

Exploring Playful Language Learning in Higher Education Through a Virtual Reality Game

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Abstract

This study investigates playful language learning in an immersive Virtual Reality (VR) environment. The authors designed a VR language game for adult learners of Finnish in higher education in Sweden and Finland, aiming to support foreign-language speaking skills. Survey data were collected from 36 participants, who reported their learning experiences, emotional responses, and perceptions of VR as a language-learning tool. Drawing on Nicola Whitton's theory of playful learning, the findings show that positive emotions, such as excitement, curiosity, and enjoyment, were more common than negative reactions, suggesting that the VR environment functioned effectively as a "magic circle" for experimenting with oral skills without real-world consequences. Negative emotions were mainly associated with perceptions that the game was too repetitive, too complex, or lacked sufficient action. For many participants, the testing session was a transformative experience that increased their confidence and openness to using playful learning environments for language learning.

Keywords: *Virtual reality, playful learning, language learning, higher education, Swedish, Finnish*

1. Introduction

This study focuses on the learning of Swedish and Finnish in Finland, and Finnish in Sweden, in a higher education context. Swedish, an official language in Finland, is a mandatory subject for all Finnish-speaking students at Finnish universities, while international degree students study Finnish. Teaching Swedish in Finland can be challenging because learners often perceive the language as having limited usefulness (Juurakko-Paavola, 2024), while learning Finnish requires considerable effort from international students (Korhonen, 2015; Mathies & Karhunen, 2021). In Sweden, Finnish is often studied at university by individuals with personal ties to the language, such as heritage learners or those with Finnish family members. According to Holmberg (2022), students perceive many university language courses as fast-paced and strongly focused on theory and grammar. Many participants in the present study are part-time students who balance their studies with work and other commitments and may therefore benefit from complementary, communicative, and innovative learning methods.

During the past twenty years, playful approaches to teaching and learning have become increasingly common in higher education, particularly in the Nordic countries. For example, according to Lakkala et al. (2015, pp. 86–87), nearly half of the teachers of Finnish as a second language in upper secondary schools, higher education institutions, and liberal adult education had already used virtual worlds or digital games in their teaching by 2015. This study explores higher education students' views of a playful Virtual Reality (VR) language-learning environment designed for learners of Finnish and Swedish. Despite growing interest in the topic, research on playful learning in adulthood remains limited, and the unique ways in which adults experience and engage in play have yet to be fully understood (Whitton, 2018). Therefore, this study examines the interconnections among technology, emotions, and learner experiences in adult language learning through a VR speech simulation game in two Nordic countries.

Our research questions are as follows:

1. What kinds of learning profiles do the participants have?
2. How did the participants experience language learning through VR?
3. What can playful learning using VR contribute to language learning in higher education?

According to Whitton (2018), playful approaches in higher education include digital game-based learning, traditional games, gamified learning systems, game building, role-play, simulations, mini-games, playful interludes, murder mysteries, quest-based learning, physical block play, escape rooms, and playful curriculum redesign. Advocates of these approaches suggest that creating safe and playful environments enables students to learn from mistakes, manage risks, and foster creativity and innovation while also enhancing the overall enjoyment of learning (Whitton, 2018). Motivated by these ideas, our team of higher education language teachers and game engineers became interested in designing a playful learning environment and subsequently created a virtual reality (VR) language-learning game (Partanen et al., 2024).

In our game, the player interacts with a virtual friend, with the task of conversing with a native speaker in a foreign language. Previous research suggests that interacting with a virtual character may lower the threshold for communication in a foreign language and reduce performance anxiety (Kaplan-Rakowski & Gruber, 2021). Our original decision to apply for Nordplus Higher Education funding for a language-learning game was based on evidence that games can make language learning enjoyable, support necessary repetition, enhance motivation, and create authentic or authentic-like communication contexts that make learning more engaging and less stressful (see also Partanen et al., 2022). The notion of *functionally authentic communication*, in which

interaction has a genuine and personally meaningful purpose, further reinforces these benefits (Partanen et al., 2024; Ericsson & Sofkova Hashemi, 2024; Bündgens-Kosten, 2012; Rüschoff, 2010). Based on our experience of teaching Finnish and Swedish as foreign languages in higher education, many students, particularly those studying part-time or taking compulsory language courses, struggle to identify personally meaningful opportunities to use the target language beyond completing course requirements. However, previous research suggests that multimodal learning environments incorporating authentic learning activities can support the development of pedagogical and communicative competence while enhancing learners' motivation.

Therefore, our goal was to create a game specifically designed to help students practise spoken language in authentic situations and gain confidence in speaking a foreign language. Digital games are typically used to enhance learner motivation (Boyle et al., 2016), and this is also one of the aims of our language-learning game (see also Juurakko-Paavola, 2024). The game combines virtual reality with role-play, simulation, and game-based learning. Game-based learning (GBL) is a methodology centred on the educational potential of games as tools that facilitate learning in a motivational, creative, and participatory manner (Macías-Guillén et al., 2021). However, virtual reality and language learning constitute a relatively young field of research, focusing on topics such as the effects of virtual reality on student interaction and participation, oral language skills, writing skills, and motivation (see, e.g., Jauregi-Ondarra et al., 2022; Parmaxi, 2023). For example, previous research has shown that practising speaking in a VR environment can boost students' confidence and willingness to communicate in the target language (Papin, 2018).

Playful learning can be considered part of participatory culture in media education (Jenkins et al., 2009). According to Hamilton et al. (2020), VR has made a significant contribution to education by allowing students to directly experience environments and situations that are difficult to replicate through traditional teaching methods such as lectures, slideshows, or 2D videos. However, according to Whitton (2018), much remains unknown about adults' play, including the reasons behind different forms of engagement, its potential benefits, its relevance to various aspects of adult life, and the effects of not playing. Therefore, our study aims to generate new insights into playful language learning among adults in higher education. In the theoretical framework section, we explain how playful learning, emotions, learning profiles, and technology are interconnected in the context of this study.

2. Theoretical framework

Nicola Whitton (2018) developed a theoretical framework for playful learning in higher education using the metaphor of the *magic circle*. Within the protected space of a magic circle, everyday rules are suspended, allowing new forms of behaviour, belief, and interaction to emerge. In this conceptualisation, three central aspects explain why playful learning is valuable in higher education: (1) *treating failure as a positive learning opportunity*, (2) *enabling learners to embrace the spirit of play*, and (3) *fostering intrinsic motivation to participate in learning* (Whitton, 2018). Through our VR game, we aimed to create a magic circle for higher education language learners. In the following sections, we discuss these three characteristics of the magic circle in greater detail and demonstrate how they relate to the focus of our study: emotions, technology, and playful language learning.

The magic circle's view of *failure* is particularly significant for adult language learning. Within the magic circle, participants are free to fail without facing real-world consequences (Whitton, 2018). Failure is not treated as a setback but rather as a valuable and integral part of the learning process. Whitton (2018) grounds this constructive perspective in resilience (Holdsworth, Turner, & Scott-Young, 2017), thoughtful risk-taking (Atkinson, 1957), and a focus on creativity, exploration, and growth rather than solely on outcomes (Dweck, 2010).

When learning a foreign language as an adult, individuals may fear communication situations because of the risk of being misunderstood, for example due to poor pronunciation (Virkkula & Toivola, 2023). Comparisons between the language learning of children and adults have shown that societal expectations vary according to the learner's age: good written skills are valued in elementary school assessment, whereas adult learners are expected, above all, to demonstrate fluent oral skills and a neutral accent in working life (Halonen & Kokkonen, 2008). Moreover, oral proficiency is generally considered difficult to attain and challenging to practise in a classroom environment. For example, teachers of Swedish have identified speaking as the most demanding language skill, the one with the fewest opportunities for classroom practice, and the least supported by digital tools (Ericsson et al., 2019). To address these challenges, new technologies can provide valuable support. In Virtual Reality (VR) simulations, for example, learners can practise work-related communication situations, such as using appropriate phrases and pronunciation (e.g., Partanen et al., 2022; Ericsson & Sofkova Hashemi, 2024; Meri-Yilan, 2019).

The emotions experienced by learners play an essential role in how they respond to failures in communication situations. Emotions are a social phenomenon that can mediate language learning and participation in many ways (Szyszka & Lintunen, 2023). Research has demonstrated the fundamental importance of emotions for students' language learning, performance, and well-being (e.g., Dewaele & MacIntyre, 2014; Miyahara, 2015, p. 46; MacIntyre & Vincze, 2017; Shao et al., 2019; Wang et al., 2024). Emotions can support memory retention and facilitate information recall (Geake, 2005; Pekrun, 2006; Steidl, 2011; Shao et al., 2020; see also Richards, 2022). Negative emotions, such as boredom, anxiety, and shame, can reduce motivation and impair cognitive functioning, thereby leading to poorer performance (e.g., Piechurska-Kuciel, 2008; Galmiche, 2017; Gkonou et al., 2017; Teimouri, 2018; Teimouri et al., 2019; Pawlak et al., 2020). In summary, emotions can be considered a key factor in the effectiveness of learning processes, making it relevant to investigate the role they play in the context of playful learning.

According to Whitton (2018), a second key feature of the magic circle is its capacity to allow learners to suspend disbelief and *fully engage* in the spirit of play by adopting what Suits (1978) calls a *lusory attitude*. This involves a willingness to accept and act in accordance with the rules and goals of playful learning, as well as to embrace the possibility of failure along the way. Entering this imaginative world enables learners to explore alternative realities and possibilities, fostering creativity and expanding their sense of what could be. Through this process, imagination and ideation are cultivated, generating a cycle of play, creativity, and innovation (Bateson, 2014). Encouraging a playful mindset provides learners with a safe space to imagine, experiment, and create within the boundaries of the magic circle, without fear of criticism or failure.

In our study, we view VR technology as a key factor in enabling full engagement in the spirit of play because of its immersive nature. According to Partanen et al. (2025), VR technology immerses players in a three-dimensional environment, creating a more intense and emotionally engaging experience than screen-based gaming, in which players remain psychologically “protected” behind a display. In VR, game elements can enter the user's personal space, thereby increasing immersion. Although VR may not directly enhance verbal interaction, its visual and spatial features deepen the sense of presence and make conversational situations feel closer to real-life interaction than traditional screen-mediated communication. Ericsson and Sofkova Hashemi (2024) note that little research has examined how language learners experience VR environments (see also Parmaxi, 2023). Their study analysed lower secondary students' self-reported experiences and explored how VR creates new opportunities to practise speaking in the target language (Ericsson & Sofkova Hashemi, 2024). Although studies focusing on adults do exist (Casañ-Pitarch & Gong, 2021; Meri-Yilan, 2019), further research is needed on learners' experiences in highly immersive VR environments (Dhimolea et al., 2022; Ericsson & Sofkova Hashemi, 2024).

This study is based on the assumption that gamification and immersion in a playful VR environment can enhance language learning in higher education. Gamification is a widely used technology-based approach to increasing learner motivation (Macías-Guillén et al., 2021; Pentikäinen & Kallionpää, 2024), as games encourage sustained effort and provide meaningful learning contexts, both of which contribute to deeper engagement (Macías-Guillén et al., 2021). VR, particularly immersive VR, has been shown to increase cognitive engagement, with immersive VR producing stronger effects than non-immersive VR (Chen et al., 2024). Gaming can also be viewed as a literacy event in which players draw on a range of literacy practices and language choices (Lee & Barton, 2013). Furthermore, VR has demonstrated effectiveness across a variety of disciplines, particularly in the teaching of procedural skills such as surgical and dental techniques.

According to Whitton (2018), the third and final characteristic of the magic circle is that it is voluntary and driven by *intrinsic motivation*: participants choose to enter and actively contribute to defining the rules, actions, and boundaries of the play space. Engagement occurs for its own sake and is sustained by the internal rewards of play rather than by external incentives. Such intrinsic motivation fosters exploration, experimentation, and personal discovery, leading to meaningful learning experiences (Whitton, 2018).

However, attitudes towards learning languages with the help of technology may vary. Consequently, we are interested in the profiles of higher education learners regarding the use of technology in language learning. At the beginning of the 2000s, Prensky (2001) introduced the concept of digital natives, arguing that young people are particularly adept at using new technologies. Digital natives are individuals who have grown up surrounded by digital media and can be contrasted with so-called digital immigrants, namely older generations who were raised in a print-based culture and have had to adapt to new technologies (Prensky, 2001). According to this view, young people's use of information and communication technologies (ICTs) differentiates them from their teachers, who are considered digital immigrants (Benini & Murray, 2014). However, the digital divide between students and teachers may not be as straightforward as Prensky suggests (Benini & Murray, 2014).

In a more recent study, Lintunen, Mutta, and Pelttari (2017) identified three learner profiles that describe how students approach technology: *digital-age learners*, *hybrid learners*, and *school learners*. A digital-age learner is a heavy user of social media and the internet who uses numerous applications daily in informal contexts and has a positive attitude towards the formal use of technology. A hybrid learner is an active user of social media and the internet who has experience with technology in traditional educational contexts but is also critical of excessive technology use and prefers to keep social media and formal learning separate. A school learner uses social media and the internet informally but prefers traditional teaching methods and face-to-face interaction. Such learners feel that they learn best through books, pens, and paper and do not believe that technology promotes learning (Lintunen et al., 2017). These learner profiles may influence how participants in our VR game perceive both gameplay and language learning.

However, it is important to keep in mind that language learners differ in many ways. Previous research suggests that second-language (L2) and foreign-language (L3) learning may be relatively easy for some learners but challenging for others, owing to individual differences in factors such as language aptitude, motivation, personality, age, learning styles, and learning strategies (see, e.g., Pietilä, 2014; Dörnyei, 2005; Grey et al., 2015). Research has also highlighted the role of emotions in language learning and foreign-language speaking (e.g., Aubrey, 2022). Similarly, Whitton (2018) argues that, although play in adult education can provide safe and creative spaces for exploration and idea generation, this is true only for certain learners and in particular contexts. The contextual and individual dimensions of play remain under-researched. Consequently, we view play in language teaching as a potential affordance for learning, while recognising that it may not be a natural or enjoyable way of learning for everyone and that it may be particularly appealing to

learners who prefer visually rich learning environments. Therefore, in this study, we aim to examine learner profiles in greater depth from a language-learning perspective.

In previous research, Ericsson and Sofkova Hashemi (2024) reported that most students (64 %) described their playing experience as good or very good in their study of lower secondary school students. According to them, the students believed they improved their speaking skills and gained confidence through everyday-life scenario practice using their speaking, listening, reading, and writing skills. The students frequently described the activity as effective, educational, powerful, smart, and useful. These results are similar to those presented in studies with adult learners (e.g., Casañ-Pitarch & Gong, 2021; Meri-Yilan, 2019). Some students, on the other hand, felt that the VR game environment was too challenging in combination with a level or mode too advanced, giving them too little support from the system and resulting in going back to one level, changing the progression mode in the system, or giving up (Ericsson & Sofkova Hashemi, 2024).

3. Methodology

The research implementation consisted of three parts: (1) *research material*, which described the game; (2) *participants*, which referred to the game's target group and described the student participants in two countries who tested the game; and (3) *research methods*, which described the survey completed by the players after playing the game and the analytical method used to examine their responses.

3.1 Research material

In our Nordplus-funded project, a group of language teachers and game engineers developed a virtual reality speech simulation game for higher education learners of Finnish and Swedish (see Partanen et al., 2024). The game was created using Unreal Engine 5 and required a virtual reality headset, which completely replaced the surrounding reality during gameplay. The virtual environment was developed using 3D modelling and texturing software, including Blender and Adobe Substance Painter. The game is set in a Finnish summer cottage and sauna, where the player meets a foreign friend, a MetaHuman character named Anna, who is a native speaker of the target language. The characters, including Anna and her mother, were created using Unreal Engine's MetaHuman Creator and then simplified in Blender to ensure smooth performance on the Meta Quest 3 headset.

In the game, the player participates in scripted communication scenarios, including giving directions to Anna, who is lost on her way to the summer cottage, applying for a summer job, and discussing health and illness after Anna wakes up feeling unwell at the cottage. An AI-based speech recognition system is used to convert the player's speech into text for evaluation. The system is based on a multilingual Whisper model that can recognise Finnish, Swedish, and several other languages. Player responses are evaluated by comparing the transcribed speech with a set of predefined answer options marked as either correct or incorrect. The closest match is identified by calculating the similarity between the player's response and all possible answer options using the Levenshtein distance algorithm. The resulting distance score determines whether the response is accepted or rejected. Once a response has been accepted, its associated flag is checked and used to inform the MetaHuman character of the player's answer.

The game aims to encourage less proficient and less motivated learners to use the target language in a learning environment that may help reduce both social and self-imposed pressures that can hinder participation and critical thinking in traditional classroom interactions. Its purpose is to provide

opportunities for structured language practice in simulated, interactive, and immersive situations that can be repeated indefinitely (Partanen et al., 2024). The game focuses on developing listening comprehension and speaking skills in the target language, Finnish or Swedish. According to Lappalainen et al. (2015), listening comprehension and speaking are integral components of scripted games. However, games that rely exclusively on spoken interaction and accurate pronunciation for progression remain rare (see also Partanen et al., 2022).

3.2 Participants

The playful VR environment was developed for higher education students learning Finnish or Swedish in a Nordic context. The participants represented three learner groups: (1) learners of Swedish in Finland, (2) learners of Finnish in Finland, and (3) learners of Finnish in Sweden. In Finland, participants tested the playful VR environment either in an independent study space at Lapland University of Applied Sciences or during a scheduled language lesson. In Sweden, the game was tested during a classroom session. In all cases, participants completed a post-game survey evaluating their learning experience (see Table 1 for the number of participants).

In the Finnish higher education context, students enrolled in compulsory Swedish language courses are predominantly L1 Finnish speakers who begin learning Swedish in primary school at approximately 11 to 13 years of age and continue studying it throughout secondary and tertiary education. As Swedish is one of Finland's two official languages, these learners may be classified as L2 or L3 learners, depending on their prior linguistic repertoire. Swedish is a compulsory component of all degree programmes in Finnish higher education, and many students perceive the subject as challenging (Juurakko-Paavola, 2024).

The participants in this study completed a survey after testing the VR language-learning game in an independent study space at Lapland University of Applied Sciences (Lapland UAS) in Rovaniemi, Finland, during the autumn of 2024. The dataset comprised responses from 23 students, most of whom were aged 18–24 years, with smaller numbers in the 25–34, 35–44, and 45+ age groups. The survey was completed in Finnish. All participants responded to every survey question.

Overall, learners of Finnish in Finnish higher education constitute a heterogeneous group with diverse linguistic and cultural backgrounds. Some have lived in Finland for several years, while others have arrived more recently. These non-native speakers of Finnish generally complete their degree studies in English, although their curricula include Finnish-language modules. Depending on their prior linguistic repertoire, they may be classified as L2 or L3 learners. At Lapland University of Applied Sciences (Lapland UAS), these students are enrolled in degree programmes such as Tourism, International Business, Sports, and Machine Learning.

Participants completed the post-game survey after testing the VR language-learning game in an independent study space at the Lapland UAS campus in Rovaniemi, Finland, during the autumn of 2024. A total of nine students participated. Most were aged 35–44 years, with additional respondents in the 18–24, 25–34, and 45+ age groups. The survey was completed in English, and all participants responded to every survey question.

Learners of Finnish in Swedish higher education represent a diverse group of adult learners with varying ages, educational backgrounds, professional experience, and prior language knowledge. Migration from Finland to Sweden was particularly active during the 1950s–1970s, and many students who choose to study Finnish today have familial or cultural ties to Finland, even if they did not acquire the language at home. Finnish is recognised as a national minority language in Sweden, which ensures, among other things, its availability as a subject in many schools. However, prior knowledge of Finnish is not required for university-level studies, and each cohort typically includes students with no personal or familial connections to Finland, Finnish culture, or the Finnish

language. Depending on their linguistic repertoire, these learners may be classified as L2 or L3 learners.

Table 1. Number of participants by language and country

	Swedish-language learners in Finland (SF)	Finnish-language learners in Finland (FF)	Finnish-language learners in Sweden (FS)
Number of participants	23	9	4

To summarise, participation in the survey was voluntary, although it was conducted as part of the participants' language studies. Virtual reality was a new language-learning environment for all participants. Table 1 presents the number of participants from each country. Before completing the questionnaire, participants were asked to play the game.

3.3 Research methods

The research data were collected through a survey. A survey was considered an appropriate method for gathering data from participants in different learner groups across two countries (Best & Harrison, 2009). The use of a survey also helped minimise researcher bias (Singh & Sagar, 2021), which might have arisen in interviews conducted by the participants' language teachers, who also served as researchers in this study.

The survey consisted of five questions: two statement-based questions and three open-ended questions ($N = 5$). Both the statements and the open-ended questions encouraged participants to reflect on their language-learning experiences from different perspectives related to the game. These perspectives were selected because they may influence participants' experiences of gameplay (see the theoretical framework on playful learning).

At the beginning of the survey, respondents were informed about the purpose of the study and the expectations regarding their participation in order to encourage engagement (see Hamilton & Bowers, 2006). Their informed consent was then obtained by asking them to select “Yes” to confirm that they understood the information provided and agreed to participate. Finally, respondents were asked to indicate their age.

The survey questions were as follows¹:

1. Where do you use the target language?
 - a. in lectures at my university
 - b. at home
 - c. at work
 - d. on social media
 - e. somewhere else, please specify:

2. Which of the following statements best describes your target language learning process?
 - a. I learn the target language by studying course materials.
 - b. I learn the target language by listening to music and watching television programmes in the target language.
 - c. Social media and gaming have helped me learn the target language.
 - d. I learn the target language with the help of my teacher, by doing my homework, and by speaking the target language whenever possible.
 - e. I would learn the target language best if I were immersed in an environment where it is spoken and had to use it regularly.
3. Do you consider yourself good at learning the target language? Why or why not?
4. What emotions or feelings did you experience while playing this VR game? Why?
5. Can technology or gaming help you learn the target language? If not, why not? If yes, how can it help you?

The survey data were analysed using a deductive qualitative content analysis approach. The analysis followed the basic structure proposed by Mayring (2000), beginning with the identification of meaningful units and proceeding to the development of themes and categories. Similarities and differences in the participants' responses were identified, combined, and organised into 12 categories. Four overarching themes emerged from the analysis and were organised according to the theoretical framework.

The findings were grouped into themes related to language-learning profiles, positive and negative emotions associated with gameplay, and technology-supported language learning. This categorisation was based on the study's theoretical assumptions that the learning environment was designed as a playful, technology-enhanced space; that emotions play a central role in the development of the magic circle; and that learners' language-learning profiles influence their experiences within such an environment. Table 2 provides an example of the deductive content analysis process applied to the survey data.

Table 2. Example of the deductive qualitative content analysis process

Quote in the data	Theme in the data	Result category
It was fun to try out a new way of learning Swedish. On the other hand, I'm not very confident about my language skills, so pronouncing them in the classroom was stressful. I felt a bit annoyed when the game didn't understand what I was trying to say. Yet you can could take more advantage of these new ways of learning, and I felt that you learn a lot. The sauna environment was a big plus :) (SF21)	Emotions	Positive emotions related to playful learning environment
Stress because I had to give directions without knowing the directions myself. Also I did not know some of the vocabulary and had to guess. But when I knew the situation and the vocabulary, it went smoothly and I had the feeling it went smoother every time I had to repeat something. (FF8)	Emotions	Negative emotions related to playful learning environment

The quotations from the Swedish learners in Finland were translated from Finnish into English for reporting purposes. These participants completed the survey in Finnish because most were enrolled in Finnish-medium degree programmes. The quotations from the Finnish learners in Finland and Sweden are presented in their original English, as most of these participants studied in English-medium degree programmes. Quotations are identified using the following codes: SF (learner of Swedish in Finland), FF (learner of Finnish in Finland), and FS (learner of Finnish in Sweden), followed by the participant number in the dataset (SF 1–23, FF 1–9, and FS 1–4).

4. Results

The results are presented in three categories: (1) language-learning profiles, (2) emotions related to gameplay, and (3) technology-supported language learning.

4.1 Language learning profiles

Most participants who tested the Swedish-language version of the game reported using, or having previously used, Swedish in their higher education courses, and five participants reported using Swedish at work. A few participants also mentioned using Swedish with friends and on social media.

Approximately half of the learners of Swedish in Finland considered themselves good at learning Swedish. The difficulties they identified included beginning language study at a young age when they did not perceive it as necessary, the perceived complexity of the Swedish language, insufficient mastery of basic language skills and grammatical structures, the time elapsed since their previous Swedish studies, a lack of repetition needed for retention, limited opportunities for oral practice, and interference from other languages (Example 1).

- 1) No, I'm not. Language learning was never made enjoyable. In comprehensive school, studying Swedish was spent doing other things, and for this reason the foundation of my Swedish is bad. (SF10)

The strengths mentioned by the participants included readiness to learn languages, the use of Swedish with family members, relatives, or at work, travelling in Sweden, good pronunciation, and similarities between Swedish and other languages (Example 2).

- 2) In my opinion, yes, I received very good Swedish tuition in high school, and I've even used Swedish a little bit at work (in Helsinki). I learn languages very easily, and especially by listening to native speakers, I learn a lot. (SF20)

However, most participants (61%) felt that an immersive environment, such as living or studying in Sweden, would be the most effective way to learn Swedish. The second most frequently selected option was learning Swedish with the support of a teacher while completing coursework and homework diligently. Independent learning through reading Swedish texts and listening to Swedish music and television programmes was selected by approximately one-third of the participants. Similarly, one-third viewed social media and gaming as useful tools for language learning.

Most participants who tested the Finnish-language version of the game in Finland reported using, or having previously used, Finnish in their higher education studies, and approximately one-third reported using Finnish at home and at work.

Most learners of Finnish in Finland considered Finnish a challenging language to learn. Nevertheless, half of the respondents felt that they were good at learning it. They described the learning process as exhausting, difficult, and demanding (e.g., Examples 3 and 4). Many also emphasised their efforts to learn the language and their determination to succeed. Although these learners are situated in a potentially immersive Finnish-language environment, the reasons they gave for finding Finnish challenging often related to the linguistic practices of Finnish society. For example, L1 speakers of Finnish frequently communicate with them in English, and many respondents reported that Finnish speakers quickly switched to English when they attempted to practise Finnish. The majority of participants (78%) believed that sustained effort is the most effective way to learn a foreign language. Approximately half thought that an immersive learning environment would support language learning. One-third of the respondents considered listening to Finnish to be a helpful learning strategy. Social media and gaming were perceived as the least beneficial options for language learning.

- 3) I am good at learning to understand the words, and I am generally good at catching the meaning from context and understanding a few words. I am not good at speaking because I don't need to, and it's uncomfortable to go from being able to eloquently express yourself to the eloquence level of a toddler. (FF8)
- 4) I think I am average because I memorize grammatical structures easily but I have a hard time memorizing vocabulary. (FS4)

In Sweden, the participants were beginner learners of Finnish. Half of the small group were aged 18–24 years, while the other half were aged 45 years or older. Only one participant reported using Finnish at home, and none used it at work. However, Finnish was used on social media. The classroom environment, together with course materials and teacher support, was also identified as an important component of the language-learning process.

Most learners of Finnish in Sweden considered themselves either good or moderately successful language learners. Most participants (75%) felt that studying Finnish at university and completing homework assignments was the most effective way for them to learn the language. In addition, three-quarters of the participants regarded an immersive Finnish-language environment as beneficial for learning. One participant noted the lack of opportunities to encounter and use Finnish in everyday life. Learning Finnish through listening activities was considered helpful by half of the participants. Only one participant identified social media and gaming as useful tools for language learning.

To summarise, most participants' responses were most closely aligned with the traditional classroom-centred language learner profile, or school learner profile, described by Lintunen et al. (2017). Learners with this profile typically perceive traditional classroom instruction as the most effective way to learn a foreign language and may be less likely to view mistakes as positive learning opportunities (Whitton, 2018). In both Finland and Sweden, technology-supported language learning, or digital-age learning (Lintunen et al., 2017), was generally perceived as less effective than more traditional forms of instruction. As the VR game represents a technology-supported language-learning approach, this finding may partly help to explain some participants' reservations towards the VR game.

However, one-third of the learners of Swedish in Finland identified technology-supported language learning as a viable option. Although differences were observed between the participant groups, the present study does not provide sufficient evidence to explain their underlying causes. Factors such as prior experience with digital technologies, VR, or language learning may have influenced these perceptions and should therefore be explored in future research. Overall, the findings suggest that technology-supported language learning was not widely regarded as the most effective approach among the participants in this study.

4.2 Emotions associated with gameplay

Kruk and Pawlak (2022), who examined emotions in foreign language learning within the field of computer-assisted language learning (CALL), distinguish between positive emotions (e.g., enjoyment and curiosity) and negative emotions (e.g., boredom and language anxiety) and explore their role in L2 teaching and learning in CALL environments. Earlier, Papin (2018), in his study of language learning in virtual reality in a university context, also highlighted the psycho-affective factors underlying willingness to communicate (WTC) in a second language. Drawing on this CALL-oriented perspective, the findings are presented in two categories: positive emotions and negative emotions related to gameplay.

4.2.1 Positive emotions associated with gameplay

Most learners of Swedish in Finland perceived VR-based playful learning as a positive experience. They described their emotions as *fun*, *interesting*, *peaceful*, *immersive*, *nice*, *good*, *fine*, *easy*, and *cool* (e.g., the second half of Example 5). The visual 3D environment, consisting of a summer cottage and sauna setting, also received positive feedback and was perceived as supportive of learning. Participants further highlighted the opportunity to make mistakes in a safe environment as a positive aspect of the experience. One participant noted that interacting with a MetaHuman character was more motivating than using language-learning applications without human-like characters, such as Duolingo. Immersion was frequently mentioned as a factor that supported learning, and some participants suggested that VR-based playful learning could provide a novel way of learning a language (Example 5).

- 5) It was fun to try out a new way of learning Swedish. On the other hand, I'm not very confident about my language skills, so pronouncing them in the classroom was stressful. I felt a bit annoyed when the game didn't understand what I was trying to say. Yet you can take more advantage of these new ways of learning, and I felt that you learn a lot. The sauna environment was a big plus :) (SF21)

Most learners of Finnish in Finland reported that VR-based playful learning was a positive experience (Example 6). They described it as *awesome*, *exciting*, *fun*, *enjoyable*, and *a great new way to learn*.

- 6) I had more fun with it, than when reading and translating at home. (FF3)

Learners of Finnish in Sweden described VR-based playful learning as both a positive and a negative experience. The positive emotions and experiences reported included enjoyment, interest, immersion, and relaxation (Example 7).

- 7) It can feel weird in the beginning, but it's a chill environment and does not put any pressure on the player. (FS4)

To summarise, most participants experienced positive emotions during playful language learning in VR. These positive emotions appeared to be closely related to the novelty of the VR experience, as some participants were using a VR headset for the first time. The findings suggest that the immersive nature of the playful environment reflects key characteristics of play (Whitton, 2018) and may foster learners' intrinsic motivation to engage with the learning tasks and succeed in the conversational situations provided by the game.

4.2.2 Negative emotions associated with gameplay

Some learners of Swedish in Finland reported negative emotions, such as anxiety and irritation, when entering the playful VR environment (cf. Example 5). Anxiety was primarily associated with the presence of other students who could hear the participant speaking Swedish. This was related to the testing arrangements, as several students played the game simultaneously in a classroom setting while others waited for their turn. Irritation occurred when the game failed to recognise a participant's response or when participants were unable to identify the correct answer (Example 8). Some participants also reported frustration when they could not understand the native Swedish spoken by the virtual character Anna, even after replaying her utterances several times. Additional negative experiences were associated with the VR headset, including eye strain, nausea, and dizziness. Some participants felt discouraged because they perceived the game as too difficult, whereas others felt that it did not provide a sufficient level of challenge because the language tasks were too easy.

- 8) Not knowing enough if your Swedish skills are weak like mine, the examples and the game support sentences too fast, and a lot of repetition was needed, and maybe to learn the pronunciation more than the meaning of the sentence itself. As a learning environment, it felt immersive. (SF6)

A small number of Finnish learners in Finland reported negative emotions associated with playful VR learning, including boredom, linguistic difficulty, and stress. Boredom was primarily attributed to the game's slow pace, as the system took a considerable amount of time to process players' spoken responses. Participants also perceived the language level of the game as challenging (Example 9). Stress arose when learners were unable to interpret the visual instructions, leaving them uncertain about what to say in order to progress through the game.

- 9) Stress because I had to give directions without knowing the directions myself. Also I did not know some of the vocabulary and had to guess. But once I knew the situation and the vocabulary, it went smoothly, and I felt it went even more smoothly every time I had to repeat something. (FF8)

The Finnish learners in Sweden expressed concern about the game's slow pace and the need to repeat their responses when the game did not understand them immediately (Example 10). Dizziness resulting from gameplay was also mentioned as a negative aspect.

- 10) Nothing speciell [sic]. It was too slow and I had to reply many times to the same questions. But it was funny. (FS1)

To summarise, many of the negative emotions experienced during gameplay stemmed from technological limitations, physical discomfort caused by the VR headset, or the testing situation involving other students. In addition, learners' inability to speak or understand the target language was reported as a source of negative feelings. These factors disrupted the sense of immersion that the technology could otherwise provide. Ideally, during gameplay, learners would feel as though they were truly at the summer cottage, talking with a friend in a real-life situation. Such challenges weakened players' motivation and engagement with the game and playfulness (Whitton, 2018).

4.3 Technology-supported playful language learning

After visiting the playful VR environment, the Swedish learners in Finland were confident that technology could support the learning of Swedish or other foreign languages (cf. their learning profiles reported in the first results section). Among the benefits of technology, the participants mentioned: the opportunity to practise spoken language, a safe learning environment, immediate

feedback, agency and partnership in communicative situations, experiences of success in using a foreign language, the simulation of real-life situations, the efficient use of time and attention in learning, interaction with a native speaker (as opposed to another language learner in the classroom), opportunities to practise without stress or pressure, increased opportunities for language use, a more effective alternative to independent study, a more motivating way of learning, and the possibility of practising as many times as needed (Example 11).

- 11) I think it helps. If you make learning Swedish more interesting and interactive, it could help you remember it. (SF8)

After visiting the playful VR environment, the learners of Finnish in Finland were also confident that technology could support their learning of Finnish. To maximise its positive effects, however, they emphasised the importance of spending sufficient time playing, practising daily, and having access to the game at home (Example 12). They described language-learning technology as *fun*, *interesting*, and *interactive*, and recognised the value of repetition and corrective feedback. Thus, playing the game could help learners view failure as a positive learning opportunity (Whitton, 2018).

- 12) I think it can help me since my biggest problem is that I do not have the need to speak Finnish in my everyday life or work life. A game like that gives the incentive to use my language skills, and what I have newly learned would be very cool! (FF8)

In contrast, the learners of Finnish in Sweden were not yet fully convinced of the potential that technology could offer for language learning (Example 13). One participant felt that technology provided opportunities for learning regardless of time or place. Another did not view technology as a viable option for language learning, while a third wished to explore additional resources before forming an opinion.

- 13) I think it was very good that in some places you felt forced to listen. I think that kind I liked that you were forced to pronounce long and complicated sentences, again and again. Even if you did not know them, it help me to practice pronunciation, which i usually would not given much time on. I like that you were able to point at things and see the names of objects, but I would love to see these object during the game too and add items which are related to the scenarios so you can point at them and different things during the scenario, not only at the end. If their would be more point and say, give and bring, kind of objectives, would it be useful. (FS3)

To conclude, during testing, some learners reported that their attitudes towards the playful VR environment changed. Playing in the environment generated a sense of capability and confidence in their language-learning potential. This suggests that, even when the experience was demanding, the novelty and exploratory nature of the learning environment were perceived as exciting and motivating. For some participants, the experience became empowering and transformative, reinforcing the idea that engaging with unfamiliar technological tools can positively influence language-learning self-efficacy. Following their visit to the playful VR environment, most students were optimistic about the role of technology in language learning when used appropriately, for example, for daily practice. This finding contrasts with participants' responses at the beginning of the survey, when many did not perceive technology-supported language learning as a viable option for learning a language. We suggest that this may be related to their learning profiles (Lintunen et al., 2017). Nevertheless, the positive and playful VR learning experience led participants to adopt a more favourable attitude towards technology-supported language learning. The findings do not

demonstrate that a magic circle was created; rather, participants' reported experiences can be interpreted as consistent with Whitton's (2018) description of a *magic circle*.

5. Discussion and conclusion

Although some challenges were reported, the participants generally enjoyed language learning through the playful VR environment. These findings are consistent with previous research (e.g., Ericsson & Sofkova Hashemi, 2024; Casañ-Pitarch & Gong, 2021; Meri-Yilan, 2019). Participants described language learning in virtual reality as experiential and engaging, highlighting the inclusion of physical activities and a strong sense of presence. The findings also support earlier research on language learning in VR (Papin, 2018), which suggests that practising speaking in virtual environments can enhance learners' confidence and willingness to communicate in a foreign language. Based on the data, participants experienced more positive than negative emotions during their visit to the playful VR environment. Previous research indicates that positive emotions create conditions that are conducive to learning (Richards, 2022). If playful VR environments were adopted as a regular component of higher education, the positive emotions reported by participants could contribute to the development of a playful learning atmosphere and foster intrinsic motivation. These experiences can be interpreted through Whitton's (2018) concept of the *magic circle*, suggesting that playful VR environments may provide a safe and engaging context for language learning.

Based on this study's findings, interactive engagement in a playful virtual environment may foster memorable and positive learning experiences that differ from those typically associated with traditional classroom instruction. Before testing the VR environment, participants generally assumed that conventional classroom learning was the most effective way to acquire a new language. Therefore, most participants appeared to share a traditional learner profile (see also Lintunen et al., 2017). However, after experiencing the playful VR environment, most learners reported that it provided a psychologically safe space in which the reactions of virtual characters and the overall interactional context were fully controlled. This allowed them to experiment with language use, make mistakes without social consequences, and learn through iterative trial and error (Whitton, 2018). Immersive and playful forms of learning may also facilitate empathy and identification with the learning situation, creating what Whitton (2018) describes as a *magic circle*, which enhances engagement and emotional involvement. This may be particularly relevant in higher education contexts, where adult learners are often expected to perform fluently in a foreign language (Halonen & Kokkonen, 2008), yet frequently experience anxiety or fear of losing face in real-life communication situations.

The findings of this study indicate that a playful VR environment represents a relatively novel approach to language learning. Prior to participating in the study, participants did not perceive virtual reality as a viable option for practicing a foreign language (see also Jauregi-Ondarra et al., 2022; Parmaxi, 2023). This finding is consistent with Whitton's (2018) argument that play has significant potential to engage, influence, and transform learners' attitudes and behaviours, as was observed in the present study. Within the fast-paced and information-saturated learning culture of the 2020s, one of the most significant advantages of VR for language learning may be its immersive nature. VR headsets reduce external distractions and enable learners to focus more fully on instructional content and interaction (Hamilton et al., 2020; Partanen et al., 2022). Furthermore, the playful VR learning environment may be viewed as an example of the participatory culture that characterises learning in the 2020s.

The study also suggests that, while technology-enhanced and playful learning approaches may be motivating and engaging for some learners, they may simultaneously induce stress in those who are less comfortable with new digital and participatory learning environments. For example, Juurakko-Paavola (2024) notes that learning English is often easier for Finnish-speaking students because

they are already familiar with multimodal international games played during their leisure time, highlighting gaming as a promising avenue for language learning. These findings open avenues for further research, including the examination of individual differences, such as gender, prior gaming experience, and digital literacy, and their influence on language-learning outcomes and emotional reactions during gameplay (see Juurakko-Paavola, 2024). Notably, younger participants in this study expected more action-oriented features and, when these expectations were not met, evaluated the playful learning experience more negatively.

When developing future technology-enhanced playful learning environments, it is important to acknowledge that technological systems do not always function as intended. As demonstrated in this study, technical issues, such as slow system responses, may lead to frustration and require considerable perseverance from learners. Similar challenges have been reported in previous research, where technical difficulties disrupted learners' focus and occasionally reduced motivation (Hamilton et al., 2020; Reinders & Benson, 2017). However, Szyszka and Lintunen (2023) conceptualise perseverance in language learning as the ability to remain calm and continue working despite difficulties or setbacks. From this perspective, future technology-mediated learning environments may foster a new form of perseverance in which learners must navigate both linguistic challenges and technological obstacles, potentially creating meaningful learning opportunities. As digital participation increasingly involves interacting with complex technological systems, learners are required not only to develop linguistic competence but also to cope with technological uncertainty and disruption. Indeed, the need for perseverance may be an essential characteristic of, as well as a challenge within, the participatory culture of the 2020s (see also Jenkins et al., 2009).

Developing new pedagogical approaches to language learning in higher education is becoming increasingly important, as the higher education landscape is undergoing considerable transformation (Finnish Ministry of Education and Culture, 2025; Hamilton et al., 2020). For example, playful and game-based environments, including those supported by AI, can simulate authentic workplace communication and thereby help prepare students for internships and professional practice (Partanen et al., 2022). Such environments are likely to become increasingly common in Nordic adult education (Solita, 2024). However, Whitton (2018) argues that access to play remains unequal, shaped by factors such as time, confidence, interest, and social capital. Therefore, future playful learning environments in higher education should be designed with particular attention to inclusivity and equity. At the same time, Jenkins et al. (2009) argue that discussions of access should move beyond mere availability and focus instead on opportunities for participation in participatory culture, as well as on ensuring that all young people can develop the cultural competencies and social skills they need. Furthermore, technology-enhanced and playful language learning in higher education should not be understood merely as an instructional method but as part of a broader educational ecosystem involving learners, teachers, learning environments, and institutional practices, including assessment and feedback (see also Jalkanen & Taalas, 2015).

Endnotes

1) The survey questions are presented here in an edited form for stylistic and grammatical consistency.

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