

## The Impacts of Virtual Reality on Young EFL Learners' Pronunciation

Minoo Alemi<sup>1</sup> \*  & Shiva Khatooni<sup>2</sup>

### Abstract

This study made an attempt to investigate the impacts of Virtual Reality on Iranian young Foreign Language learners' pronunciation, aged between 6 to 12 years (Low-intermediate Level) in Tehran, Iran. To this aim, after taking a pronunciation pre-test through Speech ace Browser, 18 students participated in the study and were divided into two groups in order to be controlled better in their performance. The Virtual Reality Game (VR Games) given by a teacher was designed with a humanoid robot in virtual environments and all of the pronunciation items were measured in words consisting of vowel /i/ and /i/ and vowel /o/ and /u/. The researchers taught learners the items in 10 ninety-minute-long sessions (twice a week) through the VR games and helped them learn efficaciously the items by different pronunciation activities. Finally, the researchers administered the post-test and the paired-samples *t*-test was conducted to examine a potential relationship between the pretest and the posttest of the group. The findings of the study showed that there was a significant relationship between these two times of testing. Overall, the results revealed that VR has been very influential and useful in creating an efficient and pleasurable English learning environment. This study has some implications for technology-based education and language teaching through educational games.

**Keywords:** virtual reality, pronunciation, young EFL learners

Vol. 11, No. 6, Tome 60  
pp. 449-480  
February & March  
2021

Received: 23 September 2019  
Received in revised form: 9 December 2019  
Accepted: 25 December 2019

1. Corresponding author, Associate Professor, Department of Applied Linguistics, Islamic Azad University, West Tehran Branch, Tehran, Iran; Email: [alemi@sharif.ir](mailto:alemi@sharif.ir);

ORCID ID: <https://orcid.org/000000019703831X>

2. PhD Candidate in Applied Linguistics, Islamic Azad University, Central Tehran Branch, Tehran, Iran.

### **1. Introduction**

During the past years, communication is addressed as an essential goal in language learning and teaching (Cook, 2016). Although communication is an end for every teacher and learner in native and non-native contexts, there are various amount of challenges in the path of language learning (Cohen, 2014). As previous studies have mentioned the role of meaningful communication in language conversations and face to face interactions (Ali, 2016; Burgess & Spencer, 2000; Cook, 2016), teachers and learners are trying to find a way to create meaningful and understandable way of communication (Al-Zayed, 2017; Cruttenden, 2014). As Al-Zayed (2017) maintained, one of the factors of meaningful communication can be the result of the combination between vocabulary knowledge and appropriate level of pronunciation. Therefore, pronunciation can be identified as a challenging component for language learners all around the world especially in non-native countries (EFL/ESL). In other words, pronunciation is ignored during past years by many teachers and learners because teaching and mastery of it can be recognized as a complex and hard task (Cook, 2016). Moreover, non-native countries experience lack of access to native-like pronunciation and corrective feedbacks from native speakers and listeners. In other side, with the advancement of technology and advancement in computer assisted language learning (CALL) programs in language education, creating immersive and virtual environments come true for language learners and teachers to be placed in these environments (Chik, 2014; Chiu, 2017; Lawrence & Ahmed, 2020). To explain it clear, virtual reality assisted language learning can be introduced as an appropriate way for teachers and learners to teach and learn pronunciation because these virtual environments can make the language learning experience in virtual or immersive way.

Based on the mentioned problems in pronunciation in language education and improvement in CALL, this study tried to investigate the impacts of VR based pronunciation training in terms of VRAPT (Virtual Reality Assisted Pronunciation Training) for the first time in related literature. In line with

this goal, following research question was raised by researchers to examine whether VRAPT can improve the pronunciation of young EFL learners.

### **Research Question**

Does VR have any significant impact on the pronunciation of young EFL learners (from pre-test to post-test)?

## **2. Literature Review**

### **2.1. Pronunciation Training through Technologies (From Computer to Virtual Environments)**

After the advent of using computers, computer softwares, as well as mobile applications for language teaching, researchers and linguists have succeeded in incorporating humanoid robots into the realm of teaching of English or Robot-Assisted Language Learning (Alemi, Meghdari & Ghazisaedi, 2014). These robots can influence the many aspects of linguistics or even psychology by teaching a language. For example, Alemi, Meghdari, Ghazisaedy (2015) with the use of a humanoid robot as a teaching assistant in teaching English assessed the level of anxiety and attitude of about 46 female students in English language classes. The result indicated that the use of a robot in the classroom could be very entertaining and enhanced learning more effectively.

VRALL is combination of virtual reality and robot assisted language learning. In fact, linguists use this technology to create virtual and unrealistic environments similar to lessons and training environments (Lin & Lan, 2015).

What is considered as VRAPT in this study is type of classroom in which VR technologies assisted as teacher assistant to improve the EFL learners' pronunciation.

## **3. Methodology**

In order to conduct the current study, the following steps were undertaken.

### **Pre-test Phase**

At the outset of the study, given the fact that the pronunciation variable was assumed to be dynamic and uncontrollable, All the students' (18 girls and boys) initial mastery over pronunciation was measured. This was done through speech recognition browser (SpeechAce) in two categories of vowel /ɪ/ and /i/ and vowel /ʊ/ and /u/ in simple words and sentences with the aim of being close to the native tune-up. Additionally, after collecting this information, the needs and level of the participants were examined through the percentage of native-like pronunciation that the software gave to the researcher; therefore their level was determined for the game because this sounds absolutely essential and games should fit with the proficiency level of learners. The children were monitored by the teacher and the game specialist at Sharif University of Technology and their pronunciation was continually recorded.

#### **Treatment Phase**

In the VR group, students were able to play 10 sessions of ninety minutes with virtual reality and a game designed for this type of training. The beginning of each session, new topics were taught by the teacher and then a game or practice of virtual reality was used. During these sessions, learners were able to learn the pronunciation of different words from different scenarios such as hobbies, colors, fruits, jobs, sports, body parts, toys, jobs, animals, foods, and birthday, etc where each scenario was specifically designed and created in a fully 3D environment.

#### **Post-test Phase**

After presenting the class and receiving 10 ninety-minute-long sessions, the participating learners were tested again through the Speech ace Software to collect the posttest information, and then the results were compared.

### **4. Results**

In order to achieve the purpose of the study, first descriptive statistics was run as shown in Table 1. The students in the posttest ( $M = 6.01$ ,  $SD = 1.08$ ) had a better performance, as against that of theirs in the pretest ( $M = 3.64$ ,  $SD = .81$ ).

**Table 1.**

*Descriptive statistics of two testing times of students ( N= 18 )*

		Mean	N	Std. Deviation	Std. Error Mean
VRAPT	Pretest	3.64	18.00	0.81	0.19
	Posttest	6.01	18.00	1.08	0.25

Moreover, the paired-samples t-tests was run as shown in Table 2 which indicated that there was a significant difference between pretest and posttest of students,  $t(17) = -13.41$ ,  $p = .00$ , with the Cohen’s effect size value being 2.47, which can be considered as a very high effect size.

**Table 2.**

*Paired-Samples t-test*

	Paired Differences		95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Lower	Upper			
Pretest and Posttest	-2.37	.75	-2.75	-2.00	-13.41	17.00	.00

The results from the pretest to the posttest revealed that there was a significant difference between the gains of these students in terms of pronunciation. This efficiency could be attributed to different factors like ‘authenticity’, ‘motivation’ and ‘repetition’. Therefore, VR had the potency to inspire and motivate the participants in order to perform better in pronunciation and they could have better performance in communication. Based on this, VR can make the path of meaningful communication shorter and can be used in language classrooms to help teachers and learners.

