



TRABAJO DE FIN DE GRADO

The use of virtual worlds in foreign language learning

Autora: María Muñoz Sánchez

Tutores: ANKE BERNES y MANUEL PALOMO DUARTE

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1. Abstract and keywords

Nowadays, technology plays a fundamental role in our lives. This trend is also noticeable in the area of education, considering that the use of ICT services is increasing in educational centres. Considering this factor, I focused on the use of virtual worlds (VWs) for foreign language teaching and learning. The primary objective of this senior thesis is to demonstrate that VWs offer multiple educational applications to support the foreign language teaching and learning processes and that the potential of VWs has not been very much explored in language teaching and learning. For this purpose, a review of the literature based on four journals (*ReCALL*, *Computers & Education*, *Language Learning & Technology* and the *British Journal of Educational Technology*) has been carried out. I have focused on the articles published between 2010 and 2016, both included. A total number of twenty one publications that deal with virtual worlds and foreign language teaching and learning was found. These articles have been analyzed according to the journal and the year they were published in, the VW they use, the language skills they enhance and the type of learning they support. Through the aforementioned analysis, both hypotheses have been proven.

Keywords: virtual worlds, foreign language learning, interaction, motivation, collaboration, serious games, task-based learning.

1.1. Resumen y palabras claves

A día de hoy, la tecnología juega un papel fundamental en nuestras vidas. Esta tendencia también es apreciable en el ámbito de la educación, dado que el uso de los servicios TIC está aumentando en los centros educativos. Considerando este factor, me he centrado en el uso de los mundos virtuales para enseñar y aprender un idioma. El objetivo principal de este trabajo es demostrar que los mundos virtuales ofrecen múltiples aplicaciones educativas para apoyar los procesos de enseñanza y aprendizaje de lenguas extranjeras y que el potencial de los mundos virtuales no ha sido muy explotado en la enseñanza y el aprendizaje de idiomas. Con este propósito, se ha llevado a cabo un análisis de la bibliografía encontrada en cuatro revistas científicas (*ReCALL*, *Computers & Education*, *Language Learning & Technology* and the *British Journal of Educational Technology*), centrándome en los artículos publicados entre los

años 2010 y 2016, ambos incluidos. Fueron encontrados un total de veintiún artículos que tratan de los mundos virtuales y la enseñanza y aprendizaje de idiomas. Todos ellos han sido analizados con respecto a la revista y al año en el que fueron publicados, el mundo virtual que emplean, las competencias lingüísticas que desarrollan y los tipos de aprendizaje que utilizan. A través de dicho análisis, ambas hipótesis han sido probadas.

Palabras claves: mundos virtuales, enseñanza y aprendizaje de idiomas, interacción, motivación, colaboración, juegos serios, aprendizaje por tareas.

2. Introduction

The decision to focus on the multiple didactic applications Virtual Worlds (VWs) provide its users with, was based on my interest to learn about innovative teaching and learning approaches. Specifically, I was interested in getting to know more about e-learning and the possibilities that it offers for foreign language teaching. What motivated this concern is the importance that technology has nowadays in our lives and the growing importance that it is acquiring in the education field [UNESCO, 2011]. In order for students to familiarize with the didactic methods that are based on technology, and for them to benefit from their advantages, teachers are gradually introducing different electronic resources in their curriculum [European Commission, 2015]. For instance, nowadays many higher education centers possess ICT services, which allow educators to introduce in their teaching syllabus new learning tools such as VWs. Thanks to the present senior thesis, I was able to expand my knowledge on educational technologies for language teaching and learning, which will probably help me to better meet my future students' needs.

Moreover, I believe that when teaching a foreign language, it is essential to motivate learners by providing them with enough opportunities to interact in the target language. This is a further reason why I decided to research the pedagogic uses of VWs, because, taking into consideration how attractive technology is to many people these days, the use of VWs may enhance students' interest in language learning. Hence, in this work, I will explain how this type of virtual platform can motivate students and enhance their interactions in the target language.

In order to clarify what we generally understand by VWs, the present work starts with a definition of the term and an explanation of its main features. In section 3.1., since there is a wide range of VWs and the present senior thesis cannot treat all in depth, I decided to focus on the distinctive features of the most popular 3D virtual environment, which is *Second Life*. I also discuss the advantages that other VWs offer in contrast with *Second Life*. All the VWs that are explained appear in the literature which is used for the subsequent analysis. In the following section, 3.2., different VWs' educational applications will be addressed. Thereupon, the ways in which VWs can foster motivation will be considered too. The section 3.3. will deal with how these virtual platforms allow the development of the main competences which are necessary to be successful when interacting in a foreign language: listening, reading, speaking, writing and the intercultural competence. Each of these skills will be approached separately. Next, section 3.4. will present three of the main types of learning that are feasible in VWs: game-based, task-based and collaborative learning. Hereafter, in section 4, I will explain the two hypotheses my work is based on: *VWs offer valuable opportunities for language teaching and learning* and *the potential of VWs has not been very much explored in language teaching and learning*. The methodology used to find evidence to support both hypotheses will be explained in section 5. Next, an analysis of the data found in twenty one research papers on the use of VWs for language learning will be carried out. Moreover, in section 6 as well, the results of the analysis will be discussed. To conclude, section 7 will summarize the outcome of my analysis.

The last part is the bibliography. In it, the references of the academic papers whose ideas I use in the present senior thesis are encompassed. I discarded the consulted publications that are not relevant for this project. In the bibliography, I also included the articles that are studied in the analysis. The publications taken into account for the analysis appear in the annex too, together with information about their author/authors, the year and the journal they were published in, their content, the language competence/s, the type of learning they address and the VW they use.

3. State of the art

3.1 Virtual Worlds

This project will start by defining the subject matter of the present study, which are Virtual worlds (VWs). A VW is a computerized social network in which, by means of an avatar, the user can move around the virtual environment and interact with other users. Interaction takes place in real-time. According to Bell [2008] there are three main aspects that characterize VWs: simultaneity, persistency and the utilization of avatars.

Simultaneity refers to the fact that in order to communicate and interact within the VW, the interlocutors need to be online. Conversations can be held in private or in public with either one particular person, or with a group of people [Deutschmann et al., 2009a]. In addition, VWs allow users to interact with Non-Player Characters (NPCs) such as automated avatars, also denominated bots [Lorenzo et al., 2013]. Sajjanhar [2012] points out that their main use is to ‘detect spammers/abusers; invite residents to a group; and greet residents’. Moreover, other researchers, have underlined the potential of using bots to increase students’ opportunities to interact in the target language [Palomo et al., 2015a]. Synchronicity in VWs also allow students to receive immediate feedback on their performance [Berns et al., 2012]. In summary, the fact that communication is synchronous offers students the opportunity to get involved in real-time conversation tasks.

Next, I will focus on the second feature that characterizes VWs, which is persistence [Bell, 2008]. Persistence means that even when a user logs out, the VW continues functioning so that other users can still access the virtual platform and interact within it [Bell, 2008]. Furthermore, since VWs are persistent, they can be accessed anytime and anywhere.

Next, the focus will be shifted to the concept of avatars. Bell [2008: 3] defines the term as ‘any digital representation (graphical or textual), beyond a simple label or name, that has the ability to perform actions being controlled by a human agent in real time’. The avatar is the tool that represents each user in the VW and the one through which users can interact. Avatars are able to carry out numerous actions, namely moving around the environment, interacting with different objects by even modifying them, and also interacting with other

avatars [Couto, 2010]. The avatar's appearance can be customized at any time, so that our alter-ego can project the image that we desire [Educause, 2008]. The realism with which the characters are presented and the user's ability to customize it are different ways for the residents to feel connected to their figures, getting involved in the VW [Couto 2010; Peterson, 2012].

Another aspect which makes VWs valuable resources for teaching and learning foreign languages are the tools through which users can interact and communicate among each other. As pointed out by several authors [Lorenzo et al., 2013], the main communication tools available in VWs are:

- text chat
- voice chat
- video chat
- chatbots or NPCs
- boards

The aforementioned tools are indispensable for foreign language learning and teaching in VWs since they allow students to perform actions such as conversing, giving or attending a presentation and completing tasks collaboratively, among multiple other possible interactions. Through their use, students are able to practice the target language and to consequently enhance their linguistic competences. On one hand, by text chatting, students can develop their reading and writing skills. On the other hand, voice and video chat allow students to practice their listening and speaking abilities. VWs also provide the opportunity to interact with chatbots, so that students can practice the target language anytime without another student being connected simultaneously [Palomo et al., 2015a]. For the purpose of achieving naturalness in their speech, chatbots need to be provided with an artificial intelligence system [Lorenzo et al., 2013]. Moreover, multiple types of boards (media board, brainstorming board, etc.) can be found in VWs, and each of them offer teachers and learners different possible uses, some of which will be explained in detail in subsection 3.4.3.

VWs differ from other virtual environments such as *Moodle*, *Sakai* and *WebCT/Blackboard* in that they promote an approach to learning through which students become active

participants in their learning process [Educause, 2006; Berns et al., 2013b]. These other virtual environments are mostly used as data banks [Berns, 2013a]. Additionally, communication via a VW involves an user-adaptable setting that contextualises the learning experience [Berns, 2013a]. VWs' spatial dimension allows the performance of tasks that would be impossible to carry out in other virtual platforms such as social networks sites or virtual learning environments like *Moodle*. An example of this type of tasks would be interacting with a virtual mock up of the cultural environment typical from the target language's country/ies [Deutschmann et al., 2009; Ibañez et al., 2011].

Another factor to take into account regarding VWs, is the fact that there is a wide variety of them and each one has its respective distinctive features. This makes it possible for the designer of the academic activities supported by VWs' platforms, to adapt them to the specific performance the students should execute, and to adjust them to his and his student's computer equipments. Thereupon, this section will deal with the particular characteristics of some of the VWs that are used for language teaching and learning.

Next, I will briefly describe the most popular and frequently used VW for foreign language learning, which is *Second Life*. '*Second Life* is the largest virtual world, with tens of millions of square meters of virtual lands, more than 13 million registered users (or "residents"), and a thriving economy' [Educause, 2008: 1]. It is accessible for everyone to interact since 2003, due to the work of Linden lab [Molka-Danielsen, 2009]. Therefore, besides being a VW, *Second Life* can also be categorized as a MUVE, multi-user online virtual environment [Molka-Danielsen, 2009]. The web page 'www.secondlife.com' allows any person with a suitable electronic equipment to install the VW's application and to connect to it from any location [Educause, 2008]. Once the user has logged in, the first step to take is choosing an avatar, the virtual representation with which he/she will explore the multiple islands that *Second Life* holds. To interact with other users, *Second Life* offers tools such as text and voice chat [Educause, 2008]. That way, different language skills can be enhanced. A further way to communicate in the MUVE is through gestures [Educause, 2008]. Avatars can express themselves non verbally by clapping, acting bored, taking a bow etc. Further 3D virtual platforms, such as *AvayaLive Engage*, also allow its users to make the interaction more natural through gestures making [Kozlova, 2015]. However, avatars have no facial

expression, what can complicate interaction in terms of letting everyone speak in turns [Zhang, 2013].

Another remarkable fact about *Second Life* is that it is actually created by the residents themselves [Molka-Danielsen, 2009]. Users can build and customize the content of the environment. This has noticeable applications when it comes to teaching since the platform can be adapted by educators according to the students' educational needs. This feature also applies to other VWs such as *Active Worlds* [Shih et al., 2008].

In order to create an island for learners, teachers will need to buy or rent land [Molka-Danielsen, 2009]. 'The land, island or "sim" in *Second Life* is a virtual space that is simulated on a large array of servers called a Grid. So, the owner of land in *Second Life* is actually renting capacity on a server owned by Linden Lab' [Molka-Danielsen, 2009: 15]. When constructing the space, it must be taken into account that *Second Life*'s virtual spaces are able to support a given number of prims (3D objects) and avatars, what becomes relevant if for instance our student body is over the established capacity [Molka-Danielsen, 2009].

However, the aforesaid attributes, are only some of the positive aspects of one particular VW, which is *Second Life*. We can find alternatives to *Second Life* that offer advantages such as being able to control the servers that run the MUVE, for instance *Open Wonderland*, *Open Croquet* and *OpenSim* [Lorenzo et al., 2013]. In other words, these VWs are open-source softwares, what means that they can be modified at any time [Lorenzo et al., 2013; Berns et al., 2013a]. Owing to this, the administrator can determine who will be able to access the platform, preventing external visitors from interfering in the students' performances [Berns et al., 2013a]. The fact that programmers are able to modify the environment in line with teaching and learning needs allows for a more personalized education. Also, in contrast with *Second Life*, *OpenSim* allows an unlimited space and number of objects, permitting the creation of great sophisticated environments [Berns et al., 2013a]. Nevertheless, educators must take into account that the quality of the VW's performance can be affected if the space is overbuilt [Berns et al., 2013a]. Moreover, *OpenSim* allows the analysis of learner's behavior since 'developers can get access to the logs stored in the database system' [Berns et al., 2013b]. This can be useful when it comes to evaluating students.

3.2 VWs and Foreign Language Learning

A need to account for the changes that result from the increasing presence of technology has been created in the area of education. Experts agree that a 21st century education system is needed, and to do so, we would need to start by understanding knowledge not only as the memorization of data, but as an active process whose value lies in the ability to manage that information [Ministry of Education, 2012]. This applies to the use of ICTs for educational programs. A VW platform can be a powerful supplementary resource to teaching and learning foreign languages, since it allows learners to meaningfully interact in the target language. In order to learn a foreign language, students need both to receive quality input as well as opportunities to produce language output. Since face-to-face classes cannot always provide learners with these opportunities due to the high number of course students or to the low number of classroom hours, VWs could offer valuable opportunities to compensate the lack of language practice in class [Berns et al., 2013b; Morton, 2012]. By letting students interact with other users anytime and from anywhere, VWs help them foster their language skills out of class, allowing learners to practice the target language in different communicative contexts [Berns et al., 2013b].

Besides being used as a complement to face-to-face lessons, VWs can also be a useful tool for distance learning. These virtual spaces allow students to interact with other users, practicing this way their communicative skills, from any location where the computer has access to the internet. This way, students do not need to attend the language course in person, saving travelling time and gaining independence [Chang et al., 2009]. According to García [2016], one of the main advantages of studying languages through virtual environments such as VWs, would be that the distance learning method turns students into the masters of their own learning. They are enabled to decide the direction that their learning is going to take.

Using VWs for educational purposes, contrasts with the traditional learning method, which can be said to be less motivational since students are given large amounts of information and not many opportunities to produce output. Following from this idea, it should be remarked that constructivist learning in VWs fulfills what Molka-Danielsen, Panichi and Deutschmann [2010] declare as the ‘three main intrinsic needs that motivate behaviour’:

- ‘The need for competence which refers to the need to experience oneself as capable and competent in controlling the environment and being able to reliably predict outcomes’.
- ‘The need for autonomy which includes the need to experience one’s actions as results of autonomous choice without external interference’.
- ‘The need for relatedness, which refers to the need to care for and be authentically related to others, i.e. participation and involvement with social world’

As is well known, motivation is a key factor in every learning experience, thus encouraging it would suppose a benefit in the student’s learning process. In order to do this, educators can create cooperative learning environments in VWs, so that students feel safe when making mistakes and can therefore ask for help without fear and learn from their errors [Ospina, 2006]. However, competition may be motivational as well, since challenges encourage students to surpass themselves [Berns et al., 2013a].

There are multiple ways in which VWs can foster learner’s motivation. One of them being the use of avatars. When presenting themselves in a VW, students are, by some means, protected under their virtual appearance that guarantees their anonymity. ‘Research shows that anonymity brings about [...] weak social feedback, uninhibited behaviour and decreased self-awareness’ [Couto, 2010: 3]. Avatars are then an effective way to beat ‘Foreign Language Anxiety’, as it is usually caused when a learner feels that his person can be damaged if he makes a mistake when speaking in the target language [Couto, 2010].

A further element that fosters motivation is the virtual environment itself. VWs can be designed to resemble the real world and owing to this feature, real life situations can be simulated, allowing students to learn from practice [Couto, 2010; Kluge et al., 2008]. This way, thanks to the 3D immersive environment that contextualizes the experience and allows the interaction among users, students can get prepared to face these situations on a real scenario [Kluge et al., 2008]. Therefore, the fact that VWs can recreate settings that are not possible to reproduce in the classroom, is one of the principal reasons why these platforms can be regarded as useful learning and teaching tools.

Avatars together with the 3D appearance that resembles the real world create a ‘sense of presence’ that helps students immerse in VWs [Couto, 2010]. This is essential since ‘immersion has been said to have a positive impact in students’ motivation’ [Couto, 2010: 2]. Also, both of the previously mentioned features are subject of customization, which is another way in which residents can feel connected to VWs, getting more involved in them [Peterson, 2012].

Taking into account the importance that technology has nowadays in conjunction with all the aforesaid features about VWs, it seems reasonable to affirm that most students are likely to be attracted to VWs. This should lead to the repetition of the exercises available in the VW and to develop curiosity for the environment, experimenting reiteratedly with it. Since from practicing comes the strengthening of the language skills, the repetition of activities can help to build up confidence in regard to the command of the target language. However, not all students feel equally towards VWs as learning tools. Despite the fact that technology seems to be a dominant characteristic of our era, in order to enjoy it, the knowledge of certain abilities are required, and not everyone has them. Therefore, it would be essential to attempt preventing any sort of exclusion or frustration among the pupils who lack these digital competences [Whitton et al., 2008]. For example, adult learners are less likely to be interested in using three-dimensional spaces as educational tools or to be able to navigate within VWs without difficulties [Whitton et al., 2008]. However, ‘there is evidence that they will be happy to use them if they are perceived as an effective way to learn in that context’ [Whitton et al., 2008: 224]. On account of this, educators should consider devoting time to explain the functioning of the chosen VW, with the purpose that learners become comfortable with the virtual platform and understand its aim [Deutschmann et al., 2009].

3.3. Language competences

VWs allow the enhancement of the linguistic skills, due to the variety of communicative tools they offer. This section will briefly explain how, in VWs, students can find the necessary resources to enhance the oral (speaking and listening) and written (reading and writing) language competences, which are necessary to successfully interact in a foreign language. This section will also explore the importance that the intercultural competence has when learning a foreign language and how it can be approached in VWs.

3.3.1. Listening

There are multiple ways in which students can practice their listening skills in VWs. These virtual spaces allow learners to have synchronous conversations via voice chat or video chat, tools thanks to which they will be receiving aural input. Lectures can also take place in VWs, this way students can attend lectures without having to go to an actual auditorium [Petrakou, 2010]. Moreover, VWs can connect learners with speakers from different places around the world, what includes the possibility of getting input from native speakers. This provides students with valuable opportunities to become familiar with different accents of the target language (e.g. learners of English as a foreign language with the American, British or Australian accents).

A further way to enhance students' listening skills is inserting audio recordings in VWs [Berns et al., 2013a]. They can be used for foreign language teaching in multiple ways. For instance, they can appear together with the written form of the word or with an image or a photograph that represents what is being verbalized in the recording, allowing students to widen their vocabulary in the target language [Berns et al., 2013a]. Audio recordings can also be presented as questions that have to be matched with the correct answers, which are provided for the students [Berns et al., 2013a].

3.3.2. Reading

The text chat tool, enables students to receive written input in VWs. Conversations in these virtual platforms can be hold through text chat, enhancing this way the student's reading comprehension. A further tool available in VWs to receive written input are the different types of boards where, for instance, written presentations and Google documents can be displayed [Chang et al., 2009].

3.3.3. Speaking

According to several researchers, output production has been proven to be essential for foreign language learning since it is the way in which students can become aware of their weaknesses and overcome them as a consequence [Berns et al., 2013b; Swain, 2005]. VWs offer numerous opportunities for users to practice the target language and therefore to become more fluent when speaking in the target language [Swain, 2005]. In VWs, speaking exercises, such as lectures, oral presentations, dialogues or group discussions are mostly carried out via voice chat [Petrakou, 2010]. In the cases where more than two people participate, a 'voice protocol' could be established, to organize the interventions and avoid interruptions [Petrakou, 2010]. In order to enable the voice function, users need to have and to configure a headset, what might be problematic for those who lack of digital competences [Petrakou, 2010]. Technical problems regarding oral communication can also appear, such as delays or echo, what would cause difficulties at the time of completing certain tasks [Jauregi et al., 2010]. To avoid this from happening, experts recommend to have an alternative communication channel [Jauregi et al., 2010].

3.3.4. Writing

In VWs, students can produce written output through the use of tools such as text chat or boards. Therefore, these virtual environments provide learners with the opportunity to practice their writing skill in the target language. Also, the fact that communication in VWs is synchronous allow students to engage in real-time written conversations [Bell, 2008]. That way, learners can communicate with others by writing with not only the purpose of

conversing, but also to carry out collaborative learning tasks. In order to complete them, students will need to make use of their writing skill, asking for and providing information [Palomo et al., 2015b].

3.3.5. Intercultural competence¹

In VWs, users from all over the world can synchronously interact. This feature opens a range of educational possibilities, since consequently, students can communicate with native speakers of the target language. In order to successfully communicate, learners should, not only be able to get their ideas through to interlocutors, but they should also understand the culture and history behind their language [Jauregi et al., 2010]. In other words, taking into account the identity of a certain cultural profile is key for speakers to deliver their message and to avoid misinterpretations for factors such as politeness or prejudices [Jauregi et al., 2010]. Once that I have established the importance of having an open mind and being tolerant about the culture attached to the target language [Jauregi et al., 2010], the uses of VWs for this purpose will be discussed.

Being able to interact with speakers of the target language on a virtual environment can have multiple positive effects on students' learning process. First of all, they will become aware of the differences and similarities that their culture has with the foreign one, and therefore they will be able to adapt their behaviour accordingly [Canto et al., 2010]. Moreover, they can learn new vocabulary and idioms, as well as how to recognise which particular words should be used in a certain context in order for communication to be successful [Canto et al., 2010]. Also, feeling that their learning is supported by a native speaker can increase the learners' confidence when producing output in the target language, leading to a more fluent discourse [Canto et al., 2010].

Regarding the cultural aspects of languages, it should be also considered that VWs offer the opportunity to simulate the real world. Therefore, since real locations can be reproduced in

¹ We decided to include the intercultural competence among the language competences since it is key to interact in a foreign language. However, in the Common European Framework of Reference for Languages, it is classified as a general competence: https://www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf

3D, language students have the opportunity to benefit from it by virtually visiting emblematic places from where the target language is spoken.

3.4 Types of learning supported by virtual worlds

This section will deal with three different types of learning through which foreign language skills can be enhanced in VWs. It should be noted that there are more types of learning that can be used for language education, however, I decided to focus on the three main ones that can be supported by VWs: game-based, task-based and collaborative learning. The reason for this choice is based on the fact that these are the most recurrent varieties in the articles about foreign language teaching and learning in VWs. It is also based on the valuable opportunities that these types of learning offer for the enhancement of language skills.

3.4.1. Game-Based Learning

The use of video games to teach or learn a foreign language has increased during the last decade [Cornillie et al., 2012]. There are multiple researches that study the different educational benefits video games can bring, such as the opportunity to learn through exploration or the increasement of attention and interest [García, 2016]. These dynamic environments are said to have motivational potential, however not all students feel equally towards video games [Reinders et al., 2014]. Therefore, motivation should not be the reason to use video games to teach, but the additional options that they can offer in comparison to a regular classroom. For instance, Reinders and Wattana [2014] discuss different benefits that massively multiplayer online role-playing games (MMORPGs) offer, such as anonymity, reduced inhibition, reduced anxiety and the improvement of self-confidence.

VWs as virtual platforms can implement educational games, also called serious games. Serious games are developed for educational purposes combining fun and learning [Aretio, 2016]. The combination of VWs and serious games is rooted in the educational possibilities video games offer as they allow the interaction between users and/or with the environment [Palomo et al., 2015]. VWs offer many options for customization, consequently, educators can adapt the chosen platform to the classroom's educational needs. However, educators

ought to consider that ‘creating effective educational gaming worlds can be expensive, in terms of development time and expertise as well as financially’ [Whitton et al., 2008: 228]. Additionally, developing entertaining games is not an easy task, it requires a course designer with great programming competences, what can suppose a problem since, nowadays, the majority of the teachers do not possess this digital qualification [Whitton et al., 2008].

Commercial off-the-shelf games, like the VW *World of Warcraft*, can also be used for educational purposes since they support communities of speakers from major languages that represent different linguistic backgrounds [Cornillie et al., 2012]. Students can benefit from playing this MMORPG since it allows the performance of communicative activities in the target language such as ‘initiating or responding to questions, seeking help, negotiating meaning of unfamiliar words, expressing need, asking for or providing locative information, apologizing and greeting’ [Zheng et al., 2012: 356]. An added value is that the interaction happens naturally inside the game experience, where students are engaged in questing and in exploring the environment [Zheng et al., 2012].

3.4.2. Task-based Learning

Furthermore, VWs allow the development of a wide range of communicative tasks for the students to practice the target language, improving this way their language skills. There are individual and group tasks [Deutschmann et al., 2009b]. When the learner’s task is based on the interaction with the environment, it is considered individual, and when the activity requires the participation of other users to be completed, then it is a group task. This last category can be divided into two types of tasks, the ones that consist of a conversation between users and ‘collaborative tasks’, which suppose that learners need to communicate in order to achieve a common goal.

Tasks can be adapted to enhance one or various language skills, since they allow multiple options for interaction. Therefore, educators can design activities that allow students to practice the specific linguistic areas to which it is not possible to devote enough time in class. In that case, VWs could be used to complement face-to-face teaching, compensating the possible lack of opportunities to interact in the target language [Berns et al., 2012]. In other

words, VWs' adaptability enables teachers to provide a 'student-centered' education in which the learning experience is improved thanks to the development of tasks that meet their educational needs [Kluge et al., 2008].

Moreover, in VWs, students are able to carry out tasks that they will probably have to face in real-life situations and which are often difficult or impossible to practice in class. Then, with these real-life virtually simulated tasks, learners have the opportunity to prepare themselves for authentic communicative scenarios. Kluge and Riley [2008] relate this type of activities to the concept 'authentic learning', which stands for the idea that students need to experience how interactions are given in the real world. VWs are therefore presented as a suitable way to perform these tasks since they allow students to engage in multiple communicative scenarios [Kluge et al., 2008].

However, not all tasks are efficient when teaching and learning a foreign language in VWs. Several experts [Jauregi et al., 2009] who have tested the efficiency of different activities performed in *Second Life*, have reached to the conclusion that in order for a VW-based exercise to produce the desired results, the task should:

- Provide rich input.
- Provide opportunities to interact in the target language.
- Allow students to discern the linguistic units that conform the target language.
- Include the intercultural competence.

3.4.3. Collaborative Learning

VWs allow students to learn by cooperating with other users in order to complete a given task. This type of learning can be found in virtual environments as such, but also in video games like MMORPGs. Whitton and Hollins [2008] state that thanks to collaborative learning, students can improve their language skills, as well as their ability to analyse and re-write texts. Collaboration among students can also teach them how to accept judgment on their performance [Whitton et al., 2008]. Collaborating to complete tasks in a virtual environment, also has the advantage that users can interact in the distance at a convenient time for them, without any need to meet in person [Chang et al., 2009].

In VWs, besides text or voice chat, students can have access to further communicative tools that permit the carrying out of collaborative activities. For instance, several researchers [Chang et al., 2009] point out that *Second Life* offers various types of boards which allow learners to work in groups:

- Slide presenter board: on this platform, presentations can be created in conjunction with other users.
- Brainstorming board: through this tool, the group members can share their ideas.
- Media board: this resource provides a solution to the lack of a tool to edit documents collaboratively in *Second Life*. Through this board, students can use the Google Docs service, being able to create and modify their content and the one written by others.

4. Purpose and hypotheses

The present work aims to explore the use of VWs in the area of foreign language learning. Therefore, this senior thesis is based on two hypotheses:

Hypothesis 1: *VWs offer valuable opportunities for language teaching and learning.*

Hypothesis 2: *The potential of VWs has not been very much explored in language teaching and learning.*

Next, I will explain the methodology used to find evidence in support of both hypotheses.

5. Methodology

To find evidence in support of the above mentioned hypotheses, I first carried out a review of the literature on the topic of VWs and foreign language teaching and learning. The timeframe that has been considered for the analysis, covers from 2010 to 2016. I selected this period in order to obtain results that reflect the recent paradigm of the use of VWs for language education. The scientific search was based on the keywords *virtual worlds and foreign language learning*. Four specialised journals were consulted: *ReCALL*, *Computers & Education*, *Language Learning & Technology* and the *British Journal of Educational*

Technology. The search was carried out on the 27th and 28th of June. To organize and share the references found, I used *Mendeley*, a free reference manager and social network. As a result of the scientific search, a total of twenty one publications were considered valid for the analysis. The papers are listed in a table in the annex and have been made public by uploading them to *FigShare*². This way I aimed to share my findings with a broader audience allowing other researchers to access the retrieved information and to eventually update it.

6. Analysis

I will start the analysis of the twenty one scientific articles by presenting the number of results that the keywords *virtual worlds and foreign language learning* retrieved. Each of the four academic journals that were consulted appear together with the number of articles that were considered for the present analysis:

Journal	Valid publications	Total number of results
<i>ReCALL</i>	6	40
<i>Computers & Education</i>	2	45
<i>Language Learning & Technology</i>	9	56
<i>British Journal of Educational Technology</i>	4	73

Table 1: Number of results retrieved by scientific journals

As *Table 1* shows, the number of relevant publications is not very large considering the total number of articles found. However, for the purpose of the current research, only those publications which dealt with both topics, VWs and foreign language learning, were considered as relevant. Those papers that discussed either one topic or the other were not taken into account. For instance, multiple articles analyzed the possibilities for foreign

² FigShare is an online repository that allows users to share their research findings to make them available and citable for other users. The link to the document with the results is the following:
https://figshare.com/articles/FigShare_pdf/3698895

language learning using social networks, telecollaboration, blogs and wikis among other technological resources, but they did not consider VWs. I also found articles that studied how VWs can be used for educational purposes, but they did not focus on foreign language learning. Other publications explained how gaming can enhance users' linguistic competences but they did not include VWs as a possible platform to support the ludic experience. Book reviews also appeared in the results but they were not included in the analysis since it is exclusively based on journal papers. Moreover, *Language Learning and Technology* in particular retrieved sixteen results which were full issues, lists of related dissertations, archives and reports. These findings were not contemplated in the total number of results provided in *Table 1*.

Next, a quantitative analysis of the publications' selection is presented in a chart:

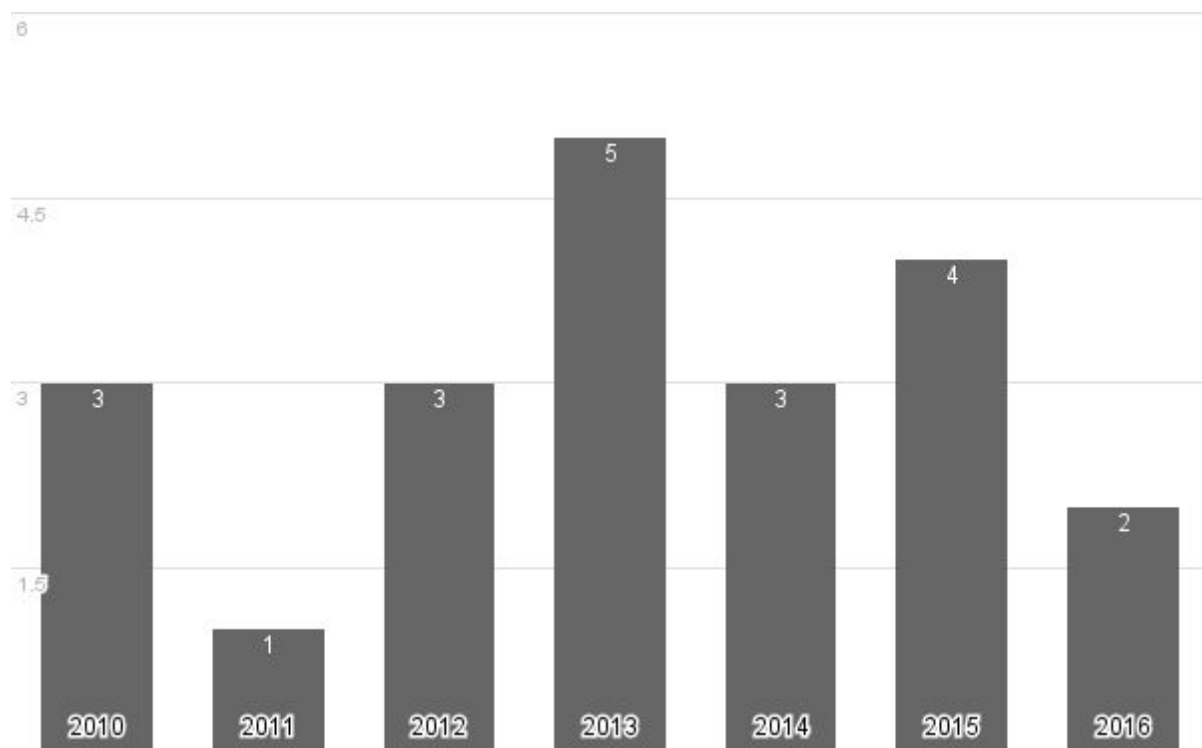


Figure 1. Number of publications per year analyzed

The classification of the valid papers according to the year in which they were published shows how the number of publications per year is not significant. In fact, the year in which

most publications were written, 2013, only accounts for five articles. In *Figure 1*, it can also be appreciated how research in VWs and foreign languages acquisition has not increased, it appears to be almost equal during the time period 2010-2016. However, it should be noted that further research on VWs and language education might be carried out during the rest of the year 2016.

Next, I will focus on the content of the twenty one publications that had been taken into account for the present analysis. Both theoretical and practical studies have been considered. On one hand, a total of sixteen publications provide practical examples of how language skills can be enhanced through the use of VWs. On the other hand, a total of five articles are theoretical and focus on how technologies can foster foreign language learning.

Below, I will present the types of VWs that were found in the analyzed papers. This way, I aim to identify the most frequently used VWs in foreign language learning. As illustrated by the chart in *Figure 2* these are: *Second Life*, *World of Warcraft*, *OpenSim*, *Open Wonderland*, *Open Croquet*, *Active Worlds* and *AvayaLive Engage*.

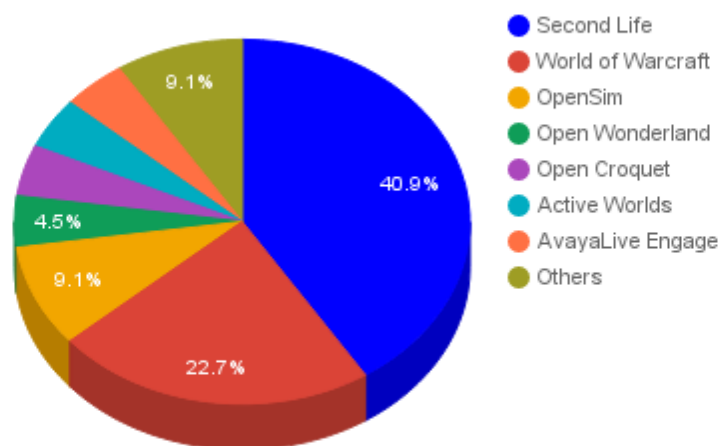


Figure 2. The use of Virtual Worlds in foreign language learning

The chart also indicates the number of publications that focus on the different VWs³. The data clearly illustrates that *Second Life* is the most used VW for foreign language learning. This concurs with the previously explained theory in section 3.1., which stated that *Second Life* is the most popular VW. However, due to some technical drawbacks of *Second Life*, such as its non proprietary software for which the server cannot completely be controlled by the administrator, and its lack of access to the logs (what makes it difficult to evaluate students' performances), many researchers started exploring new virtual platforms [Chen et al., 2011; Berns et al, 2013a]. Some of these alternative VWs are *OpenSim* and *Open Wonderland*, which account for two and one articles respectively. They are open-source VWs, hence, they allow teachers to fully control the virtual environment and to tailor it to students' learning needs [Chen et al., 2011]. Moreover, they permit to avoid external users from accessing the platform [Chen et al., 2011]. *Open Croquet* and *Active Worlds* are further options, however these VWs are exclusively presented in one theoretical article as possible platforms to support educational activities. *AvayaLive Engage* also appears in one article of the literature. It proposes a practical example on what skills teachers need to have to successfully teach in VWs [Kozlova, 2015].

The second most employed VW is *World of Warcraft*, which I am explaining separately since it is the only massively multiplayer online role playing game (MMORPG) of the VWs' selection. It was found in five out of the twenty one analyzed papers. Two of the five papers provide some practical examples on how this MMORPG can be used to learn English as a foreign language, while the other three deal with the positive effects that game play can have for foreign language learning, and included *World of Warcraft* as an available option. Among the advantages that virtual games can bring to learning, the articles mention autonomy, contextualised vocabulary and the reduction of anxiety when producing output in the target language [Chick, 2014; Reinders et al., 2014]. Chick [2014] proposes that educators should take advantage of the possibilities that games offer to enhance students' linguistic skills in the target language by guiding them on how to turn video games into a tool to learn autonomously. For example, by using games as educational tools they can learn words in

³ It should be noted that some publications mention more than one VW.

context, associating this way the image and the concept [Chick, 2014]. Reinders and Wattana [2014] suggest that in order to overcome the lack of participation in class, virtual games are a valuable tool since they are proven to reduce anxiety about mistakes making. For this reason, students feel more confident about producing output, practising this way the target language and enhancing their ability to interact.

It must also be considered that two theoretical articles do not make reference to a concrete platform, they talk about VWs as a whole. These publications are included in the category of ‘others’.

In view of the above, it is made clear that the most popular VWs for language education are those which cannot be controlled by an administrator, *Second Life* and *World of Warcraft*. This is relevant in regards to the second hypothesis, since it proves that the advantages offered by open-source virtual environments are not highly utilised.

Next, the enhancement of the target language’s skills through the use of VWs will be illustrated and discussed:

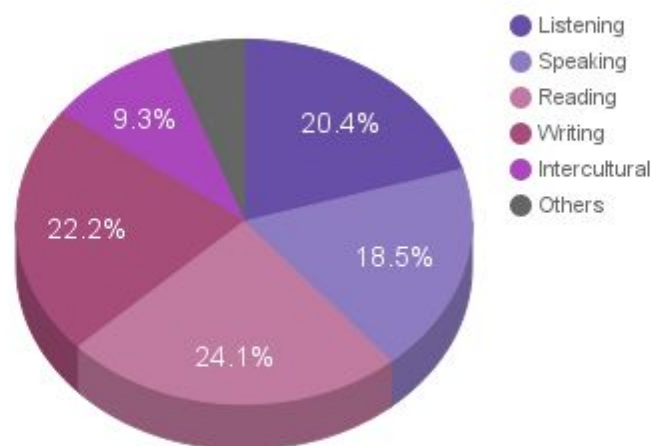


Figure 3. Language competences

Figure 3 shows how the oral and the written skills are addressed almost equally in the articles that have been analyzed. However, bearing in mind the second hypothesis, it is important to underline the fact that the intercultural competence is discussed in a shorter amount of publications. Five practical articles of the literature proposed the interaction with native speakers through VWs. Only one of these publications presents the 3D environment itself as a source for cultural information acquisition. This article explains an activity which allow students to learn from native speakers by going with them on virtual tours to islands that imitate their home towns [Canto et al, 2013]. Three publications were included in the category of ‘others’ since they did not mention any language skill.

The literature shows how thanks to the communication tools available in VWs, students can enhance their linguistic skills in the target language. This is relevant regarding the first set out hypothesis. These tools which make interaction between users possible are: text chat, voice chat, video chat, boards and chatbots. In the articles, text chat appears in relation to the articles that aimed to enhance the writing and reading skills and voice chat in relation to the speaking and listening publications. However, only one article uses boards. In it, the tool is employed to support collaborative learning [Kozlova, 2015]. This same article mentions video chat as a possible option to interact in VWs but the tool is not used in any of the publications. Chatbots are also used in exclusively one of the publications. The article discusses how chatbots are a tool that can increase students’ sense of presence and immersion [Wang et al., 2015]. Considering this information, it can be seen that when it comes to communication tools, as the second hypothesis states, the potential of VWs is not being explored much.

A further aspect to be taken into account is the type of learning that can be supported by VWs. I will focus on the three learning types that appeared in the literature: game-based, task-based and collaborative learning. These types are frequently used to teach and learn foreign languages due to the numerous possibilities that they offer to enhance the learning experience. The fact that VWs can support these three different learning types is further proof for the first hypothesis. In the following graph, *Figure 4*, the valid articles are presented according to the type of learning that appears in them:

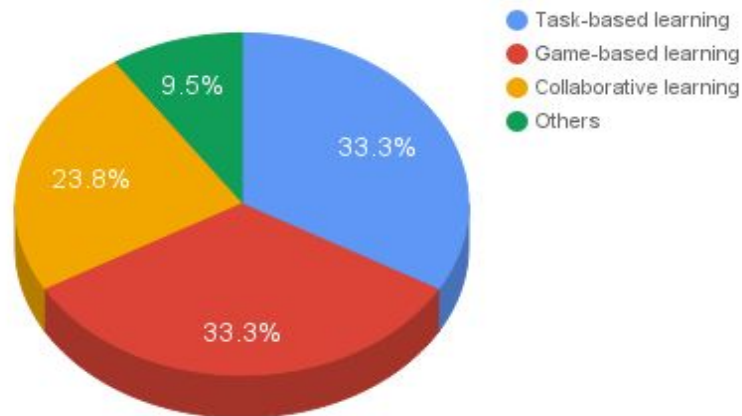


Figure 4. Type of learning supported by VWs

As portrayed in *Figure 4*, task-based and game-based learning appeared in the same number of publications, seven to be precise. However, collaborative activities were proposed in five publications. Considering the second hypothesis, the fact that collaboration is not as employed as other learning types, is noteworthy. Nevertheless, it must be taken into account that these categories can overlap. For instance, most games included task-based learning, which shows that VWs have the potential to make ludic exercises out of any language activity. An example of games that include tasks would be the MMORPG *World of Warcraft*. In this virtual game, the participants must go on quests to achieve different goals [Zheng et al., 2012]. Moreover, sometimes, just because of the platform’s virtual format, the students might understand the task in the VW as a game, even when it was not designed as such: ‘They viewed the learning approach as an online game thus being eager to involve themselves in the activities’ [Lan, 2015]. In the category of ‘other’ I have included two publications that do not mention a particular type of activity.

7. Conclusions

The present senior thesis aimed to prove two hypotheses: *VWs offer valuable opportunities for language teaching and learning* and *the potential of VWs has not been very much explored in language teaching and learning*. To this end, I have analyzed the twenty one articles that resulted from a scientific research in four academic journals: *ReCALL*, *Computers & Education*, *Language Learning & Technology* and the *British Journal of Educational Technology*. The search was based on the keywords *virtual worlds and foreign language learning*, and the period of time selected was from 2010 to 2016, including both of these years. As a result of the analysis, both hypotheses were proven.

The first hypothesis, states that *VWs offer valuable opportunities for language teaching and learning*. Along this senior thesis, both in the theoretical and the practical part, I have presented multiple advantages that different VWs bring to the foreign language learning experience. I have shown how students can improve their communicative skills in the target language through the multiple possibilities of interaction that are available in VWs. Not only is it possible to interact with a classmate or with the teacher, but with native speakers (since VWs can be accessed anywhere) and chatbots. Thanks to the use of the communicative tools that VWs offer, which besides conversing allow for multiple types of interactions, students are able to enhance their listening, reading, writing and speaking, together with their intercultural competence.

Moreover, also with the purpose of proving the first hypothesis, this senior thesis has explained the three main types of learning that are supported by VWs: task-based, collaborative and game-based learning. They all foster a constructivist approach to learning, requiring the active participation of students in their learning process [Educause, 2006]. Task-based learning allow students to practice the language competences in different communicative scenarios that are given in real life [Kluge et al., 2008]. This is not always possible in the classroom. Game-based learning turns studying into a ludic experience, combining knowledge and fun. In VWs, students can also learn through collaboration, having

to make use of their linguistic skills to communicate with another user and achieve a common goal.

Next, I will deal with the second hypothesis: *the potential of virtual worlds has not been explored very much in language teaching and learning*. Regarding this hypothesis, I have showed different VWs, and explained their main features. This way, it was possible to see how each platform offers different possibilities for language teaching. Since the servers of open-source VWs can be controlled [Chen et al., 2011], this type of platform can be said to be the most interesting one to support the language learning experience. However, results showed that *Second Life* and *World of Warcraft*, which are not open-source VWs, were the most popular VWs among the valid publications.

It has also been discussed how not all of the VWs' teaching possibilities are equally used. The analysis of the twenty one papers my research is based on shows that little research has been done regarding the possibilities that VWs offer to enhance learners' intercultural competence. Also, collaboration was the less researched type of learning, despite allowing students to practice their language competences interacting with others. Moreover, communication tools such as chatbots (which allow students to communicate without the need of another user) or boards (which support presentations and collaborative tasks) have little presence in the literature.

Furthermore, a quantitative analysis of the valid publications has been presented. It showed how the amount of articles that focus on VWs for language teaching and learning is limited, taking into account the multiple opportunities that these environments offer.

However, this work only explores some of the aspects that need to be considered to implement VWs in an educational programme. Further research, regarding the uses of VWs in foreign language teaching, would be needed in order to address the topics that this senior thesis could not encompass. For instance, it would also be interesting to consider how to assess students' performance in VWs.

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Language students and their technologies: Charting the evolution 2006–2011	Steel, Caroline H. Levy, Mike	2013	ReCALL	Theory	Listening Reading Speaking Writing	Task	x
Level of abstraction and feelings of presence in virtual space: Business English negotiation in Open Wonderland	Chen, Judy F. Warden, Clyde A. Wen-Shung Tai, David Chen, Farn-Shing Chao, Chich-Yang	2011	Computers & Education	Practice	Reading Writing	Task	Open Wonderland
Game-like language learning in 3-D virtual environments	Berns, Anke Gonzalez-Pardo, Antonio Camacho, David	2013	Computers & Education	Practice	Listening Reading Writing	Game	OpenSim
Emerging technologies from memory palaces to spacing algorithms: approaches to second-language vocabulary learning	Godwin-Jones, Robert	2010	Language Learning & Technology	Theory	Listening Reading	Collaboration	Second Life
Can I say something? The effects of digital game play on willingness to communicate	Reinders, Hayo Sorada, Wattana	2014	Language Learning & Technology	Practice	Reading Writing	Game	World of Warcraft
Digital gaming and language learning: autonomy and community	Chik, Alice	2014	Language Learning & Technology	Practice	Listening Reading Speaking Writing	Game	World of Warcraft

Does Second Life improve Mandarin learning by overseas Chinese students?	Lan, Yu-Ju	2014	Language Learning & Technology	Practice	Speaking	Task	Second Life
ESL teacher training in 3D virtual worlds	Kozlova, Iryna	2015	Language Learning & Technology	Practice	Listening Reading Speaking Writing Intercultural	Collaboration	AvayaLive Engage
Facilitating participation: teacher roles in a multiuser virtual learning environment	Wang, Airong	2015	Language Learning & Technology	Practice	Listening Speaking	Task	Second Life
Contextual EFL learning in a 3D virtual environment	Lan, Yu-Ju	2015	Language Learning & Technology	Practice	Reading Writing Intercultural	Task	Second Life
Irish in a 3D world: engaging primary school children	Dalton, Gene	2016	Language Learning & Technology	Practice	Listening Reading Speaking Writing	Collaboration	OpenSim
The role of technology in SLA research	Chun, Dorothy M.	2016	Language Learning & Technology	Theory	x	x	x
Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings: A review of the research	Hew, Khe Foon Cheung, Wing Sum	2010	British Journal of Educational Technology	Theory	x	x	Active Worlds Second Life Open Croquet

Second Life in education: A review of publications from its launch to 2011	Wang, Feihong Burton, John K.	2013	British Journal of Educational Technology	Theory	x	Collaboration	Second Life
Pedagogical challenges of spoken English learning in the Second Life virtual world: A case study	Zhang, Haisen	2013	British Journal of Educational Technology	Practice	Speaking Intercultural	Task	Second Life
VILLAGE-Virtual Immersive Language Learning and Gaming Environment: Immersion and presence	Wang, Feihong Burton, John K.	2015	British Journal of Educational Technology	Practice	Writing	Game	OpenSim

x = It is not specified in the text.