A Virtual Reality Experience for Learning Languages

Sarah Garcia
University of South Florida
sarahgarcia@mail.usf.edu

Ronald Kauer
University of South Florida
rkauer@mail.usf.edu

Denis Laesker
University of South Florida
dlaesker@mail.usf.edu

Jason Nguyen
University of South Florida
jasonn1@mail.usf.edu

Marvin Andujar
University of South Florida
andujar1@usf.edu

ABSTRACT

This demo showcases an interactive virtual reality (VR) experience for language learning that allows users to enter a virtual world to explore and interact with their surroundings while learning Spanish. Through immersive game-play on the Oculus Rift, users explore Spanish translations of everyday household items in a search-and-find format, scoring points when they can correctly identify objects. Users are able to put what they learn into practice in real time. Study participants who tried the experience said they found this method of language learning to be more enjoyable than traditional methods of studying due to the gamification created and it not "feeling like studying". As VR headsets continue to become more accessible to the public, this application addresses the cost limitations of traveling overseas to achieve immersion in foreign language. Additionally, this application can be expanded to most real-world scenarios and locations.

KEYWORDS

Virtual reality; language education; language learning; game-based learning; immersion

1 INTRODUCTION

Created in Unity and scripted for the Oculus Rift, this language learning experience allows users to be immersed in a foreign language. As immersion is a proven method of learning a second language, using virtual reality to attain immersion has potential educational benefits [1]. Users can explore the inside of a virtual home, complete with everyday objects to interact with. Through a search-and-find game, users are asked to find household objects to gain score points. While currently set in the inside of the home, this experience can be scaled to nearly all real-world scenarios and incorporate any objects.

2 METHODOLOGY

A focus group was conducted to collect qualitative study regarding the current version of the application. In this focus group, four participants (three male and one female) completed a pre-experiment survey and then tested the interactive game. To test the game, participants were each individually set up in the environment, given five minutes to freely roam the virtual environment, and then given an additional five minutes to play the search-and-find game.

After all four participants completed the search-and-find game, all four sat down together for a focus group to discuss what they just experienced. Questions involved what they learned, how natural they found the interaction, likes, dislikes, etc.

3 RESULTS

Results of the focus group indicate that participants enjoyed learning a foreign language through the use of virtual reality. Participants mentioned that language learning in virtual reality was more fun than previous traditional learning methods that they have experienced. Phrases uses regarding the application include describing it as "almost like playing a game".

Participants noted that they believed learning in a virtual environment helped them to better remember the names of objects that they interacted with, however this is anecdotal and would require further testing to answer the question if it improved their learning ability or retention. Feedback from the focus group indicated that User Interface design of the application could be improved, specifically in relation to prompts and score placed on the screen. However overall, feedback showed that learning a foreign in virtual reality has a potential future.

4 GAMEPLAY IMAGES

Figure 1: Image of seek-and-find gameplay.

Figure 2: User playing game while sitting.

5 EXPERIENCE

Briefing and Set Up: Participants will begin by being told a brief overview of what they will be experiencing. This includes information regarding potential dizziness from use of virtual reality headsets and precautions to take regarding their step if they choose to complete the experience standing to reduce the chance of injury. The experience can also be played sitting down as seen in Fig. 2. Next, participants will continue by getting set up with the Oculus Rift headset. This set up includes instructing and assisting participants regarding mounting the display and vision correction for proper use.

Gameplay: After set-up, participants will begin by entering the 3D modeled space created. A screenshot of gameplay can be seen in Fig. 1, where the prompt appears at the bottom and the current score appears at the top of the screen in white font. They will be given time to adjust to their surroundings before beginning the search-and-find game for learning Spanish. When beginning, the game will:

- At the bottom of the screen a question will appear, prompting the user to find an object
- The prompt will be read to the user using the headphones in the Oculus Rift, allowing users to hear the sentence and object pronunciations in Spanish
- Users can then explore the household and interactable objects within it to find the desired object. Interactable objects will highlight light blue when hovered over, indicating that they are a possible choice.
- Users will be given points upon selecting the correct item. These points, incrementing by 10 with each correct answer are shown at the top of the screen. No points are awarded or deducted for selecting the incorrect item, however the object will highlight red if chosen incorrectly to indicate that it is not the desired item for the search-and-find question.

Users will continue in this fashion repeatedly until completing the entire series of questions or until choosing to end gameplay. At the end of the game, users are presented with their final score, to be used to measure progress and improvement over time.

6 REQUIREMENTS

6.1 Technical Requirements

Technical requirements for running this experience include power supply to be used for a VR-Ready laptop that will be provided by demonstrators.

6.2 Space Requirements

The space requirements needed to successfully use a virtual reality simulation would be approximately 10 feet by 10 feet to limit users colliding with objects. Additionally, a table to set up the VR-Ready computer on top of is required.

REFERENCES

[1] Savage, B. L., & Hughes, H. Z. (2014). How Does Short-Term Foreign Language Immersion Stimulate Language Learning?. Frontiers: The Interdisciplinary Journal of Study Abroad, 24, 103-120.