

# Virtual Reality Applications in Education

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## Abstract

Virtual reality (VR) is a computer-based simulation technology that enables users to interact while experiencing oneself in a virtual environment. Virtual reality (VR) combines three-dimensional (3D) objects combined with hearing and vision to create effects for users as if they were in a virtual environment. It should be noted here that the use of Virtual Reality is very effective in the field of education. Given that a user can observe things in cyberspace from all angles, including above, below, to the left, right, back, and ahead, the 3D coordinate system used in virtual reality (VR) is based on the Cartesian coordinate system.

Keywords: Virtual Reality (VR), Education

## 1. Introduction

Advances in technology in recent years have introduced new forms of learning. Mobile apps are one of these new forms as smartphones and tablets become part of the everyday culture of students. The learning process can be challenging for students because it requires a lot of effort, so you need to be motivated to learn [1]. Virtual reality will be available in homes in 2016 thanks to consumer electronics like smartphones. Modern entails integrating this technology into the classroom, accommodating various learning preferences, and streamlining the teaching and learning process [2], [3].

Virtual technology is also at the cutting edge of technology advancements. recent improvements have made this technology more accessible and students with disabilities can now participate in virtual activities [4]. However, these advances also benefit the average student by creating a more accessible experience, such as using a mobile device or accessing a virtual space upon registration. on a distance course. recent improvements level, the benefits of using virtual technology :

- Virtual technology increases student engagement and drive. Students feel like the protagonists as they explore 3D models that create immersive experiences and enhance their learning experiences.



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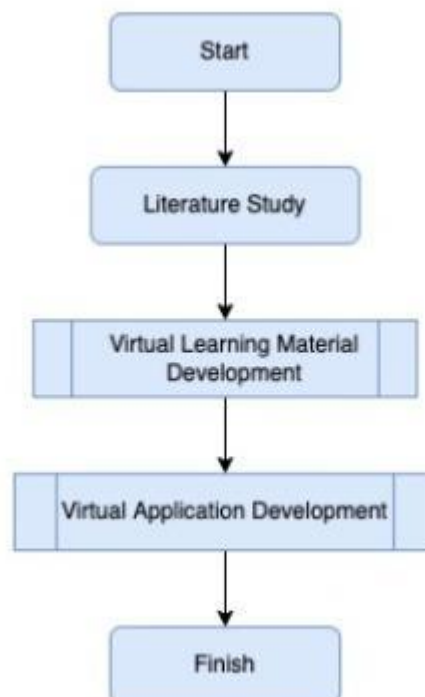
- *Constructivist learning methodologies are made possible by virtual technologies. Improve your learning. You can now use virtual technology[5]. Recent technological advances have made VR/AR more accessible on game consoles, tablets, and cellphones. Students can now access VR content without the need for complex hardware through well-known web sites like Youtube. Additionally, students with disabilities can more easily access virtual environments and interact with virtual objects than other students.*
- *Virtual technology offers more interaction than regular learning materials. Using VR/AR, students feel immersive when interacting with concepts, objects, and processes using headsets, sensory gloves, and motion sensors[6]. This immersion allows you to experiment with environments with realistic objects that would otherwise be inaccessible.*

## 2. Research

Method Methodological data are the methods researchers use to solve problems. A literature review looks for theoretical references related to a discovered case or problem[7]. Software development models are used to develop learning tools based on virtual reality technology.

### 2.2 Literature Review

Virtual Reality (VR) now no longer has the capacity to attract us into new worlds, however it additionally has the ability to enhance the fineness of schooling through unlocking extra mastering cap potential than ever before[8]. Real time interactive photos with 3-dimensional models , mixed with display era which can offer customers an enjoyment like coming into a digital global and being capable of managing e-mail[9].



Picture 1. Virtual Reality Diagrams

Virtual fact immediately produces a simulated surroundings just like the actual global that is created with the intention of manufacturing and enjoying this is just like the actual global. So in

a digital fact, customers can discover the digital global and on occasion also can engage with items within the digital global[10]. The cap potential of VR to beautify mastering cap potential and scholar engagement can not be underestimated. In a global world this is more and more primarily based totally on enjoyment, the fee of VR continues to grow. Virtual Reality will surely now no longer take over the general foundation for schooling, however instead supplement it. This is a powerful tool[10].

### **3. Findings**

In recent years, in particular, in 2016, significant progress is made to develop an embarrassing virtual device, and has led to a new thinking method for the possibility of use this technology in education [11]. Virtual reality will complement it rather than definitely making a common foundation for education. This is an effective tool, and virtual reality is based on vision, hearing and touching. FREINA & OTT emphasizes complete immersion for complete immersion in a virtual environment, but all five senses must be involved, but focus must be in observations and hearings[12]. VRs for education can share emotional experiences that allow users to share emotional experiences and will be difficult to experience in the classroom[13].

#### **3.1 Problem**

Virtual reality is a powerful and exciting technology that aims to imitate the real world in a computer atmosphere engaged in all emotions. Various types of virtual realities such as digital heritage, educational simulation[14], virtual concerts and others have been created. Compared to traditional graphics studies, virtual reality technology emphasizes interactions between users and systems. You can enter and test your digital environment in real time[15]. There is a section that is often called virtual tours because virtual reality, virtual reality, virtual navigation for the landscape present in the real world[16]. Virtual tours are a technique for simulating a place, usually using video or images. It can also be developed on a panoramic photocarrier that provides a continuous field of view [17]. All of these technologies are used to develop virtual tours based on computer-generated virtual reality to create virtual world experiences. use of virtual reality technologies to the education field Technology-based education has begun to be applied in the education field itself. There are many types of skills that begin to enter the educational world, such as virtual reality technology. This technology can be used to support training and to increase student learning efficiency. Application of virtual reality technology can be used in mathematical learning processes related to the subject of geometry discussion [18].

#### **3.2 Research Implementation**

Especially for students in schools the use of VR is still rare, but it is predicted that in the future the use of VR at various levels of school education will be commonly used. Virtual reality has several benefits for education, including:

1. Technology that uses 3dimensional graphics, so it seems as if the user feels the sensation of interacting with the real environment
2. Helping students visualize abstract learning materials to be easier to understand
3. As a learning media that is more interesting and fun.
4. Increase students interest in learning process
5. Increase students' learning motivation
6. Assist students in doing practice
7. For teachers, , technology for virtual reality can be used as a middleman to speed up the distribution of information and as a teaching tool to improve the efficiency of student learning.

Virtual Reality technology provides tremendous benefits in our lives, for example in the fields of military, aviation, medicine, sports, etc. In addition, Technology for virtual reality has also started to emerge in the field of education[19], [20]. We hope that this technology can be used as a new breakthrough in teaching and learning activities and improve student learning.

### **4. Conclusion**

Technology will continue to advance with the times. Technology was created to facilitate all activities performed by humans. There are so many technologies that continue to evolve today, one of which is virtual reality technology. Of course, with this technique it would be easier to model a real or abstract environment as a three-dimensional field. Virtual reality technology brings tremendous benefits to our lives, be it military, aviation, medical, sports, etc. Virtual reality technology has also begun to develop in the educational field. We hope that this technology can be used as a new breakthrough in teaching and learning activities and improve student learning.

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