

# Virtual Reality in Healthcare and Education System and its Challenges

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**Keywords:** Virtual Reality (VR) in Healthcare and Education System; Benefits of VR in Healthcare and Education; Challenges with VR.

**Abstract:** The aim of this study is to highlight the benefits of VR in Education and Healthcare and the challenges comes with this technology. VR is a tool which is used in many fields and it plays an important role in Education and Healthcare. VR has advantage as it increases its processing power and decreases its cost which attracts people towards it. No doubt most people are familiar with gaming in which VR is used but there are many industries which already adopt VR. It was invented around 1960. The exact origin of VR is not confirmed. The VR mainly provide devices to the industries like medical, military training, automobile designs from 1970 to 1990.

**Introduction:** The word VR is made up by combining two words “Virtual” and “reality”. The meaning is conceptually reality, through the use of technology it leads to an experience near-reality. VR creates an artificial world which quit looks and experience like real world. Via VR the user can look up, down, walk and move as they were actually there. Healthcare and Education both plays an important role in our society. Past few years shows how the usage of VR in many sectors repeatedly increase. The below figure shows in in which sector VR uses the most. As gaming with VR is very popular among people, game is the sector where VR contributes very highly than any other sector. The healthcare and education sectors comes in second number where VR contributes equally both sector with 41-41%.

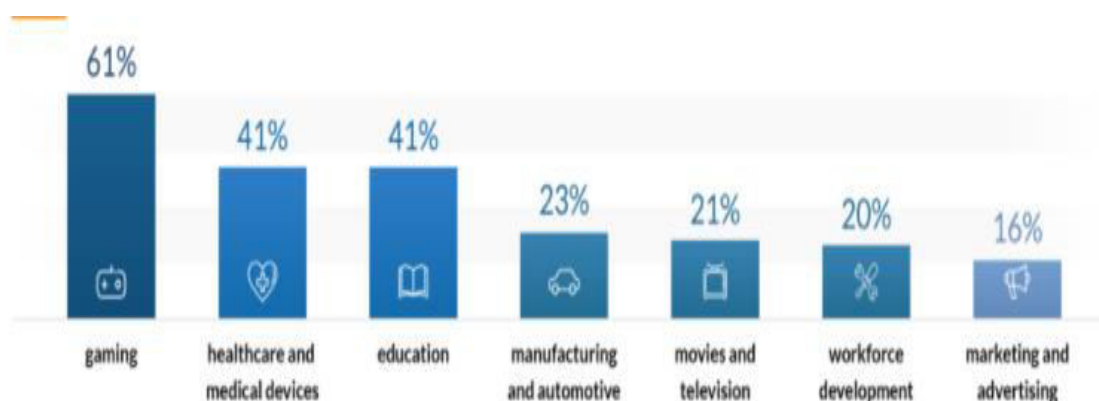


Figure.1 Sectors uses VR

## 1. Role of VR in Healthcare

VR is getting popular with every passing year past few years are the witnessed. VR is not restricted in a particular field. Healthcare is one of the biggest industries which adopts VR, It uses in Robotic Surgery, Phobia treatment. Skill Gaining etc. However, surgery, healthcare devices etc. are slowly gaining popularity but slowly it increases the adoption by many healthcare and people also starting accepting it. VR uses in medical training for both doctors and students, for patient treatment. It is not only beneficial for doctors but also for patients, it allows patients to be taken through their surgical process step by step.

## 2.Applications of VR in Healthcare are:

- 1) Medical Education: VR technologies are being used in medical education and training. It provides students to practice complex and reduces risk by providing life-saving procedures. And improves their skills. Many big VR-based organizations are developing 3D-degree video and 3D interactive content to develop the best learning tool for students and physicians which helps them to learn in a best way.
- 2) VR in Diagnostic: VR is used as a diagnosis tool. Such as MRI/CT scans are helps to doctors in diagnosis. It eliminates the painful experience for the patients during diagnosis.
- 3) VR Mental Illness Treatment: Exposure therapy is a procedure which is used for treating different mental health issues. Exposure therapy providing low cost, flexible and low risk level for mental health issues. It is also useful in treating anxiety and panic attacks, it is a new and good way to keep the body relaxed and calm.
- 4) VR in Surgery: VR in surgery is very popular among physicians. Robotic device is used for surgery, which is controlled by the physicians. This process decreases the time and risk related with the surgery. VR plays an important role in surgery. Force feedback is a feature that helps surgeon to measure the force need to applied during the surgery such as dentist etc. VR plays an important role in surgery.
- 5) Human Simulation Technique: This process helps doctors and nurses and medical professionals to interact with other. They can join different training sessions and able to interact with a patient but only in 3D environment.
- 6) Other fields: VR is not only limited to a specific field it helps doctors, nurses and medical professionals in many ways such as Dentistry, Nursing, Phobia etc.

**Figure 2.** VR in Surgery



**Figure 3.** Using Headsets in Healthcare



### 3. Education with VR

VR is a new era of personalized learning; it has a bright future in education sector. VR allows students to experience ancient times and different destinations across the world Without leaving the classroom. 360VR is a type of VR which is most commonly used for Education. In this type a special camera and equipment use to capture the real world Locations. VR content can be view with the help of VR headset or can be projected onto the Wall called immersive classroom. By using VR students can experience the locations that would Not be possible or too expensive to visit. In this way VR, open a new world of possibility of learning and teaching for both students and teachers. VR improves education by providing learning through experience instead of old tradition reading and writing.



**Figure 4.** Immersive classroom



**Figure 5.** Using headset during classes

The above figure 4. shows the immersive classroom in which VR projected onto wall. The figure 5. shows the second technique in which headsets are used for learning.

#### 4. Challenges in VR

As the time passing the popularity of VR increasing. It is reaching almost all the fields but it has some challenges also. Followings are some issues. It has many health issues. VR headsets can cause eye fatigue because people blink less when watching screens, cause dried eyes. VR sickness also known as cybersickness, Women's are more affected than men by using headsets common causes are headache, vomiting, sweating, fatigue etc. Cybersickness causes when persons exposure to the virtual environment these symptoms are similar motion sickness. Motion sickness occurs because of Difference between reality and expected motion. according to a study approximately 25-40% people Experience VR sickness when using VR machines.

It also affects to children's mental health according to a study 6-18 age group uses the most VR technology as compared to adults 19-65 age group. Due to high use of immersive technology sometimes the children forget the difference between reality and virtuality due to this their it also affects on their behaviour. Children may hold the idea of virtual reality while experiencing the real world and by excess use of VR it leads in changes of behaviour and attitude. Excessive usage of VR that has very salient sensory features may disturb the ability of children to maintain the physical world rule. VR creates scenario with multisensory for users experience which can be dangerous in real world.

It affects to the privacy of a person also. VR headsets uses eye tracking sensors and it reveals the personality traits, fear, emotions, interests, skills, mental and health conditions.

#### 5. Conclusion

As the technology has many benefits it has some challenges too like health related and children mental and physical health issues. For health-related issues industry should improve their technology regarding health safety so, the people will not suffer for health issues like headache, vomiting etc. and children also uses VR than adults this health issues will be more harmful for children and can affect their growing stage. Sometimes the children forget the difference between real and virtual world due to excessive use of VR parents should also take care about the use of VR that children should use VR as per the need not unnecessary.

#### References

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