

Recent Trends in Teaching / Learning Foreign Language Using Virtual Educational Technologies

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Abstract

Virtual technology (VT) has shown to have great potential as an educational instrument when it comes to new teaching/learning methods. With the growth and dissemination of this technology, there is a massive opportunity for language teachers to add VT to their methods of teaching a second/foreign language, since students keep showing a specific interest in new technologies. This systematic review of recent research papers aims at understanding if the use of VT/VR is beneficial for the learning of a foreign language or not. Results show that more than half of the articles proved that VT/VR can be used to learn a foreign language. It was also found that teaching/learning was the most evaluated dependent variable among the chosen records, augmented reality was the leading technology used, higher education was one of the least researched stages, and the most used language to evaluate the use of VT/VR was by far the English language. Given the lack of directed investigation, it is recommended to use VT/VR to support foreign language teaching/learning but not entirely replace traditional approaches.

Keywords: virtual reality, foreign language, second language, education, learning.

1.0. Introduction

Different definitions were proposed concerning *Virtual Technology* (VT) which causes it to be somewhat challenging to define. Nonetheless, VT, as well as *Virtual Reality* (VR), is often referred to as a simulation of a three-dimensional *Virtual Environment* (VE), generated by a computer, in which the person can interact with the said environment with, for example, a helmet with an integrated screen. According to Fuchs et al. (2011), the goal of virtual technology in education is to enable sensory-motor and cognitive activities in a person or a group, while they are immersed in a digitally created environment. This can be imaginary or a simulation concerning the real world. It has been already found that some of the challenges related to learning a foreign language are related to teachers and their lack of proper training, lack of proper facilities, lack of oriented materials dependent on the students' needs and reactions towards the errors made by the learners. Thus, with the continuous evolution of technology, the student's attention and interest in learning became even a bigger challenge for educators that are now faced with the inevitable challenge to innovate and develop new learning methods (Krassmann et al., 2020), which has therefore become a priority, helping students to better engage in the learning process. E-learning has been growing over the years together with the digital learning resources, computers and mobile phones, which have all become part of our everyday life. This is even more common in the digital native generation, also known as "Generation Z", which consist of individuals born between 1990 and early 2010 (Alizadeh, 2010). It is noteworthy that this generation has grown up in a digital era where the use of technologies is appreciated and expected. One of the technologies that this new generation is excited about is Virtual Reality (VR). This new medium transports the users to another dimension (the virtual world). Instead of being just an observer, the user becomes an actor in a digital world where they can interact (Parmaxi, 2020) and receive feedback from those interactions. This medium can produce the perfect learning environment allowing students to learn by practicing, acquiring new knowledge similarly to how they would in the real world.

2.0. The Nature of VT / VR in Teaching / Learning Foreign Languages

Given the nature of VR technologies, their use has been very beneficial in diverse areas of application such as education. One of the most critical factors on foreign language education is to be regularly exposed to the language being learned. The primary approach usually consists of listening first for a long time and then be asked to speak. However, it must be ensured that whoever is learning is motivated and relieved of the stress and boredom by using, for example, multimedia content (Lin et al., 2019). VR adapts traditional multimedia content and significantly raises the user's level of immersion, particularly at the level of visual perception in learning.

VT systems in the sphere of teaching and learning foreign languages can be classified into three major categories: non-immersive, semi-immersive and immersive (Wu, 2019). Non-immersive, sometimes designated desktop VT, is the least immersive and least expensive of the VR systems and places the user in the three-dimensional VE and allows interaction

manual search was performed on different search engines and using citations identified manually in the selected articles that were not in the original query results. This step also included the use of Google Scholar that, although deemed inappropriate as a central search system, can be considered an additional resource to make sure that relevant papers that fit this SR's scope were also included. After this process, the final number of full-text papers was 30.

The scoring of the 30 final papers for full-text analysis revealed an average score of 2,3 on the overall paper quality. Out of all the papers, 3.3% had the lowest scoring possible, while 33.3% had the highest possible rating. A graphical representation using a word cloud (Fig. 1) has revealed that the keywords around the VR and foreign language education theme of the researches examined are learning, virtual, language, reality, education, game and immersion.

Most studies analyzed used face-to-face teaching as a mode of instruction (80%), while a tenth of the papers did not mention what mode of instruction they used. Table 2 shows a synthesis of the factors identified.

Table 2. Modes of Instruction

Modes of instruction	Percentage
Face-to-face	80%
Not informed	10%
Blended learning	6,7%
Gamification	3,3%

The first stage of tertiary education was the educational stage used in the majority of the studies - 40.5%, occurred during the start of a specific graduation / with undergraduate students. The post-secondary non-tertiary education (start of generic graduation in countries like the US) represented the second most covered stage with 14.3%, while the second stage of tertiary education (postgraduate, graduate students, PhD) represented 11.9%. Five of the studies did not provide information about the educational stage. Table 3 shows a synthesis of the factors identified and their percentage. Some papers analyzed covered more than one educational stage.

Table 3. Educational Stages

Educational stages	Percentage
First stage of tertiary education (BA)	40,5%
Post-secondary non-tertiary education (colleges, lyceums)	14,3%
Second stage of tertiary education (MA)	11,9%
Not informed	7,1%
Sum of others	26,2%

Results show that the vast majority of foreign language education studies had a positive impact and improved students' learning. Based on the findings, the VR method reported significantly higher perceived enjoyability and effectiveness and not only on the student's linguistic abilities but also on their cognitive abilities as well. Likewise, the users registered better focus on the assignment without external distractions; the integration of avatars in the learning materials can improve English learning efficacy; increase in motivation or willingness to learn was displayed and the enjoyment that stems from the feelings of presence and immersion afforded by the novel technology. Additionally, weaker learners have the freedom to revise and upskill themselves at their own pace, as long as they have access to the system.

When rivalling VR with conventional teaching practices, the participants stated that VR is more enjoyable, it was proven to be significantly better than using solely conventional teaching methods. Even in Chen's (2016) work where it recorded higher initial test scores using the traditional method, recalling the words a week later was significantly higher using the VR. Not only that, according to Gomez (2020) paper, the kinesthetic component also plays a substantial role in the retention of vocabulary. The rate at which participants from the VR kinesthetic group forgot the words after a week was significantly lower compared to the text-only and VR non-kinesthetic conditions. Nevertheless, studies like that of Chang et al. (2012) show that VR does not always claim better learning. Thus, even though the participants showed a significant improvement in the sense of cultural involvement, there is no conclusive evidence that the language learning outcomes improved.

5.0. Conclusion

In this SR it has been found that virtual environments are widely used as indeed truly potential didactic territories for foreign languages learning and teaching. Furthermore, these highly valuable didactic environments comprehend an important number of learning-related strategies and realities, provides freedom in the development process and several valuable and applicable features for foreign language education, namely the very active participation, high interactivity,

navigation and interaction with avatars and even recreation of circumstances and places of cultural importance. We also came across the fact that, regarding the VE implementation, Unity was by far the most prevalent game engine found in the examined papers as it allows rich assets store, popular programming languages and also easy porting to PC VR HMDs, which according to this investigation are the most used VR technology by a significant margin. Based on the findings, VR for foreign language education is an excellent strategy. One should take advantage of this as it had a positive impact and improved students' learning, especially when rivalling VR with conventional teaching practices was proven to be significantly better. Also, participants stated that VR is more enjoyable. This made it possible to summarize the findings in two key main conclusions:

- The relation between VR and foreign language learning is quite positive, particularly compared with conventional pedagogy practices.
- The relation between VR and the users' motivation and satisfaction is also quite positive.

Therefore, these findings present the VR as a highly rich and potential didactic tool for foreign language learning and teaching, which may well surpass the efficiency levels of learning and teaching a foreign language as produced by conventional and traditional methodologies. Also, the high levels of motivation and satisfaction shown by users when using VR certainly contribute to a significant increase in the very levels of learning efficacy and success a student may attain as he or she will be more committed to the activities exercises suggested. Therefore; these two aspects are of great importance and provide relevant conclusions that educators and language researchers may want to consider. Nevertheless, even with this positive evidence of VR setups, there are important points that deserve to be addressed. Regarding the sample of studies, several more studies should be conducted in virtual reality and foreign language education. Concerning the gaps in the literature, future research should explore much more comparisons between VR and other forms of instruction, including, but not limited to, other types of conventional teaching techniques, video, photos, different setup types, et cetera. Additionally, one thing that all the analyzed studies lacked was the consideration of other aspects of multisensory immersion. Studies with these features should be conducted to check for better results considering the incorporation of all multisensory stimuli increases users' involvement, thus leading to more attention devoted to the VR environment.

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