

Digital Game-based Learning in the Classroom: Creation of an Autonomous Learning Model Applied by Means of ICT Tools, to Enhance English Vocabulary Teaching and Learning Processes in Level A1 at the UIS Language Institute.

Modality: Internship

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Dedication

To my grandmother Luz Marina, grandfather Pablo Julio, mother Maria Isabel, and father Jorge Enrique, who have always been helping me when I needed support in my life, including academic issues, since my very beginnings.

To my dearest Mateo Flórez, Pochito, who offered support when I thought I could never achieve this, and for lending me his skills to fulfill this project.

To my loved dogs Manito, Suka, and Sultan, who are always present in my life, for having accompanied me in the saddest times, reminding me of what is important, strengthening me to continue this fight against animal abuse.

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This goal would not have been achieved without the support of my research director, Aleyda Fonseca Estepa, who believed in the project, supported it during all the time that it lasted, and lent me the necessary help to complete my job against all odds.

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I thank coordinator Ángel Mogollón, for helping me in every situation where I needed orientation, and for supporting my process along the extensive journey.

I would also like to thank director Laura Cristina Dueñas, for allowing me to implement this project at the UIS Language Institute.

I hope my work will be helpful to you.

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Abstract

Title: Digital Game-based Learning in the Classroom: Creation of an Autonomous Learning Model Applied by Means of ICT Tools, to Enhance English Vocabulary Teaching and Learning Processes in Level A1 at the UIS Language Institute. *

Author: Jessica Daniela Blanco Suárez. **

Keywords: Digital Game-based Learning, Vocabulary, Teaching, Learning, Motivation.

Description:

Project called “Vocab +” focused on helping to complement the vocabulary teaching and learning processes offered to children in the age range of 7 to 9 years, at the UIS Language Institute, corresponding to level A1. Its objective is to expand the amount of vocabulary taught and enrich class sessions, through the implementation of a virtual platform supported by digital means and elements of Digital Game-based Learning. The results of the implementation showed that it was possible to increase the motivation in class and the opportunity to give the lessons in a more meaningful and engaging way during the sessions.

* Bachelor Thesis

** Human Sciences Faculty. School of Languages. Director Aleyda Fonseca Estepa.

Resumen

Título: Aprendizaje basado en juegos digitales en el aula: creación de un modelo de aprendizaje autónomo aplicado por medio de herramientas TIC, para mejorar los procesos de enseñanza y aprendizaje de vocabulario en inglés en el nivel A1 en el Instituto de Lenguas UIS.

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Autora: Jessica Daniela Blanco Suárez. **

Palabras clave: Aprendizaje basado en juegos digitales, Vocabulario, Enseñanza, Aprendizaje, Motivación.

Descripción:

Proyecto llamado “Vocab +” enfocado en ayudar a complementar los procesos de enseñanza y aprendizaje de vocabulario ofrecidos a niños en edades de 7 a 9 años en el Instituto de Lenguas UIS, pertenecientes al nivel A1. Tiene como objetivo ampliar la cantidad de vocabulario enseñado y enriquecer las sesiones de clase, por medio de la implementación de una plataforma virtual apoyada en herramientas digitales y de elementos del *Digital Game-based Learning*. Los resultados de la implementación muestran que se permitió aumentar la motivación en clase y se otorgó la oportunidad de dar las lecciones de manera más significativa y envolvente durante las sesiones.

* Trabajo de Grado

** Facultad de ciencias humanas. Escuela de idiomas. Directora Aleyda Fonseca Estepa.

Introduction

1. Characterization of the Company

The company, within which the project was implemented, refers to the Language Institute of the Universidad Industrial de Santander, an educational institution located in the city of Bucaramanga. It is responsible for providing education in languages to the student population at various age ranges and offers education courses in French, German, Italian, Portuguese and English. It was founded in 1990 through the agreement No. 036 of April 5, carried out by the Superior Council of the University, thus creating a self-sustaining academic unit, associated with the Faculty of Human Sciences.

Its main facility is situated within the main educational campus of the Universidad Industrial de Santander, located in the city of Bucaramanga and it possesses five additional offices within the Santanderean territory, located in Cabecera, Barbosa, Socorro and Málaga.

Due to its association with one of the most renowned universities at the national level, and the excellent training of the administrative and academic staff, the language institute is recognized at the departmental level as one of the best-prepared establishments with the highest quality standards in the region. This institute currently possesses an infrastructure capable of carrying out class sessions in both remote and face-to-face modalities, as the different classrooms include computers, video projectors, and internet connection, in addition to a complete set of dual cameras, and microphone and sound incorporated system that makes the interconnection possible.

In addition to the academic courses offered as part of the university's academic programs, the Language Institute offers two kinds of extension courses:

- “Jóvenes y adultos” which focuses on young adults and adults over 15 years old, consisting of 18 levels with a duration of 40 hours each.

- “Niños y jóvenes” which focuses on kids, pre-teenagers and teenagers between 7 and 15 years old, consisting of 12 levels with a duration of 40 hours each.

The internship project will be developed inside the “Niños and jóvenes” program and will focus its work on Kids courses with levels A1.

1.2 Justification

The main motivation that led to the proposal and implementation of this project lies in the identification of an issue related to the difficulties present in the vocabulary acquisition processes of children in KIDS courses at levels A1 at the UIS Language Institute. In those A1 levels, the assigned resource to work with is the textbook named “Family and Friends 1 - 2nd Edition”, which was originally published by Oxford University Press in 2017. This book offers a fixed quantity of new mandatory vocabulary, consisting of an average of 10 words per unit, and an average of 5 additional words taking into consideration the optional vocabulary from the complementary material that the book offers, which is not mandatory.

This limited amount of vocabulary can be increased having in mind the excellent learning capacities of children in age ranges corresponding to levels A1, due to the *plasticity* features that their young brains possess, as suggested by Johnston (2004). About this, Buonomano, M. (1998) mentions that the word "*plasticity*" which comes from the Greek term "*plastikos*", used in this context, refers to the brain's ability to learn and to memorize new information, which is higher in early ages and decreases as humans get older.

This short amount of mandatory vocabulary also limits teachers on their practices, affects normal class sessions in the institute, and needs to be solved. The identification of this problem was possible since there is direct experience working with these groups as the researcher is part of the academic community of the Language Institute, more specifically, a teacher. By knowing the way in which classes are carried out with these levels, the researcher

started to look for new ways to help students improve their vocabulary acquisition processes through autonomous and fun procedures, with the purpose of exploiting children's potential, and motivating them to become more immersed in their learning activities.

Considering this, a more enriching teaching practice can and should be delivered to students in age ranges such as those found in KIDS levels (from 7 to 9 years old), since children possess a better ability to learn new languages in comparison to adults, as mentioned before.

Furthermore, this research is part of a process that has been carried out in previous academic contexts, where three theoretical, qualitative, and quantitative investigations have been performed on the subject of video games, ICTs (Information and Communication Technologies), their inclusion in education, and its benefits. These investigations showed that video games are beginning to have an increasing impact in educational contexts thanks to approaches such as *Gamification*, *Game-based Learning* and *Digital Game-Based Learning*, which are going to be discussed further. On this, Pivec and Dziabenko (2004) suggest that games are becoming a new form of interactive content that deserves to be explored for learning purposes. According to Reid (2012), these digital tools also generate motivation in people and can help students to awaken interest in academic content. This motivational factor is key for the preparation of teaching activities in the educational environment, which now more than ever is focused on the use of digital elements due to virtual modalities adopted by several academic institutions since the pandemic caused by the SARS-CoV 2 started.

It was decided to implement an ICT tool in the project, since these allow to support the English teaching and learning processes of students through interactive and fun activities, helping them to motivate, engage and develop interest in the topics seen in classes, in a more autonomous way. As Anggraeni (2014) suggests, language teaching consists of a series of

mediating and facilitating strategies devoted for learning, and technologies such as ICTs, offer the perfect characteristics to encourage and allow learners to build their own knowledge, to learn by their own.

To continue with this research process, it was decided to take the next step in development, which involved the identification of a problem and the design of a system that allowed contributing to its solution, implemented through an ICT tool. Thus, a virtual interactive platform was created.

1.3 Objectives:

General Objective:

To improve the vocabulary teaching and learning processes of teachers and children in levels A1 at the UIS Language Institute, through the design and implementation of an educational virtual interactive platform.

Specific Objectives:

To provide students with an autonomous model of learning, packed inside the virtual interactive platform, focused on enhancing their personal vocabulary acquisition processes through different participative activities, hence promoting autonomous learning practices.

To offer teachers new educational activities, resources, and tools, packed inside the virtual interactive platform, that can assist and support their virtual or face-to-face class sessions, providing more meaningful and engaging lessons.

To create an educational virtual interactive platform and offer free access to it, by donating this digital tool to the institution, so other members and students of the Language Institute can use it during their class sessions, as well as students at home.

Having identified the problem, the implementation of the project followed four methodological stages, which will be detailed further in this document. They are divided into the **Design Stage**, where all the technical, content, and graphic planning took place. The **Development Stage**, including the different technical, graphic advances in the realization of the project. The **Implementation Stage**, where the final product was incorporated in a class session at the institute, and a training session was carried out with the academic team of the institute in order to present the proposal; and the last **Data Collection Stage**, consisting of

collecting feedback data from the participants involved in the project, both students and educators of the institute, to get to know their experience with the platform.

The current document will describe all the aspects previously mentioned and will present in detail, the creation process of the entire work, mentioning the events, possible inconveniences, aspects that were not possible to carry out, and the resultant outcome.

2. Theoretical Framework

2.1 Background

Several researchers around the globe have shown that the fostering of different skills through the implementation of digital-based strategies in areas of education, has been successful. In 2013, Genlott & Grönlund reported the effectiveness of the method *Integrated Write to Learn* (iWTR) on helping children perform better in reading and writing. It was tested by using two experimental and two control groups with students from a Swedish school. The results showed an improvement in both literacy skills. Students could write longer texts, with better structure and more complex use of vocabulary, in comparison with the early stages of the project.

Similarly, Genlott et al. (2016) implemented in a class the method *Write to Learn* (WTL) to help people improve in mathematics and literacy skills using ICTs. The researchers implemented traditional methods (no ICT use) with one control group and applied Individual Technology Use (ITU) with the other. The results showed that the ITU method had the best performance, and the group with the traditional method did not show major improvement. The authors concluded that the introduction of technology in different stages of learning creates a positive environment for learning a wide variety of skills.

Regarding commercial video games, some have been proven to be efficient when used as an educational tool, as demonstrated by Ebrahimzadeh (2017), where a group of students interacted with a commercial video game titled *Warcraft III*. The results showed that students that had direct contact with the game, retained more vocabulary than the students who learned by only-reading activities. In the same vein, Miller and Hegelheimer (2006) implemented a commercial video game to teach some features of languages and found that students significantly acquired a lot of vocabulary, and they strengthened other major functions, such as grammatical constructions. Lastly, Galvis (2011) explored the integration of a commercial game named *GTA San Andreas* in the program of a military school in Colombia and found out that students felt more connected to the English subject, developed vocabulary, and gained cultural-background information about the region portrayed in the game.

On the other hand, there also exists a branch of video game designing that specializes in developing educational video games such as *My English Coach - Spanish Edition* (2009), which was used in a study conducted by Vélez and Rivas (2018) in a Puerto Rican school, where 77 sixth graders played the video game daily, during four weeks. One of the findings showed a notorious increase in vocabulary and a good perception from the participants towards the use of this resource for educational purposes, since their learning process became more interesting and meaningful.

2.2 Theoretical Foundation

ICT Resources for Educational Purposes

According to Cacheiro (2011), ICT resources are teaching aids that help “the creation of multimedia content, collaborative environments, and e-learning scenarios”. These are

divided into information, collaboration and learning resources. Cacheiro (2011) states that learning resources “offer the possibility of acquiring knowledge, attitudes, and procedures during the teaching process”, such as slides and videos. “Educational software” is the quintessential element of this category, and, as suggested by Caccuri (2013), the term is used to refer to all the programs created with the purpose of being used as a “didactic means” that could support learning and teaching processes.

Regarding the area of learning resources, video games and digital elements have been recently summed up, since the approaches of *Gamification* and *Digital Game-based Learning* have explored the idea of incorporating gaming features into educational areas, with the purpose of delivering more meaningful and motivating learning experiences. About this, Marc Prensky, creator of the Digital Game-based Learning approach, mentions that games can provide learning experiences specially to teenagers and kids, since children (like every other human) like to learn “when it isn’t forced upon them” (Prensky, 2003).

Gamification: Game Elements into Education

Hamari, J. (2019) defines Gamification as a technique in which the structure of a non-gaming process, system or service is transformed into one that, while developing it, can transmit similar experiences to those generated when playing games. In other words, a strategy in which an activity that is not related to games, is modified to help people who are involved in it, feel more engaged and motivated. Marczewski (2015, p.4) briefly defines Gamification as, “basically [...] making a task more interesting by adopting game mechanics”.

Regarding education, Kapp, (2013) describes what he calls “Structural Gamification” as the incorporation of gaming elements within the structure of an activity, with the purpose of motivating students through the learning process of a subject without modifying the content

taught, regardless of whether the matter is related to games or not. Considering this, gamification can be used in areas of English Language Teaching (ELT) and English as a Foreign Language (EFL), to improve learning processes. A great example of this kind of software is *Duolingo*, a language learning website and app that uses gamified elements such as live-stocks, score and levels, to teach content unrelated to gaming, for instance, languages. (Siegler, 2011).

Digital Game-based Learning: Video Games for English Learning Teaching

It is important to mention that *Digital Game-based Learning* (DGBL) is a ramification of the broader approach of *Game-based Learning* (GBL), defined as a teaching method that implements games in academic settings to enhance the process of teaching English (Mitchell & Savill-Smith, 2004). Dempsey, J. Lucassen, B. Haynes, L. Casey & M. (1996, p. 3) define a game as a “set of activities involving one or more players. It has goals, constraints, payoffs [...] and involves some aspect of competition, even if that competition is with oneself”. Video games, in contrast, transport the concept to digital scenarios, such as computers, game consoles, mobile phones and similar gadgets.

DGBL can be defined as “an instructional method that incorporates educational content or learning principles into video games with the goal of engaging learners.” (Coffey, 2017, p. 1) and according to Prensky, (2003) it is good at transforming learning data that is not interesting to learners (but that is necessary for them to learn) into more meaningful resources. “We have all encountered material like this, from the multiplication tables, to typing, to vocabulary and language learning, to spelling, to rules and regulations. Stuff that is, in a word, boring” (Prensky, 2003. p. 9). This formal implementation of video games in education is a topic that has propelled during recent decades. Now, even major corporations such as *Nintendo* have opted to create educational games like the “My Coach” series, which

are aimed to help people learn and reinforce grammar and vocabulary in several languages. (Boyer, 2007).

Subsequently, the improvement of language skills through the implementation of DGBL aids in academic environments is possible. The idea has been discussed several times before, and the approach has received other names that in essence refer to the same concept, such as *Edugaming*, which promotes the unification of educational practices with the use of digital games (Fabricatore, 2000), or the broader classification of “Didactic Games” mentioned by Caccuri (2013).

2.3 Legal Framework

The entity in charge of ICTs management in Colombia is called "Ministerio TIC", which was inaugurated in 2009 when Law 1341 was approved (MinTIC, 2009). It emphasizes the realization and articulation of a system that supports the inclusion of ICTs in the country by promoting the population's “digital literacy”, initiating the training of educational staff, and incorporating ICTs as an academic subject from the first school levels. (Law 1341, 2009, Article 39).

Similarly, law 1978 of 2019 seeks to increase the technological quality offered in schools and to invest in projects that promote the appropriation of ICTs by the student community. (Law 1978, 2019, Article 25).

Moreover, Law 1955 of 2019 issues a national development plan called "Pacto por Colombia, pacto por la equidad" that includes managing a digital transformation of the country (Law 1955 , 2019, Article 3) and focuses on promoting scientific, technological and innovative aspects among companies and homes in the territory. (Ministerio Nacional de Educación, 2020).

In addition, the entity immediately linked to the UIS Language Institute, Universidad Industrial de Santander, promotes and supports educational training through ICTs, as mentioned in Superior Agreement No. 051 of 2009, which mentions that the institution must incorporate ICTs in its information processes, and recognizes that their application has improved its teaching and learning practices. Similarly, the university aims to strengthen its technological infrastructure and calls on the educational community to adopt the use of ICTs in its entirety, as well as to implement pedagogical strategies based on them to improve the quality of education. (Consejo Superior de la Universidad Industrial de Santander, 2009, Acuerdo No. 051).

3. Project Report

The birth of the project is the result of various stages of preparation, planning, design, realization, implementation, and evaluation. In each of them an essential part was carried out that contributed to the development of the virtual interactive platform. In the following sections, the various stages of progress will be presented, which allowed the formation of the proposed learning model.

3.1 First stage - Design

This stage covers everything related to the preliminary ideas raised to include in the final design of the project. The concepts, intentions, proposals, objectives, and elements initially considered to be incorporated in the final work are included. It is generated after having identified the aforementioned problem, where there is an improbable deficiency in the teaching and learning processes of new vocabulary at the KIDS 1 level, which was identified through the experiences that the researcher has had as a teacher at the UIS Language Institute, working with students at this level. About this, Alqahtani, M. (2015) mentions that

vocabulary plays an important role and it's a critical factor when learning a second language, since limited knowledge of words can interfere with the success of a communication process in a second language. Knowing this, the researcher chose to focus on finding a way to help improve the way students learn new words.

Thus, since the aim of the project was to complement the teaching and learning vocabulary acquisition processes, the researcher decided to name the project "Vocab +". Having established this, the next aspect to take into consideration was the selection of contents destined to be used in the project. The researcher selected a series of topics corresponding to the content taught in the level KIDS 1, according (but not strictly based on) the book assigned to this level and the first four units assigned to the course. These topics were divided into four sections, each including a summation of the mandatory vocabulary proposed by the book (an average of 10 words), the optional vocabulary present in the complementary material offered by the book editorial (an average of 5 words), and the new vocabulary proposed by the researcher (an average of 10 extra words), resulting on a median amount of 23 words per section.

The five sections containing the topics of the first four units were named and split up, and the words for each category were distributed as follows:

Starting

Numbers from one to ten: one, two, three, four, five, six, seven, eight, nine, ten.

Colors: red, yellow, pink, green, purple, orange, blue, black, white, grey.

School Objects

Pen, pencil, sharpener, pencil case, rubber, ruler, book, notebook, bag, folder, door, window, bookcase, scissors, crayon, tape, string, whiteboard, marker, blackboard, chalk, desk, glue, paper.

Toys

Doll, ball, teddy bear, puzzle, car, kite, bike, train, boat, plane, building bricks, video game, yo-yo, robot, scooter, skates, skipping rope, plushies.

Parts of the Body

Head, face, eyes, eyebrows, nose, ears, mouth, tongue, teeth, shoulders, arms, hands, fingers, legs, knees, feet, toes, neck, elbow.

Moreover, regarding the conceptual area that conforms to the educative virtual interactive platform, they were mainly divided into three aspects to which the pillars of the project obey: usage of ICTs, educative material used in the institute's curricular content, and engagement strategies.

In regard to the usage of ICTs, the project had to be created in a digital format in order to be attractive to children and useful for teachers, since students like computer activities and computer games, as mentioned by Mark Prensky (2003). Similarly, educators also have access to several technological resources offered by the Language Institute, including individual classrooms with complete equipment to be used by the teacher during class sessions, such as computational instruments, video projectors and audio systems. In addition to this, the UIS Language Institute has access to classrooms with enough computers to be used by the students in the event that an instructor wants to develop their class in an environment suitable for virtuality. Therefore, it was decided to design a virtual interactive platform that included two modes of use, one for teachers, named "Teaching Mode" with educational audiovisual resources, and one for students called "Game Mode" containing educational minigames. This, with the purpose of offering both sectors the opportunity to use the virtual platform without physical limitations.

The Teaching Mode was planned to include two interactive elements in the form of slides:

Standard Slides: a set of virtual slides containing the vocabulary in matter, including illustrations of each one of the words, to be used by teachers to practice the vocabulary present in the book, and to teach new complementary lexicon.

Flip-it Slides: a set of virtual slides incorporating the feature of flipping the virtual card, showing only the illustrations of the vocabulary on one side, and the illustrations with the words on the other. These slides were designed to evaluate the students, in order to test their knowledge on the lexicon learned, by showing them only the images and asking the kids to say or write the words.

The Game Mode was designed to incorporate two educational interactive minigames, with which students could practice the vocabulary while playing, and not focusing strictly on studying, but rather on having a good time:

Vocabsteroids: an arcade-like video game, where the student has to control a little spaceship and shoot asteroids containing specific pictures from the vocabulary. A text box in the bottom part of the screen will indicate the student what word they need to shoot. If the student shoots at the wrong asteroid, they will lose one of the three stocks/lives of the match. The game will increase its speed every ten rounds, elevating the difficulty, so students don't get under stimulated by the dynamic of the game. This game was designed with the help of an experienced Game Designer.

Flipcards: a memory game where students will briefly see 18 cards on the board, each containing a word or an illustration of a word from the vocabulary. Then, after five seconds, the cards will automatically flip to the other side, showing a generic "pawttern" and students will have to match pairs selecting a picture and the word corresponding to that image. The back side of the cards is numbered, so the cards can be referred to remotely and the players won't have to touch the screen to select the card. This will also help learners to practice the numbers in English.

The five sections containing the topic vocabulary previously mentioned could be accessed individually in both Teaching and Game modes, in order to review each topic individually.

Regarding the aesthetic and graphical aspects of the platform, all the illustrations needed to include in the project, were planned to be originally made by the researcher using a digital-drawing monitor. This included the buttons to click on, the designs and “pawtterns” on the cards, the illustrations of the words from the vocabulary, the small icons needed for the minigames (spaceship, asteroids, stocks), the logo of the project, and lastly, the project mascot, “Pochi the Dog” who was planned to accompany the students throughout the different activities.

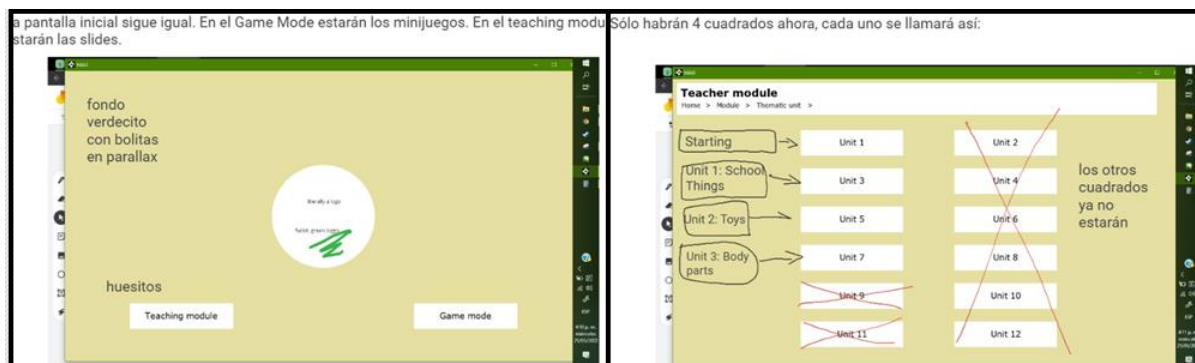
The music needed for the project had to belong to the public domain or be protected under the Creative Commons free-to-use license, which allows creators to use music or sound effects with no intervention from Copyright.

The technical facet of the project, regarding the coding and programming of the platform, was done by an experienced software and video game developer, who has worked on several video game-like projects in the past and who is knowledgeable in the area of game development.

3.2 Second stage - Development

In order to initialize and complete the development of the project, the process was divided into three sections:

3.2.1 Distribution of the platform’s interface, where the researcher designed the different screens in which the virtual platform needed to be distributed and shared them with the programmer in order for him to start building the executable program. These screens were going to be the link between the person using the program, and its features, making possible its usage. [Figure 1. Appendix 1]

Figure 1*Distribution of the Interface*

3.2.2 Art creation, part where the researcher was in charge of generating all the visual resources needed for the project. The illustrations of the program were created using a digital-drawing monitor, which allowed to generate digital images of the different elements that conformed the interface of the virtual platform. A total of 106 drawings were made, distributed into miscellaneous, topic units, interface, mascot, and logos. It is worth mentioning that the platform was designed with ‘Dog’ thematic, since it is directed towards the child audience, and wants to remain as children friendly as possible. [Figures 2, 3.

Appendix 2]

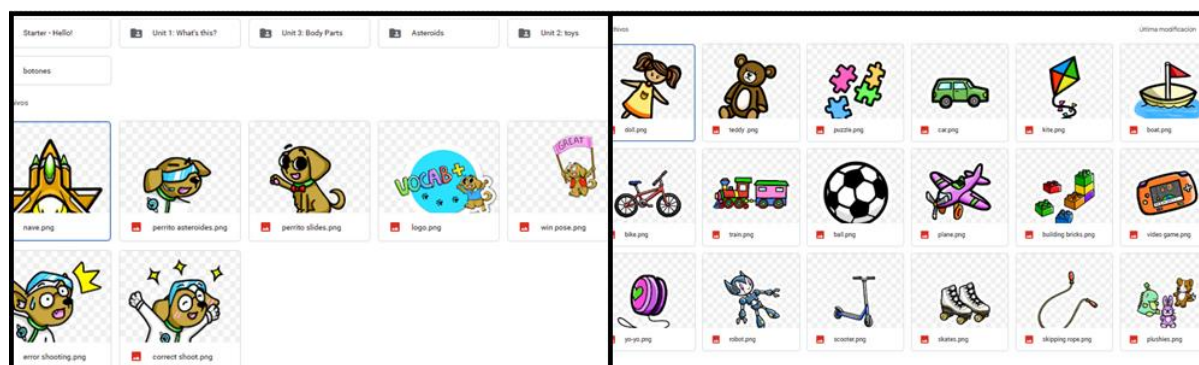
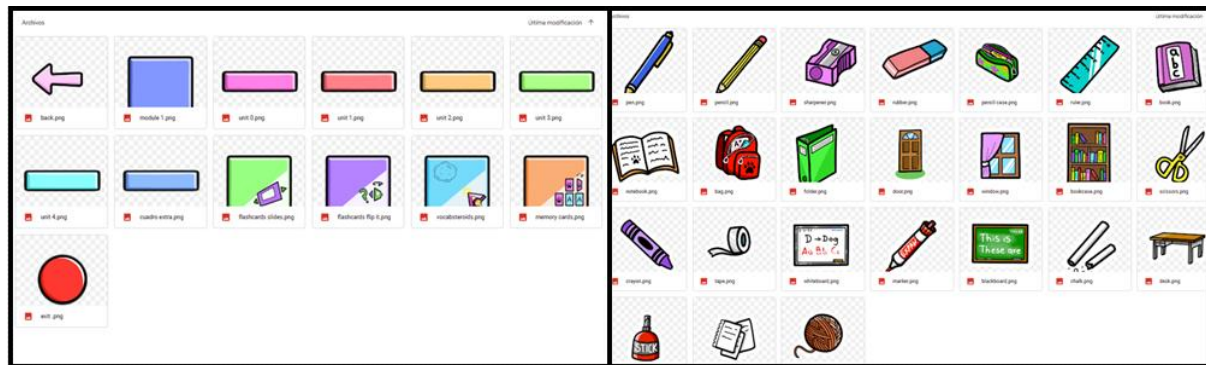
Figure 2*Illustrations of Pochi, and Toys.*

Figure 3

Illustrations of miscellaneous items, and School Supplies.



3.2.3 Programming, where the programmer grabbed the interface instructions and the illustrated material given by the researcher and used it to start programming the virtual interactive platform. To carry out this module, the software developer used *Game Maker Studio*, a software designed for the creation of, principally, video games, but suitable to program other digital programs as well, using the programming language *Game Maker Language* (GML). The creation of this program had no monetary cost.

Once completed, the platform was presented as a computer executable program, which doesn't require any kind of pre-installation to be opened and represents the easy access to which the researcher referred to in the designing stage.

3.3 Implementation Stage

Once the virtual interactive platform was completed, the researcher proceeded to initialize the application of the project. This occurred in different sections since the project was originally designed to be used by educators and students. Therefore, the stage was subdivided into two main steps:

3.3.1 Classroom Implementation

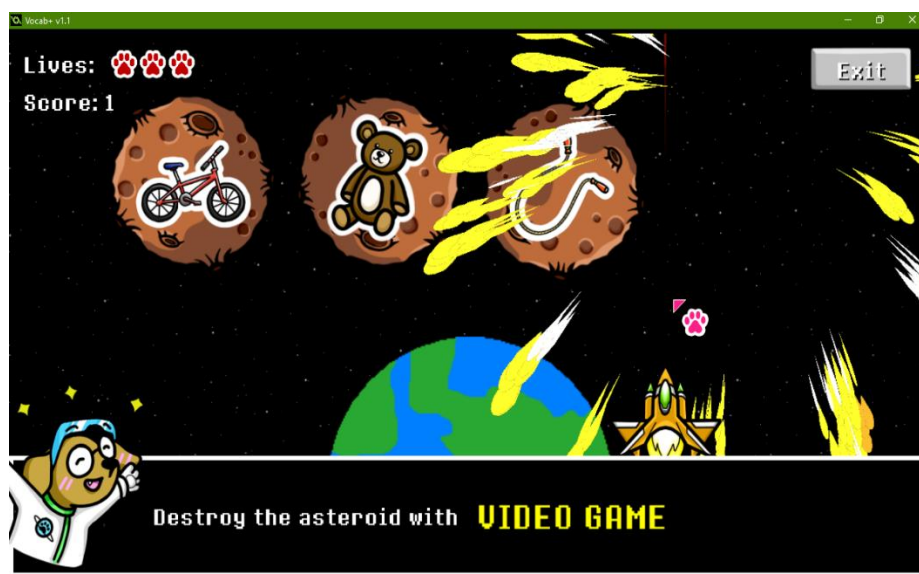
This step corresponds to the implementation carried out with students at the UIS Language institute. The participants were part of a KIDS 1 p.m. group conformed by 18 students, whose age ranged from 7 to 9 years old.

In the eighth class, corresponding to June 11th, the researcher introduced the virtual interactive platform to students, which has been preinstalled beforehand, with the purpose of rehearsing all the vocabulary before the Final-term exam that was going to take place on June 18th.

The researcher implemented both minigames *Vocabsteroids* and *Flipcards* in the session, belonging to the Game Mode of the program. In the first place, the teacher had students hear the instructions of the game while playing a demonstration match on the screen, using the video projector. Student's reaction to the first glimpse of the minigame was extremely positive. [Figure 4]

Figure 4

Vocabsteroids Gameplay Screen



Note: In the picture, the player has shot the correct target and has scored a point successfully.

Following this, students were invited to play the game one by one, with the purpose of allowing them to experience the activity and collect fruitful information to improve the game features. It could be observed that the vast majority of students felt immediately engaged in the activity, as they did not want to stop playing.

Only three students expressed difficulties using the game key controls, of which only one was not able to accommodate to the keys at all and stopped playing. On the other hand, all the other students got used to the inputs and scored many points before losing. Once all the students had tried the first minigame and practiced the vocabulary, the teacher initialized the second game, *Flipcards*. To play this, the tutor had the students divide into two teams with equal parts, and started a scoring game, where the team with more correct answers was going to obtain a prize. All students got excited and expressed a positive answer towards the card game. [Figure 5]

Figure 5

Flipcards Gameplay Screen



Note: In the picture, the player has selected correct pairs of words and has scored points successfully.

After explaining the rules of the game, students felt eager to start playing, as competing against other teams made them feel excited. Both groups started to participate, one child playing per turn. Students liked the dynamic of saying the number in English, corresponding to the card that they wanted to flip, and celebrated every time someone scored a point in their team. At the moment of finishing the game, students expressed sadness and returned to their seats.

Two main problems were identified during this implementation of the games. In the *Vocabsteroids*, students were scoring a numerous amount of points with little difficulty. To fix this, the game was subsequently updated, adding a gradual increase in the speed of the game.

Concerning the *Flipcards*, it was noticed that at the beginning of the game, the pictures and names in the cards were shown in a very short period of time. An update was added, where the time in which students could have a glimpse at the distribution of the pictures and words, was increased from 2 seconds, to 5, before flipping and hiding the content.

Once the class implementation was over, and in order to collect information about student's opinion on the games, an authorization form was sent to the parents of the group. By filling this form, they authorized to include their children in the present document, in an anonymous way. A total of 18 students were authorized to participate in the project.

3.3.2 Training session

This section corresponds to the implementation carried out by the researcher with the academic community at UIS Language Institute, constituted by coordinators, directors, administrative personnel, and active teachers.

The purpose of this training session was to introduce the project to all the institute's staff in order to share with them the birth of the initiative, the topics that it covers, the recommended levels to work with, the pillars that support its theoretical distribution, the

different resources that are now available for their use, to capacitate them in how to use the program, and also to inform them of the possibility for children to play this at home.

Through a personal meeting with the Institute's academic coordinator, the researcher selected a day and a time for the training session. The coordinator agreed with the date and time proposed by the researcher, and it was scheduled for August 04 at 4:00 p.m. in the afternoon. The encounter had a duration of one hour, and all the educators from the institute were invited. It was carried out through the videoconferencing platform, ZOOM.

During the reunion, the researcher addressed the most important aspects of the platform, talked about them, explained the different concepts under which the project was constructed, shared the final version of the platform including all its features and provided further information regarding the downloading sites, the future expectancies of the project, and finally asked the attendees to fill out a survey form to gather data regarding the performance of the presentation and other platform-related aspects.

The training session was presented by means of a set of Google Slides. [Appendix 3]
The distribution of the meeting was organized in seven principal sections:

Presentation and Contextualization.

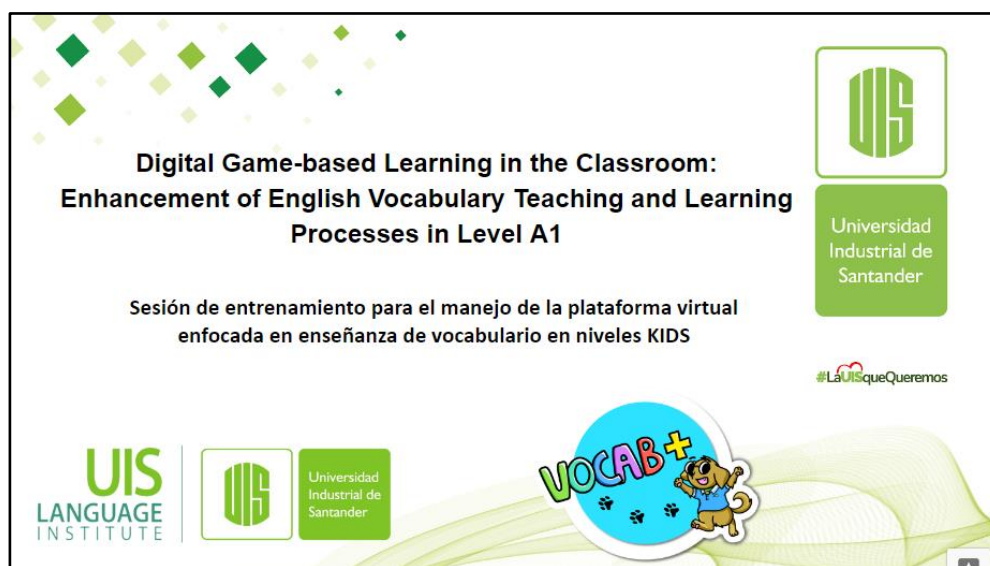
Firstly, those present in the meeting were welcomed and then proceeded to give them information related to the essence of the project. It was explained, through the title of the meeting, that it was a training session where they were going to learn about a new resource, developed by a teacher from the institute who is in her graduation process, which would help them complement the classes in KIDS levels, and would be available for free use.

The cover of the slides reads as follows: Digital Game-based Learning in the Classroom: Enhancement of English Vocabulary Teaching and Learning Processes in

Level A1 - Training session for the management of the virtual platform focused on teaching vocabulary at KIDS levels, [Figure 6. Appendix 5]

Figure 6

Training Session Cover



Introduction to the different gaming approaches (Gamificación, Game-based Learning y Digital Game-based Learning).

Subsequently, it was necessary to carry out a presentation to the teachers regarding the different approaches on which the platform is based, and as based on which it was decided to be created by digital means. These elements are crucial, and it is essential that those involved in the meeting get familiar with them. Another reason why it was extremely important that attendees learn about them, relies on the fact that they are concepts which are being used more and more continuously, since they offer very enriching benefits that few other activities do. About this, Mark Prensky (2003) mentions that games do not mean an imposition and motivate the learner to get involved on their own in the learning process, which is especially useful, since students do not like to study when they are forced to acquire the knowledge. It is quite common that students even end up learning without knowing that they are studying.

In the first place, the concept of Gamification was presented, which consists of strategic processes in which various practices and services, generally educational, are improved by generating experiences similar to those experienced when playing games when people get involved in them. (Hamari, J. 2019). Gamification is successfully achieved by incorporating characteristics of games, such as punctuation, time limit, objectives, team participation, and prizes, among other dynamics, into entirely educational activities. The purpose of implementing Gamification aims to motivate and involve learners more effectively and dynamically in educational processes, as supported by Hamari, J. (2019).

Following this, the concept of Game-Based Learning was introduced. Pho, A. and Dinscore, A. (2015) refer to the GBL as the approach where the several activities, programs, and practices created to form part of the educational area, generally intended to carry out academic tasks, are designed to inherently function as games since the very beginning, and thus they possess educational value. Here, an educational activity does not adopt nor borrows characteristics from games, but it is rather designed from the beginning as one that can offer support to learning in diverse areas of knowledge. (Pho, A. Dinscore, A. (2015).

Continuing this, the last and most important element was introduced. The Digital Game-Based Learning is an educational approach very similar to the GBL; however, this concept relies on mainly digital tools and ICTs to design games and gamified activities with educational value. (Prensky, 2003).

Several of these products are transformed into video games, since they promote interaction between a user and a device and incorporate a narrative. Some examples given include *The Magic School Bus*, an educational computer game for kids, *Duolingo*, a language learning application. *Kahoot*, a GBL digital resource to evaluate

topic in the form of game quizzes. *Encarta Kids*, an interactive virtual encyclopedia made by Microsoft. *Nintendo LABO*, a Nintendo SWITCH game consisting of a crafting set designed to interact with digital video games. *Brain Training Series*, a franchise designed to practice mathematical and logical subjects, published on the Nintendo consoles.

Following this, to close the approach introduction, a short trivia was carried out among the participants of the training session. [Appendix 6]

The trivia contained five multiple choice questions including examples of Gamification, GBL and DGBL products, and situations in which only one of the approaches was implemented. After collecting a total of eleven responses, the researcher shared the feedback with the right answers. It is worth mentioning that the vast majority of the replies were accurate and correct.

Once the introduction to the different educational approaches was delivered, the researcher began to introduce the aspects concerning the project per se. To begin with, attendees learned about the public towards which the proposal was aimed. The Project focused on A1 level students at the Institute of Languages, corresponding to KIDS courses in age ranges from 7 to 9 years old. As mentioned before, the attendees were told that the content included in the virtual platform was oriented by the vocabulary covered in the book *Family and Friends 1 - 2nd Edition*; however, the researcher emphasized in the fact that it does not strictly stick to the units arrangement from the book, and that the subjects were distributed in independent topics so they could be consulted in later levels at the KIDS courses to practice any vocabulary needed.

Following this, the invitees learned that the researcher could identify an issue connected to the vocabulary acquisition processes of children in KIDS courses at levels A1. In those groups, the assigned textbook “*Family and Friends 1 - 2nd Edition*”, offers

an established amount of new mandatory vocabulary, consisting of 10 words on average per unit, and 5 additional words on average present in the optional vocabulary from the complementary material that the book offers, which is not compulsory to teach.

It was explained that this limited amount of vocabulary could be increased considering the excellent learning capacities that children have in age ranges corresponding to levels A1. This is due to the *plasticity* characteristics that their young brains possess, as mentioned by Johnston (2004). In addition, it was mentioned that, in this context, *plasticity* refers to the brain's ability to absorb and to memorize new information, thus learning new things. This ability is highly present in early age stages, and decreases as humans get older (Buonomano, M. 1998).

Having presented the problem, the next topic to cover during the training session was the Solution proposal. Here, the researcher's proposal to create an easy-to-access free-to-use educational virtual interactive platform supported by ICT tools was explained, which would offer enriching experiences to students at the moment of studying, such as those generated when playing different types of games or computer games. This could help to *disguise, in some way*, the process of taking the lecture on new vocabulary learned in class, activity that results in boring to some learners.

This facilitates the vocabulary acquisition processes of children and motivates themselves to become more involved in the topics. Likewise, the intention of generating digital resources that teachers could use and implement during classes at the moment of designing different types of activities that would support the teaching processes, was explained to the attendees. In the same way, it was mentioned that this proposal would not only include the vocabulary proposed by the textbook used in

classes but would also increase the number of words available for each topic, with the purpose of exploiting the learning capacities of the children.

Finally, after having mentioned all the theoretical aspects that support the basis of the program, having exposed the identified problem, after explaining the division of the practical content and proposing the solution to the inconvenience, the virtual platform was presented in its complete form. [Appendix 4]

It began by sharing the main screen of the program, where the "Vocab +" application logo can be seen next to "Pochi", the mascot, and two buttons that redirect to the two modes of use, Teaching Mode, and Game Mode. [Figure 7. Appendix 4]

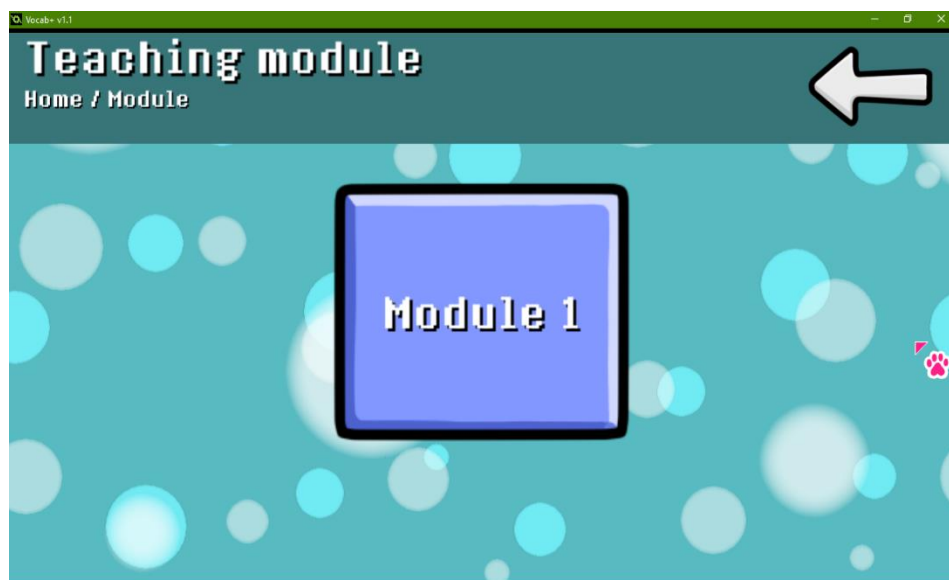
Figure 7

Vocab + Main Screen



Note: This is the first screen displayed as soon as the executable file is opened.

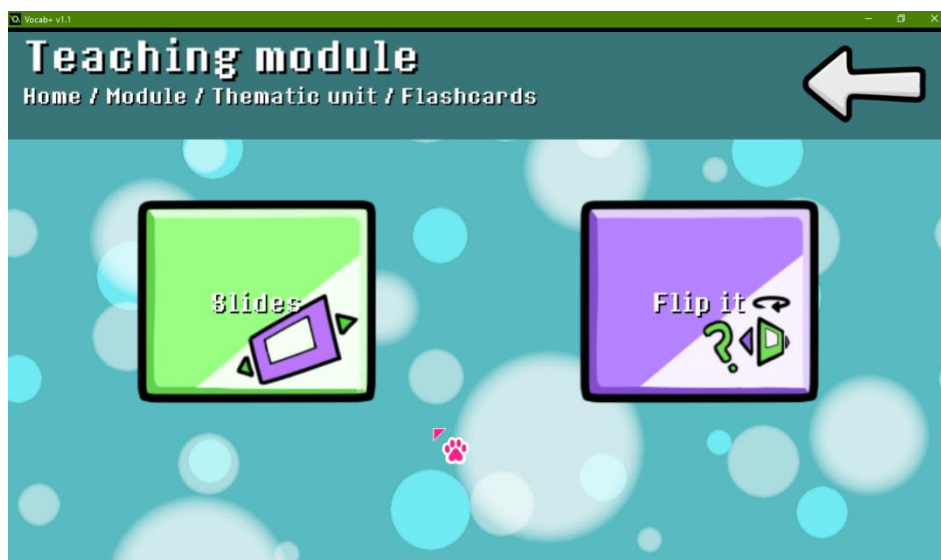
Teaching Mode was selected, and the module selection screen was displayed. This module represents the individual levels into which the KIDS courses are divided; that is, module 1 corresponding to the KIDS 1 level. [Figure 8. Appendix 4]

Figure 8*Teaching Mode Main Screen*

Next, the topic selection screen is shown. Here, the teacher can choose the topic that they want to practice with the students. [Figure 9. Appendix 4]

Figure 9*Teaching Mode Topic Selection*

Following this are Teaching Resources, which are divided into two parts: Slides and Slides Flip It. [Figure 10. Appendix 4]

Figure 10*Teaching Mode Slides Selection*

The normal Slides contain the words from the vocabulary and the illustrations of these words. They have a scroll bar at the bottom of the screen, which allows the user to select the items in the order they may need. [Figure 11. Appendix 4]

Figure 11*Average Slides*

Flip It Slides are similar to regular Slides, however they were designed to test students. For this reason, they contain only the images without the names on one side of

the card, and there is a dynamic where, by pressing a button called “Flip it”, the card is rotated showing the word next to the image. [Figure 12. Appendix 4]

Figure 12

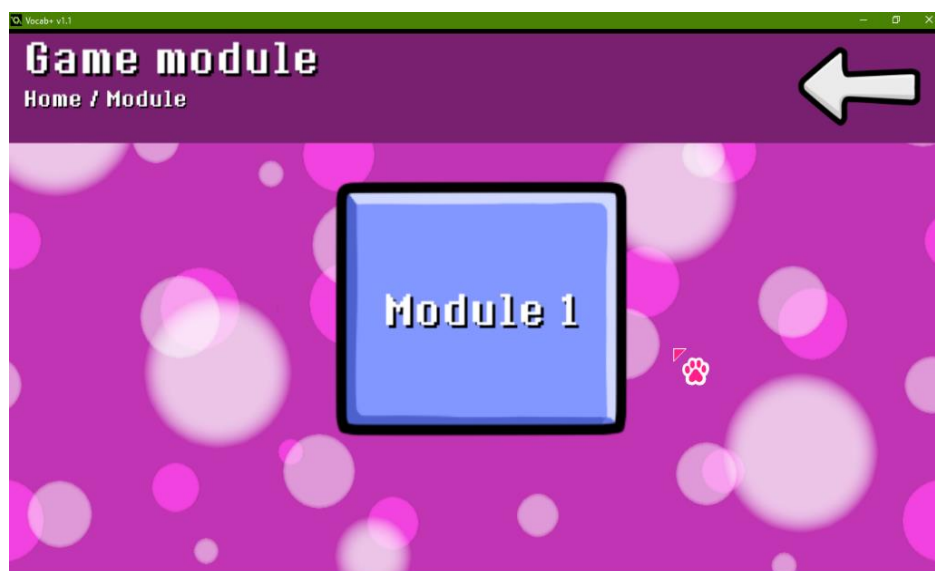
Flip It Slides



Once the entire section of the Teaching Mode was presented, the researcher continued with the presentation of the Game Mode. This mode has, in essence, the same distribution presented in the Teaching mode. The first screen shows the section where the user will get to choose the Module. [Figure 13. Appendix 4]

Figure 13

Game Mode Main Screen



Following this, the topic selection screen was displayed, allowing the user to select the group of vocabulary to rehearse. The Game Mode shares the same contents seen in the Teaching Mode. [Figure 14. Appendix 4]

Figure 14

Game Mode Topic Selection



Finally, after having selected one of the subjects, the participants were presented the two minigames aforementioned. [Figure 15. Appendix 4]

Figure 15

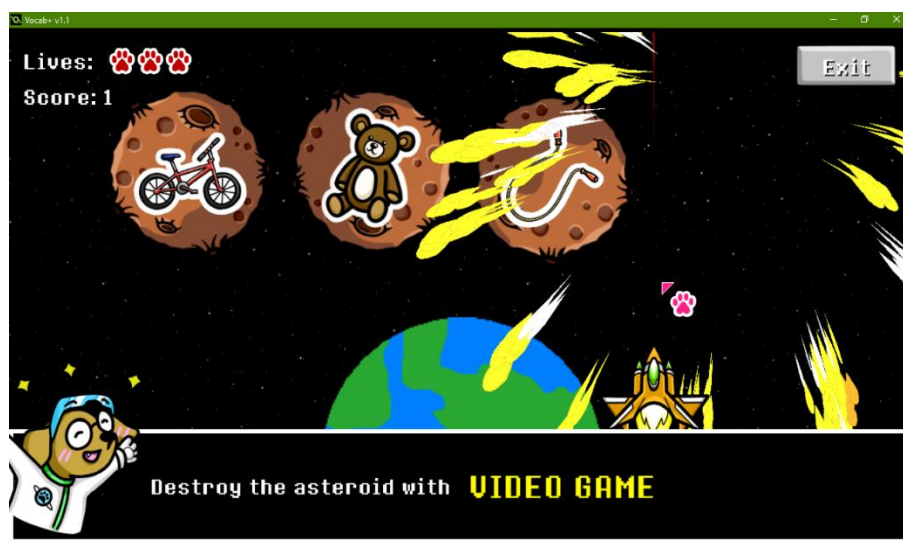
Game Mode Game Selection



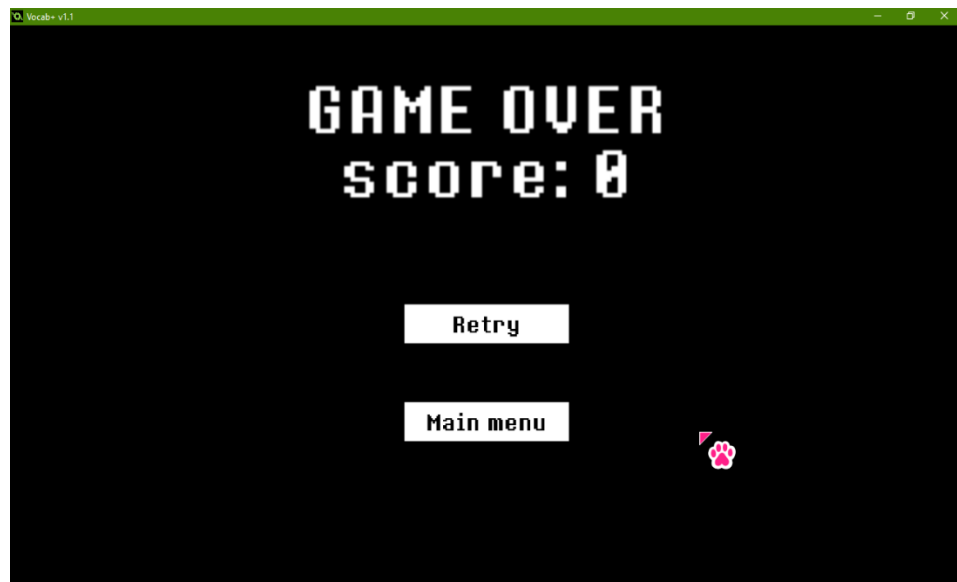
Vocabsteroids is an arcade-like game with a shooting dynamic, where the students will have to shoot an asteroid containing the picture corresponding to the word that “Pochi” points out in the bottom of the screen, in order to prevent the asteroid from crashing with the earth. Students will move the spaceship to align with the correct asteroid and then shoot it. If the player shoots the correct objective, they will score points and the asteroid will not crash into the earth. Nonetheless, if the player shoots the wrong asteroid, it will subsequently crash with the planet and the student will lose one of the three stocks or “lives”. [Figure 16. Appendix 4]

Figure 16

Vocabsteroids Gameplay Screen



If the player loses all three stocks, a Game Over will be displayed showing two buttons. One allows the user to go back to the main menu, and the other grants the opportunity to try again and continue playing. It is worth mentioning that this game contains sound effects and four different songs in order to make the gaming experience more fun and engaging. [Figure 17. Appendix 4]

Figure 17*Teaching Mode Topic Selection*

The second game called *Flipcards* is a memory game. It consists of a set of 18 cards, each one containing one word from the vocabulary or one illustration from the vocabulary on one face, and only a numbered pattern on their back side. At the beginning of the game, students are shown all the content of the cards for only five seconds. Then, the cards will automatically flip to the other side, showing the numbered pattern and students will have to match pairs by clicking over a selected card. [Figure 18. Appendix 4]

Figure 18*Flipcards Gameplay Screen*

The card will flip over and show a picture or a word. If it is a word, students will have to find the other card containing its illustration; if it is an illustration, students will have to find its corresponding word. [Figure 19. Appendix 4]

Figure 19*Flipcards Gameplay Screen*

This game includes two rounds in order to cover all the words from the vocabulary. Once the student discovers all the matching pairs from the first match, the board will show a new set of cards. Finally, when all the cards are found, an “ALL CLEAR” screen will be displayed. This game also contains sound effects that play every time the player finds a match, which makes students feel rewarded after making a good move. [Figure 20. Appendix 4]

Figure 20

Flipcards Clear Screen



Having presented all the different features of the virtual platform, the researcher proceeded to share the aspects regarding the download sites and the future plans for the platform.

The program will be available for download in the month of December through *Google Drive* and *Mediafire*, after completing the development of two User Manuals that will be accessible for the users of the platform. The first illustrated manual will be designed for educators and contain all the information regarding the functional aspects of the platform and a description of its features, including those of the educational resources in the Teaching Mode, and the minigames present in the Game Mode.

The second illustrated user manual is directed to students and parents. It will contain information in Spanish regarding the functional aspects of the different resources, making emphasis in the minigames offered in the Game Mode, since the purpose of those games is to provide children with an easy, accessible, and fun way to study vocabulary.

In the same vein, it was mentioned that several updates are to be carried out in the future, in order to include more topics, more educational resources, and more minigames. Educators will receive a notification when an update takes place, and the patch notes of each version, explaining the modifications made, will be also shared.

As part of the closure section of the training session, the researcher asked the participants to fill out two forms, which are going to be discussed in the following section. Having done this, the researcher thanked all the attendees and dismissed the meeting.

3.4 Data Collection Stage

In order to collect the data generated along the implementation of the program, four main forms were implemented and shared with the participants. Two applied in the mid-term of the project, and the other two were implemented in the final-term.

The first form named “AUTORIZACIÓN - KIDS 1” had the intention of explaining the parents of the children from the course KIDS 1 in which the researcher implemented the virtual interactive platform, what was the project about, its purpose, its benefits, and also, to ask if they were willing to allow their children to participate in the project, thus allowing the researcher to collect information related to their age and their opinions. This form obtained a total of 18 answers, each entry providing authorization, and hence, allowing the researcher to continue with the development of the proposal. [Appendix 5]

Having obtained the approval, and after the implementation of the minigames with the children in the 8th class, the researcher shared with the parents the second form named “Valoración - Proyecto de grado”, which contained 13 simple questions regarding the opinions and perceptions of children towards the functional and graphical aspects of the minigames, such as the readability of the illustrations, the size of the text, the feeling of engagement and fun, and the distribution of the different sections of the platform. It was divided into two sections, one regarding the *Vocabsteroids* minigame, and the other concerning the *Flipcards* minigame. Both sections contained the same multiple-choice questions. [Appendix 6]

Unfortunately, only five entries were registered in this form; however, the data collected showed that four out of five students understood *Vocabsteroids* perfectly, though it was fun, expressed that the size of the text was suitable, and all five participants said that they would be willing to play the game at home. Only one player had difficulties interacting with the game. Concerning *Flipcards*, four out of five kids mentioned that the size of the text was suitable and that the game was easy to understand. Only one presented struggle in these two aspects. On the other hand, all students declared that the game was pretty, fun, and were also willing to play it at home.

Following this, during the final-term of the implementation, two additional forms were applied after having developed the Training Session. The first form only had the purpose of registering the audience who attended the session, and it was carried out by the UIS Language Institute’s academic coordinator.

The second form was addressed to the attendees of the meeting, and covered questions respecting functionality and interface. This document registered 17 answers, and the results showed overwhelming positive feedback. In the first section regarding functionality, all the participants expressed that the virtual platform could be useful for both

educators and students, and in the same way indicated their willingness to implement the project in their own classes. [Appendix 7]

Following this, in the second section referring to the interface, the majority of the respondents stated that the platform is well distributed, and that it has easy access to its functions, assigning five out of five possible points. Only one person gave four out of five possible points regarding the aforementioned aspects. Concerning the text size and the suitability of the project to be used with children in age ranges from 7 to 9 years old, all the participants agreed that the virtual interactive platform was apt and fitting for the job.

Lastly, the form incorporated an open question requesting recommendations or further comments about the project. Here, all the answers collected were positive and encouraging.

4. Conclusions

All the information collected throughout the implementation of the project has yielded quite significant results, both for the educational area in which the proposal was developed, and for the professional formation of the researcher.

In the first place are the contributions made to the UIS Language Institute, where through the design and implementation of the interactive virtual platform, it was possible to identify a content gap in the KIDS levels that can and needs to be addressed, for which it was subsequently provided a possible solution to the problem, or at least, support was granted to improve vocabulary acquisition processes, which proved to meet the expected objectives by generating more motivating and attractive learning experiences for students. In the same way, the educational team was provided with a new digital and interactive tool that can help them teach and assess new vocabulary in larger quantities, in more attractive, enriching and user-friendly ways.

In relation to the professional training of the researcher, the learning acquired has been very significant, since the subject matter used by the project is among her areas of interest. When carrying out a project supported by digital resources, it was noted that it was harder than what was thought at one point, mainly considering that the development of any educational material requires a lot of effort and numerous design stages before even to generate a prototype of the project. Additionally, when completing this stage and starting the initial tests, there will always be new drawbacks and pending situations to improve. Now, to create an educational resource supported by ICT tools, the aforementioned must be taken into account, added to the fact that the process of managing digital or technological resources is largely outside the area of knowledge of language teachers, and the researcher must be aware of this before they venture into creating a new project. In this case, where programming for the platform was necessary, the project had the support of a software engineering student, since it was developed in an area of systems and software development, a field in which the researcher does not have knowledge and had to require external support.

Taking into consideration that the researcher developed the project within his areas of interest, the experience gained has been quite convenient, since she hopes to work on related projects, implementing the DGBL during her life and professional career.

These enriching results will certainly provide support in the future stages of development of the project, which will continue to be updated in the future, incorporating new resources that meet the needs mentioned in the document, with the intention of continuing to provide opportunities for improvement to the educational practices at the UIS Language Institute.

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