Students' attitudes toward high-immersion virtual reality assisted language learning

Regina Kaplan-Rakowski[1] and Tomasz Wojdynski[2]

Abstract. This pilot study delivers a preliminary report on students' attitudes toward Virtual Reality Assisted Language Learning (VRALL). Learners (*N*=22) participated in a VRALL lesson and then completed a post-experience survey. Virtual Reality (VR) technology allows for learning experiences that increasingly remove geographic limitations to foreign language learners. Thanks to multisensory features of VR, including 360-degree, three-dimensional visualizations, students' experiences are highly immersive. Descriptive statistics provide preliminary evidence that VR technology is engaging and immersive for learners. Moreover, VR could play a role in Computer Assisted Language Learning (CALL), especially when pitfalls such as cybersickness are overcome.

Keywords: virtual reality, virtual reality assisted language learning, VRALL, students' attitudes, immersive learning environments.

1. Introduction

A common assumption is that the most effective way to learn a foreign language is through language immersion in the country where the language is spoken. High-immersion VR technology provides fairly realistic imitations of such settings. Learners can be welcomed in sensory-rich environments, allowing them to experience telepresence (i.e. the feeling of 'being there' in the target language country).

With the most recent release of advanced VR technology, interest in learning in VR environments is experiencing a rebirth. Unlike limited VR prototypes, the new

1. Valdosta State University, Valdosta, Georgia, United States; rkaplan@siu.edu
2. The School of Banking and Management, Cracow, Poland; tomwoj@wszib.edu.pl

How to cite this article: Kaplan-Rakowski, R., & Wojdynski, T. (2018). Students' attitudes toward high-immersion virtual reality assisted language learning. In P. Taalas, J. Jalkanen, L. Bradley & S. Thouësny (Eds), *Future-proof CALL: language learning as exploration and encounters – short papers from EUROCALL 2018* (pp. 124-129). Research-publishing.net. https://doi.org/10.14705/rpnet.2018.26.824

wave of VR headsets (especially Oculus and HTC Vive) is creating settings for immersive learning at an affordable cost. Researchers from multiple disciplines have explored learning in VR (Jensen & Konradsen, 2018). However, investigations in CALL are still limited.

VR-related areas that did gain interest from the CALL community were language learning with stereoscopic three-dimensional visualizations (Kaplan-Rakowski, 2016), in gaming (e.g. Cornillie, Thorne, & Desmet, 2012), and in virtual worlds (Kaplan-Rakowski, 2011; Sadler, 2017). While each of these areas was valuable to explore, they all involved low-immersion VR environments. Low-immersion VR can be experienced on a regular desktop Personal Computer (PC) with a two-dimensional monitor. High-immersion VR requires head-mounted displays, with sophisticated sensors that track users' head movements, allowing 360-degree visualizations which foster a sense of presence.

Given that positive attitudes toward a given technology are often associated with increased motivation for learning, how language learners perceive high-immersion VR is important to explore. Dolgunsöz, Yildirim, and Yildirim (2018) show that learners are motivated by VRALL. The intention of our project was to build on their study, testing a different sample and allowing for a more self-regulated experience using higher-immersion technology. The main goal of the study was to answer the research question: what are students' attitudes toward high-immersion VRALL?

2. Method

Our pilot study collected preliminary data regarding learners' (N=22) attitudes toward VRALL. Each participant filled out a demographic questionnaire and then completed a self-selected and self-conducted VRALL lesson. The final step was answering a series of survey questions. Microsoft Excel was employed to analyze data using descriptive statistics.

2.1. Participants

The urban Polish university students who volunteered to take part in the study were all adult males (median age=25). They had a minimum basic knowledge of English and were all information technology majors. They reported spending an average of eight hours per day using electronics. No students owned a VR device and only 9% had experience with using one. This raises the possibility of a novelty effect, which could be the focus of a follow-up study.

2.2. Instruments and procedure

Two instruments were used in the study: a demographics questionnaire and a survey completed after the VRALL lesson, which was conducted via the Mondly app (https://app.mondly.com/). The post-experience survey elicited responses regarding students' views on learning languages with VR. The participants were prompted to share their positive and negative views on VRALL. The format contained 'Yes/No', Likert-scale (range 1-5), and open-ended questions.

The experiment took place in a computer laboratory, and subjects were intentionally not told what to do in the lesson. In line with the Mondly app, learners used their own intuition, with little guidance given, to proceed with the lesson. The researcher assisted only in showing the participants how to wear the Oculus Go headset and how to calibrate and maneuver the VR mouse.

2.3. Lesson content

Mondly is a paid app featuring lessons with various themes designed for second language (L2) learning (e.g. "Greetings", "In a Restaurant", "Taxi Ride") in 28 different languages. Participants could select any theme but were restricted to choosing a new language for them.

Figure 1. A screenshot of a Mondly lesson[3]: the learner, sitting in the backseat of the taxi, holds a conversation in a second language by selecting appropriate responses to the driver

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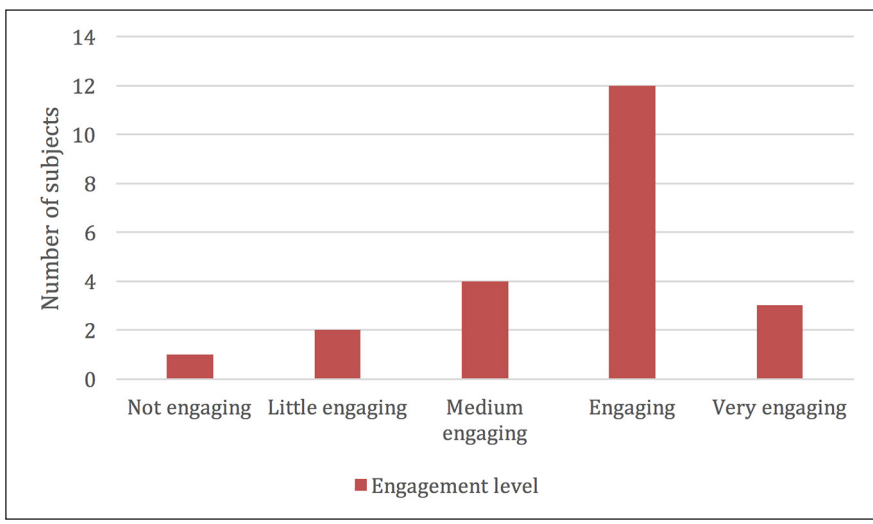
For example, a Mondly lesson creates a scenario of a student sitting in a virtual taxi and conversing with the driver in L2 (see Figure 1). The learner sees the surroundings in 360 degrees while the taxi is moving, which deepens the sense of presence. The taxi driver greets the student in L2, and the student must select the correct response from among a choice of phrases to proceed in the lesson. Voice recognition technology is used to detect the adequacy of the learner's response. The conversation lasts until the student fails to respond appropriately to the driver.

3. Findings and discussion

Descriptive statistics provided preliminary results regarding the students' attitudes about the impact of VRALL. The majority (82%) of participants said that they wanted to study languages in VR, 9% reported that they did not, and the remaining 9% had no opinion. On a Likert scale (1=not engaging, 5=very engaging), the students reported their VR experience as engaging (median=4; mean=3.6). Figure 2 is a histogram of the distribution of the learners' engagement. The results show that the learners' attitudes toward VRALL are positive and their engagement is high. These findings are in line with the study by Dolgunsöz et al. (2018).

Figure 2. Learners' engagement level in a VRALL lesson. The figure depicts study participants' response to the question: 'how engaging do you find the VRALL lesson?'



The majority of participants (91%) responded in the affirmative when asked: "Do you see any positive sides of learning languages in virtual reality?". Among their clarifying comments were: "learning in VR we can immerse ourselves better in what we are doing", "students can focus 100%", "there is a bigger use of imagination and emotional memory", and "very engaging activity; it minimizes the possibility of getting distracted". The remaining 9% of participants reported not seeing any positive sides.

Learners' insightful comments on the positive sides of VRALL reflect the reoccurring theme of increased immersion and extra focus. Wearing VR headsets could minimize distractions from external stimuli, which typically occurs while using a regular PC. Consequently, VR learning is more focused, another potential advantage that should be explored in more depth in future studies.

The survey also asked: "Do you see any negative sides of learning languages in virtual reality?". A substantial 41% acknowledged doing so. Some of these participants' comments were: "after a while you can get a headache", "VR is too absorbing", and "poor quality of the image, which causes eye tiredness and, consequently, discomfort".

Cybersickness, such as eye fatigue and dizziness, is often cited in the use of VR. However, the level of discomfort largely depends on the choice of VR experiences. More cybersickness is reported when the content is dynamic (e.g. cycling) than static (e.g. sitting). With time, the advancement of technology should correct this issue. Improvements have already been reported.

The final question was: "Some people claim that VR is the future of education. Do you agree with this statement? Justify your response with a comment". The majority (59%) of participants agreed; 14% disagreed. No opinion was expressed by 27%. Some justifications were: "new technology and its advancement encourages learning so it is necessary to take advantage of it" and "I think that no technology will be a substitute of an expert teacher".

4. Conclusions

Overall, the learners showed positive attitudes and high engagement toward VRALL. VR holds the promise of providing highly engaging experiences that allow learners to immerse themselves in foreign cultures and languages. The combination of high immersion with suppressed distraction open new possibilities

for how VRALL could prove useful in language acquisition activities such as self-regulatory extramural language learning.

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Published by Research-publishing.net, a not-for-profit association
Contact: info@research-publishing.net

Future-proof CALL: language learning as exploration and encounters – short papers from EUROCALL 2018
Edited by Peppi Taalas, Juha Jalkanen, Linda Bradley, and Sylvie Thouësny

Publication date: 2018/12/08

Typeset by Research-publishing.net
Cover theme by © 2018 Antti Myöhänen (antti.myohanen@gmail.com)
Cover layout by © 2018 Raphaël Savina (raphael@savina.net)
Drawings by © 2018 Linda Saukko-Rauta (linda@redanredan.fi)

ISBN13: 978-2-490057-22-1 (Ebook, PDF, colour)
ISBN13: 978-2-490057-23-8 (Ebook, EPUB, colour)
ISBN13: 978-2-490057-21-4 (Paperback - Print on demand, black and white)
Print on demand technology is a high-quality, innovative and ecological printing method; with which the book is never 'out of stock' or 'out of print'.

British Library Cataloguing-in-Publication Data.
A cataloguing record for this book is available from the British Library.

Legal deposit, UK: British Library.
Legal deposit, France: Bibliothèque Nationale de France - Dépôt légal: Décembre 2018.