



Universidad
Zaragoza



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TRABAJO FIN DE GRADO

MAGISTERIO EN EDUCACIÓN PRIMARIA

MENCIÓN LENGUA

AN EVALUATION OF MOBILE APPS FOR THE ACQUISITION OF ENGLISH AS A SECOND LANGUAGE

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FACULTAD DE EDUCACIÓN

2020/2021

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Abstract

This analysis studies eleven mobile applications (*Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Johnny Grammar*, *Quiz your English*, *Cambridge Exam Lift A2*, *Easy peasy*, *Pili Pop English*, *Simpler* and *Learn English Playtime*) downloaded from *Google Play Store* to acquire English as a second language. The selected apps are labelled as ‘educational’, ‘free’ and they all have the PEGI 3 code, which means that all apps are suitable for early second language learners. This work, which is carried out because of the scarcity of research about mobile phone applications to enhance learning, is based on the examination of apps developed to promote Second Language Acquisition in Primary Education children in the light of those theoretical and methodological frameworks which explain how second languages are learnt and taught and some descriptive features that makes the apps engaging and motivating have also been investigated. It is also explored the limitations of the apps and how they can be used in a Primary Education classroom. The analysis will highlight that the apps appearance seems to be more important for app developers than achieving the goal claimed in the apps description, learning English. This can be explained because all descriptive aspects analysed are mostly present in the apps whereas there is a lack of learning aspects to promote the acquisition of English.

Keywords: Mobile apps, English, Second Language Acquisition, digital literacy, Primary Education.

Resumen

Este trabajo analiza once aplicaciones para móviles (*Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Johnny Grammar*, *Quiz your English*, *Cambridge Exam Lift A2*, *Easy peasy*, *Pili Pop English*, *Simpler* and *Learn English Playtime*) descargadas en *Google Play Store* para adquirir el inglés como segunda lengua. Las aplicaciones seleccionadas están etiquetadas como ‘educativas’, ‘gratuitas’ y contienen el código PEGI, lo que significa que estas apps son adecuadas para todos los públicos, incluidos los más pequeños. Este trabajo, que ha sido llevado a cabo debido a la escasez de investigaciones sobre aplicaciones para móviles para potenciar el aprendizaje, se basa en la investigación de las apps desarrolladas para promover la adquisición de una segunda lengua en niños de educación primaria aplicando los marcos teóricos y

metodológicos que explican cómo se aprenden y enseñan las segundas lenguas y además, se han analizado algunas características descriptivas que hacen que las aplicaciones sean atractivas y motivadoras. Este análisis también explora las limitaciones de las aplicaciones y cómo se pueden utilizar en un aula de Educación Primaria. Los resultados demuestran que para los desarrolladores de aplicaciones la apariencia de las aplicaciones parece ser más importante que lograr el objetivo mostrado en la descripción de las aplicaciones, aprender inglés. Esto se puede explicar porque todos los aspectos descriptivos analizados están mayoritariamente presentes en las aplicaciones mientras que faltan aspectos de aprendizaje que favorezcan la adquisición del inglés.

Palabras clave: Aplicaciones móviles, inglés, adquisición de una segunda lengua, alfabetización digital, educación primaria.

1. Introduction

The rapid development of technology in recent years has resulted in the increasing use of mobile technology and therefore, smartphones or transportable gadgets have been introduced into the learning process, which has implied a change in the traditional teaching method. This change in education is motivated by the mobility offered by smartphones along with the integration of media such as text, pictures, audio or video which has seemed to increase the interest of students in studying as revealed in the study conducted by Zou and Li (2015). Furthermore, thanks to the easy connection to the Internet and the portability of mobile devices, a great number of apps for acquiring a language can be found in the best-known stores, *Google Play Store* and *Apple App Store*, and these apps enhance language learning through gamification.

The purpose of this research is to analyse the validity of apps, advertised as educational in *Google Play Store*, for acquiring early learners English as a second language and, once the apps limitations are acknowledged, propose their possible application in a Primary Education classroom, taking into account the learners age and the activities offered in each app selected.

In order to achieve this aim, three set of analyses have been carried out as the main methodology used for this project. The first one includes some descriptive factors that contribute to make the process of learning enjoyable and motivating such as target users, attractive and intuitive design, play offline or play with friends among others. The second analysis examines the aspects that apps for acquiring a second language should have, for instance the input provided, output elicited by the apps or the negotiation of meaning offered among others. Finally, the limitations of the apps have been acknowledged and the possible implementations of the selected apps in the Primary Education classroom are proposed.

This analysis includes a theoretical framework in which the whole study is based on and the literature review taken into account to carry out this project has been the main theories of second language acquisition such as Krashen's input hypothesis (1982), Swain's output hypothesis (1985), Long's interactional moves and the feedback provided studied in the interaction hypothesis (Long, 1996) and a learner individual factor that affects the process of learning, the motivation (Gardner, 1985).

The project is divided into five sections. Firstly, the theoretical framework, on which the analysis is based, is presented followed by the description of the methodology used to develop the study of the apps. The third part includes all the analyses carried out to examine to what extent the apps analysed are valid for early learners to acquire a second language and, in the fourth section, the limitations of apps are acknowledged and their possible use in the Primary Education is proposed. Finally, in the last section, some conclusions are drawn on the limitations of app usage when acquiring a second language as well as how the apps studied can be implemented in a Primary Education classroom.

2. Literature review

The spread of technology in the recent years has been one of the factors that has contributed to the extended use of mobile technology and thus, to a revolutionary approach to education as mobile devices have been incorporated into the process of learning. The broad use this technology, and in particular the growing use of smartphones or transportable gadgets, has also contributed to transform the traditional teaching method and the learning process (Kukulska-Hulme, 2009). One of the reasons for this transformation comes from the benefit of mobility. The term ‘mobile’ stands for the ‘mobility’, that is the ability to move freely and easily from one place to another (Gangaiamaran and Pasupathi, 2017). As argued by Kukulska-Hulme (2012), Mobile Assisted Language Learning (MALL) is a subarea of the growing field of mobile learning (mLearning) research which has increasingly attracted the attention of scholars. It also deals with the use of mobile technology in language learning and provides both scaffolding and easy access for any learner without place and time constraints. The characteristics of mobile technology are that it is up to the student to decide the place and time of learning the language along with the portability and accessibility of the information, which play an important role in the enhancement of English language teaching and learning (El- Hussein & Cronje, 2010).

This study focuses on the use of apps, the short form of “application software”, which are intended to run on any portable or mobile device such as iPhones or tablets and are commonly downloaded from app stores such as *Apple App Store* and *Google Play Store*, among others. Moreover, apps are classified into different categories such as gaming, entertainment, or education.

The rapid development of app technologies has allowed the integration of media, for instance, text, pictures, audio or video into the apps. In the case of educational apps, as revealed in the study conducted by Zou and Li (2015), this has entailed an increasing interest of students in studying. A wide range of apps for those who want to learn a language are available to download thanks to the easy access to the Internet and the accessibility and great portability of mobile devices. These apps enhance language learning through the gamified approach, which as claimed by Kiryakova et al., (2014), consists of the integration of game elements and game thinking in activities that include a series of features such as challenges or tasks, which users perform and progress

towards defined objectives, points that players win as a result of tasks completion, different levels to be passed by learner, badges which serve as rewards for completing actions, or ranking of users according to their achievements. In addition, the instantaneous and positive feedback offered is the main reason that makes users feel motivated, engaged and encouraged in their actions.

The use of gamification in education is supported by authors such as Giang (2013), who argues that the use of game mechanics improves the abilities to learn new skills by 40%, or Huang and Soman (2013) who states that gamification in education has several positive effects on students' behaviour, commitment and motivation, which can lead to improvement of knowledge and skills.

As contended by Liu and He (2014), "there is a lack of recommendation about relevant apps and suggestions about how effectively to use them to learn English". Researchers such as Neumann (2018) or Gangaianmaran and Pasupathi (2017) coincide on the lack of investigation and research done until these days in the app education field and highlight the need of further studies to examine and determine to what extent apps promote effective learning. However, despite the lack of investigation, the aforementioned researchers agree on the positive effect that mobile learning and technology have in the process of second language learning. For instance, Zou and Li (2015) constructed and incorporated an app for English learning targeting the four basics skills (reading, listening, writing and speaking) and the study confirmed that the app motivated the students at the time their attitude towards using mobile devices for learning was more positive.

This work is based on the analysis of apps developed to promote Second Language Acquisition in Primary Education children in the light of those theoretical and methodological frameworks which explain how second languages are learnt and taught. Taking the literate review into consideration, the apps researched offered a great amount of input. According to Krashen's input hypothesis (1985b), language acquisition takes place when the amount of comprehensible input is received so the more comprehensible input is offered by the apps and received by the players, the more they will acquire. This author (Krashen, 1989) argues about the positive implications of comprehensible input since is associated with greater vocabulary acquisition, which means that there are more opportunities for vocabulary acquisition when a learner is exposed to a learning environment with as much comprehensible input as possible.

Another aspect of the apps studied is the possibilities for interaction offered. According to the interactionist view of language and Long's interaction hypothesis (1981), if learners receive comprehensible input during a conversation can be as result of the negotiation of meaning and interactional moves that take place during conversation. Therefore, it is important to examine whether the apps provide interaction as in this process, input is better targeted or adapted through repetitions and recasts, confirmation checks, clarification requests or comprehension checks and the language is made comprehensible and closer to the learner *i+1* (Krashen, 1982), which is the input containing structures a little beyond the current interlanguage level of the learner.

The output production elicited by the apps selected is also examined in the light of Swain's comprehensible output hypothesis (1985). As contended by this author, it is crucial that learners have opportunities to produce output and they need to be pushed to produce a message that is comprehensible, meaningful and grammatically correct and which stretches their linguistic resources so they can be aware of the hole in their interlanguage and develop grammatical accuracy. Hence, it is crucial to analyse if apps provide the players a myriad of opportunities to produce so learners can be aware of the gaps in their interlanguage and develop it, among others.

Also important for the analysis of language acquisition is the amount of feedback offered to the learner, which as acknowledged in Long's revised interaction hypothesis (1996), plays a vital role during the process of learning. This is also highlighted and explained by the Information Processing Theory (McLaughlin, 1987), which states that humans have limited processing capacity and attention and they are usually focused on meaning, but when negative feedback is provided, learners direct their attention to form. It is also necessary to consider whether the condition for feedback to be effective is met, that is, whether it has been understood by the person who receives it. Furthermore, the positive feedback is investigated as by providing positive feedback, the learner's motivation towards learning the language is increased.

Complementing the theoretical aspects of language acquisition mentioned it is also necessary to explore motivation, an individual factor which should be taken into account considering that the educational apps examined are based on a reward system to encourage learning. The second language learning motivation of a learner was defined by Gardner (1985) as "the combination of effort plus desire to achieve the goal of learning the language plus a favourable attitude towards learning the language".

This analysis is carried out because of the scarcity of research about mobile phone applications to enhance learning and, taking the literature review into consideration, the objectives to be achieved through the examination of the apps are to know whether the selected apps are valid to acquire English as a Second Language, to analyse the limitations of the apps selected through an analysis of the lack of learning acquisition aspects in the apps and how they can be applied in a Primary Education classroom.

3. Methodology

The objective of this study was to analyse the validity of apps, advertised as educational in *Google Play Store*, to acquire English as a Second Language, to examine the possible limitations these apps might have regarding learning acquisition aspects and their possible application in a Primary Education classroom.

To achieve this aim, data were collected from 11 apps downloaded from *Google Play Store*, all of them labelled as 'Educational' and whose users evaluation were high, from 3,6 to 4,8 out of 5: *Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Johnny Grammar*, *Quiz your English*, *Cambridge Exam Lift A2*, *Easy peasy*, *Pili Pop English*, *Simpler* and *Learn English Playtime*.

The apps were examined considering both their descriptive factors as well as the most relevant aspects of second language learning and acquisition theories such as the input hypothesis (Krashen, 1982), the output hypothesis (Swain, 1985), the interaction hypothesis (Long, 1996) and the feedback they provided examined in Long's (1996) revised interaction hypothesis.

The descriptive factors selected for the study on apps were:

- The age to which the apps target, which was considered an essential criterion given that the goal is to study the validity of apps for teaching English to Primary Education children. For this study, all apps are labelled by *Pan European Game Information*, which is an age rating system to prevent children from accessing content which is not appropriate for their age among others, with PEGI 3 which means that the apps are suitable for all ages.
- The possibility of playing offline, considering that this feature allows learners to learn without time and place constraints.
- The options of playing with friends, as through cooperation games, learners are more engaged and can help each other in the process of learning.
- Whether the design was attractive and intuitive for the players age.
- The option of personalising the app, since this can be engaging for children.
- The possibility of preparing for an official certificate of language proficiency, as parents might consider this certificate important.
- The time they can play free, considering that apps are commercial products.

- The amount of advertisements, since the process of learning can be disturbed by that.
- The availability of in-app purchases, considering that learners are under-age and should be prevented from accessing them.
- The existence of a parent zone, in which parents can control the amount of advertisements and in-app purchases in the app.
- The need for registration to find out whether players need to introduce any personal data apart from the name, age or level of English.
- The difficulty of activities, and whether this is in accordance with the age or language level of the user.
- Whether the content must be offered to the learner is adequate considering that if the content is not suitable, it could prevent the player from learning.
- The time available to answer since timed activities could make the learner nervous.

It must be mentioned that some features, such as the feature of creating reminders and the users' evaluation of apps which had originally been included in the analysis, were later discarded since they were not judged as important as it was initially believed. The former was not considered significant as the person responsible for the child's process of learning should know when it is the appropriate moment to use the app as well as the time the child should be playing. The latter was not taken into account because the users evaluation of the apps in *Google Play Store* might not be objective and their options might not be based on an analysis of those characteristics which are specifically relevant to foster second language acquisition.

As regards the second part of the analysis, considering that all the apps were advertised and labelled as 'Educational', it is important to explore whether if they promote real learning by examining the amount of input (Krashen, 1982) the learners are provided as well as the nature of it, Swain's (1985) output hypothesis and whether children are asked to produce orally and/or in writing, or whether production is not required to accomplish the apps activities, Long's (1996) interactional moves, studied in his interaction hypothesis, to evaluate whether the activities promote opportunities for interaction and negotiation of meaning, Long's (1996) revised interaction hypothesis in which the role of feedback was acknowledged and the extent to which these aspects were present in the wide range of activities offered by each app. Besides, the apps are

also analysed in terms of motivation (Gardner, 1985).

Once all these aspects had been carefully selected, two tables were created in order to record the data obtained and the target features were analysed. Moreover, an analysis of the limitations of each app when promoting the second language acquisition as well as their possible application in the Primary Education classroom was conducted.

The analysis presented in this work is divided into 3 main sections. In section 4.1, the descriptive features gathered from the apps are examined and comparisons are made to know whether these aspects are included in them. Section 4.2 presents the information collected regarding the second language acquisition aspects, offered by the apps and in section 4.3, the limitations of each app that could prevent early second language learners from acquiring the language are analysed.

Finally, the analysis of the limitations found in the apps related to the second language acquisition is detailed as well as how the apps selected for the study could be implemented in a Primary Education context since not every app is appropriate for all primary students and the activities offered by the apps are not used similarly as not every app offers the same exercises. The apps selected can be used, both in the classroom or at home and always taking into account the learners' age and their level of English and with the supervision of the teacher in class or parents at home.

4. Analysis

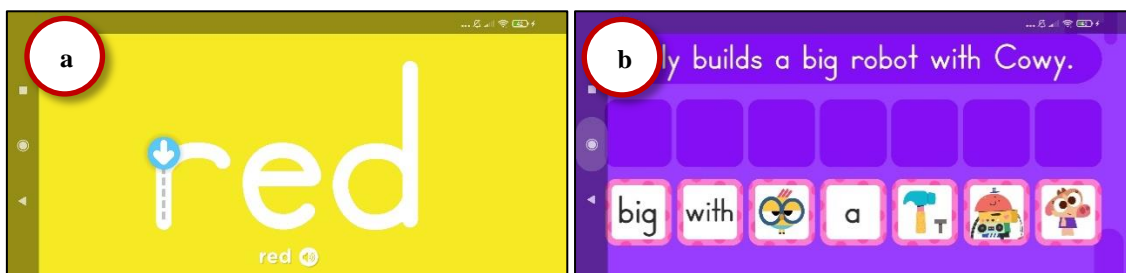
The present analysis examines to which extent apps promote effective English language learning and the implications that this could have in the primary education classroom. This has been carried out through an examination regarding the descriptive features of apps and the learning factors contained in the apps.

4.1 App analysed

The best-known stores in the industry are *Apple's iOS App Store* and *Google's Android Play Store*, and each of them contains more than 100,000 applications including games, learning aids, and utility software applications advertised as educational or intended for children. The data for this study were collected through the download of eleven apps from one of the most famous app stores: *Google Play Store*. These apps are *Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Johnny Grammar*, *Quiz your English*, *Cambridge Exam Lift A2*, *Easy peasy*, *Pili Pop English*, *Simpler* and *Learn English Playtime*.

The majority of apps are also available in *Apple App Store* and all of them are labelled as 'Educational', except *Quiz your English* developed by *Cambridge English*, 'free' and are classified as 'PEGI 3' (*Pan European Game Information*). Most apps, apart from being labelled with this code, specify an appropriate range of age such as 'for the entire family', 'under 5', 'from 2 to 8' and 'from 6 to 12'.

1. Lingokids:



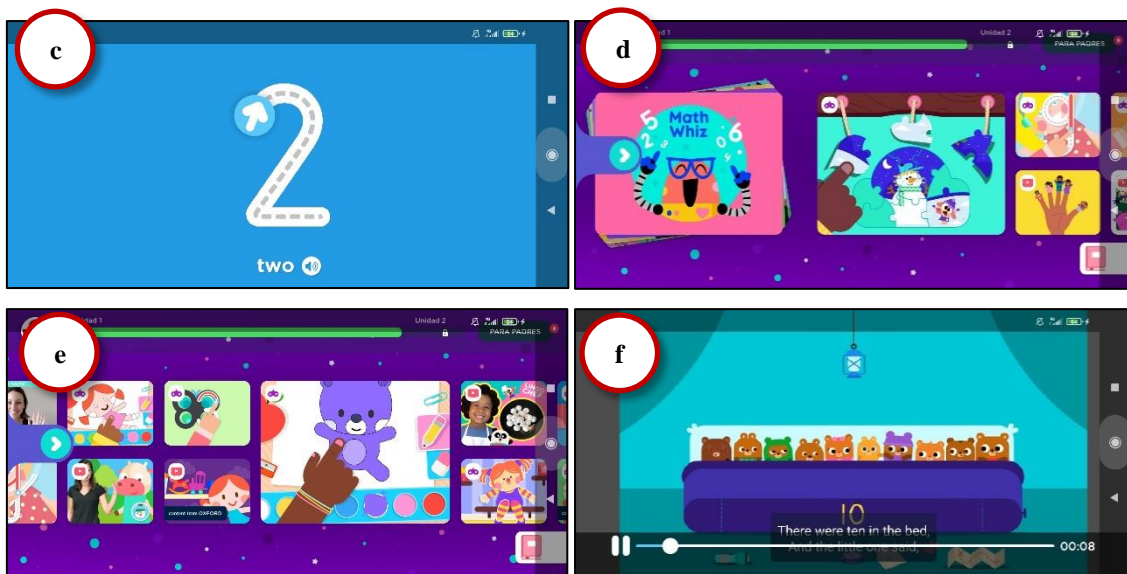


Figure 1. Lingokids activities

It is an ad-free educational app for children between 2 and 8 years through with which they are expected to learn English thanks to the gamified approach, which presents learning as it was a game. It offers children more than 600 activities, grouped into several units, such as games, videos and songs (Figure 1f) that help them develop their level of English by teaching learners to write letters, numbers and words as well. Regarding the feedback given, is not very explicit as does not offer corrective feedback in all the activities, learners notice the error because nothing happens when they fail. Each unit has 6 lessons and each lesson has between 5 and 20 activities to choose from (Figure 1d and 1e) and completing an entire unit unlocks the following with more lessons and activities. Through the app the writing skill is develop through the letter and number tracing games (Figure 1a and 1c) as well as the listening skill thanks to the great amount of input.

It is an attractive app in terms of design since it uses a wide range of very striking colours and animal characters (Figure b). Moreover, it has a parent zone in which parents have to introduce a required pin and allows parents to interact with other parents who share the same application, see the completed units and activities, get extra content control the progress of the child or edit reminders to play.

2. Duolingo

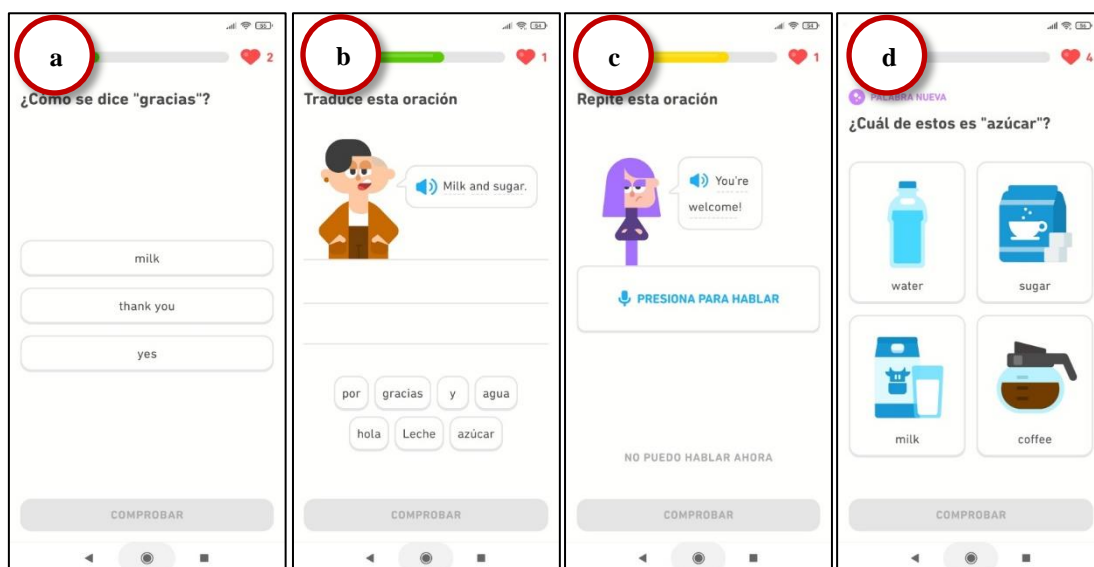


Figure 2. Duolingo activities

The app is free and is not targeted to a particular age consumer but it has the PEGI 3 code. It modulates the learning of languages into a game to make it more effective and each learner is responsible of his own pace and process of learning.

It includes a variety of activities whose main aim is to learn vocabulary and grammar structures as well as develop to a greater or lesser extent the four macroskills. For instance, new vocabulary is taught through pictures (Figure 2d) and grammar points are explained in little speech bubbles. In addition, there are numerous activities to practice English such as listening exercises in which the learner has to write what he/she has heard, speaking activities that consist of reading aloud a sentence (Figure 2c) or repeating what has been heard, match the words to their foreign language equivalents, writing the translation of a word (Figure 2a) or a sentence (Figure 2b), listen and chose the option heard or complete the gaps of dialogue with the multiple choice options given. As students progress through the different lessons (with topics such as travel, food, family, jobs, and shops among others), which can be repeated as many times as necessary, they receive experience points as they and these lessons can be.

The learning fostered by Duolingo is visual as new vocabulary is learn through pictures or flashcards, a code of colours is used to indicate whether the answer is right or wrong, and highlighted words to focus the learner attention on new words or grammar points. In addition, it has an attractive design as the main character is a green bird and during the activities some animated characters appear.

3. Memrise

It is a language learning app which does not specify the target consumers but it has the PEGI 3 code. Its learning method is based on the repetition of words or short sentences in order to be memorised by the learners and the acquisition of the new word or sentence is illustrated with a flowerpot. When the activities are completed, the flower grows and when the sentence or word has already been learn, the flower reaches its maximum size.

This app is focused on colloquial and informal English and it contains a variety of activities to develop speaking, writing, listening and reading. These include videos of native people saying the target word or sentence (Figure 3a), translation exercises (Figure 3c) writing exercises in which the letters or words are given to the learner in order to form the word or sentence correctly (Figure 3b) and listening exercises in which the learner has to discriminate the word heard and choose it among the four options given or by a word given the learner has to choose one of the four recordings that say that word. There are also speaking activities in which the learners are given a sentence and they have to record their voice saying it (Figure 3d).

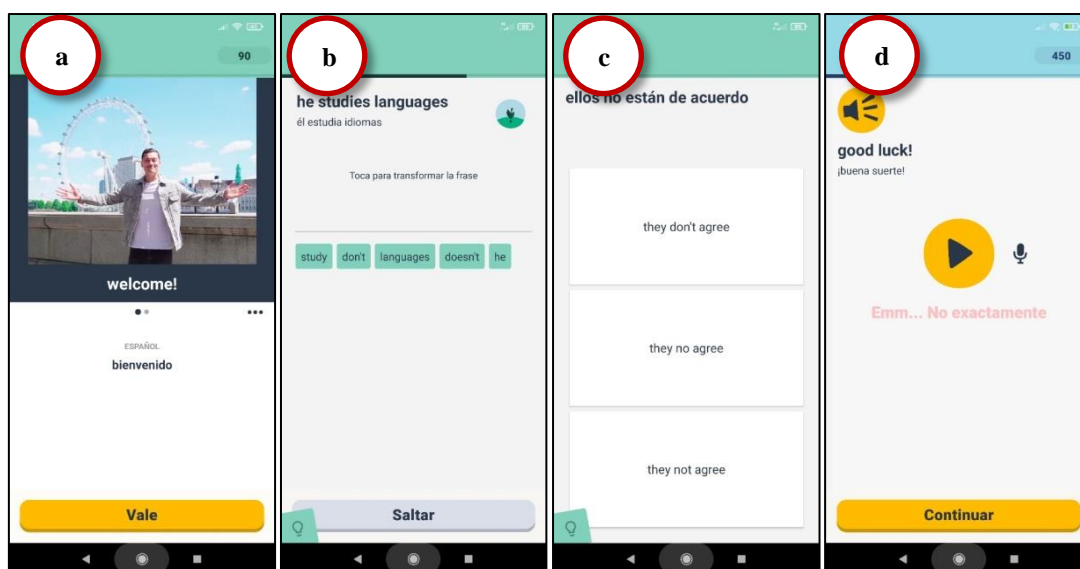


Figure 3. Memrise activities

Moreover, there are two types of activities to review vocabulary: the classic review, in which learners are able to reinforce the last words learned without time limitations, or the quick review, in which the sentences and words learned are shown through the variety of activities previously mentioned so the learner can revise how many of it

he/she remembers in a limited time and with a fixed number of lives that will be reduced as the player fails.

Learners' feedback indicates whether the answer is correct or not, always highlighting in green the correct answer and in the case of an incorrect answer, in red.

4. Early Learn

Early Learn App For Kids is an educational learning game for preschool kids aimed at learning the alphabet, numbers and the names of a wide range of animals, fruits, vegetables, shapes, colours, means of transport, musical instruments, flowers, countries and parts of the human body in an interactive way. It is also a colourful app that helps kids in their process of learning, with an interface that makes kids be focused on phonics and letters. It has no third-party ads nor in-app purchases.



Figure 4. Early Learn activities

It contains a series of activities (Figure 4a) to help children recognize letter shapes, associate them with phonic sounds and pictures (Figure 4d and 4e), and use their knowledge of the alphabet in matching exercises in which numbers or words are shown and the learner has to choose the appropriate picture is being asked. In addition, it uses

some songs such as five little monkeys (Figure 4c) or Twinkle Twinkle Little Star (Figure 4b) to introduce English to the little ones. Moreover, it is important to note that the learner is not provided with feedback as the app does not require any output and the skills developed are the receptive ones: listening and reading.

5. Johnny Grammar

Johnny Grammar's Word Challenge, developed by the *British Council* and labelled with the PEGI 3 code, contains quizzes for English learners to examine the spelling, grammar structures and basic everyday vocabulary. It has three levels, from easy to hard, three quiz categories, words, grammar and spelling (Figure 5a), and ten common topics (food and restaurants, travel and getting around, small talk, hobbies, idioms, express yourself, films, TV and Internet, at work, taking it easy and shopping).

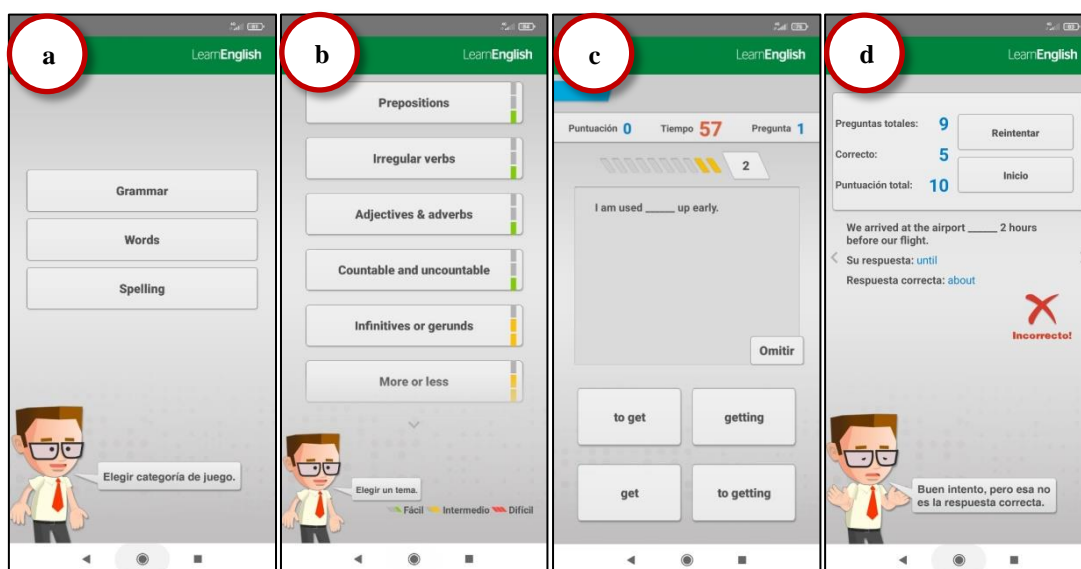


Figure 5. Johnny Grammar

Furthermore, it offers twelve grammar topics, such as prepositions, irregular verbs, adjectives and adverbs, countable and uncountable, infinitives or gerunds, more or less, expressions with colour, few and little, adverbial clauses, modals, linkers and conjunctions (Figure 5b).

Each quiz lasts sixty seconds and the player has to complete each sentence gap with the multiple choice options appeared under the incomplete sentence (Figure 5c). If the answer is correct, the player receives five points and if not, two points are diminished and at the end of each quiz, feedback is provided to each sentence answer in order to let the learner know his/her mistakes and the correct answers that can help him/her in the

process of learning (Figure 5d).

It is important to note that not all skills are developed through the game as what the learner has to do is only to choose among the 4 options given. The reading skill is the only one developed as players have to read carefully each sentence to choose the correct answer. It also can be said that, taking into account learners' age, the writing skill is developed thanks to activities in which the player has to choose the word spelled correctly. Through the game by completing the quizzes, learners win insignias such as grammar novice, grammar ace, grammar master, word apprentice, word builder among others and they also compete with other players on a world leader board.

6. Quiz your English

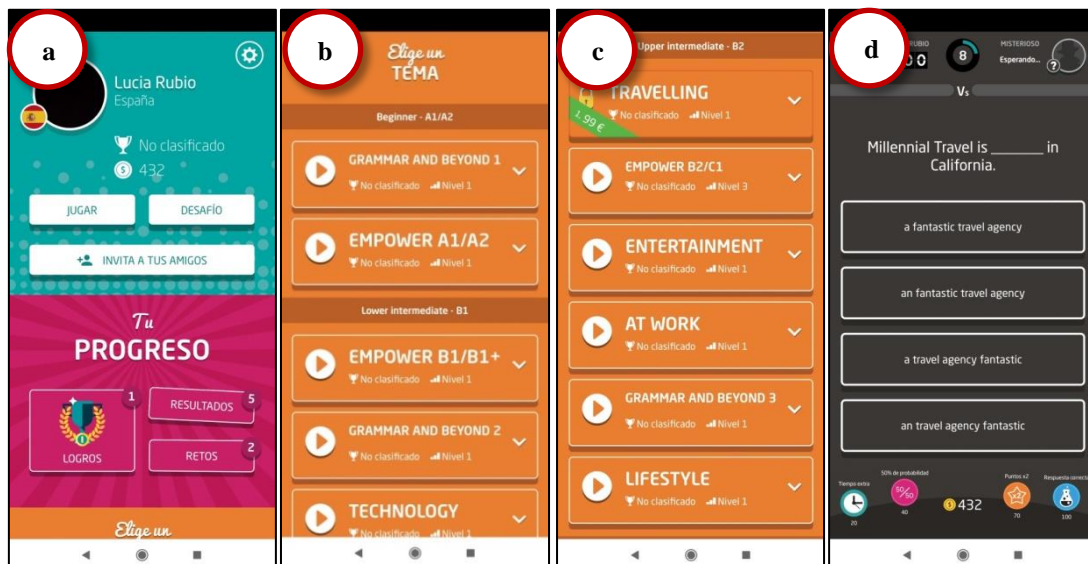


Figure 6. Quiz your English

It is an app labelled with the PEGI 3 code and developed by Cambridge English, in which the player learns through testing his level of English and competing against students from all over the world or with their friends (Figure 6a). The game is based on answering a large number of multiple choice questions quickly against opponents around the world (Figure 6d) and as soon as the quiz finishes, the player receives points which are accumulated and allow the player to level up and the answers given can be checked in the statistics section to see where the mistakes were made. During the game feedback is provided by signalling in green colour the correct answer and if the learner has chosen an incorrect one, it will be highlighted in red colour and in green the correct

one.

Its quizzes cover a variety of topics and grammar that help the learner practice the vocabulary for work, education, travel or leisure and develop the reading skill as they have to read carefully each sentence in order to choose the correct answer and to a lesser extent, writing is also worked in the activities which require the knowledge of the correct spelling of the word to choose the correct answer.

It must be highlighted that each topic is related to a particular level of mastery according to the CEFR levels (Figure 6b and 6c), so depending on each learner level of English, the player will be able to play to some quizzes or others.

As the content is official from Cambridge English, exam packages are also available to help students prepare the Cambridge exams as the Cambridge First Certificate or Cambridge PET.

7. Cambridge Exam Lift A2

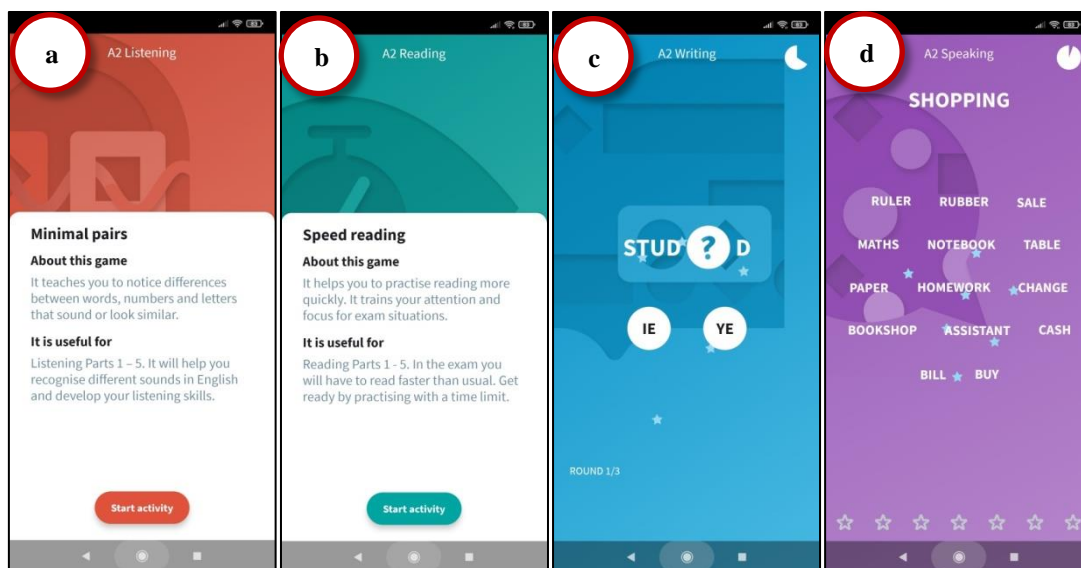


Figure 7. Cambridge Exam Lift A2

The app created by Cambridge Assessment English, which is run by the University of Cambridge, is labelled as ‘for the entire family’ according to *Google Play Store* age ranges and aimed at helping learners providing them with skills-based activities to pass the A2 Key for Schools exam.

The app focuses on reading, writing, speaking and listening, developing the skills and microskills such as skimming, identifying collocations or predicting content for

productive listening tasks through the variety of activities proposed. Some of them are minimal pair discrimination (Figure 7a), spelling exercises (Figure 7c), error finding in which the player has to say the sentence shows is correctly written or not, speed reading of a sentence and answering a question related to it (Figure 7b), complete a dialogue choosing the options given or choose the words related to the given topic (Figure 7d).

Each level contains four activities, one for each skill to develop and feedback is provided twice: right after the learner answer by a tick or cross and at the end of each activity by showing the list of the answers given and the correct ones. If it is a listening activity, the player can listen to the recording again to be able to found out what the mistake was.

The free version only allows the learner to play one different level every twenty-four hours or to repeat the same level played with exactly the same activities. Only one level is available each day, which means that the learner cannot play the previously unlocked levels if he does not pay for the premium version.

8. Easy peasy

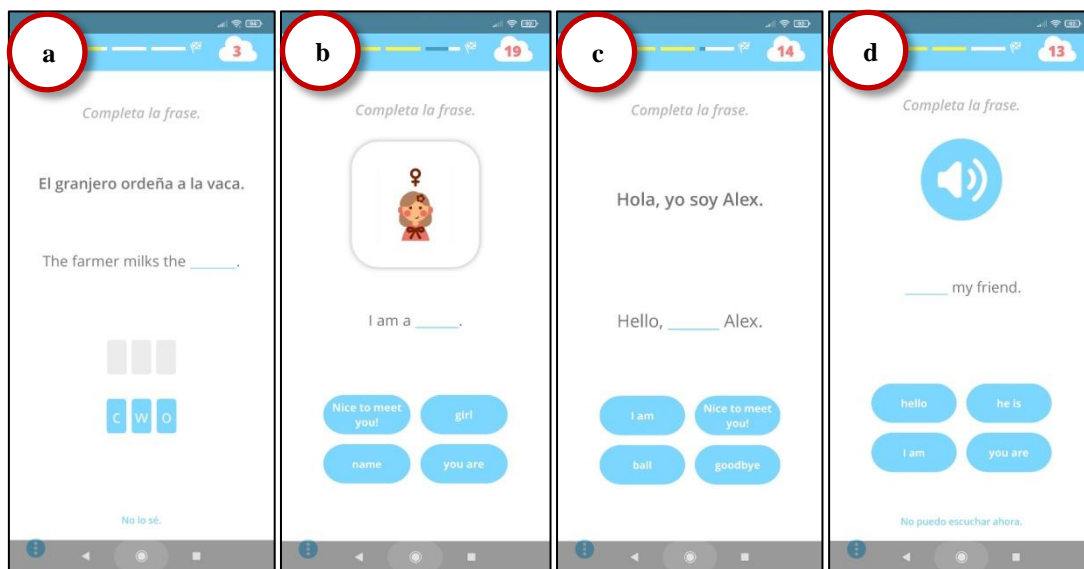


Figure 8. Easy peasy activities

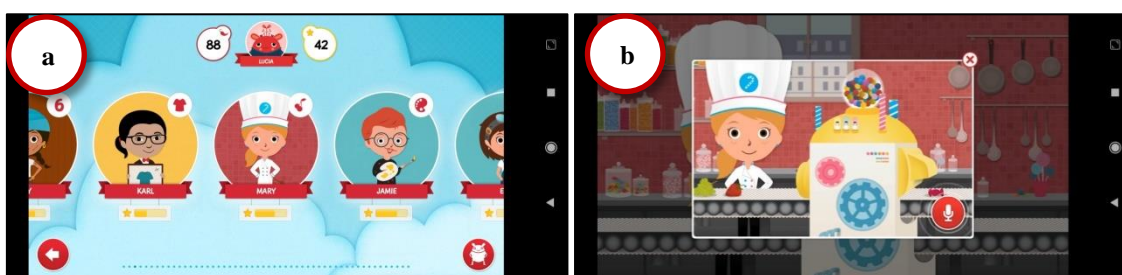
It is an app for six to twelve year-old children that helps them learn vocabulary, syntactic structures, grammar, pronunciation and phonetics through flashcards. The learner can use the ones already created or invent ones which are more appropriate for his learning process. This feature can be included in class as an activity to review

vocabulary or as a follow-up of a lesson.

There are several learning activities that include matching words or pictures, spelling out, translation (Figure 8a and 8c), listening and understanding and completing sentences with the multiple choice options given (Figure 8b). Words are first presented with pictures to understand the meaning better and then are repeated several times so learners can learn them by using them in the activities. Through the exercises learners develop the specially the passive skills such as reading, as sentences need to be read in order the learner to choose the correct answer, and listening through the activities in which the learner listens to a word and has to choose the correct answer in which the word appears written (Figure 8d). The writing skill is also develop to a lesser extent through the exercise in which the letters that form a word appear disordered and the learner has to order them to form the word that corresponds to the picture shown.

Feedback is provided using a code of colours, in the case of the multiple choice activities it is given by colouring in green colour the correct answer and in red the incorrect one chosen by the learner. In the exercise about translating a sentence by ordering the words given or introducing the letters given in order to form the word of the picture shown, when all words or letters are ordered correctly, they appear in green colour but if there is just one letter or word not well ordered, the whole sentence or letters are shown in red and immediately, they are relocated in green colour. Furthermore, every time a flashcard game is completed successfully, the player receives a coin that allows him/her to play non-educational games such as *Invaders*, *Pong* or *Snake*. However, the free version only allows the learner to play two flashcard games per day.

9. Pili Pop English



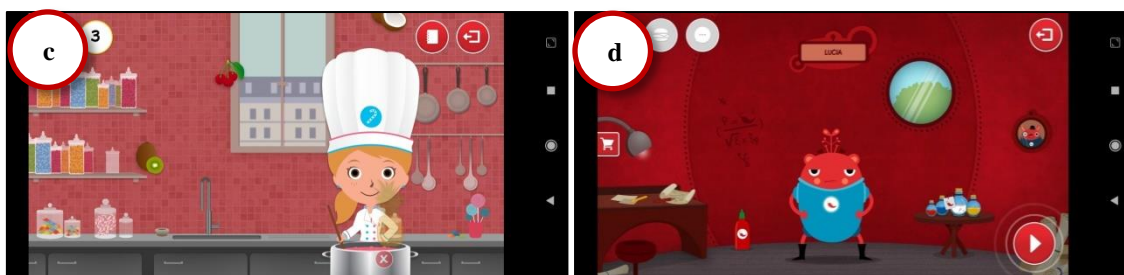


Figure 9. Pili Pop English

The app helps learners between five and ten years to acquire the second language through two types of activities which help learners practice two different macro skill: listening and speaking. The former is developed through exercises (Figure 9c) which involve understanding and recognising what has been said in order to be able to carry out the assignments, while the speaking activities (Figure 9b) pictures are shown and the learner has to accomplish different tasks through spoken English that goes from repeating the names heard of some fruits, clothes or colours to asking some guided questions. By practicing oral skills daily, the learners are expected to be able to recognize and pronounce everyday words as the same time they improve pronunciation.

Corrective feedback is visual as when the learner is wrong in his/her answer, a red cross is shown next to the answer/item selected followed by a sound of failure. On the other hand, positive feedback is only given by a sound that people associate to a correct answer and a point is added to the game score.

As the player completes the activities, whose topics are varied (numbers from 0 to 20, everyday clothes, food that includes vegetables and fruits, colours, places of the city or pets (Figure 9a) among others), the points accumulated are transformed into some red chillies which given as a reward in order to exchange them for food and many other things to take care of Pili, the main character of the app (Figure 9d).

10. Simpler

The app is labelled as ‘for the entire family’ according to *Google Play Store* and it is aimed at the learning of the second language, English. When the learners start to play the app, they first have to complete a short test.

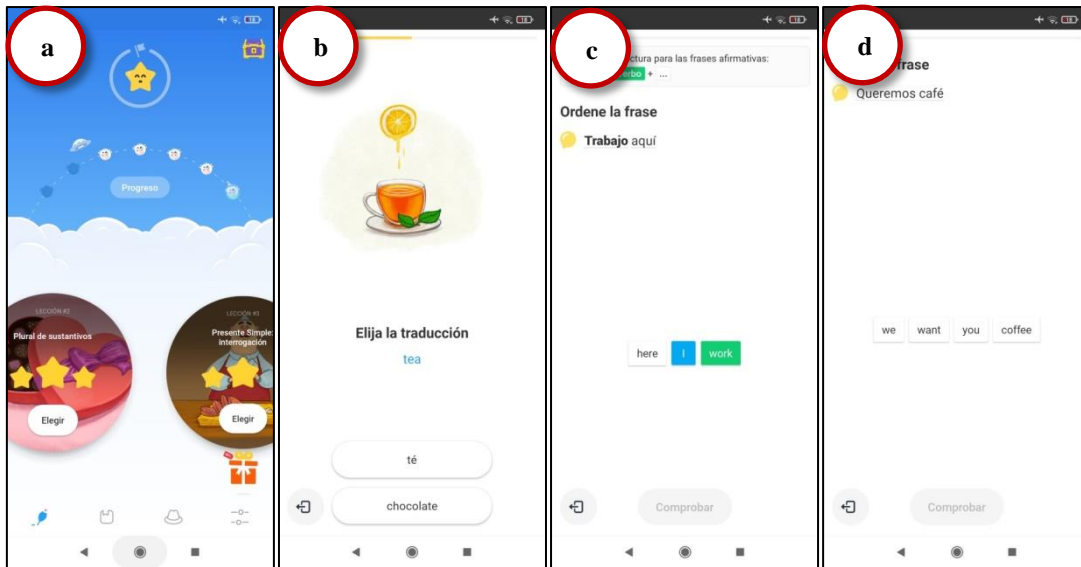


Figure 10. Simpler

There are several levels which each of them is focused on a different grammar point (Figure 10a) and it contains three sections to be done in order. The first one called 'words' introduces new vocabulary through links between word and image (Figure 10b), the second one named 'rules' explains the grammatical rule and requires the learner to practice it with translation exercises in which the learner has to select the words given in order to create the sentence properly (Figure 10c). Finally, the trainer mode allows the learner to practice the vocabulary with the grammar points learned in the previous sections (Figure 9d). All these activities foster the reading skill, as the learner needs to read the vocabulary shown or the sentences in the translation exercises among others, the listening is also worked as the pronunciation of each answer whether is corrected or not is heard and writing through the activity in which the player has to order words to create the indicated sentence. Moreover, feedback is provided at all times whether the answer is correct or not, a pop-up window shows the correct answer varying its colour depending if the answer given is correct (green) or incorrect (red) and the pronunciation of the correct answer is heard. If the learner is wrong, the explanation of the grammatical structure will be shown to make the learner notice the mistake.

11. Learn English Playtime

It has been created by the *British Council* and it targets children between six and eleven years old. Learning is based on the use of songs or videos with subtitles, which can be activated or deactivated, and different games and activities all classified into different

topics (Figure 11a).



Figure 11. Learn English Playtime

It has been created by the *British Council* and it targets children between six and eleven years old. Learning is based on the use of songs or videos with subtitles, which can be activated or deactivated, and different games and activities all classified into different topics (Figure 11a). There are a variety of activities which develop listening, reading, writing and, to a lesser extent, speaking. These include listening and recording words appearing in the videos (Figure 11c), being able to compare the learner's pronunciation with the real one and some games to improve spelling, understanding and grammar which are of three types: in the ABC exercise a picture is shown and some letters are given in order to select the correct ones and organise them to form the corresponding word (Figure 11d). In the second one, the learner has to choose the correct answer from the multiple choice options that correspond to the name of the picture shown (Figure 11e) while the third one consist of selecting from a list of words given, the ones that are verbs, nouns or adjectives, always illustrated by an example of each category (Figure 11f). The feedback is given similarly in all activities, when the learners fail in the option chosen appears a red cross and the correct answer is coloured in green and a tick is shown next to it. In the case of the ordering words activity, if the learner chooses a

letter incorrectly, the remaining letters needed to form the word are ordered, giving no choice to the players to try again.

In each game pack, parents can see the child's progress in five different areas: videos, speaking, spelling, comprehension and grammar, which each one correspond to the activities mentioned and there is also a parent zone to change the app settings (Figure 11b).

4.2 Descriptive analysis

Apart from observing the description of each app shown in *Google Play Store*, a series descriptive features and second language aspects have been selected in order to evaluate the apps aimed at early second language learners objectively and optimally. The first part of the analysis corresponds to the descriptive aspects that include all important features at the time of choosing an app for children. The Table 1 shows all these aspects taking into account at the time of analysing the descriptive features.

The descriptive factors were firstly analysed as they give a broad view of the apps selected and are significant for the analysis of the validity of learning. The descriptive aspects were analysed taking into account all these features:

- Target public to which they are aimed at since the PEGI code is extremely broad and not all apps indicate a narrow circle of target learners what implies that, in order to introduce or use them in the primary education classes, apps should be tested and analysed to know to which extent are appropriate for a specific children age.
- Play offline.
- Play with friends.
- The attractive and intuitive design.
- The option to personalise the app.
- Preparation for an official certificate of language proficiency.
- Time to play free.
- Advertisements.
- In-app purchases.
- The existence of a parent zone.
- Registration process.
- Activities difficulty.
- Adequate content.
- Limited time to answer.

	Target users	Play offline	Playing with friends	Preparing an official certificate	Attractive design	Personalise the app	Intuitive
Lingokids	2-8	Yes, but videos can not be seen	No	No	Yes	No	Yes
Duolingo	-	Yes, if the units have been previously downloaded	No	No	Yes	The character appearance	Yes
Memrise	-	No	No	No	Yes	No	Yes
Early Learn	Until 5	Yes	No	No	Yes	No	Yes
Johnny Grammar	-	Yes, but the classification is not shown	No	No	Yes	No	Yes
Quiz your English	-	No	Yes	Yes	Yes	No	Yes
Cambridge Exam Lift A2	Entire family	No	No	Yes	No	No	Yes
Easy peasy	6-12	By paying the premium version	No	No	Yes	Create your own flashcards	Yes
Pili Pop English	6-12	Yes if the activities have been previously downloaded	No	No	Yes	No	Yes
Simpler	Entire family	Yes	No	No	No	No	Yes
Learn English Playtime	6-12	Yes, if the tales videos have been previously downloaded	No	No	Yes	No	Yes

Table 1. Descriptive aspects

	Time top lay free	Advertisements	In-app purchases	Parents zone	Register	Activities difficulty	Aduquate content	Limited time to answer
Lingokids	2 games/day	Premium version ads	Yes	Yes	Yes	Easy, medium, hard	Yes	No
Duolingo	When they run out of lives	Premium version ads	Yes	No	Yes	Initial exam to adapt difficulty	Yes	No
Memrise	Free versión reduces content	Premium version ads	Yes	No	Yes	Beginner and intermediate	Not very adequate	No
Early Learn	Free	Third-party ads	No	No	Yes	Already established	Yes	No
Johnny Grammar	Free	Third-party ads	No	No	No	Easy, medium, hard	Not very adequate	Yes
Quiz your English	Limited activities	Third-party ads	Yes	No	Yes	CEFR levels	Depends on the learner	Yes
Cambridge Exam Lift A2	Limited activities	No	Yes	No	Yes	Already established	Depend on the learner	Yes
Easy peasy	2 games/day	Premium version ads	Yes	No	Name and English level	Easy, medium, hard	Yes	No
Pili Pop English	40 games	No	Yes	Yes	Name and age	Easy, medium, hard	Older learner might get bored	Yes
Simpler	Free versión reduces content	Premium version ads	Yes	No	No	Already established	Yes	No
Learn English Playtime	Only offers a trial version	Premium version ads	Yes	Yes	No	Easy, medium, hard	Older learners migh get bored	Yes

Table 1. Descriptive aspects

Regarding its possible use offline, mobile learning has been shown (Gangaiamaran and Pasupathi, 2017) to enhance the mobility of learning process without time constrain. Except for 4 cases (*Memrise*, *Quiz your English*, *Cambridge Exam Lift A2* and *Easy peasy*) in which the offline mode is not contemplated in the free version.

The app developers of *Lingokids*, *Early Learn*, *Johnny Grammar*, *Easy peasy*, *Simpler*, *Pili Pop English*, *Duolingo* and *Learn English Playtime* considered significant the limitation of use that implies. But it is important to note that in the last three apps mentioned, the content requires to be downloaded before being used without connection to the Internet.

Regarding the option of playing with friends online, this is only available in one of the apps, *Quiz your English*. This highlights the fact that app developers do not seem to consider connection as an important feature that can promote learning through cooperation or in this case, rivalry. However, Oțoiu et al., (2019) when cooperative learning or rivalry takes place, learners achieve positive performance outcomes due to the increasing motivation and achieve the common or individual goal, which in the case of *Quiz your English* is winning the quiz.

When it comes to the difficulty of activities, most applications have different levels of performance (easy, medium and hard), although the labels vary depending on each app. *Lingo kids*, *Johnny Grammar*, *Easy peasy*, *Pili Pop English* and *Learn English Playtime* belong to this group while *Memrise* only has the beginner and intermediate levels.

Cambridge Exam Lift A2, *Simpler* and *Early Learn* have a level of difficulty already established for each app whereas *Quiz your English* adopts the levels of the Common European Framework of References for languages.

Duolingo, unlike the rest, has an option to start from scratch or take an initial exam to adapt the difficulty.

Preparing early second language learners to obtain an official certificate of language proficiency does not seem important for app developers as only the apps developed by Cambridge, *Quiz your English* and *Cambridge Exam Lift A2*, take this feature into account. As a matter of fact, these apps are aimed at helping users pass the Cambridge English exams so the main objective of these apps is to practice exam skills. The reason for the scarcity of preparation for a certificate of language proficiency in the analysed apps may be found in the fact that the remaining apps support a meaningful learning

approach that engages students with the only goal of learning learn English or making learners become interested in the second language learning.

Another aspect considered in the analysis is the attractive design, which is crucial to engage children in their adventure of learning since young learners play this kind of app with the purpose of having fun rather than of learning. The descriptive analysis showed that app developers, whose target audience are children, seem to have kept in mind the need to create an app that connects both of them to achieve the best learning outcome. The attractive design of the apps which targeted a particular range of ages included, in most cases, animal characters and even the apps labelled with the PEGI 3 and do not target a specific target public have a design that engages learners. For instance, *Duolingo* uses a green bird as the character that accompanies and helps the little users in the learning process. Those apps which were labelled ‘for the entire family’ have a design that might not be very suitable for kids learning because these apps are not very thrilling as a result of not including engaging characters or motivating rewards to increase the motivation of playing the app and thus, learn (Figure 12, Figure 13a and 13b).



Figure 12. Exam Cambridge Lift A2 app

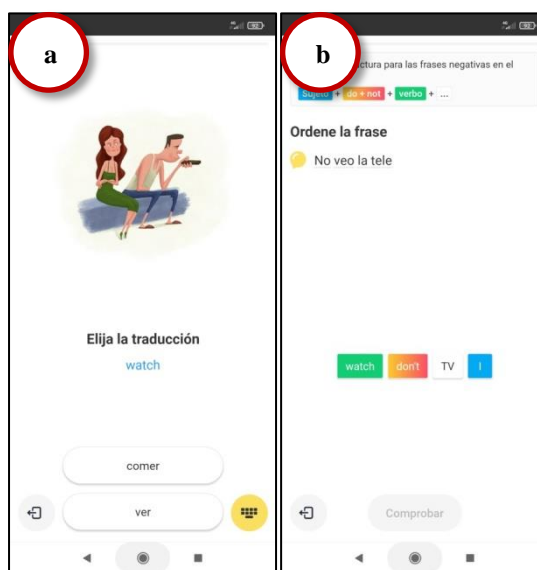


Figure 13. Simpler translation activities

The only apps that allows the learner personalise the apps are *Duolingo*, in which the character appearance can be changed, and *Easy peasy* which lets the player create his own vocabulary cards to learn. The fact that 9 apps do not allow the player to personalise the apps, might imply that they do not foster learners’ creativity and the reason of the unchangeable design of the apps may be explained by the appropriate design they have

according to the age group they are aimed at.

Another important aspect to highlight is the intuitive design that the all apps selected for the study have. App developers seem to have been aware of the fact that as apps are aimed at language learning, users need to understand the activities or what they are being asked in order to achieve the goal of learning.

The applications in this study were initially offered as free, but when the users download them, they will realise that they are not totally free.

Only 2, *Early Learn* and *Johnny Grammar*, are completely free and 4 of them, *Memrise*, *Easy peasy*, *Pili Pop English* and *Learn English Playtime* inform about the premium version in their descriptions.

In *Lingokids* and *Easy peasy* free version only two games can be played while *Duolingo* lets the learners play unlimited times provided that they do not run out of lives. *Memrise* eliminates two types of activities and *Simpler* removes the most engaging activities, but in any case, this does not prevent people from learning. The two apps developed by Cambridge offer limited activities to learn the second language or to prepare for an exam, so developers want to take advantage of that and persuade users to pay for the premium version and unlock exam preparations. *Learn English Playtime* and *Pili Pop English* only offer a trial version.

For this reason, users should not forget that apps are commercial products and they are not necessarily free although they belong to this *Google Play Store* category and in the description does not mention the information related to the premium version.

The fact of not mentioning in the app descriptions some relevant information such as the free version of apps also happens with the advertisements and in-app purchases.

Regarding advertisements, there are only 2 apps which do not contain any kind of ad (*Cambridge Exam Lift A2* and *Pili Pop English*), 3 of them includes third-party ads (*Early Learn*, *Johnny Grammar* and *Quiz your English*) and the remaining 6 only offer the premium version in their ads. Moreover, the analysis of *Early Learn* and its description provided by *Google Play Store* showed, results show that the app description is misleading as it states that there are no advertisements of the type mentioned while they actually do appear in the app.

Early Learn and *Johnny Grammar* are the only apps which are completely free. The rest of the apps offer purchases related to the premium version and it must be said that

Duolingo, *Lingo kids*, *Cambridge Exam Lift A2* and *Simpler* omit this relevant information in the app description of *Google Play Store*.

In this line it is important to highlight the scarcity of parental zones and the how parents access to them, taking into account all the apps that contain ads and in-app purchases. For instance, in *Lingo kids* caretakers or parents have to introduce the numbers that appear written with letters while in *Pili Pop English* they have to solve a division by clicking on one of the three options given and in *Learn English Playtime* an addition must be solved introducing the result correctly.

Before starting to play, learners need to be registered in 6 of the apps analysed. In order to do so, the apps offer different options such as registering through Facebook, Google or with the user's mail, as it is the case of *Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Quiz your English* and *Cambridge Exam Lift A2*.

Another aspect analysed was whether the content appearing in the applications is adapted to the age range for which it is aimed at. For example, *Lingokids* and *Early Learn* are directed towards the youngest children and their content is reduced to basic vocabulary lessons to learn numbers, names of fruits or colours, among others. In addition, the former includes letter and number tracing activities that help the little ones learn how to write them.

Regarding *Simpler* and *Duolingo*, the content includes a variety of grammar structures and vocabulary which are adequate for early second language learners. On the other hand, *Cambridge Lift A2* and *Quiz your English* are directed to learners who want to practice English in order to pass a Cambridge Exam, so the content might not be suitable for those learners who do not have this objective.

Easy peasy offers a wide range of topics that allow the learner to choose the adequate difficulty of the game whereas in *Learn English Playtime* and *Pili Pop English*, older learners might get bored because of the simplicity of the games.

The content of *Memrise* as well as *Johnny Grammar* is not appropriate for early second language learners as the former teaches very colloquial and informal English and the content in the latter, is of high difficulty and, as a result, the variety of topics for learners is reduced.

As regards limitation in the time to answer, *Lingo kids*, *Duolingo*, *Memrise*, *Early Learn*, *Easy peasy* and *Simpler* allow the learner to answer without time constraints,

thus these apps would respect the individual needs of each student and their varying learning times. It is important to mention that there are two apps, *Johnny Grammar* and *Quiz your English*, which are based on quizzes and therefore, the timing of their activities seems to be justified.

To sum up, the results of the analysis showed that app developers have taking into account several important features that can make the process of learning enjoyable and engaging such as the attractive and intuitive design of apps, the play offline mode so learners are able to learn without place and time constraint, the targeted public in relation to the activities difficulty and adequate content and the unlimited time to answer that respects each learner pace of learning.

The features that have not been considered by the app developers as important as the previous ones mentioned are the preparation for an official certificate of language proficiency, play with friends, the existence of a parent zone to manage advertisements and in-app purchases or asking in the registration process for the learners age o level of English.

The feature of creating reminders has not been consider significant as the person who is responsible both for the child and for the time he/she makes use of technology, should know when it is the appropriate moment to use the app as well as the available time the child should be playing.

4.3 Learning English through apps

The next step in the analysis focused on the extent to which aspects of learning are taken into account when creating an app for early second language learners.

In this section the most significant aspects at the time of learning a second language and to which extent they have been taken into account by app developers are analysed, including all important features that parents or caretakers who want to learn English should keep in mind at the time of choosing an appropriate app for their learning. Table 2 shows all the aspects taken into account when analysing the apps: the input received by the player, the output produced by the learner and the type of feedback provided among others.

	Input	Output	Feedback	Interaction	Accuracy vs. fluency	Motivation
Lingokids	Oral	No output	No	No	Accuracy	Extrinsic (songs, win insignias)
Duolingo	Both	Oral and written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (unlock new lessons, win gems and experience points)
Memrise	Both	Written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (unlock new lessons)
Early Learn	Both	No output	No	No	Accuracy	Extrinsic (songs)
Johnny Grammar	Written	Written	Only correct or incorrect answer	No	Accuracy	Extrinsic (climb positions in the app's rankings)
Quiz your English	Written	Written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (climb positions in the app's rankings)
Cambridge Exam Lift A2	Both	Written	Summary of learners answers and the correct ones	No	Accuracy	Intrinsic
Easy peasy	Both	Written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (coins to play other non-educational games)
Pili Pop English	Oral	Oral output	Only correct or incorrect answer	No	Accuracy	Extrinsic (chillies used to buy food and products to use for the care of Pili, the app's pet)
Simpler	Both	Written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (points to level up)
Learn English Playtime	Both	Oral and written	Correct or incorrect answer + correct answer highlighted	No	Accuracy	Extrinsic (engaging stories)

Table 2. Learning aspects and motivation

4.3.1 Input

The most important feature of an app which aims at promoting language learning is the amount of input it offers to learning. According to Krashen's input hypothesis (1985), input is extremely important at the time of learning a language because language acquisition takes place when the amount of comprehensible input is received and therefore, for the development of the learner's *interlanguage* (Selinker, 1972), which is the continuum between the learner initial level of a language and the native level.

As regards the analysed apps, all of them provide input but of different nature. *Lingo kids* and *Pili Pop English* only provide oral input as the activities mostly consist of understanding what the learners are asked and every time they select an item or an object, they listen to how the word corresponding to the selected object is pronounced. On the other hand *Johnny Grammar* and *Quiz your English* provide only written input through quiz activities that involve a reading the sentences that have to be answered in the shortest time possible.

In *Duolingo*, *Memrise*, *Cambridge Exam Lift A2*, *Easy peasy*, *Simpler*, *Early Learn* and *Learn English Playtime* input is both oral and written so their benefit for learners will be more complete since they can learn how a word or sentence is pronounced and written. The activities of these apps include the pronunciation of the selected and correct options, the understanding of the instructions given (e.g 'take a red coat'), clicking a word or picture to hear how the word is pronounced as well reading a word accompanied by a picture or a text fragment in order to answer some questions and read carefully the sentences that the learner is asked to translate into his/her first language among others.

In *Easy peasy*, *Simpler*, *Memrise* and *Duolingo* children are exposed to both languages Spanish and English as the target public are young learners of English and may not understand some activities. The use of the learners' first language input in certain exercises or explanations is justified to enable the learner understanding. Moreover, these apps used Spanish to practice through translation exercises. However, there is no need to translate the exercise statements in *Easy peasy*, *Duolingo* and *Simpler* since the activities are extremely intuitive.

It must be noted that 7 apps comply with Krashen's (1982) net hypothesis, which states that the learner is mainly exposed to *roughly tuned input* as the input is not adapted to

the current interlanguage of the players. For instance, *Lingo kids*, *Pili Pop English*, *Early Learn*, *Quiz your English*, *Cambridge Exam Lift A2*, *Johnny Grammar* and *Learn English Playtime* do not adapt the language but the visual aids used, such as videos or pictures help the player understand the activities and instructions given, which is more suitable for his/her process of learning.

4.3.2 Output

Another aspect to consider for language learning is the output produced by the learner. Based on the output hypothesis (Swain, 1985), when answering the wide range of questions proposed by each app, the app players can be aware of the gaps in their interlanguage and realise the aspect of language that they do not know or master, for instance, grammatical structures, vocabulary or the way a word is pronounced.

Ranking the applications in terms of output, both oral and written, from the most to the least output facilitating app, the analysis showed that, *Duolingo* and *Pili Pop English* are the ones which elicit more output. The first app offers translation of sentences into Spanish or English through the learner's own keyboard, what implies that the learner must know how each word is written as any letter or word is given, listening to a brief sentence and choosing the words offered in the order they have been heard or a speaking activity based on the pronunciation of a sentence shown in the screen.

Pili Pop English speaking activities goes from asking the learner to repeat the name of things such as clothes (e.g 'coat') or food (e.g 'apple') among others, to answer questions with a whole sentence as it is the case of the clothes topic in which players have to say 'the model wants a coat' or in the case of the food topic, 'it's an apple'.

The second group of apps regarding the output elicited are *Memrise*, *Easy peasy*, *Simpler* and *Learn English Playtime*, together with answering multiple choice questions, the player is asked to order the letters or words given to create a word or sentence or to translate sentences or words. *Learn English Playtime* also allows children to record their pronunciation of some words appearing in the stories so they can listen to them to know if they have pronounced correctly.

The third group of apps includes *Johnny Grammar*, *Quiz your English* and *Cambridge Exam Lift A2* the learner answers are limited to the choice of an answer among the

multiple choice questions. These include vocabulary, grammatical structures or spelling focusing on language accuracy and the child does not have to produce speaking nor writing output.

The last apps in the ranking are *Early Learn* since no output is elicited as the player only has to touch the pictures in order to hear how they are pronounced or to choose the correct picture according to the word shown and, in a similar line, *Lingo kids* only requires learners to understand what they are being asked to do during the different tasks, such as in letter tracing exercises.

4.3.3 Feedback

Long's proposal (1996) in terms of feedback and to what extent it is provided by the apps analysed is another issue explored in this study as it is vital in the process of learning because it allows the learner to realise the mistakes made and helps him/her in their second language development and improvement.

The analysis showed that the apps explored in this study provide both positive and negative feedback and use a code of colours, green for correct answers and red for the incorrect ones, or sounds that are commonly attributed to correct or incorrect answers so that the learner is aware that he/she is not correct. It is crucial that learners understand the feedback they are provided so that they can improve in the language learning process and noticing the gaps in their interlanguage. There are some apps in which the feedback provided is more detailed than in others as they offer an explanation about the mistake made as well as the correct answer.

Early Learn for example, does not provide any kind of feedback because the child only has to touch the pictures or words in order to listen to how they are pronounced and in the matching exercises the learner has to choose the appropriate picture according to the numbers or words showed but he/she does not know either the correct or the incorrect answers as it only appears a score depending on the number of correct answers. Similarly, *Lingo kids* does not offer corrective feedback in all the activities when the learners are mistaken, they notice the error because, simply, nothing happens when they do it.

The feedback given by *Johnny Grammar* and *Pili Pop English* is simply limited to informing the learner if the answer is correct or incorrect, avoiding all kind of

explanations or praise.

Duolingo, *Quiz your English*, *Easy peasy*, *Learn English Playtime*, *Memrise* and some activities in *Simpler* do not only indicate whether the answer is correct or not, in case the learner is not accurate and makes a mistake, but they will also highlight the correct answer. Besides, the last three apps mentioned repeat the pronunciation of the correct answer regardless of whether the player was correct or not, what makes him/her receive more input. As an example we can mention that when the learner fails in a *Simpler* activity of ordering words to create a sentence, the answer is marked as incorrect and a pop-up window is shown with the grammatical explanation, which seeks to make the learner aware of the mistake.

Cambridge Exam Lift A2 is another example of high-quality feedback since at the end of each activity a register of the learner answers, the correct ones and a summary of the input received (which is an audio or a text) is provided, so that learner is able to compare his answers with the correct ones and understand why he/she was wrong.

4.3.4 Interaction

With regard to interaction, Long (1981) suggested that when people interact during communication, they make the input comprehensible and closer to the learner interlanguage. This aspect of learning is, according to the data obtained in the analysis conducted not present in the studied apps, which highlights the weaknesses or limitations of learning through technology, emphasising that learning through real communication is richer and the fact that real conversations or communication are hard to be replaced by technological applications.

4.3.5 Accuracy vs. fluency

The last aspect analysed as regards language learning features is to what extent apps promote or foster accuracy or fluency and according to Skehan et al., (1996), the former is the extent to which the learner's output matches some external standard, traditionally the output of an idealised native speaker, whereas the latter is related to the learner's capacity to produce language in real time without inappropriate pausing or hesitation. The results show that the 11 apps analysed place the focus on language accuracy as the

activities are based on the grammatical correctness and the vocabulary appropriateness of diverse topics. Repetition is included as an element used to achieve the purpose of learning the grammar points and vocabulary without mistakes. Therefore, fluency is not fostered as activities do not promote real communication and in those exercises in which oral output is required, the learner is asked to repeat a variety of sentences until he/she acquires the proper pronunciation.

4.3.6 Motivation

Apart from all these specific aspects of second language learning, it is important to mention a key individual factor that affects the process of learning, motivation. The second language learning motivation of a learner was defined by Gardner (1985) as “the combination of effort plus desire to achieve the goal of learning the language plus a favourable attitude towards learning the language”.

Taking into account the importance of motivation in relation to the analysed apps and being aware of the fact that all of them aim at children learning, results showed that their developers have kept in mind this determining fact as in most of the apps selected, their developers use extrinsic motivation (through rewards or experience points among others), which although it is not as strong as intrinsic motivation according to the Harlow’s puzzle experiment (1949), it is useful to motivate players in order to achieve their goal, English learning. Moreover, according to the Dörnyei Trpartite Model (1994) there are two types of motivation the integrative and the instrumental. The former is the desire to learn the second language because of an interest in the people and culture of the second language group whereas the latter is the desire to learn the second language for utilitarian reasons.

Regarding the analysis of *Cambrige Exam Lift* in terms of motivation, the app is exclusively aimed at the preparation of the CEFR A2 level so it uses the intrinsic motivation of the learner, being himself/herself his/her source of motivation and therefore, it will be increased as the player passes the levels since it will mean that he is improving the level and learning. In addition, the language level motivation of the player is instrumental since he/she plays the app to pass the A2 Cambridge exam and get the recognition of his/her language mastery.

The use of songs as a motivating element stands out in *Early Learn* and *Lingo kids*,

which include vocabulary and grammatical structures that students learn without realising it and can be analysed by learners depending on their age or the language level. Furthermore, songs are an excellent resource to improve aspects of language such as pronunciation.

It is true that *Early Learn* developers seem to be aware of the fact that the app is directed to learners whose age is under 5 and the app does not include any other aspect to encourage learners such as rewards, which makes it lose some great potential. Similarly, *Learn English Playtime* can be motivating for the engaging stories shown, as stated by Ellis and Brewster (1991), storytelling has several benefits such as the increasing motivation, natural repetition or input containing a variety of structures among others.

In terms of motivation, according to the analysis results the apps which might be more motivating are the ones in which the learners complete a series of lessons, levels or activities and receive rewards such as coins to play other non-educational games (*Easy peasy*), insignias with the app characters (*Lingo kids*), points to level up (*Simpler*), red chillies used to buy food and products to use for the care of Pili, the app's pet (*Pili Pop English*) and unlock new lessons (*Duolingo* and *Memrise*).

By way of illustration we can mention *Duolingo*, in which while playing, children get rewards such as gems and experience points by completing the lessons and by achieving some established objectives, such as learning a specific number of words or completing a number of lessons without mistakes. These gems allow the learners to change the character appearance among other motivating aspects.

Quiz your English and *Johnny Grammar* use the potential of the learner's motivation as a result of climbing positions in the app's rankings and outperform both rivals and themselves and, thus, to achieve learning. A different motivating technique is used in *Pili Pop English*, in which the learner establishes a tie with the app pet, which means that if the child is involved in its care, he/she is directly involved in his/her process of learning without realising it.

4.4 Limitations

The last aspects explored in this study are the limitations that the apps selected have for learning a second language and how these apps could be implemented in a Primary

Education classroom. The apps limitations analysis was carried out through the examination of the results of the previous analysis, in which the extent to which app developers had taken into account the learning aspects included in the apps in relation to the theories of second language acquisition, were highlighted. Once the limitations of each app were acknowledged, another analysis focused on the strengths of each app regarding the aspects of second language acquisition was carried out in order to find the possible applications of these apps in the Primary Education.

As regards app limitations, the analysis showed that there are three important limitations to mention. Firstly, there is a clear lack of interaction and negotiation of meaning offered by the apps studied as there are no activities to simulate a real conversation with interactional moves to help the learner understand what he is being asked and make the input comprehensible and closer to the learner $i+1$. In my view, it would be arduous to include these aspects in apps since interaction and negotiation of meaning takes places in real conversation and apps are not focused on simulate real conversations. Secondly, most apps do not facilitate the learner output production, which as contended by Swain in the comprehensible output hypothesis (1985), it is crucial that learners have opportunities to produce output and they need to be pushed to produce a message that is comprehensible, meaningful and grammatically correct and which stretches their linguistic resources so they can be aware of the deficiencies in their interlanguage. Moreover, students need to be pushed to produce more accurately for instance, in front of the class, in written texts or in peer interaction in order to make their interlanguage closer to the native level.

Another relevant constraint is the feedback provided. In most cases in the apps, the learner may not understand why he/she is wrong as there are no explanations offered and as claimed by Swain (1993), when learners are provided with feedback, they modify their second language output to make it more accurate. Moreover, Swain and Lapkin (1995) established three key functions for the second language output and one of them was the noticing function, in which the learners notice the gaps in their interlanguage when they receive feedback that is understood. In order to improve the feedback provided in the apps, app developers should provide learners with explanations of the mistakes made so they can be aware of the gaps in their interlanguage.

These results highlight the need for app developers to improve the apps in order to

achieve the goal they claim, learning. Yet, in spite of the acknowledged limitations, most apps could be used in the Primary Education context, both in the classroom or at home, depending on the learners' age and their level of English, always with the supervision of the teacher in class or parents at home. For instance, the songs in *Lingokids* and *Early Learn* could be used to introduce the topics related to each song or to analyse the songs in terms of vocabulary, grammatical structures or phonics. Moreover, *Learn English Playtime* could be used to practice the aspects of language appeared in the storytelling videos offered by the app such as verbs, adverbs, prepositions, among others, always taking into account the age of the learner, to introduce a new unit or to foster listening through comprehension activities created by the teacher.

Easy peasy, *Pili Pop English* and the quizzes in *Johnny Grammar* would be suitable for students to revise targeted vocabulary topics or grammatical aspects. Moreover, the former offers the possibility of creating your own cards and use them in the app activities.

Duolingo could be used at home, both to learn English and reinforce it as the vocabulary and grammar are taught step by step and the activities offered are so engaging that it could help learners have a more positive view of English. Similarly, *Simpler* is an app that could be suitable for teaching the grammatical points taught at school, to older primary education learners at home as the app offers the explanation of the grammatical rules and allows the learner to practice them.

On the other hand, *Memrise* is not, in my view, the most appropriate one to use for acquiring a language in an educative context as the language taught is informal and colloquial. Similarly, both *Cambridge Exam Lift A2* and *Quiz your English* could be played at home. The former would be aimed at reinforcing any macroskill such as listening, reading, writing and speaking whereas the latter would be used to revise grammatical structures and specific vocabulary found in the Cambridge English exams. Although these apps are aimed at students who want to practice the language in order to get a certificate of proficiency and this is not an aim of the curriculum, it can be a learner objective since getting a Cambridge certificate is specially valued by families and by the formal education context.

5. Conclusions:

The aims of this research were three-fold. Firstly, the analysis is intended to examine to what extent apps, advertised as educational in *Google Play Store*, are valid and effective for acquiring English as a second language, secondly, to analyse the limitations through an analysis of the lack of learning acquisition aspects in the apps and thirdly, once the limitations of apps are acknowledged, to examine the possible applications that apps might have in a Primary Education classroom.

The main objective of this study is has been to contribute to the need that had been detected in terms of the scarcity of research about mobile phone applications to enhance learning.

Results highlight that all second language learning acquisition aspects, depending on the degree to which app developers have taken them into account and how they have incorporated in the apps, contribute to a greater or to a lesser extent to make learning as meaningful as possible, develop the potential of the player and achieve the goal that all the app description mention: learning. It is important to note that there are certain aspects that take place in real communication and that favour language acquisition such as negotiation of meaning and interactional moves (Long, 1981). Both aspects are, according to the findings of this study, not always found in the apps since the interaction in them is more unidirectional, being the learner the one who interacts with the game so it can not get to be imitated a real communication with prompts, recast and repetitions. Thus, apps are a suitable tool or instrument for language learning although they will never replace a conversation with a native speaker or a face-to-face learning since there will always be more interaction in the latter.

However, the descriptive aspects that were taken into account to assess the apps have been mostly covered and contribute to make the process of learning enjoyable, attractive for learners and favour players to be opened for second language acquisition.

The result of the analysis shows that the attractive design is crucial to engage children in their process of learning and in order to achieve that, app developers whose target users are children, introduce engaging characters, such as animals, to make the app design more attractive. Even the analysis of an app without a specific age range, but containing the PEGI 3 code, which means that the app is suitable for all ages, revealed

the presence of this feature to make the process of learning more engaging and attractive. Moreover, all app developers were found to make sure that the app had an intuitive design so even the youngest children can play them.

In the registration process of the apps, few apps ask about the player's age or proficiency level while in some learners need to be registered through *Facebook*, *Google* or with the user's mail, what implies the supervision of parents in this process as children are under the age permitted for having a social network account.

The play offline feature should be taken into account as through rivalry or cooperation learners would be more engaged in the process of learning and they would make a bigger effort to achieve the objectives proposed in the app and hence, learning.

The fact that the all descriptive aspects analysed were mostly present in the apps could be explained because for app developers, the apps appearance seems to be more important than achieving the real goal claimed in the apps description, learning English. The aspects of learning offered by the apps as well as the content to be learned and the options given to the learner to do so are less significant for those who create the apps. That is why consumers do not forget the fact that apps are commercial products that their developers try sell as apps to learn English effortlessly, but as a matter of fact, in general terms we can argue that they do not achieve the aims of their description in *Google Play Store*.

Very few apps do not contain any kind of ad and some app descriptions do not mention relevant information such as the fact that apps contained in-app purchases or advertisement not related with learning. Another app description turned out to be misleading and most apps were free at first, but when the users download them, the apps turn out to be not totally free, limiting learning to a reduce activities available or removing the most engaging features, what support the fact that app developers have, first and foremost, an economic interest. These results highlight the fact that children who play the apps should be supervised as, because of their early age, they should not be exposed to in-app purchases, among others. It is also important to note the importance that those who are responsible for the process of learning of the child should know the appropriate aspects that contribute to language learning in order to be able to choose the app correctly and achieve the purpose of language acquisition, always keeping in mind that not all apps description correspond to what the game actually is or

teach as apps are commercial products.

To conclude, the application of these apps into a Primary Education classroom would be possible with the teachers support since they should support the aspects of learning previously mentioned that are not present in the apps such as interaction or negotiation of meaning. It is important to note that although the apps developed by Cambridge English are not very relevant in the educative context of a Primary Education classroom since getting an official certificate is not an educational objective, it can be a learner personal objective what would turn these applications into a source of practice to help the learner pass a Cambridge exam, which is especially valued by families and by the formal education context.

Technology, apart from playing a key role to engage learners in the second language acquisition, it is commonly used nowadays and learners need to be prepared to make a safety and appropriately use of it. For this reason, children need to be digitally literate to face today's world and they should be provided with the necessary practice, tools and knowledge so they can be able to develop a series of skills, understanding and technological awareness in order to get on very well in the knowledge society we live in this day and age, which is based on the use of the information and communication technology also known as ICT. Furthermore, the use of technology and apps could mean a change in education since the vision of English of many children could change positively.

Although the apps are not used directly in class, it should not be forgotten that the curriculum highlights the development of digital competence, which will be strengthened through the use of the apps as learners would make a safe and critical use of information society technologies for leisure and communication, bringing the focus to the fact that these apps are aimed at obtaining, producing and exchanging information along with participating in communication networks through the internet, which is also emphasized in the curriculum. Finally, yet importantly, autonomous learning will be developed implicitly as learners will have to organise their own learning and manage time and information effectively, involving aspects such as acquiring, processing and assimilating new knowledge and skills and making use of strategies to facilitate the understanding and production of information.

Some limitations in the apps should be acknowledged for instance, feedback should be

improved by giving the player an explanation of the mistakes made to ensure that he/she knows why he/she was mistaken. Also more English input should be added replacing some activity statements that are formulated in Spanish. Furthermore, an increase of speaking activities to practice accurate pronunciation and to promote real communication will improve the quality of apps regarding oral output production. Few apps offer oral activities and the ones which have these kind of exercises, they were very controlled being the learner limited to repeat some sentences.

Mobile technology and especially, mobile apps to enhance second language acquisition, have become part of our daily life but future research should be done to study the appropriate apps for the different age rates, since the PEGI 3 code is very broad, as well as to what extent the use of apps foster early learners' digital literacy and the second language acquisition.

The study regarding apps for acquiring English as a Second Language acknowledged several limitations such as the narrow selection of apps used in the present study was only a small sample of the apps that can be found in *Google Play Store*, the age rate system of the apps which was very broad and as a result, little comparisons could be made regarding activities aimed at the same group age. Furthermore, the selected apps were studied in the light of second language acquisition theoretical framework and no children played these apps to corroborate the extent to which apps were valid to acquire English.

6. References

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