

Virtual reality and intercomprehension: A serious game for multilingual learning on the Francigena cycle route

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Abstract

The project Time to S.P.R.I.C. – Shared Pathways for Romance languages, Intercomprehension and Cycling in virtual reality provides an immersive digital environment that promotes linguistic intercomprehension between Romance languages through a serious game set along the Via Francigena cycle route in the Susa Valley (Piedmont). Integrating storytelling, cultural exploration and interaction in virtual reality, the game aims to develop intercomprehension skills using the seven sieves, inferential strategies and experiential approaches. The user moves through a multilingual interactive environment, guided by an avatar, decoding written and oral input in languages other than their own L1. The playful-educational context encourages the activation of metalinguistic processes, reduces communication anxiety and supports the development of interpretative autonomy. The digital component is not only instrumental but an integral part of teaching: it allows meaningful interaction between the subject and the system, enabling personalised and adaptive feedback. The pilot study presents preliminary results involving 26 students enrolled in the Blended Intensive Programmes (UNITA) course, indicating high engagement and greater linguistic awareness on the part of the participants. The project is part of European policies for multilingualism and represents a replicable model for language teaching, with implications for schools, academia and civic life.

Keywords: *linguistic intercomprehension; virtual reality; serious games; experiential learning.*

1. One definition, multiple applications of virtual reality

In recent years, immersive Virtual Reality (VR) has undergone rapid development, garnering considerable global attention and demonstrating relevance in educational settings. The utilisation of computer-supported technologies in the development of VR applications enables the creation of simulated environments, both real and imagined, thereby providing users with an immersive experience, often referred to as a sense of presence (Burdea, 2003). Despite the recent advancements in the field of Virtual Reality (VR), the history of VR can be traced back more than a century. In 1916, Albert B. Pratt pioneered the development of the first helmet-mounted periscope, and subsequently, Morton Heiling conceptualised the Sensorama (1956), a pioneering innovation that aimed to enhance the viewer's visual experience. The development of simulated three-dimensional (3D) environments that can be freely explored and enriched with visual objects with which it is possible to interact was initiated by the

pioneers of the discipline. These simulations permit users to engage in practical tasks by means of devices, as will be demonstrated subsequently, such as, Head-Mounted Displays (HMDs) and body sensors, thus demonstrating considerable potential. Pellas et al. (2020) and Potkonjak et al. (2016) emphasise two primary facets of contemporary VR: (a) the superior graphical fidelity of three-dimensional environments, which enhances the realism of content and spatial domains; and (b) the capacity to execute tasks in real time, accompanied by an immersive sensory experience and interactive feedback from three-dimensional components. VR simulations offer realistic and interactive learning experiences, and there is also a high degree of reality perceived by users (Limniou et al., 2009). Within the domain of VR devices, four predominant categories can be distinguished:

- Head-Mounted Displays (HMD): devices such as Oculus Rift and HTC Vive, which display content through small optical screens in front of the user's eyes. Among the limitations are certainly the weight of the equipment and the limited play area supported (Southgate et al., 2019).
- Mobile VR: portable devices such as Samsung Gear VR and Google Cardboard.
- Cave Automatic Virtual Environments (CAVE): a room whose walls are used to project three-dimensional scenarios with virtual and/or realistic settings. It is an immersive system that allows users to move freely within the space (Riva, Gaggioli, 2019).

This technological evolution underscores the significance of designing VR activities that integrate immersion, interactivity, and a high degree of realism, thereby facilitating a transformation in the manner in which users learn and engage with educational and practical content. In recent years, there has been a sharp increase in the use of VR in education, training and entertainment, simulating real-life contexts and promoting experiential learning of foreign languages and the development of intercultural skills, as discussed below.

2. The state of the art of VR in language education

Building on a comprehensive overview of Virtual Reality (VR) technologies, it is essential to articulate the current state of research concerning VR-Assisted Language Learning (VRALL). A recent systematic review of 32 studies conducted between 2015 and 2020 (Dhimolea, Kaplan-Rakowski & Lin, 2022) reveals growing scholarly attention towards High-immersion VR (HiVR) for its potential to provide contextualized, experiential language learning opportunities. The review identified three key findings:

1. Repeated exposure to VR sessions is essential for effective learning;
2. VR proves particularly beneficial for contextual vocabulary acquisition;
3. Learners' perceptions of VR are largely positive, although the evidence regarding its overall effectiveness remains inconclusive.

The studies analysed span multiple linguistic domains - including speaking, listening, writing, pronunciation, and reading - with the most promising results reported in vocabulary and oral communication. Learners consistently reported high engagement, reduced language anxiety, and a heightened sense of presence, which facilitated risk-free communicative practice in authentic scenarios.

Concurrently, a large-scale survey of 2,176 language teachers (Dhimolea, Kaplan-Rakowski & Khukalenko, 2023) underscores the crucial role of teacher beliefs in the successful integration of VR into classrooms. Findings revealed that teachers' positive attitudes toward VR were strongly linked to their prior experiences with the technology and the availability of IT support in their schools. Teachers acknowledged VR's potential to motivate learners, promote communicative skills, and accommodate individual learning styles, but they also highlighted challenges such as resource limitations, training needs, and the importance of institutional support.

These studies illustrate that VRALL is an emerging field that combines strong student enthusiasm with promising pedagogical applications. However, its sustainable integration requires not only repeated and well-structured learning opportunities, but also systemic support for teachers in terms of training and technical assistance. These findings underline the dual need to improve both technological design and pedagogical preparation to fully exploit the possibilities of immersive VR in language learning.

The present article expounds upon the implementation of immersive environments in a specific domain of education, encompassing the realms of foreign language acquisition and the cultivation of intercultural competencies. This approach is predicated on the notion that direct exposure to an authentic linguistic environment, coupled with active engagement, constitutes a pivotal element in the effective and natural acquisition of a language (Garganese, 2022). The advent of VR has engendered a paradigm shift in the realm of language education, offering students a means to immerse themselves in authentic everyday scenarios. This technological advancement facilitates interaction with native speakers and enables engagement in dynamic and engaging communicative situations. Furthermore, it is possible to modulate the learning experience according to the students' needs. For instance, simulations can be adapted to reflect varying degrees of competence, thereby providing immediate and personalised feedback. This process facilitates self-correction and continuous improvement, thereby reducing anxiety related to communication in a foreign language (Bonvino & Garbarino, 2022). Moreover, the utilisation of VR facilitates transcendences geographical and social boundaries, thereby providing immersive experiences to students who, for diverse reasons, lack access to authentic language learning environments. In the contemporary language teaching context, a number of applications have been developed for use in the classroom. These include ImmerseMe and Unimersiv, which are both grounded in an immersive approach and the functional contextualisation of the language experience through a learning-by-doing approach (Grandi et al., 2021).

The utilisation of VR in education signifies an opportunity to dismantle communication barriers and promote student-centred learning, as emphasised in the Futures Literacy Laboratory Guide (UNESCO, 2023): the capacity to predict and conceptualise alternative futures can be augmented through immersive digital environments that facilitate the development of linguistic and social competencies in simulated contexts.

3. Towards the future: Linguistic intercomprehension to overcome language barriers

Among the innovative approaches to foreign language learning is Intercomprehension (IC), a pluralistic approach that allows the similarities between languages to be exploited in order to promote communication and the acquisition of language skills in a natural and intuitive way. The origins of IC can be traced back to the early 20th century, when Jules Ronjat utilised the concept in his studies to classify linguistic communities (Castagne, 2016). It was only at the close of the 20th century that IC gained relevance in the field of education, establishing itself as an innovative methodological approach to language teaching and learning. As Meissner (2004) has demonstrated, this approach is founded on the learner's capacity to comprehend a language that has not been formally acquired, utilising analogies and parallels with familiar languages. Among the cognitive strategies activated, bottom-up strategies are of particular importance, as they allow for the identification of similarities between languages through the application of the so-called 'seven sieves', analytical tools that represent different levels of interlinguistic transparency:

1. International lexicon, i.e. the set of terms shared globally;
2. Pan-Romance lexicon, consisting of words of Latin origin common to Romance languages;
3. Phonological correspondences;
4. Orthographic correspondences, which facilitate interlinguistic recognition of verbal signs;
5. Syntactic affinities between languages;
6. Morphological correspondences;
7. System of affixes, which often retain similar meanings and functions within the repertoire of a language.

This approach is part of European policies promoting multilingualism (see, for example, CARAP/FREPA, Candelier, 2007, 2012a, 2012b), aiming to develop language skills through metacognitive and inferential strategies. IC is applied in contexts ranging from education to the professional sphere and, as far as language teaching is concerned, it is an alternative – or rather a complementary methodology – to the traditional method (Escudé & Janin, 2010). In this regard, numerous digital platforms have been created over time to enhance receptive skills in Romance languages thanks to the support of European projects such as Galanet, EuRom5 and Miriadi (Bertelli, 2022), some of which, unfortunately, are no longer available today. Furthermore, IC is also used in student and professional mobility contexts, where the ability to understand different languages facilitates communication and integration in multicultural environments (Doyé, 2004).

Cognitive processes and the role of VR

From a pedagogical point of view, the IC approach is supported by neuroscientific studies that show how exposure to related languages promotes the enhancement of cognitive skills. The use of inferential strategies, for example, stimulates logical reasoning and mental flexibility, making the learning process more intuitive and natural. Listening and oral comprehension are fundamental processes in language acquisition and involve complex cognitive operations that engage different areas of the brain (Mattiola & Miličević, 2024). During listening, the nervous system processes auditory stimuli through a pathway that starts with acoustic and phonological decoding and ends with semantic integration and comprehension of the overall meaning of the utterance (Gazzaniga et al., 2010). To fill any linguistic and contextual gaps, the subject employs compensation strategies, which have been examined in various studies (Seyfarth et al., 2018; Zhang et al. 2020). Listening comprehension is certainly an area that involves extremely complex decoding processes, as it is primarily dependent on the ability to segment the sound stream, which allows words to be recognised within a continuous chain of sounds. In the case of an L2/LS, this process involves greater cognitive effort due to the difficulty of identifying word boundaries (Broersma, 2025). As explained by Mattiola and Miličević (2024, p. 179), once an initial phonological representation and partial segmentation of the acoustic signal have been obtained, it is possible to consult the mental lexicon and then proceed to morphosyntactic and semantic analysis. These are operations that involve constant interaction between sensory memory (auditory or echoic), working memory and long-term memory, and which allow the listener to confirm or invalidate the hypotheses made in the previous analytical phases. [...] Understanding an oral message inevitably involves bottom-up processing in terms of the perception and decoding of phonological units, but it is thanks to the constant intervention of top-down processing and their mutual interaction that the listener is able to construct, or rather reconstruct, the meaning in its entirety (Jouanaud, 2020).

In order to facilitate oral comprehension when encountering foreign languages, the use of Virtual Reality (VR) has been posited as a potentially effective solution. Immersive environments and interactive simulations offer learners the opportunity to practice in conditions closer to those of real communication, reducing anxiety and promoting progressive exposure to linguistic input (Gentile et al., 2023). The use of VR allows access to linguistic content which, although presented in languages that are more or less distant from the player's L1, is made more accessible by its contextualisation in a real environment. Below is a case study that emerged during the pilot phase of the project 'Time to S.P.R.I.C.: Shared Pathways for Romance languages, Intercomprehension, and Cycling in virtual reality', a serious game designed to engage university and secondary school students in a multilingual journey to develop IC skills while discovering the cultural heritage of the Susa Valley.

4. What factors need to be taken into account when designing a Serious Game (SG)?

Serious Games (SG) and gamification have transformed the landscape of learning, training and entertainment in various sectors, providing effective tools for improving skills and acquiring knowledge, leveraging immersion, motivation and engagement to facilitate experiential learning (Zafeiropoulou et al., 2021). According to numerous studies (Checa et al., 2020; Plass et al., 2020) the effectiveness of serious games is based on six fundamental principles:

- Competence. Through gaming, knowledge can be applied in simulated and real contexts, strengthening players' sense of self-efficacy (Parra-Díaz et al., 2024). Serious Games (hereinafter SG) are often used in professional training, medicine and science to train users through interactive simulations.
- Emotions. These play a key role and are conveyed through good storytelling and challenges that encourage emotional involvement, making learning more effective and memorable. For example, League of Emotions Learners (LoEL) is an SG designed to develop young people's emotional intelligence by teaching them to recognise and express their emotions in professional contexts (Santos et al., 2021).
- Group dynamics. SG also facilitates social relationships, promoting collaboration, communication and competition among players. This strengthens the sense of belonging and ability to work in a group, as can be found in online and multiplayer educational games involving different nationalities (Bacsa-Károlyi & Fehérvári, 2024).

- Identity. Another important aspect is identity building, as gaming provides an opportunity to explore and experiment with different roles and personalities, developing greater awareness of oneself and others (McNamara et al., 2023).
- Inclusion, equity and diversity. These principles, which are increasingly present in game dynamics, aim to provide access to an ever-wider audience.
- Data security and protection. Games may involve interaction between users and the collection of personal data, which is why it is essential to ensure a secure and privacy-friendly digital environment (Yigit et al., 2024).

In the serious game ‘Time to S.P.R.I.C.’, we tried to take all these aspects into account in order to allow players to apply their language skills in simulated and realistic contexts, dealing with concrete communicative situations, obtaining information, solving linguistic puzzles in order to promote emotional involvement and facilitate memorisation. Furthermore, combining one’s language skills within a group of people speaking different languages helps to strengthen the sense of belonging.

5. Game design of Time to S.P.R.I.C: Shared Pathways for Romance languages, Intercomprehension, and Cycling in virtual reality

Time to S.P.R.I.C. is an SG prototype designed to promote linguistic intercomprehension and its strategies, offering a real-life scenario rich in historical and cultural references. The SG is based on the principles of game-based learning set out by James Paul Gee (2003), emphasising linguistic and cultural identity, interactivity and problem-solving in educational games. Time To S.P.R.I.C. is developed on two distinct platforms, Unity and ThingLink, with the aim of comparing their effectiveness in virtual mode and in interactive digital format. In both platforms, the player is guided by a narrative in their L1, which accompanies the entire gaming experience. This narrative not only provides a motivating context, but also serves as a guide to understanding the actions to be performed in the various levels, making the experience accessible and engaging and minimising the risk of misunderstandings related to understanding the instructions for each activity. Through the SG, participants are exposed to different Romance languages (Italian, Spanish, Catalan, Portuguese, French, Romanian) and linguistic IC strategies while exploring the cultural heritage of the Susa Valley, virtually travelling along the Via Francigena cycle route. The decision to use two separate applications stems from the desire to analyse the degree of engagement and the development of IC skills through VR compared to traditional digital platforms, as well as a practical need related to the portability of devices and the sustainability/replicability of the educational experience in contexts not necessarily equipped with Unity headsets. The game setting, for both Unity and ThingLink, was created with the Ricoh Theta 360° camera so that players can explore and discover real spaces, enriched with graphic details, vegetation and three-dimensional characters with which users interact during the activities. Each game level is designed to integrate top-down and bottom-up IC strategies, while facilitating the seven sieves approach (Stegmann, 2005). Before starting, the player selects their L1, accessing a game structure that is uniform in content but differentiated in the Romance languages offered. By passing the oral and written tests in IC, players acquire useful items for their equipment in order to continue their journey along the Via Francigena cycle route. The player is always accompanied by an avatar who is available to provide guidance, while the interactive elements in the SG are designed to introduce texts and audio in the pan-Romance languages. The latter were generated using scaffolding activities with a view to guiding the player towards understanding, based on the model presented by Eurom5 (Bertelli, 2022; Bonvino, 2011).

5.1. Context and participants

In July 2025, the project involved a pilot group of 26 university students from the ‘UNITA - Universitas Montium’ Alliance, who participated in a Blended Intensive Programme (BIP) on IC, focusing on the theme of ‘tourism and mountains’.

5.2. Method

For the pilot session, the Thinglink version of the SG was used so that all participants could play at the same time. Student data – their potential interest and motivation towards the game, experiences and opinions in the field of IC and multilingualism – were collected through an anonymous questionnaire (each student was assigned an identification code, used both for completing the pre- and post-questionnaires and for registering for the game on Thinglink, in order to cross-reference the data collected before and after the activity). The SG takes place within a 60-minute workshop session and is divided into fifteen levels of activity and increasing difficulty aimed at promoting a pluralistic approach through the use of top-down strategies, the use of context to understand the general meaning, and the deduction of meanings thanks to the players' linguistic biography and encyclopaedic knowledge. Since the intercomprehension approach involves constant comparison between several languages of the same branch, the cognitive load is significant and a gradual approach is preferable, starting with the written text and then moving on to the oral text, diluting the use of IC strategies and following the progression outlined by the seven sieves (higher frequency of pan-Romance words and international vocabulary at the first levels, then moving on to more complex texts in the subsequent levels). Below is an example (Figure 2):

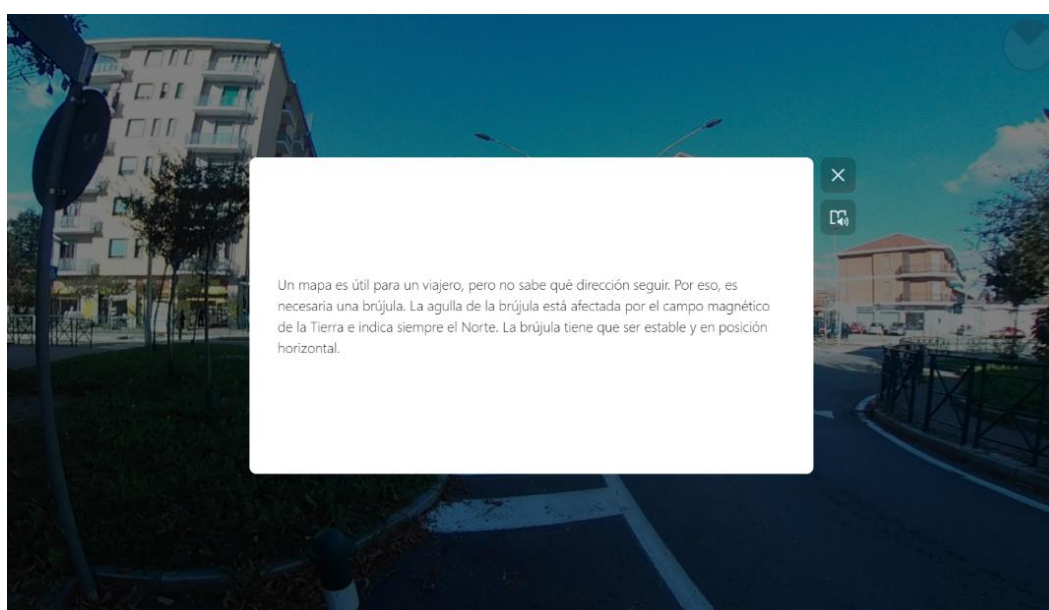


Figure 1. First level of the game presented on ThingLink. Screenshot of author's own ThingLink project.

As illustrated in Figure 1, the 360° navigable environment is displayed, with the initial text presented in this section. Overall, it evinces a high level of interlinguistic transparency, facilitating comprehension thanks to the strong similarity between Romance languages. Following the interaction with the avatar to obtain the initial instructions, the player (whose L1 is not Spanish) encounters an interactive point along the way that provides information in Spanish.

The objective is to facilitate comprehension by introducing a degree of ambiguity, thereby enabling the player to hypothesise about the less familiar vocabulary and their function within the text. This approach introduces the concept of approximate meaning and demonstrates from the outset the significance of global understanding based on areas of linguistic transparency. The process involves generating hypotheses for the less familiar vocabulary, thus enhancing the player's ability to comprehend the text. As illustrated in Table 1, a significant proportion of the words in the initial sieve contributes to enhancing the accessibility and comprehensibility of the text. This observation is exemplified by the inclusion of English words such as 'map', 'direction', and 'position', which are pertinent to the subject matter.

Table 1. The words in the above text that belong to the first sieve.

1st sieve: International vocabulary: (IT)	Spanish	Catalan	Portuguese	French	Romanian
Mappa (map)	mapa	mapa	mapa	carte	hartă
Direzione (direction)	dirección	direcció	direção	direction	direcție
Posizione (position)	posición	posició	posição	position	poziție

Furthermore, the use of pan-Romance words in the second filter with high lexical transparency can be evidenced (see Table 2).

Table 2. The words in the above text that belong to the first sieve

2nd sieve: Panromanzo lexicon (IT)	Spanish	Catalan	Portuguese	French	Romanian
Bussola (compass)	brújula	brúixola	bússola	boussole	busolă
Terra (Earth)	Tierra	Terra	Terra	Terre	Pământ / Terra
Viaggiatore (traveler)	viajero	viatger	viajante	voyageur	călător
Nord (North)	Northe	Nord	Norte	Nord	Nord

The presence of these words within the text should be sufficient for a good understanding and for identifying the solution to the puzzle (an object mentioned in the text to be found in the game environment). In fact, with the exception of the Romanian word ‘călător’, which reflects an autonomous evolution, most of them have a high level of transparency. In this initial phase, it is important to present content that is as close as possible to the learner's L1, because, as Bonvino and Garbarino (2022, p. 61) state: “it reassures the learner; it facilitates access to other languages and, above all, it provides a basis for reflection [...] with positive repercussions in several areas of learning, from problem-solving skills to the general competence of 'knowing how to learn'”. . Where the text is not understandable to some, there are scaffolding activities that allow the player, at any stage of the game, to receive support during the process. In this specific section, linked to level 1, the player must match the written word to the corresponding picture. Once the activity is completed, the same scenario is presented again, but with the addition of images related to the text in order to facilitate understanding. (Figure 2)

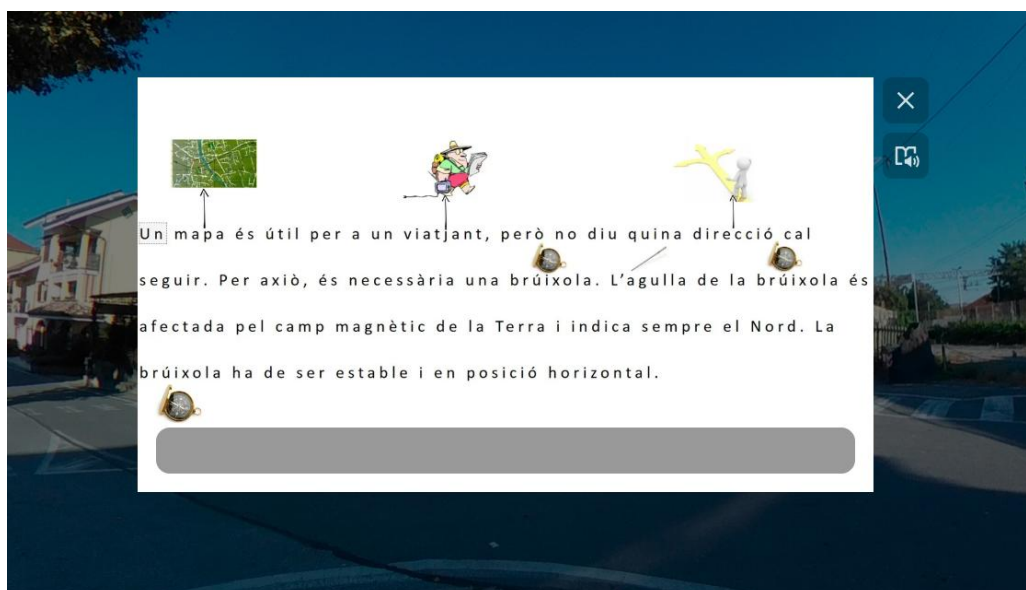


Figure 2. Presentation of the text following the scaffolding activity carried out. Screenshot of author's own ThingLink project

Furthermore, by activating specific sections within Thinglink (fig. 3), it is possible to 'colour the text' by identifying parts of speech, nouns (pink) and verbs (red) in sentences, which is useful for facilitating comprehension. Additional features include the ability to highlight adverbs and adjectives, as well as select words, listen to their pronunciation (adjusting the speed) and obtain their meaning through an image.

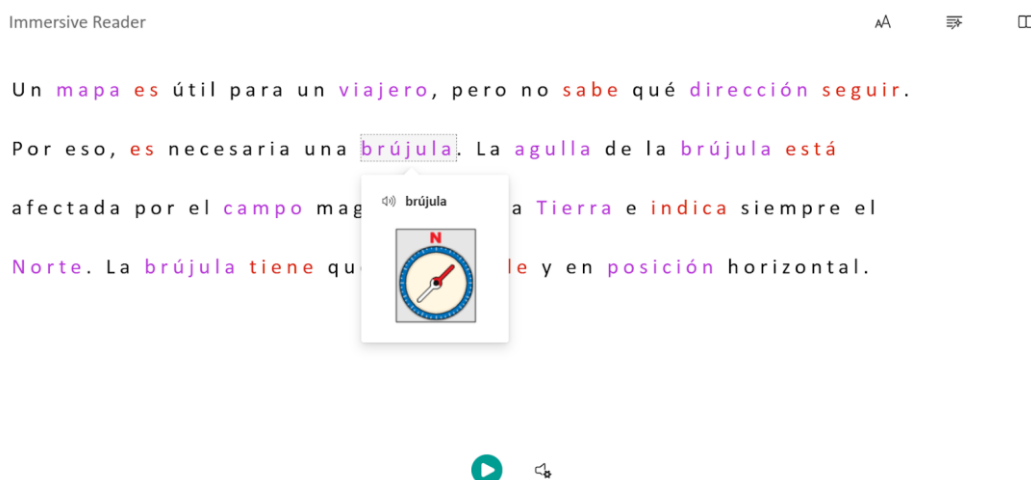


Figure 3. Presentation of simplified text with voice listening option. Screenshot of author's own ThingLink project.

5.3. Preliminary results

The results of the pilot trial conducted in July 2025 highlighted that despite the high transparency of the first proposed text, it was not immediately understandable: 18 out of 26 students answered the multiple-choice question “What are you looking for?” incorrectly, thus requiring scaffolding to help them understand the text. Table 3 shows that, during the activity carried out using the Wordwall platform, integrated into the SG environment, terms characterised by high interlinguistic transparency – such as, *brúixola*, *direcció* and *mapa* – were correctly recognised by between 94% and 100% of students. On the contrary, words with lower transparency, such as, *angulla* (83% correct answers) and *viatjant* (89%), generated a higher number of errors. These data confirm the crucial role of orthographic and phonetic correspondences (sets 3 and 4) in the process of lexical recognition between Romance languages. At the end of the level 1 analysis, it emerged that students had begun to

develop language comprehension strategies, although the results do not yet allow us to speak of a fully consolidated improvement. However, the activity promoted the acquisition of fundamental awareness for intercomprehension between Romance languages. In particular, students demonstrated a good ability to recognise terms with high interlinguistic transparency. It emerges that, in order to promote language learning, it is didactically effective to start the course with the introduction of words with high interlinguistic transparency, in order to consolidate learners' confidence. Subsequently, it is advisable to introduce less transparent terms, accompanying them with visual aids, etymological notes and guided inference activities. These strategies activate metalinguistic processes and gradually prepare students to tackle more complex lexical challenges.

Another factor that may have contributed to the high level of difficulty encountered in understanding the first text (in Catalan or Spanish, depending on the students' mother tongue) was their lack of familiarity with the Thinglink interactive environment. In fact, there was a general initial difficulty in understanding what action to take, despite the presence of printed instructions provided at the start of the activity. This was compounded by the moment when participants realised that the key object for proceeding in the game was the compass: it had to be located within the virtual environment and then used to orientate oneself in space, a necessary condition for accessing the next level.

Table 3. Scaffolding activity carried out on Wordwall in order to understand what to look for in the environment.

Word	Number of students who completed the activity (out of 26)	Number of students who correctly matched the word to the image	Percentage of correct answers
Brúixola (compass)	18	18	100%
Angulla (needle)	18	15	83%
Viatjant (traveller)	18	16	89%
Direcció (direction)	18	17	94%
Mapa (map)	18	17	94%

Finally, it is important to remember that SG is not limited to the linguistic dimension, approaching IC through the activation of specific strategies, but integrates cultural and historical content, promoting the enhancement of the territorial heritage. The recreational and educational activities are intertwined with references to significant cultural elements – such as, historical notes, monuments, local legends and gastronomic traditions – relating to emblematic places in the Piedmont region (Alpignano, Caselette, Avigliana, Sant'Ambrogio and the Sacra di San Michele), all crossed by the Francigena Cycle Route. This integrated dimension not only reinforces the effectiveness of the metalinguistic strategies already in place, but also contextualises them in a meaningful, motivating and authentic experience, promoting language learning through cultural and territorial exploration.

6. Provisional conclusions

The Time To S.P.R.I.C. project is part of research into Intercomprehension (IC) between Romance languages, with the aim of exploring the effectiveness of immersive SGs in promoting the development of IC strategies in formal and informal contexts. Based on evidence from previous initiatives such as Start@Unito and IC courses for Erasmus students (see Corino et al., 2022), it has been hypothesised that guided, immersive learning leads to more solid outcomes than autonomous, unstructured approaches.

The data collected from the pilot group through pre- and post-test questionnaires, administered via Microsoft Forms and differentiated by language, showed strong cognitive activation among participants. 92% reported using contextual inference strategies to decode the meaning of words during the game, limiting their use of explicit translation. These results lay the foundations for the integration of an observation grid inspired by EVAL-IC (Évaluation des compétences en intercompréhension), which is useful for monitoring the development of receptive and pragmatic skills. In terms of engagement levels, the results were high: over 85% of subjects agreed or strongly agreed with the motivational aspect of the game. Elements such as narrative scenarios, missions, challenges and immediate feedback contributed to the creation of a playful-educational ecosystem that supports learning without formal assessment. In line with what was previously stated, the qualitative analysis of the open-ended responses shows an appreciation of the serious game and the activities carried out, eliciting the following feedback¹:

“Me gusto mucho, la interfaz tiene posibilidades de mejora pero es una gran iniciativa”

“Mi a placut, a fost interesant si captivant.”

“Acho que é uma boa maneira de intercompreensao de novos idiomas e uma maneira de nos aprendermos a comunicar e a interpretar.”

“Pienso que es una forma didactica interesante de aprender y puede ayudar bastante, sugeriria mas actividades porque se me hizo corto”

“Foarte interactiv si ajuta la intelegerea mai buna ca alternativa la activitatea academica clasica”.

The results confirm the importance of structured digital environments in providing more immersive educational experiences, contextualised through interaction with virtual objects, maps, documents, and animated characters.

The findings of this study contribute to CALL research by expanding knowledge on how immersive serious games can foster intercomprehension strategies and cognitive activation in multilingual settings. The integration of an observation grid inspired by EVAL-IC provides a replicable methodological tool for assessing receptive and pragmatic skills in future studies. Moreover, the results highlight the role of immersive environments in reducing anxiety and enhancing motivation, pointing to new avenues for investigating affective factors in CALL. From a pedagogical perspective, the project demonstrates how narrative-driven, feedback-rich VR environments can complement traditional classroom practices by engaging learners in authentic and interactive communication. This suggests that serious games in VR are not merely technological innovations but viable instruments for supporting plurilingual education, providing teachers and institutions with scalable models to design meaningful CALL interventions.

Beginning in January 2026, students from high schools and upper secondary schools in the Turin area, whose curricula include a second Romance language, will be involved. In total, this initial phase of experimentation aims to engage 50 students, comprising experimental groups using the serious game in virtual mode (Unity) and comparison groups experiencing it in digital format (ThingLink).

¹ “Me gusto mucho, la interfaz tiene posibilidades de mejora pero es una gran iniciativa”

→ “I liked it a lot, the interface has room for improvement but it’s a great initiative.”

“Mi a placut, a fost interesant si captivant.”

→ “I liked it, it was interesting and engaging.”

“Acho que é uma boa maneira de intercompreensao de novos idiomas e uma maneira de nos aprendermos a comunicar e a interpretar.”

→ “I think it’s a good way to develop intercomprehension of new languages and a way for us to learn to communicate and interpret.”

“Pienso que es una forma didactica interesante de aprender y puede ayudar bastante, sugeriria mas actividades porque se me hizo corto”

→ “I think it’s an interesting educational way to learn and it can help a lot; I would suggest more activities because it felt short to me.”

“Foarte interactiv si ajuta la intelegerea mai buna ca alternativa la activitatea academica clasica.”

→ “Very interactive and it helps with better understanding as an alternative to traditional academic activities.”

The implementation of the project across academic, school, and civic contexts not only broadens its educational impact but also creates opportunities for regional promotion and active citizenship education, supporting an inclusive and multilingual educational model.

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