



# A Simple Blueprint for Using Oculus Rift in the Language Learning Classroom

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## Abstract

*For the past three years, I, as the director of the Cyprus University of Technology's Innovation Centre and a language lecturer and academic member of the Cyprus University of Technology's Language Centre, have been experimenting with various Virtual Reality systems in order to enhance the language learning environment and make the language learning experience more effective. Although, this innovative technology has a lot of potential to transform and revolutionize our 21st century language learning classroom and the learning environment overall, Virtual Reality is surrounded by a complex technology that requires the user to have specialized knowledge of the hardware and the software that he or she is about to use. A lack of such knowledge can turn an exciting VR experience into a frustrating nightmare for the language lecturer. Furthermore, it will also fail to become an effective technological learning tool for the language learner. This lack of knowledge has discouraged many language instructors and instructors overall to adapt VR as a learning tool in their courses [1]. Taking this issue into account, I decided to create a simple manual where all the technical and non-technical issues a lecturer might face when trying to set up and use an Oculus Rift VR system for a language learning class. This paper focuses on the simple errors and pitfalls that can be avoided prior to introducing and using the Oculus Rift VR system in a language learning classroom or course. It could also function as a simple blueprint for training language lecturers in order to use it effectively and stress-free.*

**Keywords:** *Virtual Reality, ICT, Teacher Training, Learning Approach, ESP*

## 1. Introduction

As a language educator in a tertiary education environment for the last 12 years, I am continuously looking for new ways to enhance my language learning classroom with new technological tools in order to create a more interactive and creative learning environment to keep students engaged and improve their language skills. One new emerging technological device that has permeated our classrooms in the last couple of years is Virtual Reality. Even high immersive VR systems such as HTC VIVE and Oculus Rift have become more accessible as prices have declined[2], the evolution of VR technology made the immersion into the digital world almost flawless and more VR applications are available that can be exploited for language learning purposes with new applications being developed[3]. These developments made VR more appealing as it would make my English for Specific Purpose (ESP) classroom more interactive. The strength of VR technology lies in the 3D computer generated world in which a person can immerse him-or herself and interact in it [4]. However, the high price and complex technology surrounding high immersive VR systems has kept them out of the mainstream classroom [5]. Regardless of these aforementioned issues, I purchased and decided to implement a high immersive VR system in my ESP language classroom. Unfortunately, I underestimated the various technical and non-technical pitfalls, which I would encounter during the set up and usage of the VR system, as it led to student and educator frustration, and a lot of unexpected class interruption due to technical issues. All these challenges raised my skepticism regarding the usage of VR in the classroom, but it was also the catalyst in recording all the pitfalls connected to the VR. The aim of this paper is to offer solutions to potential challenges and prepare language educators, who might be interested in utilizing the high immersive VR system Oculus Rift in their language classrooms as the benefits of VR outweighs the pitfalls.

## 2. Benefits of VR in Education

The question might be asked by many educators why they should consider using a demanding technological tool like VR in their classrooms. Literature provides some compelling evidence regarding the potential benefits of VR when it is used effectively. Firstly, VR helps to increase students' motivation by providing an immersive and engaging experience [6]. Studies have also reported that VR improves students' academic performance[7]. Furthermore, VR promotes students to become



more active learners as the VR systems allow students to learn more autonomous and encourages them to utilize their decision-making skills[8]. Language learning studies also revealed that VR technology increased motivation in class and out of class. [9]

### **3. Why Oculus**

There is a wide variety of VR systems available in today's market. However, there are only two high immersive VR mainstream systems available at the moment. The first one is the HTC VIVE, which is produced by HTC and the second one is the Oculus Rift which was taken over by Facebook. Both systems are high performance devices which allow the user to have the best immersive experience.

[10] The Oculus was chosen as it was sold locally, and its price tag was more affordable than the HTC.

### **4. Data collection**

Data was collected during the fall semester 2018 and spring semester 2019 during three different occasions. The first data collection took place during the VR introduction sessions at the Cooperative and Interactive Language Learning Centre (ReCILLC) of the CUT Language Centre. The second data collection took place at the CUTing Edge an American Space innovation center during a VR research project regarding ESP. The final data collection was at the CUTing Edge during the LC' s VR workshop. I observed and recorded all the challenges and how each challenge was solved in a journal.

### **5. Examining the pitfalls**

The pitfalls and issues that an educator could face during the entire process of the Virtual Reality usage and experience will be split into three categories: the practical, the technical and other critical issue.

#### **5.1 The practical issues**

Two of the most important practical issues an educator might face when setting up the VR equipment is the amount of space that is needed and the space's layout for efficient and safe usage of Oculus Rift. In order to operate the Oculus Rift a powerful computer is required and a monitor so that you, the educator can follow the process and progress of the VR user. Furthermore, the Oculus Rift headgear is connected to the computer with an HDMI and USB cable. Moreover, two motion sensors are also connected to the computer in order to track your position. Finally, during the VR experience the user holds two controllers to interact and control the movements in the virtual reality world. This requires adequate space for equipment so users can move the controllers and body freely and safely.

Having inadequate space or layout will inhibit the VR experience. Therefore, classrooms or lecture halls where Oculus Rift VR will be implemented should be measured and cleared of any obstacles that would inhibit movement.

#### **5.2 The technical issues**

The technical issues are usually the issues that discourage instructors from using Virtual Reality in the classroom as specific technical skills and knowledge is required to operate it effectively.

- a. The setup of the computer hardware and connecting the Head Mount Display (HMD) correctly and adjusting it in order to allow the user to experience the immersion effectively.
- b. VR systems and VR apps need updates and usually you do not know if updates are available or needed until you are about to use them. Neglecting to perform regular required system updates can cause significant lesson delays which lead to student disengagement from the lesson and causing frustration among the language instructors and students. The solution to this issue is to check for any updates available and to give yourself enough time in order to update the system if necessary, before the VR usage.
- c. Language instructors should also check if the VR App that they have chosen to use in class does not need any internet connection. Oculus Rift needs a stable internet connection and WIFI is not recommended.



- d. The various hardware and software that are coming together in order to create the Virtual Reality learning experience can be overwhelming for one person. You might have all the knowledge to set up and execute the Virtual Reality experience; however, it can be quite difficult to handle it alone as various questions from students and technical issues might arise during the experience. I and my research partner had one to two student assistants that were familiar with Oculus in order to address any technical issues. Thus, allowing the instructor to focus on teaching and facilitating students' learning needs and tasks
- e. At the moment, there are not many educational applications available specifically for language learning. However, that does not mean that you cannot choose various other Apps and use their content for language learning. In order to use them effectively each App should be researched and tested to learn about the functionality of the particular application that you have chosen in order to be integrated successfully into your curriculum.

### 5.3 Other critical issues

One of the common side effects that VR user might develop is motion sickness. Some of the motion sickness can be contributed to the latency of the VR system [11]. However, during a VR for ESP research I and my research partner noticed that students were turning their heads too quickly in various directions in order to take in all the information that the virtual environment enabled them to see and experience.

Some students even showed some fear when they put on the HMD as they feared the unknown. In order, to minimize these issues and create a comfortable learning environment we organized a pre-VR usage seminar where we introduced each individual part related to the VR system. Furthermore, we also showed the students how to move their head when navigating in the virtual world so that motion sickness can be minimized.

## 6. Conclusion

Effective high immersive VR implementation into a language learning classroom can be achieved if adequate training and assistance in combination with a blueprint of how to avoid or mitigate VR challenges is provided to the educator. By having all that, I strongly believe that a language educator is able to provide students an unequivocally vivid learning experience with a high immersive VR system such as the Oculus Rift.

## References

- [1] Huang, H. M., Liaw, S. S., & Lai, C. M. (2016). Exploring learner acceptance of the use of virtual reality in medical education: a case study of desktop and projection-based display systems. *Interactive Learning Environments*, 24(1), 3-19
- [2] Martín-Gutiérrez, J., Mora, C. E., Añorbe-Díaz, B., González-Marrero, A. (2017). Virtual Technologies Trends in Education. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(2), 469-486. <https://doi.org/10.12973/eurasia.2017.00626a>
- [3] Bonner, E., & Reinders, H. (2018). Augmented and virtual reality in the language classroom: Practical ideas. *Teaching English with Technology*, 18(3), 33-53.
- [4] Wei, W., Dongsheng, L., & Chun, L. (2013, September). Fixed-wing aircraft interactive flight simulation and training system based on XNA. In *2013 International Conference on Virtual Reality and Visualization* (pp. 191-198). IEEE.
- [5] Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education*, 70, 29-40.
- [6] Li, S., Chen, Y., & Vorvoreanu, M. (2015). A pilot study exploring augmented reality to increase motivation of Chinese college students learning English. *The ASEE Computers in Education (CoED) Journal*, 6(1), 23.
- [7] Lai, C. (2017). *Autonomous language learning with technology: Beyond the classroom*. Bloomsbury Publishing.
- [8] Lindgren, R., & Johnson-Glenberg, M. (2013). Emboldened by embodiment: Six precepts for research on embodied learning and mixed reality. *Educational Researcher*, 42(8), 445-452.
- [9] Holden, C. L., & Sykes, J. M. (2011). Leveraging mobile games for place-based language learning. *International Journal of Game-Based Learning (IJGBL)*, 1(2), 1-18.



- [10] ClassVR. (2019, February 7). Retrieved June 10, 2019, from <https://www.classvr.com/download/whitepaper-a-guide-to-ar-vr-in-education/>.
- [11] Weech, S., Kenny, S., & Barnett-Cowan, M. (2019). Presence and cybersickness in virtual reality are negatively related: a review. *Frontiers in psychology, 10*, 158