# Language Learning with VR: The Effects of Immersive Gamification on Student Motivation and Knowledge

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Abstract: The study explores the possibility of virtual reality (VR) games to support language learning, focusing on their impact on motivation and knowledge consolidation. We developed a VR game for language learning and investigated its effects on high school students. This immersive role-playing game enables students to experience language learning in a virtual environment. As they explore the digital world, interact with non-playable characters, and engage with objects, students reinforce their vocabulary through associative learning techniques. We conducted the experiment with first-year high school students who had no prior knowledge of German. The VR game showed a positive effect on traditional exam performance and language learning outcomes. Students' scores in German language exams increased, suggesting that immersive and interactive learning can improve language skills. Participants also took part in focus groups in which they expressed satisfaction with the game and saw its potential as a complementary tool to reinforce traditional learning methods.

## 1 INTRODUCTION

The development of virtual reality (VR) and augmented reality (AR) in recent years has created numerous opportunities to modernize various areas (Jensen and Konradsen, 2018; Pesek et al., 2024). The versatility of these technologies has been used in gaming, education and therapy to create immersive and engaging experiences (Emmelkamp and Meyerbröker, 2021; Hartanto et al., 2014; Howard, 2017). In addition, user motivation and engagement can also be increased through the implementation of gamification, i.e. the use of game elements in non-game contexts (Dehghanzadeh et al., 2021; Mauroner, 2019). The integration of VR and gamification in learning environments therefore offers great opportunities for innovation. It allows learners to immerse themselves in realistic environments where they can practice content in a safe, error-friendly environment. In language education, for example, VR can simulate real-life scenarios in which learners use the target language, improving their understanding and communication skills. Compared to traditional learning methods, which are often based on memorizing grammar and vocabulary (Walia, 2012), VR-based learning can be less monotonous and more engaging. Modern methods such as mobile games also improve language learning through features such as adaptive learning and instant feedback (Huu Phuc and Nghi, 2023). However, VR surpasses these tools by providing an immersive experience that replicates a language-rich environment without the cost or logistical challenges of traveling.

While many language learning applications have already been developed and widely adopted, most of them do not yet utilize the latest extended reality technologies. This could be due to the limited accessibility of VR compared to smartphones, which are available to almost everyone. Of the few applications that have experimented with VR, many lack comprehensive user studies and there is still a large gap in understanding how such technologies can be effectively integrated into formal education.

Our work aims to develop a new VR game for language learning and evaluate its impact on students. We not only want to provide a novel immersive experience, but also consider it as a potential complementary tool in schools.

To measure the effectiveness of VR for language learning, we collected data through questionnaires and interviews. These results provide valuable in-

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sights into users' experiences with the game and shed light on the possibilities of integrating VR into formal education.

The paper is organized as follows: Section 2 presents notable work on gamified language learning applications. Section 3 introduces our new application, the LingoVerse Game. Section 4 describes the experimental design of our research, while Section 5 presents the results. Finally, Section 6 concludes with a discussion of the findings.

## 2 RELATED WORK

The use of VR for educational purposes has been studied, including its application to language learning, which has gained prominence in the last two decades (Panagiotidis, 2021; Li et al., 2021). Lan (2020) conducted a user study on the use of VR for learning Chinese and English as foreign languages and found that the integration of VR into the learning process promotes user motivation and autonomy. Participants showed a positive attitude towards the learning content and reported that they enjoyed the experience of the virtual environments. Similarly, Lan et al. (2015) explored how different contexts affect foreign language learning. Their comparison of virtual and traditional learning environments found that participants demonstrated a more accelerated learning trajectory in the VR setting, suggesting that simulated experiences can facilitate language acquisition. The increased attention and interest can also be attributed to the contextual learning approach in VR environments, where users learn vocabulary through the use of sentences while receiving clues to the meaning and pronunciation. According to Chen (2016), auditory stimuli can help students consolidate orthographic knowledge by linking word forms to their corresponding sound patterns. In research on American Sign Language (ASL) learning, Alam et al. (2024) confirmed that intuitive design and clear instructions are critical to the success of VR-based learning. They emphasized the importance of developing user-friendly tools with transparent guidelines, especially for games with complex interactions.

### 2.1 Language Learning with Gamified Elements

Speaking a new language is often perceived as stressful in many countries (Dehganzadeh and Dehganzadeh, 2020), and factors such as the complexity of learning methods, disengagement, negative attitudes, and learner abilities can significantly impact foreign language acquisition (Dehganzadeh and Dehganzadeh, 2020). Therefore, the use of gamified virtual environments is of great importance, as it contributes to improving educational outcomes. Game-like learning approaches can enhance the overall experience for students (Prathyusha, 2020), and the inclusion of game elements and mechanisms within a non-game context—such as badges, leaderboards, points, feedback, challenges, social features, levels, progress bars, and teams—was shown to promote engagement. These gamified elements are highly valued by learners, who often perceive them as engaging, immersive, and beneficial for learning, as they encourage active participation (Perry, 2022).

There are a large number of mobile and web-based applications for language learning. One of the best known is the Duolingo app, a web-based and mobile virtual language learning environment for learning several foreign languages. In addition to gamified elements, its main features are spaced repetition (SRS), interleaving and instant feedback (Munday, 2017). Compared to Duolingo, the Babbel app focuses more on efficiency and less on the gamification elements. Babbel users can choose between different courses and the desired language efficiency, which is immediately followed by a lesson (Nushi and Eqbali, 2018). Another mobile and web-based application, Rosetta Stone, uses visuals, text, and sound to teach various vocabulary phrases and grammatical functions naturally, without the need for translation (Nur and Annisa, 2021). Memrise is an app that uses three scientific principles— elaborate encoding, choreographed testing, and scheduled reminders— to support vocabulary learning (Zhang, 2019). It incorporates gamification, where new words are presented as "seeds of memory" that turn into flowers when the user reviews them.

### 2.2 Language Learning with VR

Among the few VR language learning applications, Mondly VR is the most thorough as it focuses on foreign language learning and covers two areas: vocabulary and conversation. Users can learn new words and phrases in context, practice language skills such as listening and reading and receive feedback on their pronunciation (Klimova, 2021). Although Mondly VR functions as a virtual reality app with speech recognition, it requires the use of two languages: the learner's native language and the target language. As it only supports some languages, not everyone can use it. Furthermore, the app is not adapted to a school curriculum, so it is not suitable for structured use in the classroom. The Let's Date! VR app uses 360-

degree videos to improve listening comprehension and speaking skills by immersing users in a dating agency setting, simulating a real-life situation (Berns and Reyes-Sánchez, 2021). Goethestr. 56 provides an immersive learning environment where users learn German by participating in everyday activities in a family home on Goethe's Street 56 (Bartholdy et al., 2023).

While most studies emphasize the positive effects of VR on language learning, some report that users may become more focused on the gamified environment than on the language itself, which could hinder their language development, particularly in writing (Li et al., 2021). Although vocabulary acquisition generally improves, many studies note a decline in writing practice.

# 3 THE LINGOVERSE GAME

LingoVerse is an innovative open-world role-playing game (RPG) designed for immersive language learning using VR. Its main goal is to improve players' language skills by directly engaging with the target language through interactive tasks. The player navigates through the virtual world using VR controllers, freely exploring different environments, interacting with objects to reinforce vocabulary and playing mini-games that improve vocabulary through associative learning. The interactive language learning tool is based on the premise of linking text elements in the foreign language with corresponding objects and engaging in conversations with non-player characters (NPCs) in the virtual world so that the user can learn the language intuitively. The game currently offers scenarios for learning German with an interactive interface in English.

We have adopted the concept of short lessons and game mechanics, similar to Duolingo and other widely used applications that motivate and engage users in the learning process. Similar to the Rosetta Stone, our game immerses users in the world of the target language without directly translating it, encouraging natural language acquisition and application in real-world contexts. Following the Pimsleur method, the game encourages users to actively participate in dialogs, which facilitates the repetition and consolidation of phrases. The key to long-term retention is the spaced repetition method (SRS), which is also used in applications such as the flashcard app Anki (Elmes, 2006) and Memrise. Our system allows lessons to be repeated automatically after a certain period of time, which improves long-term retention of the learned material.

## 3.1 Game Mechanics and Design

The ability to freely explore different locations is closely tied to learning and simulates the experience of living in a country where the target language is spoken. Players encounter new words and phrases as they discover new areas, objects, mini-games and NPCs.

The NPC dialogs are a core element of the game. Users can converse with various NPCs scattered throughout the virtual worlds. Each NPC has a predefined set of dialogs that are used to learn certain words or phrases in the target language. The dialogs are designed to encourage players to repeat new words frequently and use them in context to improve language retention and comprehension. The NPC conversations consist of both text and audio components, followed by player responses. Task types in the dialogs include inserting the correct word or phrase into a sentence and choosing the correct verb conjugations. For each correct answer, the player receives points that contribute to progress in the game.


Figure 1: Dialogue with a character in the game.

### 3.1.1 The Matching Pairs Game

In the Matching Pairs game, players match objects to corresponding words. Each game contains objects that are related to a specific theme or environment, e.g. kitchen utensils or food. At the beginning of the game, the objects are randomly placed in predefined locations. The player must then place the objects in the designated places where the corresponding names are written in the foreign language. Once all the objects have been placed, the player receives a score based on the number of correctly matched pairs and the time required to complete the game.

### 3.1.2 The Interactive Objects

The mechanic of picking up items allows the player to manipulate objects that are highlighted when picked up. When the player picks up a particular item for the first time, a window will pop up displaying the name of the item in the target language along with an audio


Figure 2: Matching Pairs game.

pronunciation. The player can manually activate this window by pressing a button on the controller while holding the object. This allows the player to associate the visual perception of objects with the corresponding names and thus improve their vocabulary and pronunciation.


Figure 3: Picking up an interactive object (pineapple).

## 3.2 Technology and Development Tools

The game was developed using the Unity game engine, which is one of the most popular tools for game development due to its flexibility and broad platform support. Unity enables efficient integration with VR devices and offers a variety of functionalities for the development of interactive and visually appealing games. We used the C# programming language, the primary language for game development in Unity, as it offers a high level of control and is robust enough for complex operations.

For VR integration, we used OpenXR and the Oculus Quest SDK, which allowed us to optimize the game for performance on Oculus Quest devices. OpenXR simplifies the development of AR/VR applications by providing a common set of APIs for developing XR applications that run across a wide range of AR and VR devices. The Oculus Quest SDK provides tools and libraries specifically for optimizing content for Oculus Quest VR devices.

We have also implemented the *Powerful Intuitive Node/Narrative Assistant (PINA)* system for dialog systems. PINA allows us to design complex dialogs with multiple choices and actions for dynamic NPC interactions. The dialogs are designed through a visual interface, making it easier to test dialog scenarios without the need for additional programming. This feature can also enable teachers to contribute new content to the application without the need for in-depth programming knowledge.

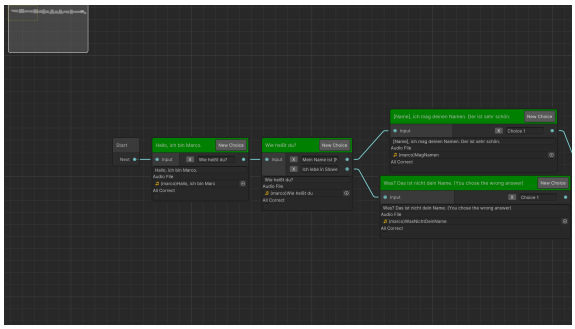

Figure 4: PINA - Visual Dialogue Editor.

For the implementation of mini-games, we used Scriptable Objects, which are part of the Unity framework and allows separation of the game data from the logic, ensuring greater modularity and reusability of code components. This approach was particularly useful when developing mini-games, as we could easily customize game rules, parameters and content without changing the core code.

## 3.3 Optimization

Due to the nature of VR, where a high refresh rate is recommended to prevent user motion sickness (Eunhee Chang and Yoo, 2020), we performed a thorough optimization of the graphical assets and code. This included reducing the graphical resolution and using occlusion culling to improve the scene rendering. Occlusion culling is a technique that improves rendering performance by not displaying objects in the world that are hidden behind other objects. This means that the GPU only processes visible elements, reducing the number of polygons and improving the frame rate. We have also introduced a tunneling vignette that blurs the edges of the field of view during movement to reduce player's nausea.

Instead of dynamic lighting, we have implemented baked lighting, where the lighting calculations are performed in advance and stored as part of the textures. This significantly reduces the CPU load and has a positive effect on the overall performance of the game as no real-time lighting calculations are required.

To manage complexity in the later stages of the game, we have also optimized scene management by using smaller and more focused scenes that allow for faster loading and improved game stability. This approach improves the experience by reducing the likelihood of technical issues or lags that could interrupt gameplay.

### 3.4 Content

The visual style of the game is designed in a low-poly style, characterized by the minimalist use of geometric shapes, which is very suitable for mobile and VR platforms as it offers both high performance and an esthetically pleasing experience. We used professionally designed models from *Synty Studios*[1]. For the background music, we used royalty-free tracks and the NPC dialogs and the pronunciation of object names were recorded by native German speakers. This allows players to experience authentic pronunciation, accent and melody of the target language. The content of the game is directly related to the learning material and is based on the Direkt Interaktiv 1 (Černý et al., 2022a,b) textbook series, which was designed for first and second year high school students and is widely used in Slovenian schools.

## 4 EXPERIMENTAL SETUP

To evaluate the effectiveness and user experience of the VR-based language learning game, we conducted an experiment with 14 first-year high school students with no prior knowledge of German. Both sessions of the experiment followed a structured schedule and included pre- and post-tests, game sessions and the collection of user feedback.

The first experimental session started six weeks after the beginning of the school year and lasted 14 days. The students were divided into two groups (A and B). Each group took turns using Meta Quest VR headsets at home for one week. Pre- and post-test questionnaires along with German language proficiency tests were administered as follows:

- **Day 0.** Introductory session and initial testing (pre-test questionnaire and German language proficiency test).
- **Day 7.** Final test and post-test questionnaire for group A and initial test for group B.
- **Day 14.** Final test and post-test questionnaire for group B.

[1]https://www.syntystudios.com/

The second experimental session was conducted six months later, using game content aligned with the students' curriculum. This time, both groups were tested simultaneously:

- **Day 0.** Initial German proficiency test for both groups.
- **Day 7.** Mid-session test for both groups.
- **Day 14.** Final test and focus group discussions for both groups.

### 4.1 Evaluation Process

To facilitate the introduction to VR and LingoVerse, students were provided with a short video tutorial[2] explaining how to use the headset and game controllers. They also had access to an introductory world in the game where they could familiarize themselves with the different concepts of the game, instructions, and simple examples of games and interactions with NPCs.

Data was collected using standardized language proficiency tests, questionnaires, game interactions and focus groups. During sessions, gameplay data was collected on the participants' assigned VR devices. Key game data included play time, interactions with NPCs, object pickups, and mini-game performance. This information was stored locally on VR devices and transferred to a MongoDB database via an API. We used standardized language tests to measure vocabulary, grammar and communication skills. Additional questionnaires collected feedback on user experience, enjoyment of the game and motivation to learn. Focus groups provided deeper insights into players' experiences, what they liked best and how useful the game could be if developed and integrated into the curriculum.

## 5 RESULT ANALYSIS

The 14 participants in the study were students of the same first-year high school class. All were 15 years old except one, who was 14. Therefore, since people from the same age group participated in the experiment, the age factor is eliminated from the results.

### 5.1 Pre-Test Questionnaire Summary

The first questionnaire assessed video gaming habits, including frequency, preferred platforms, reasons for gaming and weekly gaming time.

[2]Nik Jan Špruk, *Video tutorial for the game*, https://youtu.be/QzoZJ6bAfdU

- **Gaming Frequency.** 7 students play daily, while the rest play less frequently, with 3 almost never playing and 4 playing once a week or less.
- **Preferred Platforms.** Most students (57.2%) prefer mobile devices, followed by computers (28.6%) and gaming consoles (14.2%).
- **Reasons for Gaming.** Their main reason for playing games is fun (71.4%), followed by relaxation (21.4%), learning (14.3%), and boredom (14.3%).
- **Weekly Playing Time.** Most students play between 0-3 hours per week, with 2 students stating that they do not play at all.

## 5.2 Language Learning and Perception

We interviewed 14 students about their language learning habits. 8 students were learning a foreign language, mainly English (4) and German (2), while 6 students were not learning any language. Mobile apps (79%) were the most popular learning resource, followed by books (57%), language courses (29%) and dictionaries (14%).

Students rated the effectiveness of video games for language learning as 4.21 out of 5 on average, with the games being seen as entertaining and engaging. They preferred vocabulary (85.7%) and grammar exercises (57.1%), while pronunciation exercises were less popular (42.9%).

The perceived value of VR immersion for learning was rated 4.21 out of 5, with students emphasizing the engagement of VR due to its novelty and interactivity. Most students (57.1%) preferred to learn alone in VR and 50% preferred 15-30 minute sessions. When comparing VR to traditional classroom learning, students rated VR as more engaging (4.71 out of 5), citing its dynamic and interactive nature.

Students were also asked about their opinions on traditional learning methods and their preferences for VR language learning. The survey results showed that textbooks were the least preferred learning method, with 64.3% of students stating that they did not find them attractive. Knowledge tests, such as quizzes, were the second least preferred method, with 42.9% of students expressing a dislike for them. This was followed by workbooks, which 28.6% of students found less appealing. Group work was the least disliked method, with no students expressing a dislike of it.

When asked about preferred VR scenarios, the most popular option was practicing the language in a virtual city, chosen by 8 students, followed by historical events and fictional stories with 6 votes.

Regarding the motivation to practice speaking in VR, the average score was 3.29 out of 5, with a high standard deviation of 1.27, reflecting different opinions. Some students felt more motivated due to the convenience and interactivity of VR, while others saw no significant advantage over traditional methods.

## 5.3 German Language Proficiency Test Results

The German language tests conducted during the first and second experimental sessions assessed the improvement in language skills. The Wilcoxon signed-rank test was used to calculate statistically significant differences between sessions and groups. This non-parametric method was chosen due to the small sample size and non-normal distribution of the data. Instead of p-values, we used the Wilcoxon statistic (W-value) with a critical value of 3 for statistical significance.

The results from the first session, shown in Table 1, indicate a significant improvement in both groups between the first and second tests.

For the second session (Table 2), the data from Group 1 were not included in the statistical analysis as there were not enough valid responses. The results of Group 2 showed a significant difference between the second and third test, as can be seen in Table 3. However, the other comparisons showed no statistically significant differences.

## 5.4 Gameplay Data Results

The estimated time participants were expected to spend on the game was approximately 30 minutes, with the game content designed to last 20 to 30 minutes. Two students spent more time playing the game than anticipated. The average playing time for all participants was approximately 30 minutes, with a wide range from a minimum of 8.56 minutes to a maximum of 69.51 minutes. The average playing times of the groups are given in Table 4.

## 5.5 Post-Test Questionnaire Summary

After the test phase, the students completed a second questionnaire about their experiences with the VR language game. Their main motivation for participating was to try out the VR headset or experience a VR language game, with five students citing language improvement as their primary reason. First impressions of the game averaged 3.43 ($\sigma = 0.76$) out of 5, indicating a neutral to slightly positive experience. The

Table 1: Average scores ($\mu$) and standard deviations ($\sigma$) for the proficiency tests of the first session and W-value for both groups.
** Statistically significant.*

| | Test 1 | | Test 2 | | |
|---|---|---|---|---|---|
| | $\mu$ | $\sigma$ | $\mu$ | $\sigma$ | W-value |
| Group 1 | 13.43 | 2.44 | 16.00 | 2.77 | 1.50* |
| Group 2 | 9.43 | 1.72 | 13.14 | 3.53 | 1.00* |

Table 2: Average scores ($\mu$) and standard deviations ($\sigma$) for the proficiency tests of the second session.

| | Test 1 | | Test 2 | | Test 3 | |
|---|---|---|---|---|---|---|
| | $\mu$ | $\sigma$ | $\mu$ | $\sigma$ | $\mu$ | $\sigma$ |
| Group 1 | 20.00 | 4.00 | 19.00 | 5.00 | 21.00 | 4.00 |
| Group 2 | 23.00 | 2.77 | 22.67 | 2.34 | 26.14 | 1.68 |

Table 3: W-Values for Group 2 of the second session.
** Statistically significant.*

| Comparison | W-value |
|---|---|
| Test 1 vs. Test 2 | 6.0 |
| Test 1 vs. Test 3 | 0.0* |
| Test 2 vs. Test 3 | 0.0* |

Table 4: Average playtime ($\mu$) and standard deviations ($\sigma$) in each group in minutes.
** Small number of participants.*

| | Session 1 | | Session 2* | |
|---|---|---|---|---|
| | $\mu$ | $\sigma$ | $\mu$ | $\sigma$ |
| Group 1 | 30.44 | 16.22 | 8.83 | 0.00 |
| Group 2 | 31.06 | 10.04 | 28.13 | 18.93 |

most common suggestions included improving navigation, walking speed and game performance. The average rating for the intuitiveness of the game was 3.71 ($\sigma = 0.91$) out of 5, indicating a neutral to positive experience. Technical issues were minimal, with a few requests for additional content. The most popular features were interacting with the characters and exploring the world (35.7% each), while the mini-games were only slightly less popular (28.6%). When asked if the game increased their motivation to learn German, the average rating was 4.1 out of 5, although one student preferred traditional methods. Half of the students reported experiencing motion sickness, with 3 students never experiencing it, 4 rarely, 2 occasionally and 5 frequently. In terms of language improvement, the average rating was 3 ($\sigma = 0.784$) out of 5. Most students (85.7%) would recommend the game to others, citing fun, innovation and conversation, while a few favored traditional learning methods. When asked if the game could replace traditional methods, the average rating was 4.07 ($\sigma = 1.07$) out of 5. Some students' opinion of VR as a learning tool improved, although others still preferred apps such as Duolingo. One student opted for textbooks due to nausea from the VR headset.

## 5.6 Focus Group

Following the test phase, a focus group discussion provided further insights into the students' experiences with the game. The focus group preferred the mini games and the interactions with NPCs. The mini games were particularly valued for their interactivity, visual associations and hands-on learning, which made them more effective and enjoyable than traditional methods of vocabulary acquisition. The group suggested adding a storyline to enhance the gaming experience. They also recommended the integration of speech recognition for verbal interaction with NPCs to improve pronunciation and pragmatic use of language, and called for more varied short games, such as memory games. The map feature was highlighted as very useful for orienting within the game.

The group noted several advantages of VR over traditional methods, such as active learning through movement, abundant visual information and increased motivation. However, they also mentioned disadvantages such as headaches, dizziness, the weight of the headset and the need for game optimization. The uniqueness of VR was seen in the ability to physically interact with objects, which promoted language learning through visual and tactile associations. The group reported that VR had a positive impact on their motivation to learn German and would recommend the game as a supplement to traditional methods. Compared to apps such as Duolingo and book-based learning, VR was preferred due to its interactivity, ability to maintain learners' focus, and immersion in the learning process.

# 6 DISCUSSION AND CONCLUSION

This study explored the ability of virtual reality (VR) games to support language learning, focusing on their effects on motivation and knowledge consolidation. We examined various aspects of the game's impact on user performance using device data, user experience surveys, focus groups and language proficiency tests.

Our VR game showed a positive effect on traditional exam performance and language learning outcomes, suggesting that immersive and interactive learning can improve language skills in the real world. More importantly, the results suggest that the VR game increases motivation and improves the overall user experience. Participants were satisfied with the game and saw its potential as a complementary tool to reinforce traditional learning methods. These often struggle to maintain student engagement, and VR can help bridge these gaps by catering to different learning styles and providing real-world conversational exercises where students use their target language in meaningful contexts. VR's ability to create immersive environments could also benefit other subjects such as history, science or technical training by allowing students to engage with content in a more interactive, safe and experiential way. In addition, VR could help address accessibility challenges in education by providing remote learners with the opportunity to practice and interact in ways that are not always possible in traditional settings.

Although the language tests showed positive outcome, the results should not be generalized too quickly due to the small sample size. The most important improvement to the research would be to compare the final test results of students using VR with those using traditional learning methods. Improving the validity of the results by increasing the sample size would also help to ensure that the results are more representative and apply to different language levels. Finally, understanding how regular use of VR can reduce motion sickness and improve user comfort will be critical to improving the overall VR learning experience.

Development challenges included designing a functional prototype that was accessible to non-technical participants, as well as content limitations. Due to participants' limited vocabulary and grammar knowledge, it was difficult to incorporate enough content for the non-linear VR game, which generally requires more material than typical textbooks. Future research could therefore benefit from involving older students, as they would have a wider range of verbs, words and tenses to choose from, which would enrich the game and support testing over a longer period of time without risking monotony. It would also be important to assess whether VR games have different effects on learners with different linguistic background.

This study has highlighted several directions for further improvement. Participants expressed interest in speech recognition technology to improve language use and make it more authentic and practical. The integration of speech recognition technology could significantly improve verbal practice by providing real-time feedback on pronunciation, fluency and grammatical accuracy. Adaptive speech recognition tools could help students refine their accents and improve their confidence in spoken interactions. In addition to the speech recognition, incorporating a narrative into the game could enrich the experience and warrant further research into the long-term effects of VR-based language learning. The game could also be designed with multiple difficulty levels, allowing learners to progress through increasingly complex linguistic challenges. Beginners could benefit from structured dialogs and vocabulary prompts to provide basic support, while advanced learners could benefit from open-ended conversations, spontaneous interactions and challenges that require nuanced language use. A personalized learning path based on language proficiency assessments could further enhance the experience.

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