

Using Virtual Reality to Help Chinese Students Learn English

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Abstract. At this stage in society, countries worldwide have realized the importance of technology and its effect of it on the development of countries. In China, instead of using immersive techniques in education systems, schools still choose to use textbooks and whiteboards to teach children. This results in a lack of focus from students and an incapability to study and learn effectively. To fix this problem, Virtual Reality is put forth as an immersive and engageable solution. To analyze how well VR is affecting students, this article discusses the importance of VR usage in China and how that will help improve the quality of education for students, highlighting different ways VR has been benefiting other education systems around the world and how more countries have been implementing this into their schools. This article also discusses the current implementations of VR in Chinese education systems and how different programs that have been developing are affecting the efficiency of learning and interactivity among students positively.

Keywords: Virtual Reality, VR, China, English Education, Development.

1. Introduction

In recent years, English learning in China has become increasingly popular among high school students. The problem that people face is that English high schools teach are purely as a course or subject and are only used for examination purposes, rather than being able to communicate with native speakers or finding a job in the United States. Immersing yourself in a language's native culture is frequently the most effective method of language learning. You can pick up new words quickly because of the frequent exposure and communication pressure [1]. Even though the focus of this study is on Chinese educational systems, it seeks to address worldwide issues. Most students are uninterested in dry teaching and learning, the research claims. Those students are quickly side-tracked if the material being delivered in class is dull and simple [2]. The amount of English education that is provided in China currently is way below the standard of a native speaker. Many high school students around China have hopes to attend university in the United States but have their hopes crushed when they realize they lack the language fluency and requirement to be able to qualify. Since not enough native English teachers are in China to support and fully help with this issue, one solution that has the potential to overcome this problem is by implementing the usage of Virtual Reality (VR).

While many people might not be familiar with Virtual Reality (VR), it has become a more and more popular option for education in recent years. Wired claims that the Oculus Rift, a headset that was introduced in 2012 and attached to a monitor to immerse the user in a 3D world, was the catalyst for the trend. Since its inception, virtual reality (VR) has changed how we interact with video games as well as the entire digital world, including the usage of VR in education [3]. Studies have shown that students learn better when they do not realize that they are being taught. Using a game or a simulation to help students experience the language would be the most effective way to learn. Already in the United States, Virtual Reality (VR) has been brought to classrooms for modified learning. Since this technology began to advance in 2012, it has become increasingly practical for schools to use Virtual Reality (VR). VR has entered the classroom thanks to new tools like 360-degree cameras and programs like Google Expeditions, giving both teachers and students new ways to approach learning. The usage of virtual reality in classrooms is anticipated to grow significantly over the next five years, according to the tech website Built In [4]. From the first Virtual Reality (VR) headset to the new Facebook Oculus, this technology has been getting more advanced by the minute, waiting for people to implement it. Virtual reality educational games are evidently intended to teach children new information in an inventive way, according to studies. Video games that use virtual reality teach

players how objects function as well as how to express themselves. Children are drawn to play VR games because they make it exciting to perform several chores. The learning goal is reached through VR educational games in this mode as efficiently as possible [5].

Up until recent years, learning languages have always been done through classrooms and teaching, but with the inclusion of Virtual Reality (VR), students have the capability to interact with their surroundings and be able to fully immerse themselves in the simulation to understand it better. High school students struggle to concentrate in class and focus their attention, but VR aids and boosts learning by allowing students to interact with their curriculum and experience it in multiple ways. Students are better equipped to understand complex topics since they can see what they are learning rather than just reading about it [6]. China is the nation that has installed VR in classrooms across the nation at the fastest rate, making significant investments in the virtual reality business through local and federal governments [7]. For example, when students are placed into a busy street in New York, they can read all the signs, the store names, and the billboards posted all around them, meanwhile being able to experience what it would be like walking down the streets of New York. Not only are students learning what pizza or milkshakes are, they can also see interactions and what everything looks like. Teachers can decide to exclude any pedestrians or other objects from the simulation that can distract pupils in order to promote learning more effectively. Regardless of the nation you are in, Covid-19 has inspired us all to reconsider how work and home are related as well as the advantages of working remotely [8]. Breaking the impression that traditional education offers people, using virtual reality technology as an example, may effectively apply diverse learning, foster students' practical ability and innovative capacity, and also can strengthen their autonomous learning ability [9]. Huang stated that although there is still work to be done to build technologies that would reduce costs and enhance the user experience, "we are hopeful that we can actually revolutionize the present paradigm of education" [10]. The main goal of this research paper is to discuss how Virtual Reality (VR) can better enhance high school students who want to learn English in China.

2. Virtual reality and Chinese education

2.1. Importance of VR usage in China

Currently in China, there are a vast majority of people who want to go to the United States but do not have the language requirements to be able to effectively communicate with native speakers. Traditionally in China, the substantial study load and the use of scores as the sole criterion for outcome evaluation provide challenges to the status quo of traditional Chinese education. However, it does little to foster children's capacity for creative thought. Additionally, there is still a need for effective educational tools. Consider Beijing, where there are hundreds of thousands of instructors but fewer than 1,000 stunt teachers, with half of them already retired. In these situations, the one-teacher-to-many-students educational approach and the technique of never-ending homework both contribute to the worn-out and ineffective state for both teachers and pupils [11]. To help with this, the use of Virtual Reality (VR) has been implemented in parts of China to help with this barrier and help students learn fast and effectively. Since China's government has such a significant focus on education, it is the perfect canvas for the Virtual Reality (VR) market. In 2017, the VR market in China grew by 164% to RMB 16 billion (\$2.5 billion). The market for VR education is also expanding quickly [12]. The new white paper from Strategy Analytics and Huawei, titled "Education and Training Ignite the VR Market: A Win-Win Opportunity for Telecom Operators and VR Players," demonstrates how VR's transformative technology is influencing education and training and the part that operators can play in accelerating the adoption of technology for the benefit of learners and trainees [13]. Report author, David MacQueen, said, "VR training and education is literally changing the way people learn, by delivering lessons and training that are either not practical or even possible in the real world.

By incorporating personal experience into teaching and education, virtual reality (VR) enhances memory retention. Even though the market for VR education is still in its infancy, there are

encouraging signals of market expansion, including the growing investments that governments—particularly the Chinese government—are making in ICT for education. In the upcoming years, this market will continue to expand because of the increased support from governments and other institutions in both China and around the world. Virtual reality (VR) facilitates more effective visualization, boosts cooperation, improves educational interaction, and strengthens students' practical understanding while communicating globally. As with any new technology, research and development must take place at the same time as maximizing output and reaping all its benefits. It should be mentioned that if not properly supervised and introduced with a guided program, virtual reality does somewhat limit human interaction and can lead to isolation in younger generations. However, with the right research, advancements, and safety measures, VR's advantages surpass its drawbacks. With the help of VR technology, graduates' skill sets can be transformed and made immediately applicable. For students, learning through play, first-hand experiences, and application of knowledge results in a more enticing environment and significantly stronger skill sets [14].

Public schools are a sizable market for businesses. According to one of the company's founders, "the hardware quality is guaranteed so the product that doesn't work may be brought immediately to the factory for repair, avoiding significant after-sales maintenance and operation." However, there is not enough funding for public schools, particularly K12 institutions, to adopt the new technology. They need money from somewhere else in order to buy VR hardware. Teachers who use technology in the classroom must also decide whether to use virtual reality (VR) products, how to use them, and to what extent VR products may genuinely enhance the effectiveness of teaching and learning. JMDedu once visited a VR lesson at a high school in China that is affiliated with Renmin University. The head of the teaching and research group, Zang Chunmei, highlighted the benefits of VR application in several fields of natural science. However, she acknowledged that "teachers won't use them if they need to invest a lot of time but only obtain limited outcomes" in terms of routine teaching activities [15]. While currently, China might not have the capability to apply Virtual Reality in all the schools around China, they envision that through enough technology development and funding, VR technology can be much more advanced than it is now, taking over classes with no interaction and engagement.

2.2. Current Implementation of VR in China for Education Systems

While places like the United States, Canada and United Kingdom have all started to implement Virtual Reality into their daily education, China has yet to enter to transform their education. The government has slowly begun to realize this and has started to promote a revised curriculum consisting of the usage of Virtual Reality, in the context of Chinese history and economy. While the Chinese government has inspired many schools to reform their education systems and implement this new design of learning, many teachers, parents, and students have resisted against this reformation [16]. They believe that the long-established style of Chinese learning is based purely on the results of examinations and tests. For the past few decades, as the Chinese population grows over 320 million, the only fair and unbiased solution to differentiate the people are through examinations and tests [17]. Because of this reason, China has had a difficult time transitioning all students to adapt to a new method of teaching and learning that is deviated from the normal format of education.

Currently in China, there are few programs where Virtual Reality has been fully implemented. However, the government is encouraging different education groups in starting to transfer learning into VR. While the language courses have not been touched on for VR in China, other subjects have begun to use VR as an interactive tool. A group of graduate students led by Fabian Hadipriono Tan were studying the best way to model The Great Wall of China. While their first instinct was to utilize SOLIDWORKS, construction models, and 3D static images, they had the idea of implementing VR technology to get a more holistic view of the Great Wall in order to better structure and design the model. While the previous models of the Great Wall covered all the major parts and details, there are many places where the wall had to be generated based off rendering images since certain parts of the Great Wall were not photographed. Because of the usage of VR oculus in this graduate course,

students were able to replicate almost all details of the Great Wall in the model. What is more was that not only did students recreate a better model of the Great Wall than before, but all students also reported on having a positive impact by using VR technology and admitted it to be a major tool to assist them in capturing all parts of the Wall [18]. This form of E-learning with the help of Virtual Reality (VR) technology, which may create a suitable human-machine interaction, has made the use of VR technology in education significantly higher. The pattern that combines VR with e-learning technology not only enhances teaching methods but also strengthens students' analytical and problem-solving skills. [19]. While VR has yet to be implemented in helping students improve their English, this shows promise in the effectiveness Virtual Reality technology can bring. To ensure the engagement and immersion of students, putting students in a location in the United States, with the ability to travel anywhere they want in a virtual space can not only interest students in wanting to learn English, but also to gain experiences and develop their own perspectives.

Another implementation of VR technology can be shown through a project of gesture-based match-to-sample instruction with Virtual Reality. This project, targeted specifically towards children with autism spectrum disorders wanted to help these students improve social skills and be able to communicate effectively and naturally with people the same age [20]. Another project targeted for children with autism using OpenSimulator, the researchers constructed a desktop VR-based learning environment that supports social-oriented role-play, gaming, and design. They gathered seven 10–14-year-olds for this experiment. After over 20 hours of experimenting, data was collected from the results to be analyzed on the effectiveness of VR on social skills of autistic children. From the baseline to the intervention period, participants showed improved levels of successful social skill performance, according to the findings. The results provide early support for the use of a VR-based environment for teaching social skills to children with ASD [21]. The same study that looked at the effectiveness of teacher-implemented instruction and computer-assisted instruction found that all students acquired the target matching skills with generalization to related untaught skills and maintained acquired skills at a high level for up to 5 weeks under both CAI (Computer Assisted Instruction) and TII (Teacher Assisted Instruction). Both TII and CAI have equivalent efficacy. However, CAI beat TII in terms of the number of cues provided and the length of the lesson sessions. As a result of CAI, student involvement in independent learning rose [22]. The usage of VR, while not only beneficial to children in school, but also greatly helps students with mental disorders. Using this technology on other subjects and English learning can greatly improve students' focus on learning and the effectiveness and quality that students will be able to learn. Even though this technology has not yet been implemented, education systems around China should start realizing the importance of Virtual Reality and act.

3. Conclusion

In China, education systems have not yet been fully developed to facilitate effective English teaching. The teacher to student ratio in English teaching in China is more than 1 to 1000, making effective teaching impossible to achieve. Because of this, many students must face the reality of studying English by themselves and struggling to determine how to learn the language. The biggest challenge to people not learning English properly is the lack of variety in educational choices. With the implementation of VR, students can fully immerse themselves into the surroundings of American culture to better learn the language. Being able to immerse students into something new and interesting is the best way for them to not only learn but want to continue to learn English and excel at this subject beyond what is required and asked for just for a school examination. Not only can VR technology help students to learn more effectively, but it can also help teachers relieve stress on teaching and can assist them in keeping students focused. Not only can VR save money for actual travels or trips around the world, but students can also experience culture right where they are, and make students want to learn English rather than making it a task. While current programs are helping students in education, it has only been implemented in few places and with a limited number of

resources. This is a great start to helping education systems in China, and through development in VR technology and the familiarity of the usage of this system, schools all around China can implement this new education strategy to not only support students to become more engaged in their everyday learning, but also to assist teachers in a much more effective and less stressful teaching environment.

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