



Virtual reality: “Awesome”, “OK”, or “Not so good” for language learning?

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Abstract

High-immersion Virtual Reality (VR) has rapidly gained popularity as an innovative tool that provides users with immersive and engaging learning experiences. Meanwhile, large-scale studies that provide empirical evidence regarding its effectiveness are scarce. This pilot study is part of a Meta and Immerse co-funded large-scale project investigating cognitive and affective aspects of language learning in VR. This short paper reports on one aspect of this pilot: language learners' (n=123) impressions of French as a foreign language (L2) classes conducted in Immerse, a VR language learning platform. Despite its acclaimed potential, VR may not be immediately perceived as an “awesome” tool for language learning. Our findings indicate that most learners viewed VR as “OK” or “awesome” for learning. However, only a few participants expressed VR to be “not so good.” Stemming from positive and negative feedback from the learners, we identify which aspects of VR are most appealing, and which should be carefully considered. Based on lessons learned, we share recommendations of how to avoid typical mistakes when implementing VR in a classroom.

Keywords: *high-immersion virtual reality, language learning, learners' attitudes, Virtual Reality Assisted Language Learning (VRALL).*

1. Introduction

High-immersion Virtual Reality (VR) has the potential to engage and motivate learners. Scholars in Computer-Assisted Language Learning (CALL) have studied the effectiveness of VR-Assisted Language Learning (VRALL) for practicing social interactions (Dooly et al., 2023; Thrasher, 2022), vocabulary learning (Papin & Kaplan-Rakowski, 2022), virtual exchanges (Gruber et al., 2023), pragmatics (Taguchi, 2022), listening comprehension (Tai & Chen, 2021; Ye & Kaplan-Rakowski, 2024), and reading (Kaplan-Rakowski & Gruber, 2023). Overall, existing research has reported VR to be relatively beneficial for language learning (Dhimolea et al., 2022), however, a common limitation in these studies is the use of small sample sizes, which makes it difficult to generalize findings to larger populations. Our larger project aims to fill this research gap by collecting data on the efficacy of VR in Spanish, French, and English as a Second Language (ESL) classes across 12 different high schools in the USA during the 2023-2024 academic year. As a first part of this large-scale project, a pilot study was conducted testing the cognitive and affective aspects of learning in VR. The goal of this paper is therefore to report on learners' initial views of VR activities after their first three exposures to VR.

Although VRALL has been used and studied for decades and has been found to facilitate language learning (Kaplan-Rakowski, 2011; Lan, 2020; Sadler & Dooly, 2012), most research has involved three-dimensional (3D) virtual worlds, such as *Second Life*, which learners access via two-dimensional displays (e.g. laptops or tablets). This type of VR is considered *low-immersion* compared to *high-immersion* VR which involves the use of VR headsets that allow users to be fully enveloped in a 3D 360-degree environment that they interact with using hand-held controllers. While numerous high-immersion VR apps are available (see *Oculus*¹ store), only a few specialized language learning platforms exist; for instance, *Mondly*, *ImmerseMe*, *Noun Town*, *Language Lab*, and *Immerse*. This paper focuses on research in *Immerse*². This app has been specifically designed for VRALL and developed not only with the fundamental pedagogical principles of learning language in context, having authentic cultural experiences, and developing a vibrant sense of community, but also with capitalizing on some of the unique affordances of VR, namely immersion, presence, and embodiment (Makransky & Petersen, 2021).

A promising theory of immersive learning is Makransky & Petersen’s (2021) Cognitive and Affective Model of Immersive Learning (CAMIL). According to this model, a variety of affective and cognitive factors play important roles in how and under what conditions learning occurs or is reinforced. Our paper therefore reports on affective factors, such as interest and agency. However, peripherally, cognitive factors are also considered, including interaction with objects and other learners as well as cognitive load. Based on learners’ use of *Immerse* on three occasions, our research question is: What are language learners’ initial opinions about using *Immerse* for learning French?

2. Method

Participants in the study were 123 ($n=123$) language learners, who were high-school students of L2 French. The vast majority were from a rural high school in Texas, USA ($n_1=109$). The remaining learners ($n_2=14$) were students from a high school in central Illinois, USA. Both schools’ learner populations were primarily made up of high-school students from traditionally underrepresented and minority backgrounds. However, a main difference between these two research sites was that the school in Illinois had more financial support since it was part of a larger university system. These two schools were chosen because they had agreed to serve as pilot sites for a larger research project examining the use of VR in 12 high schools throughout the USA.

Learners completed activities in *Immerse*, which can be accessed via a VR headset or a web browser. For this study, all learners joined sessions using a VR headset. In *Immerse*, learners can directly interact with their classmates in over 30 different environments (e.g. fast food restaurant, doctor’s office, shopping center; Figures 1 & 2). Outside of class time, learners can practice speaking with AI-powered avatars and play a variety of different games to review vocabulary (Figure 3). All environments in *Immerse* are highly interactive, meaning that learners can physically grab and manipulate different objects while collaborating with their peers. For instance, when learners practice ordering food in the fast-food restaurant scenario, they can ring orders up on a cash register, cook burgers on a grill, add condiments, fill up drinks, and even pay for orders by cash or card. Such a simulation is authentic and adequately reflects real-life scenarios, adding realism to the language learning environment.

One of the aims of this pilot study was to determine what types of activities worked most optimally in high school settings. Three different types of activities were tested with learners. The first activity was a live, teacher-led lesson in a fast-food restaurant where learners learned how to order food in French. The second activity was a peer-to-peer scavenger hunt in *The Commons* (i.e. *Immerse*’s social lounge). The third activity was a structured, peer-to-peer activity in the shopping center where learners had to find and interact with certain objects while shopping together.

¹ <https://www.oculus.com/experiences/quest/>

² www.immerse.com



Figure 1. Learners interacting in a fast-food restaurant in Immerse.



Figure 2. Classroom view of learners interacting in VR.

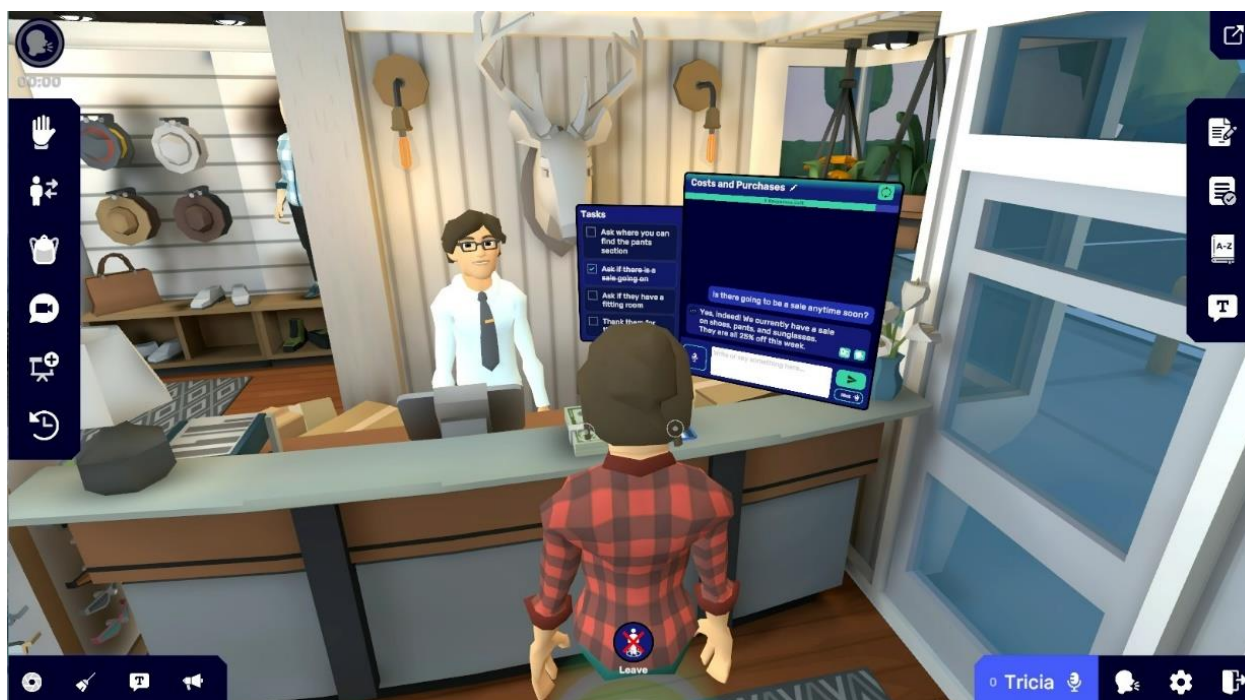


Figure 3. AI-powered avatar practice.

Following each activity, learners immediately completed a survey in which they were asked to describe their experience as “Awesome,” “OK,” or “Not so good.” This survey was kept simple to allow learners to answer quickly and to not detract from class time. In addition, learners were asked to report on what they liked and disliked about the session (if anything). Learners’ qualitative feedback was analyzed using MAXQDA software to identify trends in both positive and negative feedback.

3. Findings and discussion

Overall, 56.6% learners found VR “OK”, 40.9% expressed thinking that it was “awesome”, and only 3.3% perceived it as “not so good”. Table 1 presents results based on school and activity (see Table 1).

Table 1. Learners’ ratings of VR (all numbers are representative of percentages out of 100).

Rating	School		Scene/Activity			All Responses (n=123)
	Texas (n ₁ =109)	Illinois (n ₂ =14)	Fast food Restaurant (Teacher- led) (n ₃ =68)	The Commons (Learner- led) (n ₄ =14)	Shopping Center (Learner- led) (n ₅ =41)	
“Awesome”	36.1	78.6	33.8	78.6	39	40.9
“OK”	60.1	21.4	61.8	21.4	60	56.6
“Not so good”	3.7	0	4.4	0	1	3.3

Learners made 155 comments about what they liked and disliked. Of these, 103 were positive about VR and the Immerse application and 52 were negative. Table 2 presents a summary of the themes based on positive and negative feedback.

Table 2. Themes based on positive and negative feedback.

Positive Feedback	Negative Feedback
Interactivity with objects	Navigation
Interactivity with peers	Set-up time
Enjoyment	Physical discomfort
Visual appeal and realism	Audio feedback
Immersion	Distraction
Ease-of-use	
Break from traditional class	

With regard to positive feedback, learners commonly mentioned that they enjoyed being able to pick up, scan (to hear the pronunciation), and interact with various objects throughout scenes in Immerse (27%; 28 out of 103 comments). Along with object interaction, learners highlighted how they enjoyed being able to interact with their peers in VR together instead of being inside an isolated VR experience (21.3%). They also frequently said that VR lessons were a “fun” way to learn (19.4%) and expand their French vocabulary (13.6%). Last, learners mentioned that Immerse was visually impressive and realistic (7.8%), highly immersive (6.8%), and easy to use (4.9%). A few learners also pointed out that Immerse offered a nice break from their routine classroom activities (3.9%).

With regard to negative feedback, we identified five main concerns. First, the most common complaint (32.7%; 17 out of 52 comments) among learners was that VR and Immerse were difficult to navigate. For instance, some learners found the controls to be complicated. They also found it difficult to maneuver throughout the platform, which negatively impacted the set-up time. Second, 26.9% of learners mentioned the physical discomfort that can accompany using VR (e.g. tired eyes, nausea, headaches) and how this discomfort hindered their learning experience. Third, because learners were simultaneously inside Immerse and physically together in the classroom, acoustic feedback occurred (19.2%), leading to frustration and impeding their ability to hear others and effectively follow the lesson. Such issues, and the occasional lack of focus among their peers (9.6%), lowered the quality of the learning experience (17.3%).

Based on the lesson learned from the negative feedback we received from learners, we offer several recommendations for how to avoid possible issues when implementing VR on a larger scale in the classroom. Table 3 presents learners’ main critiques and our suggestions for addressing them.

Table 3. Learners’ critiques of VR and possible solutions.

Critiques	Solutions
Navigating VR and using controllers is difficult.	Provide learners with a more robust VR tutorial and additional practice sessions to reinforce the use of hand controllers. We recommend a minimum of two, one-hour sessions which should include a tutorial and hands-on practice.
Set-up time took away from class time in VR.	Provide both teachers and learners with more intense VR training so that they can easily start activities. Confirm that all headsets are properly connected to Wi-Fi and fully charged before class time.
VR headsets can cause physical discomfort.	Ensure that the learners select the best viewing setting in their VR headsets and that the width of the headset lenses is properly adjusted to their eyes. Make sure that learners have their motion settings set to ‘Teleport’. Allow learners to decide whether they want to join VR sessions via a headset or a computer when possible.
Acoustic feedback was distracting.	Provide all learners with headphones to prevent audio feedback.
Classmates were not always on task during group activities.	Adapt post-activity questionnaires to include peer-assessment for participation and improve accountability during tasks.

4. Conclusions

The results of this pilot study of L2 French learners (n=123), who were high school students using the high-immersion VR app Immerse to learn French, revealed that after three exposures using the app, most learners had positive perceptions of their French learning experience (40.9% thought it was “awesome” and 56.6% felt it was “OK”). In response to the open-ended question about what they liked and disliked about the app, 66% of the comments were positive and 34% were negative. The positive features included the unique affordances of VR such as the ability to interact with both objects and peers and the realism and immersivity of the environment, whereas the criticisms provided helpful lessons learned for both teachers who want to use VR in their classrooms and researchers who study the effectiveness of VR apps. Key recommendations include the need to provide both learners and teachers with multiple and thorough training sessions, explicitly instructing users on the best viewing and motion settings while in VR, and carefully designing learning activities accompanied with questionnaires to assess the effectiveness of the activities.

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