before the experimental research had begun, EFL learners were invited to complete a survey. This survey was designed to gather learners’ knowledge on language learning applications. In this process, learners answered ten items including two personal information

questions about age and gender. The remaining 8 questions, gathered general information about language learning applications, their functions and use.

Then, students were divided according to their parallels: in the private school, 15 children from parallel “A” were named as the control group, whereas, the remaining 15 children from parallel “B” were titled as the experimental group. In the same way, at the public school 32 children from parallel “A” were designated as the control group, meanwhile, the other 32 children from parallel “B” were part of the experimental group. For control groups, regular EFL lessons were carried out at the classroom with the English teacher, whereas, the experimental groups were taken to the English laboratory or the computing laboratory to use the desktop version of the Duolingo app.

Following the research process, students from experimental and control groups, took a diagnostic test. This test was designed to measure language learners’ vocabulary knowledge. They were asked to complete five items based on their vocabulary level of retention using word recognition tasks, and background vocabulary. The diagnostic test questions were based on vocabulary studied in the classroom which they were expected to know.

Continuing with the research, the experimental group took 10 vocabulary lessons using the Duolingo desktop application. During 5 weeks, twice each week, learners and the researcher meet at the English laboratory. The time for the Duolingo vocabulary lessons varied from 15 to 20 minutes. After the lessons concluded, a post-test was applied similar to the diagnostic test, in order to know the level of effectiveness of the Duolingo app. Control group, which followed the regular book-based course, took the same post-test to compare their level of vocabulary retention with experimental group.

To conclude the field research, the experimental group completed a survey regarding the use and their perceptions of the Duolingo desktop version app. In this regard, 10 items were answered by learners about the helpfulness, functionality, level of motivation produced by Duolingo to learn English, among others.

After the data was collected, all results were quantified with the help of statistics software from Excel, SurveyMonkey: an electronic survey program, with the purpose of analyzing and interpreting the results which was the base for the conclusions and findings of this project.

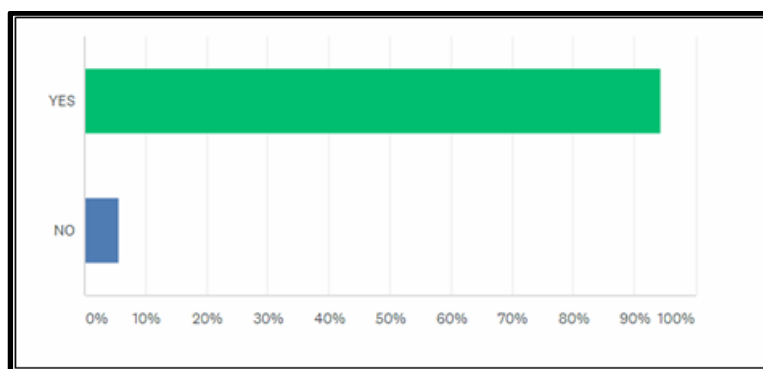
CHAPTER III: RESULTS AND DISCUSSION

Description, Analysis and Interpretation of the Results

In the following section, the results of the study have been tabulated, analyzed, and interpreted according to the objectives of the research. The analysis was divided in four sections. The first section corresponds to the survey about student's knowledge on the use of mobile language learning apps. Then, the course design is presented in table 1. Following with the results of the diagnostic and post vocabulary test. Finally, the survey about students' perceptions on the use of Duolingo app for learning EFL vocabulary.

Students' Knowledge on the Use of Mobile Language Learning Apps

All of the participants in this research, completed a survey which aimed to gather learners' knowledge of mobile technology, the mobile apps function of smart devices, as well as, their access to this technology in their homes and their impact to their daily routines. Ten items were analysed using 5 graphs with the help of SurveyMonkey software. The population for this survey was 63% women and 37% men with a range of 7 to 8 years old.

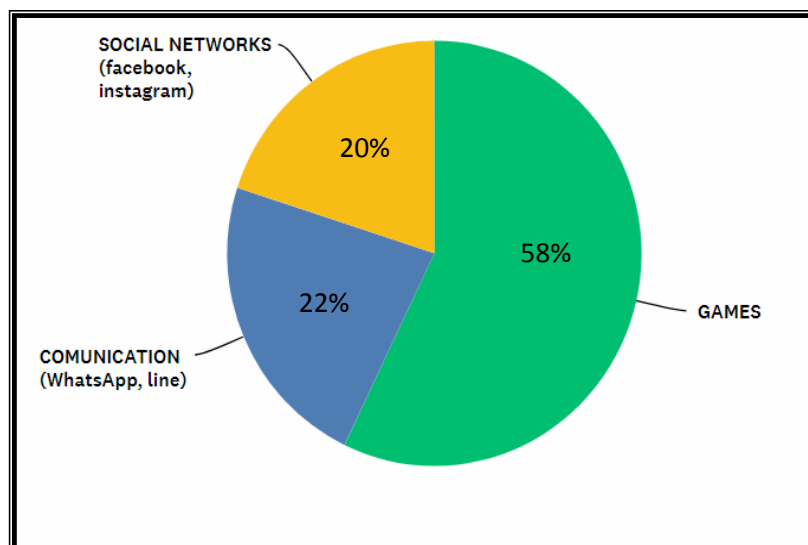


Graph 1. Students' knowledge on the use of mobile apps
Source: Students' survey on the use of mobile language learning apps.
Author: Michael Granda

According to graph 1, more than the 90% of learners know what a mobile app is, just a very few number of learners do not know the purpose of mobile apps. In the same way, around 95% of the learners indicated they have used a mobile device or smartphone once in a while. As can be noticed, the majority of participants in this research showed a good command of mobile technology, and the expertise necessary to work with mobile apps. In the words of Al Yafei and Osman (2016), learners who have a great command at using mobile technology obtain better results than learners who are just getting familiar with this technology.

As mentioned before, learners' knowledge of mobile technology is generally positive which indicates the increasing use of mobile apps in the teaching practices. In this concern, Stockwell and Hubbard (2013) consider that learning languages through apps is fastly getting an

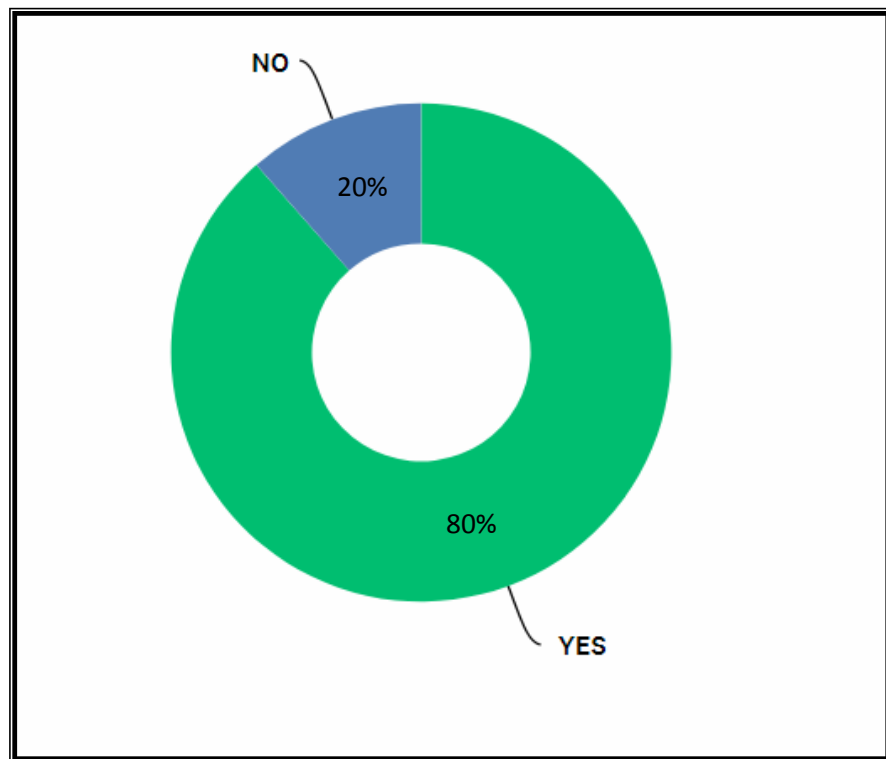
important place in language learning contexts, since its availability of tools at home, which most of learners own, being an interesting alternative to other forms of learning a second language.



Graph 2. Students' most downloaded mobile apps
Source: Students' survey on the use of mobile language learning apps.
Author: Michael Granda

As can be observed in graph 2, all of the learners mentioned they have a mobile device at home. In the same way, more than 50% of learners prefer downloading games, followed by 22% of students who download apps for communicative purposes to stay connected with their close ones. Last but not least are social media apps with 20%. According to Zhang (2016), mobile apps can help improve the learning process, and invites language trainers to include them in the lessons. He claims that teachers should use apps that students are more related with. Up to this point, the participants of this survey were kids ranged from 7 to 8 years old, and they felt more related to applications for playing games.

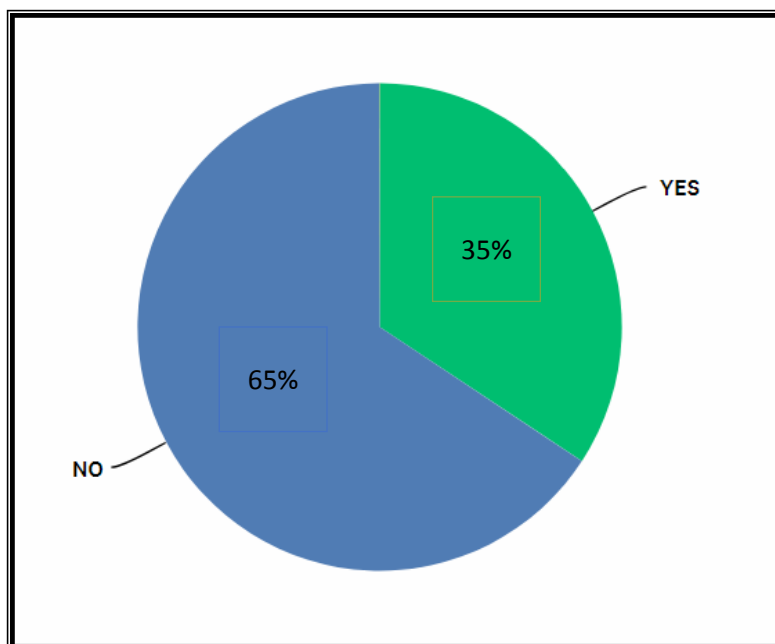
After the mentioned facts, young learners prefer games because of the visual characteristic and interactive activities which promote enthusiasm through competition with other users. As noticed before, young learners prefer downloading apps for games rather than social media apps. This can be a disadvantage according to Pollard (2015). He describes social media apps as great motivators to learn a second language, due to the exchange of ideas through text, voice, or any type of multimedia.



Graph 3. Students' interest on learning English with the use of a mobile app.
Source: Students' survey on the use of mobile language learning apps.
Author: Michael Granda

As can be seen in graph 3, around 80% of learners agreed they feel interested in learning English with the use of a mobile app. This positive tendency of learning English through mobile apps is mentioned by Rezaei, Mai and Pesaranghader (2014), who pointed out the high level of participation in learners due to their knowledge of mobile technology and the attractiveness of the learning tool. Similarly, learners in this research felt excited to learn with the use of apps, this facilitated the learning process because they felt related with the use of technology which boosted their motivation level.

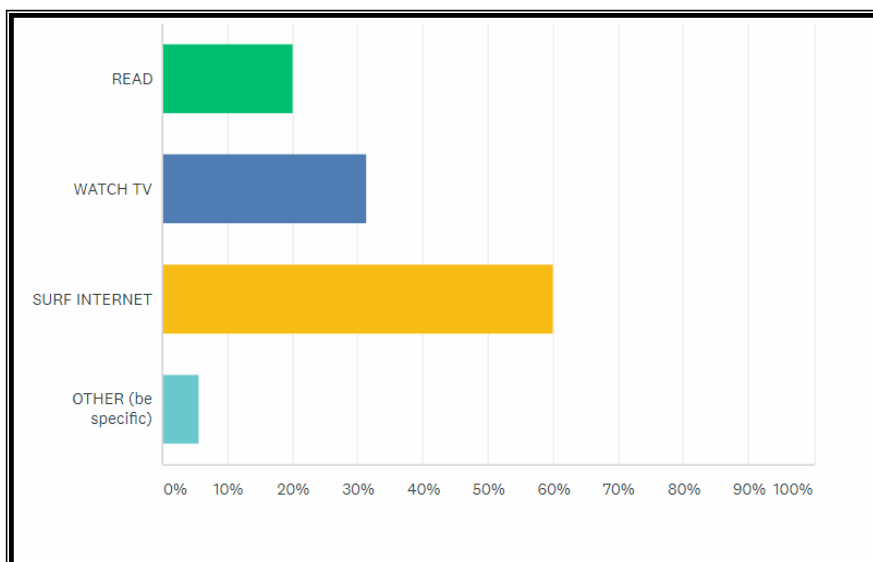
As mentioned before, most of the learners are willing to learn English through mobile apps. According to Traxler (2005), this is an advantage for the learning process. He believes that Mobile Learning can produce many educative incomes where technological devices are the main source of information, but just if these tools are handed individually to learners.



Graph 4. Students' knowledge on the use of language learning apps
Source: Students' survey on the use of mobile language learning apps.
Author: Michael Granda

As presented in graph 4, around 65% of learners have argued they do not know any language learning app. This result, demonstrates that learners have a little knowledge in language learning apps; in this concern, Montrieux, Vanderlinde, Schellens, De Marez (2015), pointed out that learners do not know how to use mobile devices to learn a second language. Similarly, in this research learners know how to use mobile devices, but they do not know how helpful they can be to learn a foreign language.

As can be seen, most of young learners ignore the existence of language learning apps. According to Pollar (2015), this is a disadvantage for learners as well as they miss learning opportunities outside the classroom. He considers free language learning apps can overcome students' negative feeling about class participation because it may deal with interesting, real-world topics. They also feel very safe and confident controlling their own technical device to answer and learn.



Graph 5. Students' most enjoyable activity during the day
Source: Students' survey on the use of mobile language learning apps.
Author: Michael Granda

According to graph 5, 60% of learners have indicated that the most enjoyable activity during the day is spending time surfing on internet. More than 30% enjoys watching TV every day. Surprisingly, 20% of learners read for pleasure in their daily routine. Finally, around 5% of learners enjoy doing other activities as playing football every day. Additionally, for the daily use of internet more than 35% of learners indicated they use it for a range of 3 to 5 hours. Also, 37% marked 1 to 2 hours as the range of time they use the web per day. For the remaining 25%, they use internet for 30 minutes to 1 hour.

As the survey revealed, learners enjoy spending time using internet. For Venkataraman, and Ramasamy (2018) this is a great advantage for the language learning context. They believe if learners are more and more exposed to use mobile phone technology in EFL classes, the results will be very beneficial. For many people and specially students, mobile phones are a part of modern life. It seems that mobile phones are used everywhere by everyone. This technology is relatively cheap and increasingly powerful, especially when more and more smart mobile phones become popular.

In the following page the course design is explained. The present chart, describes the phases followed in the research with the control and experimental group.

Table 1: Course design

Phase	Control Group	Experimental Group
Diagnostic test (Week 1)	The teacher applied a diagnostic test and explained the vocabulary learned until the last completed unit.	The teacher applied a diagnostic test and explained the vocabulary learned until the last completed unit.
Lesson 1 (Week 1)	Students made butterflies of various colors to experience the advantage that same color butterflies have against predators.	Students logged in for the first time to the Duolingo platform, they got familiarized with the platform.
Lesson 2 (week 2)	Students read about how Christmas is celebrated in different parts of the world, and made a drawing of their favorite christmas celebration.	Students started working in the Duolingo desktop version of the app. The Duolingo placement test was skipped so that everyone attended the same lesson. Completed lesson 1 and 2 from level 1 of starter phase and learned how to introduce themselves.
Lesson 3 (week 2)	Students listened and learned Christmas songs from around the world and analyzed them.	Students completed lessons 2 and 4 from level 1 of the started phase and learned how to introduce themselves.
Lesson 4 (week 3)	Students performed a scene from the birth of Jesus.	Students completed lesson 1 and 2 from level 2 of the starter phase and learned personal pronouns.
Lesson 5 (week 3)	Students worked in groups to describe various objects based on taste, smell, look, touch, and emotional feeling.	Students completed lesson 3 and 4 from level 2 of the starter phase and learned about personal pronouns.
Lesson 6 (week 4)	Students read idioms and recognized them from the actual meaning to the meaning in context.	Students completed lesson 1 and 2 from level 3 of the starter phase and learned about action verbs.
Lesson 7 (week 4)	Students asked questions	Students completed lesson

	and supported their answers by connecting prior knowledge with literal information.	3 and 4 from level 3 of the starter phase and learned about action verbs.
Lesson 8 (week 5)	Students used internet sources to analyze and discuss two different fables.	Students completed lesson 1 and 2 from level 4 of the starter phase and learned about fruits and vegetables.
Lesson 9 (week 5)	Students use graphic organizer and group activities to analyze and discuss two different fables.	Students completed lesson 3 and 4 from level 4 of the starter phase and learned about fruits and vegetable.
Lesson 10 (week 6)	Teacher administered a post-test to know the effectiveness of the Duolingo app to learn English vocabulary.	Teacher administered a post-test to know the effectiveness of the Duolingo app to learn English vocabulary.

Source: Course Design
Author: Michael Granda

Results of the diagnostic and post vocabulary tests

The results of the diagnostic test, which can be observed in table 2, show that the great majority of learners (75%) did not have enough vocabulary knowledge to complete the tasks provided in the test. As can be seen in table 2, there was no difference among learners from the private school and public school. The very few learners, who were able to complete the test successfully, have mentioned they were taking English lessons at private academies.

Table 2: Results of the diagnostic and post-test at the public and private school

Category	Diagnostic test				Post-test			
	Public School		Private School		Public School		Private School	
	Control Group	Experimental Group	Control Group	Experimental Group	Control Group	Experimental Group	Control Group	Experimental Group
Excellent	2	4	6	7	6	13	5	21
Good	8	5	4	5	9	11	12	4
Fair	12	21	14	15	13	10	8	5
Poor	18	10	6	3	12	6	5	0
TOTAL	40	40	30	30	40	40	30	30

Source: Students' Diagnostic and post test
 Author: Michael Granda

At the end of this research, learners took a post-test to confirm the effectiveness of using Duolingo Desktop Application to learn vocabulary; these results are presented in table 2. As can be seen in this table, experimental group outperformed control group in the post-test in both private and public school. Even more interesting, is the fact that experimental group at the private schools demonstrated a great improvement in the vocabulary learning through the use of Duolingo. In this way, there is a remarkable difference between learners from private school and public school in the pre-test results, if the number of excellent grades is taken into account. Such difference was not seen in the results of the diagnostic test. Possible reasons for such difference might lie on the time private school learners spend surfing on internet. Many of them accepted have logged in Duolingo at home, which was not the case in the control group of the public school.

The average results of the diagnostic test and post-test from both public and private school, which are shown in table 3, demonstrate that by learning vocabulary through the use of Duolingo language learning app, the experimental group could improve their knowledge of vocabulary through the completion of lessons and task. Such tasks, helped learners not only practice background knowledge, but also acquire new language outcomes. Additionally, there was a significant improvement in the pronunciation of new words and known vocabulary thanks to the voice recognition software used by Duolingo.

Table 3: Standard deviation of the Average Results of the diagnostic and post-test at the public and private school

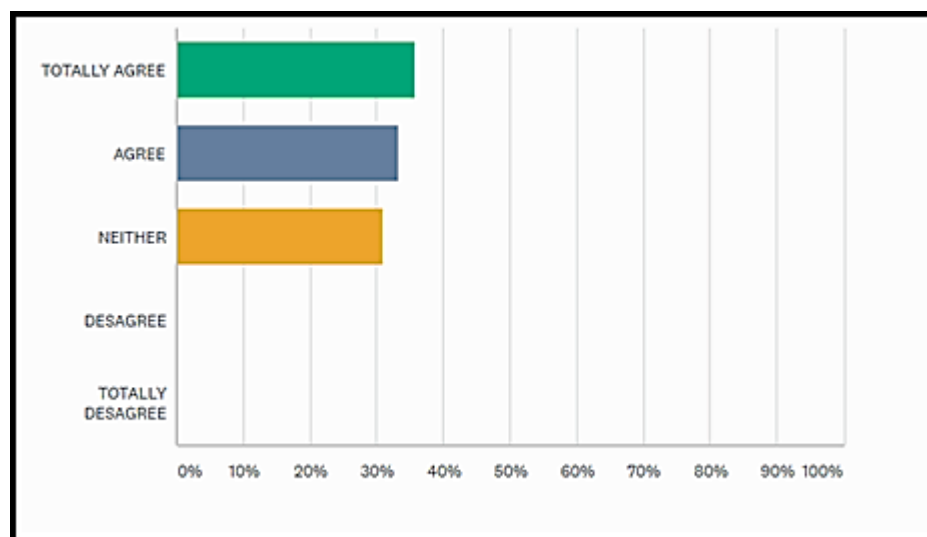
	Number of students	Average results of the diagnostic written vocabulary test	Average results of the Post written vocabulary test	Standard Deviation
Control Group	70	5.79	5.96	0.2566855104
Experimental Group	70	5.43	7.75	1,233268961

Source: Students' Diagnostic and Post-test
 Author: Michael Granda

In contrast, control group has not significantly improved his knowledge of vocabulary. Standard variation shows an improvement of 0.25 points in the post-test for control group, meanwhile, experimental group shows an improvement of 1,23 points in the applied post-test. Additionally, it was noticeable the motivation showed by learners at the moment of using the application, because none of them had never used an app for learning English vocabulary before.

Students' perceptions on the use of Duolingo app for learning EFL vocabulary

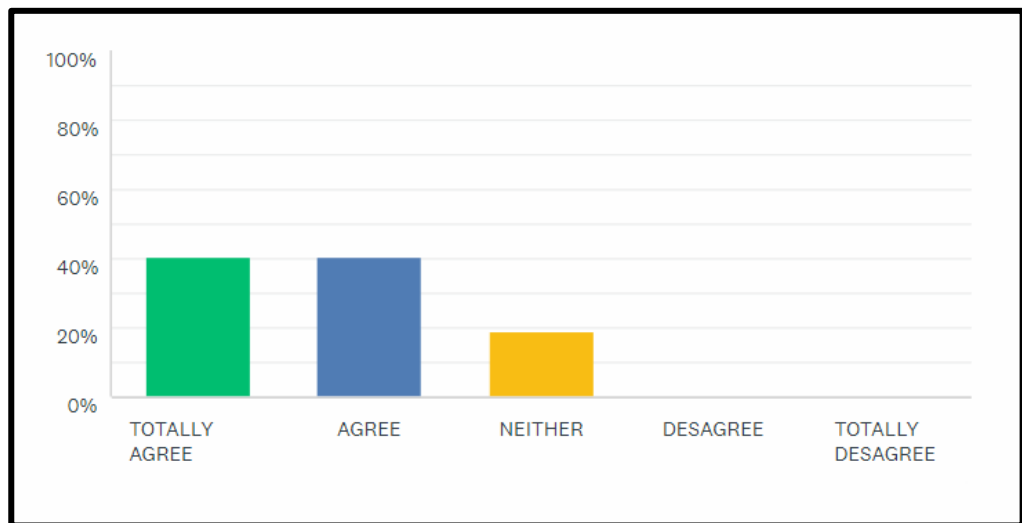
The post-survey helped analyzed the students' perceptions towards the use of Duolingo Desktop application. As can be discerned, only the experimental group participated in the completion of the post-survey. Ten items have been analyzed and the population for this survey was 50% women and 50% men.



Graph 6. Students' motivation to learn English through the use of Duolingo
Source: Students' survey on the use of Duolingo app for learning EFL vocabulary.
Author: Michael Granda

As can be observed in graph 6, results indicate that 35% of learners claimed that the use of Duolingo was a great motivator resource to learn English, meanwhile more than 30% of them considered it was a good motivator. In addition, around 65% of learners agreed that Duolingo was very easy to use, 32% indicated was normally easy; and only 5% of learners found it difficult to use. These results indicate that learners were more motivated to learn the target language thanks to the involvement of technology which contrasted the monotonous routines of the regular classes. In this concern, Montrieux, Vanderlinde, Schellens, De Marez (2015) consider that students feel more motivated to learn a language if technology is involved, because they consider it interesting and easy to use.

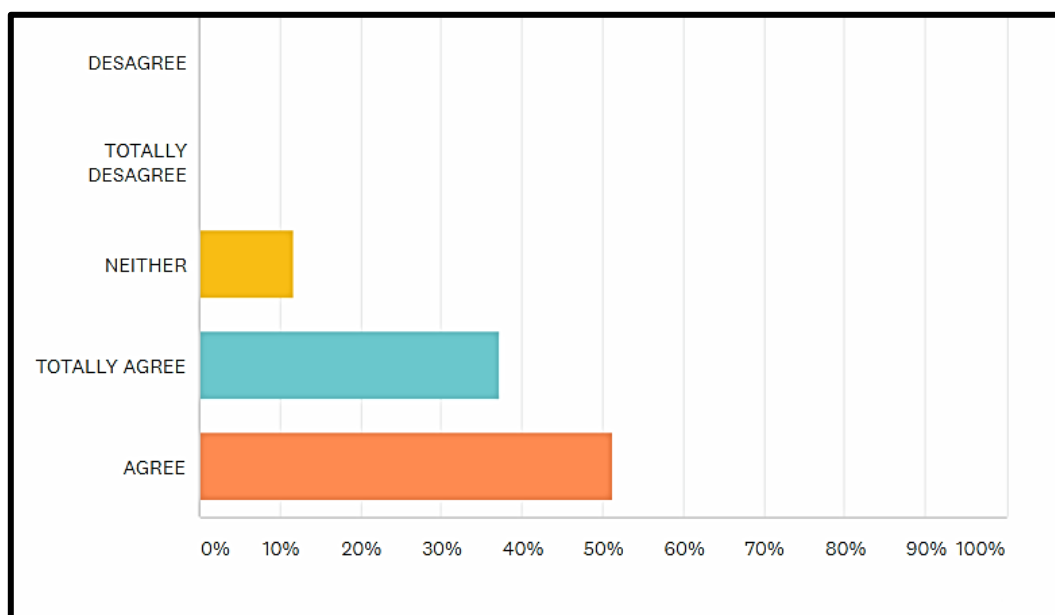
As mentioned before, learners felt more motivated to learn thanks to the familiar connection they had with technology not only during class but also at their homes. For Harmer (2007), this learning connection created by instructors at suitable settings with the help of appropriate materials fits the different cognitive or affective needs of students. In other words, there was no learning anxiety, similar to the atmosphere at home, which relaxed learners and promoted their motivation.



Graph 7. Students' learning outcomes on new vocabulary with Duolingo app.
 Source: Students' survey on the use of Duolingo app for learning EFL vocabulary.
 Author: Michael Granda

According to graph 7, results demonstrate that 40% of learners affirmed that Duolingo was really helpful to learn new vocabulary. Another 40% of students considered Duolingo as helpful, just the remaining 20% of them maintained a neutral position. Similarly, 55% of learners expressed that Duolingo was very helpful to remember background vocabulary. Also, 35% of participants identified Duolingo as a bit helpful to remember words. Lastly, 10% of learners maintained a neutral position. The results demonstrate that Duolingo provides features, which were very helpful for learners in order to learn new vocabulary and remember prior knowledge. In the words of Al Yafei and Osman (2016) mobile phones are very helpful to learn new vocabulary, and remember prior knowledge, due to the visual characteristics of these tools.

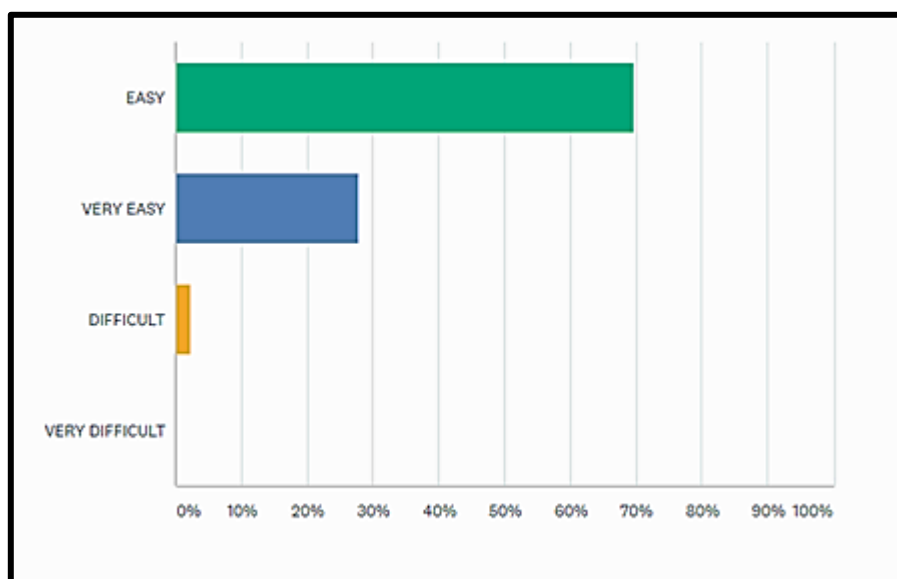
Another key point of learning new vocabulary with Duolingo, is the translation tasks of the app which invited learners to translate words in the target language into their mother tongue which promoted independent learning; regarding this fact, Alqahtani (2015) claims that this type of tasks can be harmful for the learning process. He points out that teachers must not translate words in order to teach vocabulary. Teacher can use synonyms, antonyms or illustrated examples in order to avoid the interference of the mother tongue. In this concern, learners were invited to formulate sentences for every new word used at Duolingo, so that they internalized the meaning of the word in the English language context, avoiding the use of translation when Duolingo is not being used.



Graph 8. Students' learning outcomes on pronouncing new vocabulary with Duolingo app.
Source: Students' survey on the use of Duolingo app for learning EFL vocabulary.
Author: Michael Granda

As can be observed in graph 8, it was found that 50% of learners considered Duolingo as helpful to pronounce words correctly. Meanwhile, around 37% of learners indicated that it is a very helpful tool to practice pronunciation, but around the 12% of students maintained a neutral position. In this regard, learners were able to practice pronunciation with the use of Duolingo, at the end of each lesson learners produced more natural and effortless sounds in the English language. According to Rezaei, Mai and Pesaranghader (2014) practicing pronunciation with mobiles apps can be very helpful, thanks to the voice recognition software used by this technology. This is the software used by the Duolingo app which helped learners repeat the new words through the application of pronunciation tasks.

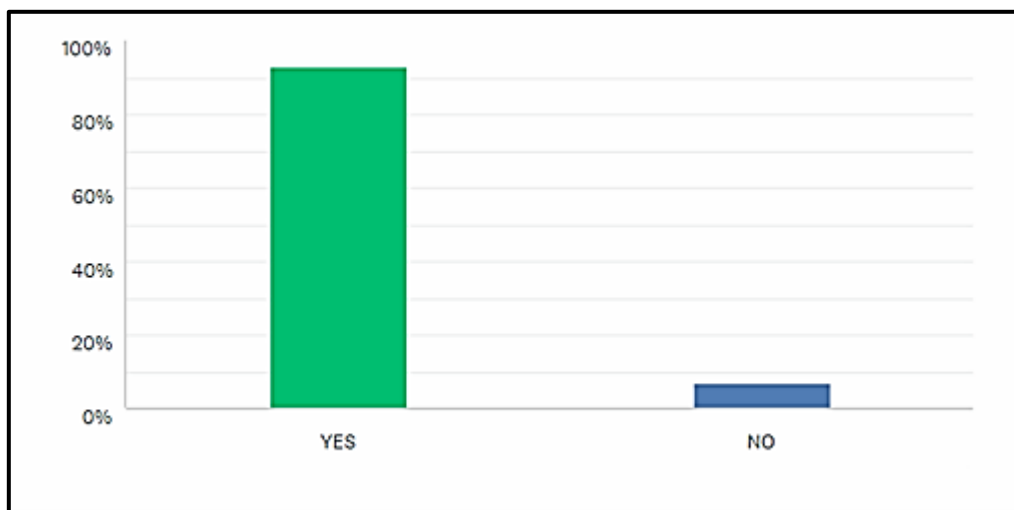
Moreover, Nation (2001) argues that this kind of tasks are helpful for vocabulary learning. He points out a record of the various classes of information which a learner should comprehend before using vocabulary. Actually, the pronunciation of a new word is one of these concepts followed by the definition of the word, the structure of the word, the morphological form of the word, among other general aspects of vocabulary learning.



Graph 9. Students' learning outcomes on remembering new vocabulary with Duolingo app.
Source: Students' survey on the use of Duolingo app for learning EFL vocabulary.
Author: Michael Granda

Based on graph 9, it can be affirmed that remembering new words with Duolingo was easy for 70% of learners, and very easy for around 27%. On the other side, 2.5% of students considered that it is difficult to remember new words with the app; concerning confidence at using the app, it was found that 56% of learners felt more confident about their English proficiency level by using Duolingo; also, 25% of learners showed that there was a great boost of confidence. In contrast, around 12% of students felt insecure of learning English through the app, and only 5% gained no confidence with the use of Duolingo. These features were found at the Duolingo lessons, in fact learners did not need help at all. They conducted their own learning through the use of the app. As reported by Roussel and Galan (2018), the use of technology in the classes produces easier lessons, thanks to the pressure liberated from learners' anxiety due to learners' shyness to ask the meaning of new words.

It is important to mention that Duolingo counts with several tasks for remembering new vocabulary. In a single lesson, learners can practice vocabulary several times by completing different tasks for instance: scramble unscramble sentences. According to Stockwell and Hubbard (2013) as many task as possible, the better the benefits for learners. They consider as very remarkable and positive the variety of tasks that can be performed through the use of applications. The potential of apps can help develop communicative activities inside and outside the classroom.



Graph 10. Students' interest on continue learning new vocabulary with Duolingo app.
Source: Students' survey on the use of Duolingo app for learning EFL vocabulary.
Author: Michael Granda

As can be noticed in graph 10, around 92% of participants agreed that they would like to continue learning the English language through the use of Duolingo. In fact, more than 55% of learners mentioned they had used the Duolingo app outside the classroom. On the other hand, only 7% of learners are not interested in learning English with the use of Duolingo. In this research, learners have claimed their interest on keep learning English with the use of Duolingo. It is important to mention that it was learners' very first time using a language learning app and it was visible their natural curiosity and interest to explore the language through technological devices. In fact, Zhang (2016) argues that learners show more interest in learning a second language through the use of mobile apps.

As pointed out before, most of the learners had used Duolingo app at their homes after the lessons were applied. In this concern, Georgiev, Georgieva and Smrikarov (2004) affirm that this is an important feature of learning through apps, because users have the power to learn anywhere at any time without permanent physical connection to cable networks. In this regard, Gupta and Tisdale (2009) point out that language learning apps allow learners to study with materials and at the same time communicate with classmates, teacher or instructors. Duolingo app is based on the use of mobile devices or computers as educational instruments to interact with learning materials no matter the time or place.

CONCLUSIONS

Through the use of the Duolingo application for acquiring vocabulary, the learning process was positively influenced. Learners showed a high level of individual participation in each lesson applied with the language learning app; they also demonstrated to be independent learners when using Duolingo, not only in class but also outside the classroom.

The most notable difference in vocabulary acquisition through the use of Duolingo and conventional teaching was the motivational factor due to the easiness found by learners to use the app. They liked the app, enjoyed the learning process and found it a helpful tool to enrich their vocabulary outside the classroom. They liked even more than regular book-based classes.

Learning English with Duolingo, helped students retain better the vocabulary. The diagnostic test and post-test results showed that learners comprehended vocabulary better due to the tasks available for remembering new words. The very diverse tasks focused on different skills positively impacted learners' vocabulary retention.

Background knowledge was another aspect which was improved and reinforced with the Duolingo application. In Fact, for more advanced learners, Duolingo helped to remember known words and review topics forgotten by them. The immediate correction of the tasks allowed learners to be more aware of the errors produced by second language interference.

The involvement of the Duolingo app in the learning process helped students liberate from learning anxiety, many of the learners who felt shy to participate in the conventional classes, were active participants in the Duolingo lessons. They were very familiarized with the use of this language learning app.

It is important to mention that the application of Duolingo to learn vocabulary was suitable for the participants of this study. In this regard, students were able to interact with other users of the app, which helped them to complete the tasks enthusiastically; besides, learners challenged peers to solve the activities in the least time possible with no mistake.

RECOMMENDATIONS

The Duolingo app is a valid option to any course, online or face to face to add extra-work to the class since learners can review the language learning at their own level. Although, the use of the platform should not be considered the core tool to teach students; instead it should be used as a helping tool to enhance English vocabulary learning.

The use of the Duolingo app should be included in the learning of a foreign language since it improves the learning process and promotes learning autonomy. In this concern, all language courses should include the use of language learning apps similar to or better than the Duolingo app since most of the learners are very related to this technology.

Before applying the use of Duolingo into the class, the teacher should take into account the type of tasks available on the app. Tasks should be interesting, engaging and should use intervalled skills. If the tasks are varied, learners will feel more challenged and motivated to complete the tasks.

The correction of the tasks when using apps as Duolingo should be at the end of each lesson. This immediate feedback allows learners self-correct, as well as be aware of the mistakes produced by the interference of the mother tongue; especially if the app has translation tasks.

The use of language learning apps should help students feel more relaxed. This feature is undeniably important for the effectiveness of the learning process. In this way, learners should be previously introduced to this type of technology, so that the app is easy to use, and does not allow the creation of learning anxiety.

Learners are naturally competitive and love to show their level of progress. The use of a language learning app should exploit learners' feelings of excitement and joy through the completion of tasks; this is an important feature in the use of the Duolingo app.

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ANNEXES

Annex 1. Format of the survey: Mobile Apps for Learning Vocabulary

1. Choose your age:

7 ()

8 ()

Another _____

2. Choose your gender:

Masculine ()

Feminine ()

3. Do you know what is an app for smartphones?

Yes ()

No ()

4. Have you ever used a cell phone or smartphone?

Yes ()

No ()

5. What apps do you usually download?

Games ()

Communication (WhatsApp, line) ()

Social Network (Facebook, Instagram) ()

Education ()

Another: _____

6. Do you have a mobile device at home?

Yes () (cellphone, tablet)

No () (no devices)

7. Would you like to learn English using an app?

Yes ()

No ()

8. Do you know any app for learning English?

Yes ()

No ()

If yes, write the name of the app_____

9. Choose the activity you do most at home?

Read ()

Watch TV ()

Surf internet ()

Another_____

10. How much time do you spend on internet?

30 minutes to 1 hour ()

1 hour to 2 hours ()

2 hours to 3 hours ()

Annex 2. Format of the test: Diagnostic and post-tests

DIAGNOSTIC VOCABULARY TEST FOR FOURTH GRADE ELEMENTARY LEARNERS

NAME: _____

DATE: _____

1. MATCH THE PICTURE WITH THE WORD



Woman



boy



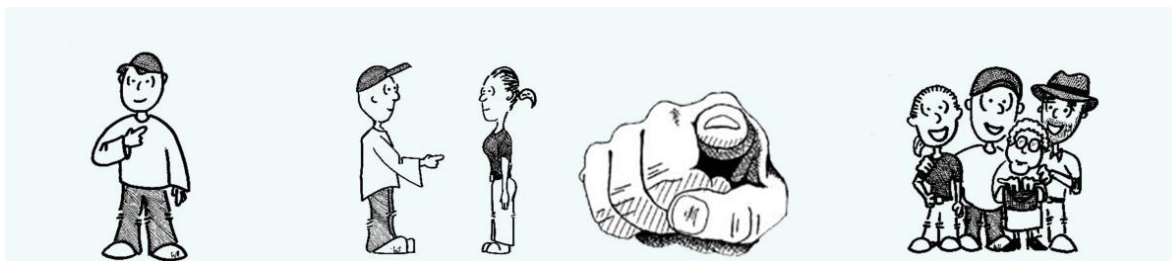
man



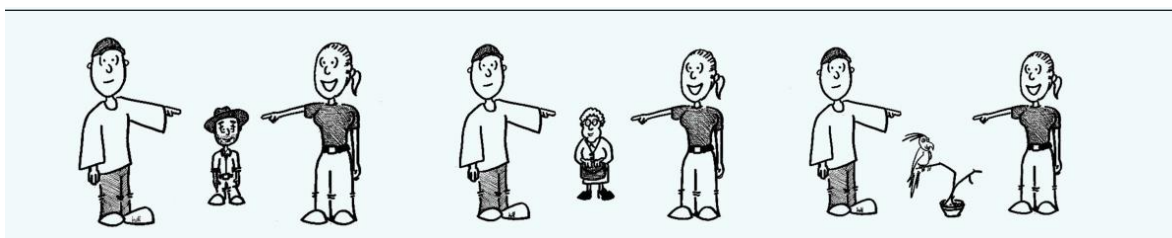
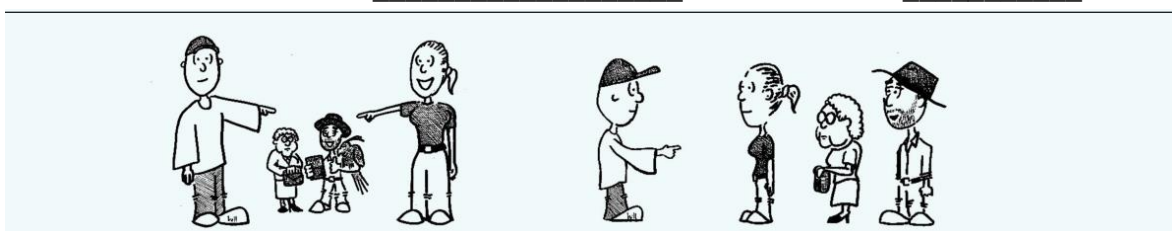
girl

2. Write the personal pronouns under each picture

YOU WE THEY HE SHE IT



I



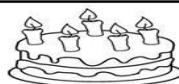
3. COMPLETE THE FOLLOWING THE GAP FILLING WITH YOU OWN INFORMATION

SELF – INTRODUCTION

Hello. My name is _____.



I am _____ **years old.**



I live in _____.



I go to _____ **school.**



My parents are _____.



My favorite food is _____.



I like _____.



4. Write the missing letters in the boxes



g r _ n d f _ t h _ r

g r _ n d m _ t h _ r



f _ t h _ r

m _ t h _ r



b r _ t h _ r

s _ s t _ r



_ n c l _

_ _ n t



c _ _ s _ n

5. Complete the following exercise with the words in the box

asleep

afternoon

telephone

scare

band

exciting

practice

marry

1. In the _____ we will go home from school.
2. I fell _____ at night.
3. The _____ played a lot of good songs.
4. The game was very _____ at the end.
5. I used my _____ to call my parents.
6. My older brother wanted to _____ me.
7. I watched my older sister _____ her life-long sweetheart.
8. We had basketball _____ after school.

Annex 3. Format of the survey: Perception of Duolingo App

1. Choose your gender:

Masculine ()

Feminine ()

2. Do you consider Duolingo app motivated you to learn English?

Totally Agree ()

Agree ()

Neutral ()

Disagree ()

Totally Disagree ()

3. Practice English with Duolingo app was:

Very Easy ()

Easy ()

Difficult ()

Very Difficult ()

4. I have learnt new words using Duolingo:

Totally Agree ()

Agree ()

Neutral ()

Disagree ()

Totally Disagree ()

5. Duolingo helped me remember known words:

Totally Agree ()

Agree ()

Neutral ()

Disagree ()

Totally Disagree ()

6. I have learnt to correctly pronounce word in English using Duolingo:

Totally Agree ()

Agree ()

Neutral ()

Disagree ()

Totally Disagree ()

7. Remembering new words with Duolingo was:

Very Easy ()

Easy ()

Difficult ()

Very Difficult ()

8. I have used Duolingo outside the classroom:

Yes ()

No ()

If yes, what electronic device did you use?

(e.g tablet, laptop, cellphone)_____

9. Through the use of Duolingo I have more confidence with my level of English

Totally Agree ()

Agree ()

Neutral ()

Disagree ()

Totally Disagree ()

10. I want to continue learning English with Duolingo:

Yes ()

No ()

Why? _____