

Abstract

It's a challenge to teach and learn a foreign language via distance learning because it lacks interaction between students and instructors. Although there are already some language learning mobile apps that exist, they often are designed for self-learning, none of them is easily adapted to the college curriculum.

In this project, we develop a mobile application for foreign language learning using Virtual Reality, particularly focusing on distance learning. This app allows instructors to assign exercises and students can easily interact with the instructor virtually and complete exercises and activities in the virtual 3D environment.

Introduction

User-centric products that meet user needs and high participation are the core methods and concepts behind many design projects today. Driven by this concept, designers need to constantly explore new technologies to improve user experience, and at the same time continue to explore the inner emotions and emotional feedback of users.

Virtual reality technology is a computer simulation system that can create and experience a virtual world. It uses a computer to generate a simulation environment, which is an interactive three-dimensional dynamic view and entity behavior system simulation of multi-source information fusion, so that users can be immersed in the system. Environment.

Integrating game design strategies into non-game products can encourage users to interact more with your product or service. By using the concept of gamification, students' learning participation can be improved. Make the boring language learning process interesting. In this application, the instructor can add and edit various language concepts in the exercises according to the course. Students will learn and review basic language concepts through simple VR interactive activities, and engage in dialogue exercises with other students or the app. They will experience various immersive scenarios in the application to simulate the real environment. User learning will be conducted in language courses to test the effectiveness of the proposed VR application for distance learning.



Figure 1 Installing Cardboard

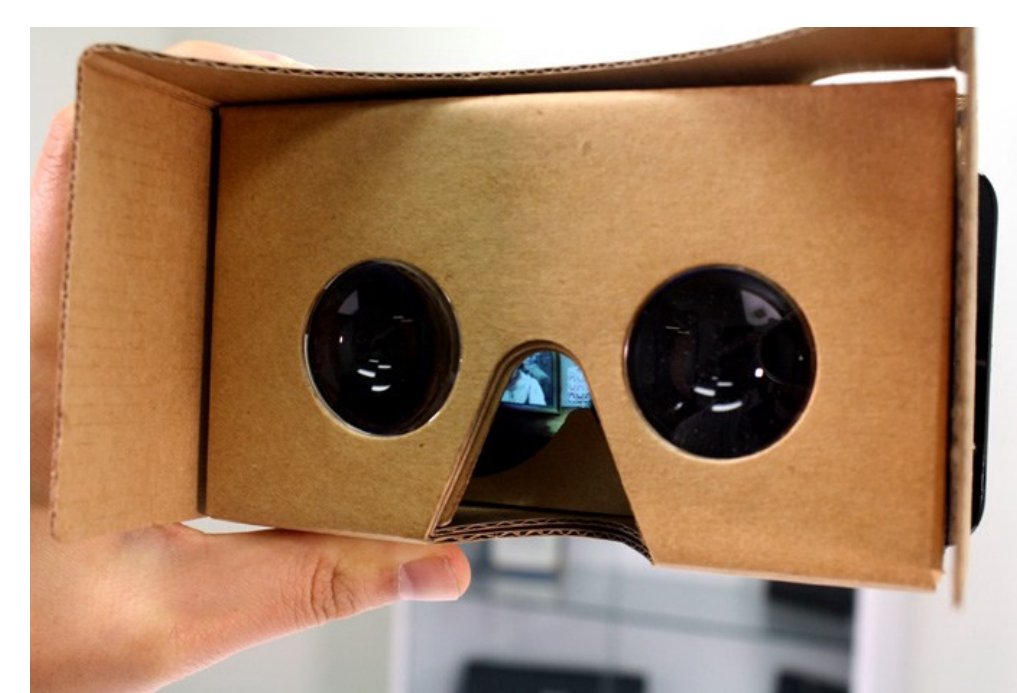


Figure 2 Installed Cardboard



Figure 3 Using Cardboard to learn



Figure 4 Virtual teacher

Approach

- **Interface:** create multiple VR language learning scenes. According to the content of the course curriculum, set up the corresponding interactive scene, and use it with the course.

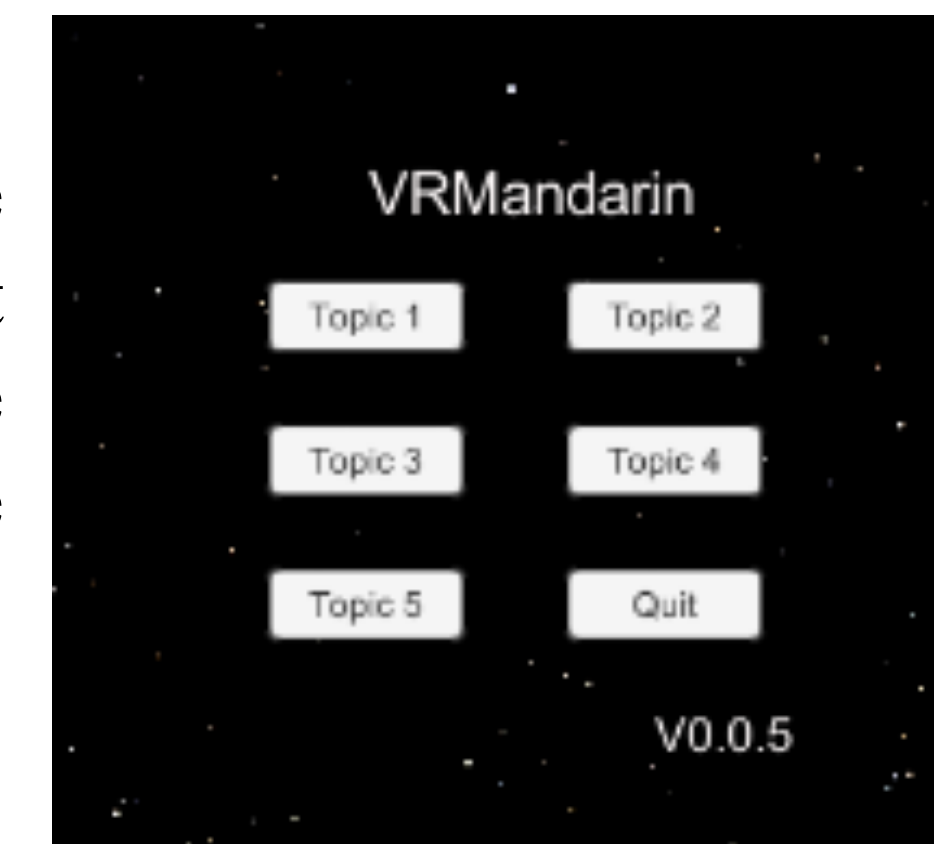


Figure 5 Main Menu

- **Pronunciation scene.** Help students master the correct pronunciation of words or sentences learned in class. Through repeated listening and follow-up speaking, students can understand how to pronounce specific words.

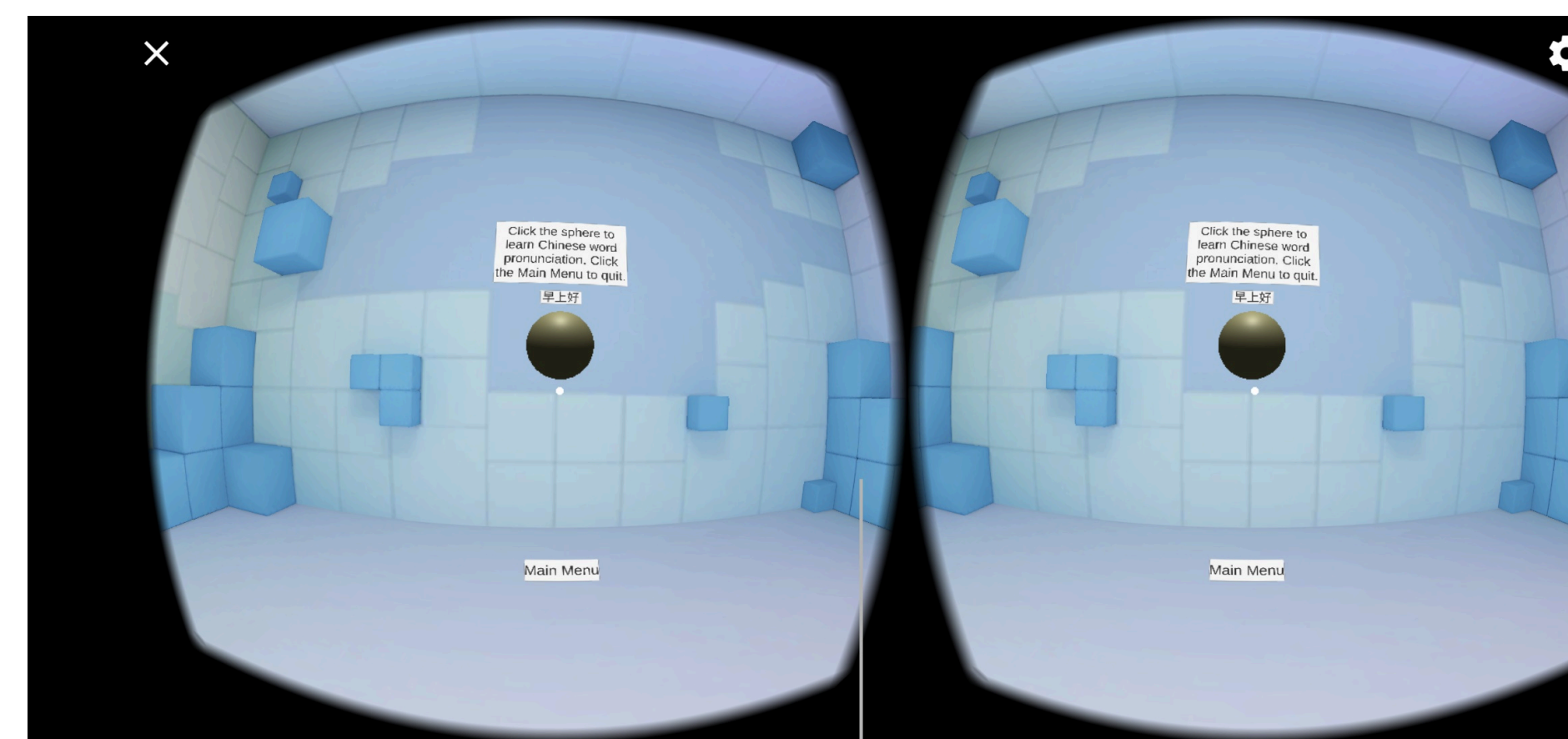


Figure 6 Pronunciation scene

- **Dialogue test scene.** Test students' mastery of the language learned in class. The students are tested through a question-and-answer method, so that the instructor can understand where the students are weak. After that, instructor can focus on the explanation in class.

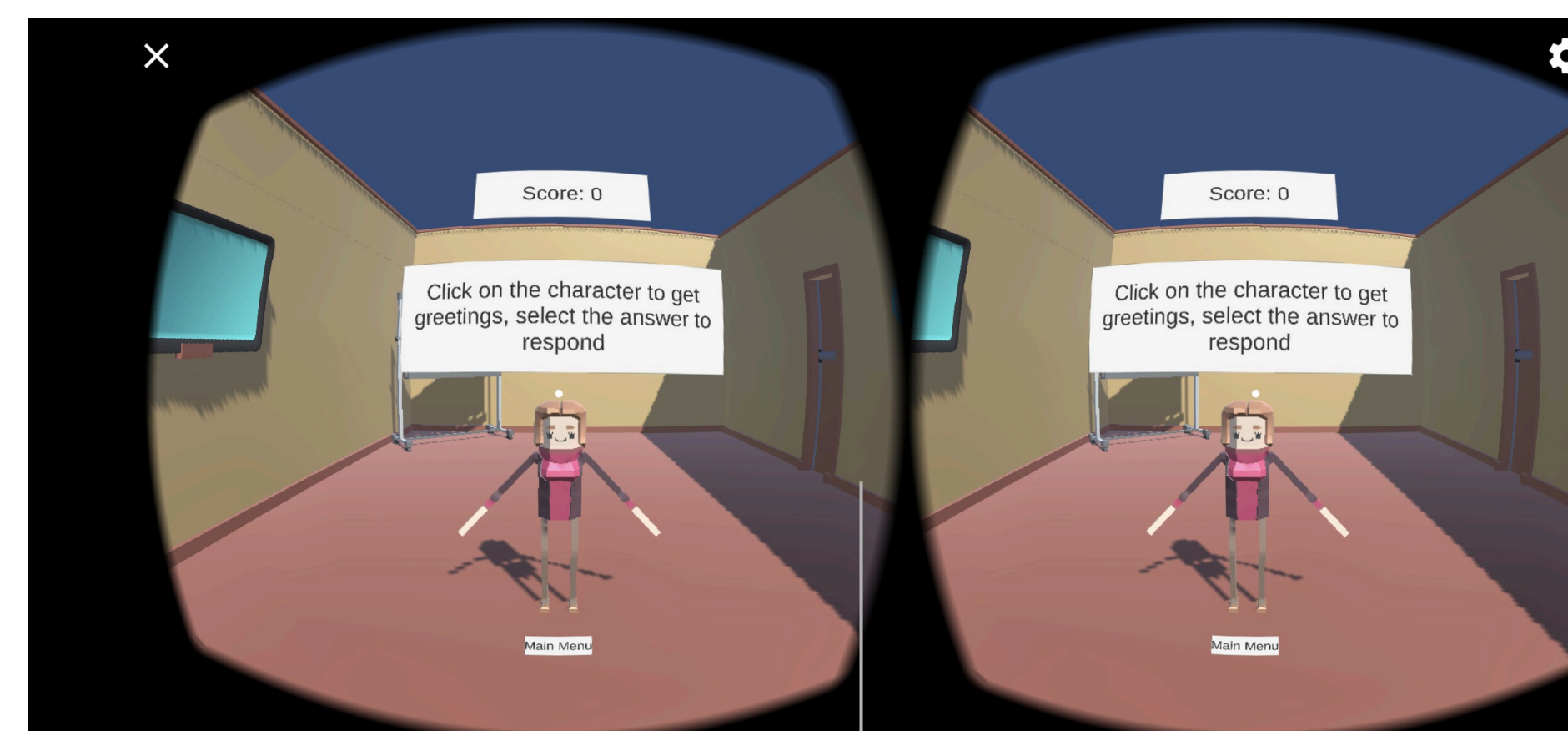


Figure 7 Dialogue test scene

- **Pronunciation test scene.** Identify the words or sentences speak aloud by the students, judges whether the students have the correct pronunciation. And give feedback to students. Students can return to the pronunciation scene to continue learning the correct pronunciation of words.

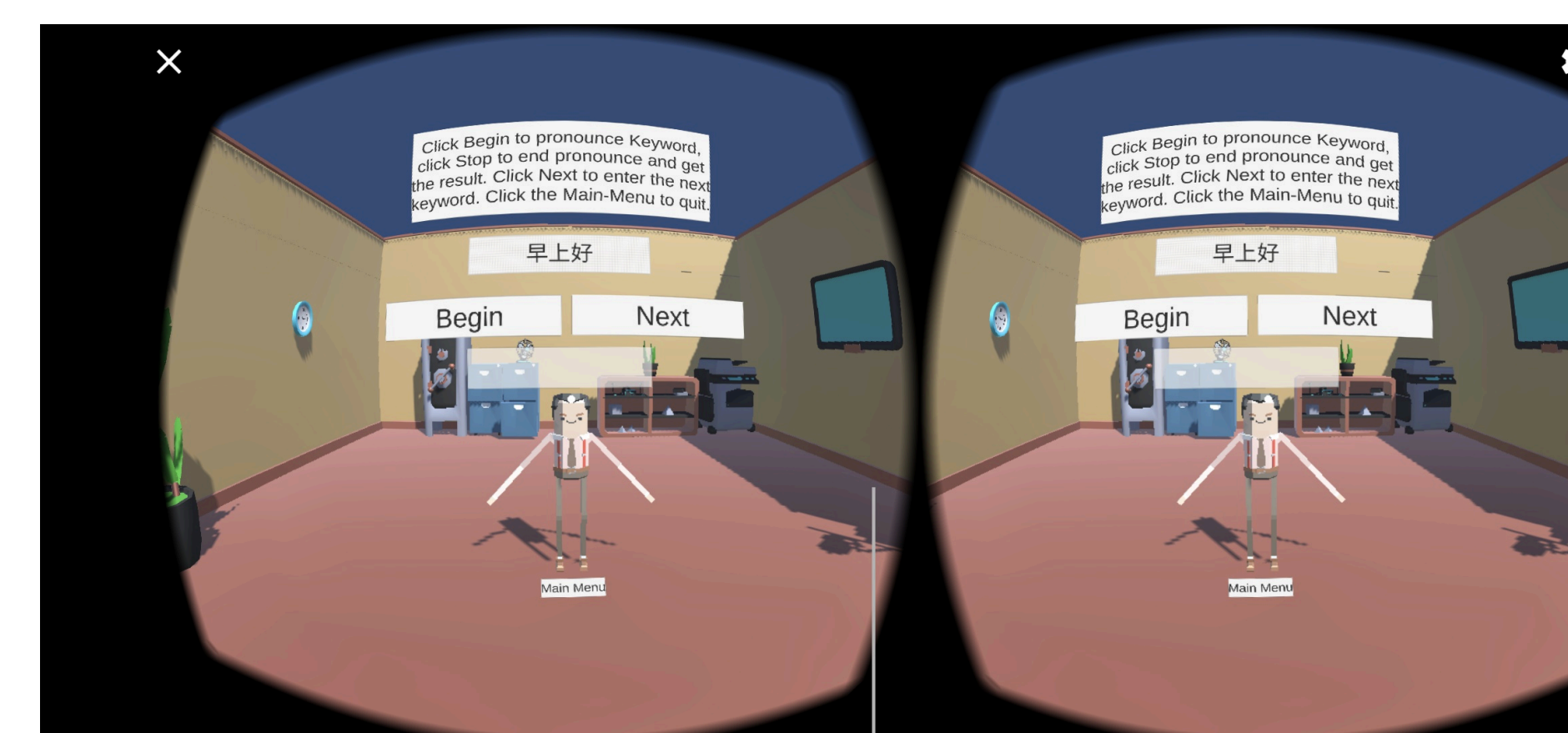


Figure 8 Pronunciation test scene

Discussion & Conclusion

- We were able to develop two versions of the application. One is the WebGL version, and the other is the Android version. Both versions have basic features to learn the language.
- Among students, more people use Apple devices than Android devices. Although these students who use Apple devices can currently use the WebGL version to learn languages, we should develop the Apple version in the next phase. In addition, more students expressed the hope that the app can add more pronunciation, sentence exercises, and images.
- Through this VR application, students can repeatedly practice what they have learned in class. This includes listening, speaking, and using words and sentences. These exercises are matched with the college curriculum, and students can open the app to learn the language at any time. It improves the interaction between lecturers and students in a distance learning environment.
- From the beginning of this project to the present, we have experienced a lot. We think about how to enhance students' interest in language learning. We think of ways to integrate the content of the class into this application. I not only learned a lot of new knowledge, but also understood how to use what I learned in class.

Future work

- Develop the Apple version.
- Use the database to manage the content of the exercises in the application.
- Add more exercises to help students learn and use the language.
- Add more interactions to enhance students' interest. Beautify the current scene and characters. Add more images and character animation.
- Conduct more testing in language classes.

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