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VIRTUAL REALITY IN LINGUISTIC TEACHING TO IMMIGRANTS

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Abstract: The objective of this study is to evaluate the opportunities and limitations that virtual reality can provide in language teaching to immigrants using situations of daily life where meanings of cultural contexts are also worked transversally. For the development of this virtual reality tool, a co-creation methodology has been used in which end users of two types have been involved: immigrants and refugees and teachers and facilitators who will use it from three different places in Europe: Catalonia, Germany and Greece.

For the evaluation of the opportunities and limitations, a mixed qualitative and quantitative methodology will be used in which interviews will be carried out with the end users and a questionnaire will be carried out with the aim of collecting their assessment. In this methodology, the analysis of the responses from the perspective of the users is essential to be able to improve constantly.

This research is part of the European project WELCOME, (Multiple Intelligence Conversation Agent Services for Reception, Management and Integration of Third Country Nationals in the EU), which seeks to use technology to support the reception and integration of immigrants in Europe. The results obtained in this study will serve the developers linked to the project to improve technology and virtual reality, making it more accessible and friendly for immigrants and that can serve as a language acquisition tool in real situations.

Keywords: Third Country Nationals, Co-creation, Language Teaching, Innovation

INTRODUCTION

The number of refugees in the world has reached the highest level ever recorded, with 25.45 million people. In 2015 and 2016 alone, more than 2.5 million people applied for asylum in the EU. In 2017, 2018 and in 2019 the

figures decreased significantly, but in the first months of 2020 they skyrocketed again. This means that both the reception and integration of third-country nationals remain a major societal challenge for many EU countries. To face this challenge, the WELCOME project aims to develop immersive and intelligent systems that will act as personal assistants for immigrants and refugees, and in turn collect information to support the decisions of the Administrations of the receiving countries.

WELCOME addresses the following innovation objectives:

- Co-design of technologies for the reception, integration and inclusion of migrants and support for Administrations.
- Development of intelligent conversation technologies for the coordination of services and the management of interactions.
- Development of multilingual linguistic technologies
- Design of knowledge representation schemes and development of knowledge acquisition and interpretation technologies.
- Creation of personalized environments for interaction between migrants and support and accompaniment agents.
- Provision of a decision-making support system for Administrations

WELCOME will validate the platform developed as a whole and in each of its technologies through three different use cases:

- Reception and orientation of third country nationals
- Integration of third country nationals
- Support for residents of third countries in the receiving country
- In all three cases of use, decision-making support technologies will be provided to the

Administrations.

Within this frame of reference of the WELCOME project, the use of Virtual Reality for the acquisition of language skills by Nationals of Third Countries constitutes the first important point of innovation. For this reason, virtual reality tools linked to everyday life situations are being developed, with the aim of providing Third-Country Nationals with the necessary linguistic tools so that they can function independently in host societies. End users have been involved at all times from a co-creation perspective, identifying the most common situations and those in which linguistic difficulties arise by teachers specialized in teaching languages to foreigners. As a second aspect linked to innovation, we can point out that linked to learning the language, cultural contexts are being taken into consideration, also supporting the National of the Third Country to acquire knowledge in relation to the uses and cultural habits of the host societies.

STATE OF THE ART IN THE USE OF APPS AND VIRTUAL REALITY IN LANGUAGE LEARNING

Currently there are numerous applications and online tools that facilitate the learning of a foreign language. As part of the WELCOME project and to take language training to a level that is not covered in other applications, the most popular apps in the Spanish market have been tested.

The testing has been carried out taking into account the requirements and needs of end users; to identify those aspects and needs that current tools do not cover.

Next, the advantages and barriers identified for each of the applications studied have been collected.

The apps have been tested in their version for IOs on Iphone and Ipad. (Duolingo, Drops, Word of the day, Babel and Mondly). The

duration of each test in each application has had a variable duration between 3 weeks to 3 months. Mondly and Babel have been tested in the web version via a computer. The main conclusions are listed below:

DUOLINGO

Duolingo is one of the most popular language learning apps in the world. It offers a wide variety of languages, and its free version covers all levels. It is necessary to create an individual user profile that collects the user's personal information, native language, language to be learned, and the user's progress through the different lessons and levels.

Identified advantages:

- The free version covers a large number of topics and levels.
- Offers a wide variety of languages.
- The visual aspect is attractive.
- The user interface is simple.

Barriers detected:

- Limit of errors per day: users in the free version have a limited number of errors in activities each day. When they run out they cannot continue with the course. The number of daily errors is 3.
- There is no specific alphabet learning activity. When working with an alphabet other than the native one, it is very difficult to continue with the basic level without the help of other external materials.
- Writing and pronunciation activities are introduced very early, so it is easy to make mistakes and not be able to continue with the activities because the course has been blocked. People with a low level of literacy will easily become demotivated.
- It is not possible to navigate freely through the course; users must follow the marked itinerary; they cannot practice a subject of their interest freely. The user

can re-practice topics already completed; but you cannot advance according to your interests or needs.

Conclusions: Duolingo is an interesting tool for people with previous knowledge of a language and who want to expand their knowledge. Requires advanced knowledge of reading and writing; the speech recognition functionality may give errors in pronunciation exercises. Users with a very basic knowledge of a language may feel demotivated as the initial learning curve is very steep.

DROPS

Drops focuses on learning vocabulary and simple expressions. It is necessary to create a user profile that collects the user's native language, their progress in the different lessons and that allows the user to configure the duration of the lessons in the paid version of the application. In the free version, only one 5-minute lesson per day is allowed.

Identified advantages:

- Free version available.
- Covers a multitude of languages.
- Covers a wide variety of languages.
- It is very visual.
- The student can freely choose the order of the topics to practice.
- Includes a glossary of terms learned, searchable in the student's native language or in the language they are learning.
- Includes the alphabet as an activity.

Barriers detected:

- The free version only allows 5 minutes of practice per day.
- Does not include complete dialogues to practice.
- There are no explanations or opportunity to practice grammar.
- The presentation of terms can be unordered in some cases. For example, in

the case of pronouns, not all the personal pronouns are presented in an orderly manner, but rather they are presented in a disorderly manner and mixing personal pronouns with possessive pronouns, which can lead to confusion for the student.

Conclusions: Drops is an application that allows users to acquire a basic vocabulary in many languages, basic topics are worked on, from the alphabet to simple phrases, so it is suitable for users without prior knowledge. Once the user has mastered the basic vocabulary, it is necessary to complement this application with additional training to cover other aspects that the app does not cover, such as grammar or oral interaction.

WORD OF THE DAY

Word of the day allows you to learn a new word every day in the languages that we choose. The free version only offers vocabulary in English allowing you to choose between British or American English. There is no need to fill out any registration information or create a learner profile. The app is very simple to use, the user chooses the variety of English they prefer, and every day they receive a new word to increase their vocabulary. The word of the day is shown, a brief explanation of the meaning and one or two sentences where that word is used; to facilitate a learning context. The app has a calendar, where the user can consult all the previous words in reverse chronological order. This application is aimed at users with a medium-advanced knowledge of a language and who wish to enrich their vocabulary in a simple way without consuming a large amount of time.

Identified advantages:

- Installation and access is simple, since it does not require the creation of a user account.
- It is available for both Android and IOs

mobile devices.

- Offers the possibility of listening to the pronunciation of the words that are offered.
- Provides information on the etymology of the term.
- It offers practical examples to be able to incorporate that term into our habitual vocabulary.

Barriers detected:

- There are no levels of learning or customization, the term of the day is the same for all users.
- Requires a medium-advanced knowledge of the language; in this case of English. Most of the terms that are presented are cultured or of unusual use. It is focused on enriching the vocabulary, even of native speakers.
- The free version is only available in British English or American English. It is not possible to choose the word of the day in another language.

Conclusions: The Word of the day application is interesting for those users who, having a medium-advanced level of English, want to incorporate new terms into their vocabulary in a simple way that hardly consumes time. It is not recommended for users with an initial knowledge of the English language as the terms used are rarely used.

BABEL

Babbel offers 13 different languages, for most of these languages it offers two levels, basic and intermediate. It is one of the most popular applications worldwide. It consists of a multi-device platform that works on both computers and tablets or smartphones. When the user registers, they choose the language, as well as their motivation to learn that language (to study, work, travel, etc.), their previous level of knowledge of it (the options are: not

much, somewhat, a lot) and the amount of daily time that the user wants to dedicate to learning the new language, from 5 minutes to 60 minutes a day.

Identified advantages:

- Up to 14 languages available, many of them offer two levels of learning, initial and advanced, in the languages that only one level is offered, this level is initial or basic.
- At the basic level the application is mainly very visual and also offers support in audio format, which is useful for basic level learners.
- It is multi-device, that is, it can be accessed both from a computer and from a tablet or smartphone.

Barriers detected:

- The lessons are grouped by theme, browsing between lessons is not totally free, and access to the lessons in the free version of the program is very limited. Only one lesson can be completed per day. To unlock the subsequent lessons it is necessary to make a paid subscription.
- There is no initial basic vocabulary activity, or the alphabet in a structured way, which is quite important when trying to learn a language with a different alphabet than the native language.

Conclusions: The resources available in the free version are very limited. The learning curve for students without previous knowledge of the language is quite limited, in general, it is recommended for students who already have some previous knowledge of the language.

MONDLY AND MONDLY AUGMENTED REALITY

Mondly is a language learning platform, which is complemented by an app that allows you to simulate conversations with bots in augmented reality. Users can register for free on the web or download the application on their tablet or smartphone. The website offers lessons in 33 languages. In its free version, students can register in one language only, to access more languages they must purchase a paid subscription.

This platform is complemented by an app for tablets and smartphones called Mondly AR. In this application, students can interact orally with a bot in augmented reality. In the free version of the app, students can only access the first lesson and practice basic forms of greetings. The other lessons are unlocked by purchasing the paid version. The app allows you to practice conversations in simulations of real environments.

Identified advantages:

- 33 languages available, although in the free version the student can only register in one language.

- Possibility of taking multiple lessons in the same day in the free version.
- There is an application for tablets or mobile phones adapted to language learning for children.
- Possibility of complementing traditional lessons with augmented reality learning.
- Offers brief grammatical explanations such as the conjugation of the verbs that are presented.

Barriers detected:

- Impossibility of freely browsing the contents available in the free version. The lessons must be completed in the order

marked in order to continue advancing in the contents.

- There is no basic alphabet learning activity, which makes it difficult to learn languages with a different alphabet than the native language.

- Requires some previous knowledge of the language, even at the basic level, since sentence translation or pronunciation activities are presented immediately, which can demotivate students with a low level of previous knowledge of the language.

- The augmented reality application offers very few features in its free version.

Conclusions: Of all the applications analyzed, Mondly with the Mondly Augmented Reality plugin is the most advanced from the point of view of new technologies applied to language teaching.

Regarding the challenges in Virtual Reality found in the bibliographic review, it is worth highlighting the article by Anke Berns and Salvador Reyes-Sánchez published in 2021, where an analysis of virtual reality in language learning is made. Among the most important conclusions drawn from this study can be pointed out the need to explore new ways to make the most of virtual reality for the teaching of foreign languages, and the need to address not only the student's feeling of immersion, but also the degree of interaction. All this combined with a student-centered learning model so that they can adapt to learning, being a field of work that offers opportunities for the development of Artificial Intelligence. Likewise, the need to unite language and culture in these virtual environments has been collected by authors such as Noelia Moreno, Juan José Leiva, María del Carmen Galván,

Eloy López and Francisco José García. ¹.

The vast majority of the analyzed applications require a prior level of literacy and prior knowledge of technology. It can be concluded that the audience for these types of applications are mainly students who, on many occasions, already know a second language and want to learn a third language or improve or refresh their language skills. Most of these applications are general, that is, except for the Chinese or English language, they are not specific to a single language, but several languages can be studied with the same application.

None of them have as their target audience migrants, refugees or asylum seekers who need to acquire a series of language skills to be able to function freely in the host society, who may have low levels of literacy, limited technological skills or have mother tongues with a different alphabet.

CO-CREATION AND METHODOLOGY APPLIED IN THE PROJECT

The WELCOME project's main objective is to develop a system that contributes to the integration of Third Country Nationals, immigrants and refugees, in the host country. For this, a co-creation methodology has been used that has consisted of weekly co-creation sessions that took place between professionals from organizations that work directly in intervention with immigrants and refugees, mainly NGOs and Public Administrations, and technological professionals. The meetings were held virtually due to the COVID19 situation and it was the main user requirements gathering technique used in the first phase of WELCOME. During these meetings, discussions were dedicated to specific needs that were highlighted by organizations

working with the target audience, immigrants, refugees and asylum seekers, which were sometimes guided by specific questions from technology partners. Parallel to the co-creation sessions, the organizations that work with end users provided descriptions of their current needs and requests, highlighting the differences, commonalities and shared needs between different types of organizations, both public and private, and pointing out the most common contexts where it is necessary to provide language skills to immigrants and refugees so that they can solve common situations in daily life in host societies. Cultural contexts have also been taken into account, as an innovation, since the union between the use of the language and the habits of a society are important to develop immersive virtual learning environments close to reality.

After the collection of user needs and technical development by the developers, user tests will be carried out with real people from Third Countries, where the virtual reality module created within the framework of the WELCOME project will be tested in three languages, Catalan, German and Greek. This module has developed real situations faced by immigrants, refugees and asylum seekers, combining linguistic activities with mini-games where aspects related to language and culture are worked on. In this phase, the feedback received from users is very important. To collect this feedback, a questionnaire has been developed that asks about sociodemographic aspects (age, gender, country of origin, mother tongue, educational level) and aspects such as technological skills or handling of other languages, and participants are asked for their assessment in relation to the Virtual Reality module and other aspects of the application developed in the WELCOME project. To comply with

1. Moreno, N.M., Leiva, J.J., Galván, M.C., López, E. y García, F.J. (2017). Augmented reality and virtual reality for teaching-learning English from a communicative and intercultural approach. In Ruiz Palmero, J., Sánchez-Rodríguez, J. and Sánchez-Rivas, E. (Ed.). Teaching innovation and use of ICT in education. Málaga: UMA Editorial.

the Data Protection Law, responses will be anonymized or pseudonymized and all participants will sign a prior consent.

EXPECTED RESULTS

Subsequently, after carrying out the pilot tests, the data will be analyzed statistically. The following correlations are expected to be established.

- Value differences in relation to gender, age, educational level, previous digital skills, and languages known by the immigrant, refugee or asylum seeker.
- Differences in the results obtained in the activities in relation to gender, age, educational level, previous digital skills, and languages known by the immigrant, refugee or asylum seeker.
- Barriers related to the use of technology, especially with regard to the acquisition of the necessary technical and economic requirements for the acquisition of virtual reality equipment.
- Differences between the different languages where the pilots will take place, Catalan, Greek and German.
- Utility by end users in the Virtual Reality module aimed at language learning.

GENERAL CONCLUSIONS

Most of the language learning applications are aimed at students or people who already know a language and want to improve their knowledge and skills or learn another language after being functional in a second language. Although they seek to be interactive and visual, they are not aimed at the public of immigrants, refugees or asylum seekers who have other needs and interests. In their case, they are not looking for a linguistic certification or to improve their knowledge in a foreign language, but to have the knowledge and skills that allow them to function independently in the host society. As studies have pointed out, virtual reality offers an opportunity to combine real spaces and situations, apply artificial intelligence and introduce cultural themes in specific situations, making the overall context much closer to reality.

Both the approach aimed at People from Third Countries with needs different from those of the students, as well as the insertion of cultural aspects constitutes an innovation within the WELCOME project and we hope to be able to create this way a useful tool for the reception and integration of immigrants and refugees in host societies.

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