

Investigating the Application of Virtual Reality in Education Sector

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Abstract

The following study has been surrounded by the subject matter of the application of virtual reality in education sector and all types of valid and authentic insights have been collected to evaluate the study in a proper manner. Virtual reality is an example of a types of technology implementation which can be rather used in any kind of sector in a progressive manner. At the beginning of the study an introduction has been constructed over the concept of virtual reality in education sectors and various types of usages of virtual reality in different sector has been elaborated within this study. After this, secondary data, qualitative approach, inclusion and exclusion criteria and cross sectional research designs have been selected and evaluated in a proper manner to provide betterment within this study. Also, there are notion of virtual reality, importance of virtual reality in education sector in an extended manner and challenges in incorporating virtual reality in education and here are plenty of challenges which have been depicted within this following study. Lastly, a discussion has been made gathering the information which have been made on the following subject matter of virtual reality.

Keywords

Virtual reality, education sector, technology.

INTRODUCTION

In the time of technology implementation and up gradation of technology, it is quite certain that there is an important use of a thoughtful innovation and the innovation is known as virtual reality or VR in global terms. Virtual reality or VR helps to simulate circumstances of a three dimensional periphery that activities users to extend and connected with a virtual atmosphere within such manner that is equal to reality as it has been perceived with the help of user's senses [1]. There are three major applications of virtual reality, in other words, VR can be used majorly in three different sectors and the utilized sectors are as follows- education, military and healthcare sector.

With the help of virtual reality, an individual can be able to develop teamwork and social strategies through making innovative and collaborative learning circumstances as well. Also, the students can securely interact and identify learning subject matters virtually in pairs and groups within the metaverse of education. In short, with the help of virtual reality, everyone can be able to connect and make a healthy collaboration within a particular sector [2]. The simplest examples of augmented or virtual reality are the filters of Snap chat or Instagram, where the users can be able to relocate or modify facial expressions and change the environment on their screen.

In a more summarized form, use of VR in the education sector is greatly increased to provide a better education system all over the world. VR helps the educational institution and education sector by making such lessons which would be immersive and that would involve memorable and impactful lessons for the students in a certain

manner. Also, the VR experience develops learning results and helps the student to develop crucial and interpersonal strategies which depicts empathy, collaboration and social skills which are actually needed to survive and raise effectively in today's society [3]. Furthermore, virtual reality helps to increase the interaction and makes the students more enthusiastic to solve any sorts of problems regarding studies. Therefore, in the education sector, the use of VR is an important factor which can lead an entire generation to get a bright future with this kind of technology implementation.

MATERIALS AND METHODS

In the process of collecting data which are related to the following subject matter there are some criteria which have been followed and maintained to bring betterment in the execution process of the topic of the following study. There are some crucial factors by following which, the study has been evaluated in a proper manner and the insights have been gathered in an extensive manner. In the following study, a particular type of research design has been selected and the research design is cross sectional. Particular reason behind choosing the cross sectional research design is that it becomes easy to examine several variables at one time and for this reason, the cross sectional research design has been selected. Another criterion has been followed and maintained to give this following study a particular type of execution and the criteria is named as inclusion and exclusion criteria. In this study, primary data has been excluded and secondary data has been included to provide betterment within this study.

Also, in this study the data has been collected by following the qualitative approach which can be able to give better

executions to the subject matter and insights can be counted as the valid insights for this study. Furthermore in this study, there is another criterion which has been followed and implemented to evaluate the data in a proper manner is the sources of data. The main sources of these data which have been collected for the research work is that all the data have been collected from peer-reviewed journals, articles and newspapers and journals have been published after the year of 2019. Lastly, the reason behind selecting this subject matter is to highlight the importance of virtual reality in the education sector and how the education sector and educational institutions can be able to gain growth has been depicted in an appropriate manner. For this reason, the topic has been selected and elaborated by collecting proper insights for this study.

RESULTS

Notion to virtual reality

Virtual reality can seem to be a juxtaposed factor in education but it can be understood as a phase of virtual world and animations which can be reality regulated from the real world like it is a part of the real world. In a technical aspect, the term virtual reality intends to mention the implementations of computational technology and devices to make virtual simulations. These aspects shift the view of the users in the time of setting or fixing up the structure of virtual reality so that the users can not only see the image but can be able to feel and experience the image from the core of it [4]. It is known as three dimensional the strategies which are also an important factor of virtual reality and being in these technology implementations, embedded with the needed specific devices, the users can implement the sense of simulations. The sense of stimulation can shift up and down and to observe everything in case they are really a part of the virtual world.

The most basic and recognisable example of understanding the concept of virtual reality can be a three dimensional movie. By the implementations of special glasses, the audiences can be able to gain such experiences which would provide those audiences a real life feeling and the entire thing of a three dimensional movie can be immensely fascinating to the audiences to accept the technology implementation in an active manner [5]. In a same way, the lights and sound effects have been taken within the acceptance so as to assure the experiences of such things happening right in front of audience eyes even though nothing of it is real. Technological benefits and advancements play a crucial role in understanding and being a segment of the world of virtual reality and thus virtual reality becomes an extensive part of daily lives.

Importance of virtual reality in education sector

Education sector is expanding its field and in the present situation of up gradation and technology implementations, the use of upgraded technology is increasing the quality of the educational field and increasing the use of virtual reality

as well. There are three major ways by which virtual reality can be implemented in the education sector in a successive manner and the ways are as follows- trips of virtual fields, immersion of language and training of skills [6]. Apart from these three types of ways of using VR there are also several ways by which virtual reality can be used within the education sector. By applying philosophical theories, architectural designs, special education, distance learning and developed interactions, VR can be used within the education sector or in a classroom.

A certain factor about education is that it is changing enormously and the strategies as well as the instruments and procedures of teaching and learning are becoming more attractive and alluring the students to share innovative thoughts within classrooms. In present situations, education is taking a quick placements from stereotypical ways of reading that are textbooks and blackboards to smart boards and smartphones internet connectivity through which, the students can gain the strait of active learning in a proactive manner [7]. Also, in the era of upgrading education, there is no chance to use any sort of stereotypical methods which can create monotony among the students from their classrooms and make a detachment among the classroom and students in the present educational circumstances. There is another aspect of the education sector which is more crucial is that education is becoming more and more collaborative and user friendly. Upgrades like virtual reality, augmented reality, graphics and animations are playing a vital part in giving ground for better chances of learning.

There is no such technology which shifts human relations entirely, but one thing which can be done is to increase the process of human interactions in an effective manner. Virtual reality in education has been accepted in an extensive range for educating almost all students from every age group. VR is a great instrument to provide the students a fresh and elaborated aspect and real life experience of those things which have been studied by the students without even being there directly [8]. This can also allow a student to have the experiences of the past events and allows them to have a look apart from getting into the classroom physically. Students can have the virtual projection of the choices of their career and also be creative and provide innovative thoughts by sharing activities which can make the students even more potential about their subjects.

Apart from these, there are five major benefits of using virtual reality in the education sector and the benefits are as follows- uplifts student's involvement, learning based on real life experience, virtual field trips, high tech training and distance learning. Currently, students prefer such educational materials which would be innovative and alluring the attention of students and by seeing which, students can be able to gain a strong grip over that subject. In case it is possible to take a glance at the education of ten years back, the main attraction of education used to be colourful images and eye catchy contents which can make the students more involved about their subject [9]. In the present era, it is

actually becoming backdated to teach the students and make the students understand the depth of their subject in an extensive manner.

With the help of implementation of virtual reality in several schools, colleges and educational institutions, the education becomes more attractive for the students who are actually eager to gain knowledge by experiencing real life activities. Additionally, VR is related to the psychological condition of a student which helps to stimulate brain cells by alluring effects and three dimensional experiences which gives the students better understanding about learning. Also, VR helps to break the monotony of the students which can hamper consciousness of the students which are related to study [10]. Furthermore, features of VR are effective enough to encourage student engagement in a proactive manner and it is potential for those students who get demotivated easily and get frightened to learn something new and innovative. In short, with the help of virtual reality, student’s engagement can be boosted up and students can gain motivation to teach other students in an effective manner.

There is another benefit of using virtual reality within the educational sector and the benefit is to get experience based learning which would be immensely helpful for the students to gain a sheer amount of grip over the subjects. Learning with stereotypical reading and writing are no longer an impactful part which can make the students and teachers motivated throughout the process of teaching and learning. In case it is possible to make a quick view over the ten years back education system, the only things which can make the student more attentive towards studies are colourful books which used to be fascinating for the students [11]. After a few years, students get extreme monotony in reading and writing and it decrease student engagement at a rapid pace and it can easily discourage the students to be more attentive about learning.

Therefore, the experiences which can be gained by using virtual reality in the education sector, can give experience based learning by activating displays and the activated displays makes the students more engaged towards studies. With the help of implementing virtual reality within the educational sector, the real life experiences can be gained by the students. As an example, students can be able to learn the use of physics in daily life and how it regulates all the daily life activities, can be known by the students. Also, the experiences can be increased by adjusting the devices with required sensors by implementing which movements of the learners can be traced and displaying inclusion accordingly on the VR screen [12]. The students can be able to see and learn the things as they actually are and make memories that are going to retain longer within their minds by activating the memories for further continuation to recall the learning by experience within a quick manner.

Not only for the students, but also virtual reality is an effective part for the teachers which are actually eager to teach the students by providing them a sheer amount of real life experiences which should be learned by them. By knowing all the features of VR, the teachers can be able to teach the students manually and for these reasons, the student-teacher bond becomes more compatible in a successive manner. It is important to maintain and retain the relation between students and teachers and increase the effectiveness of that bond to learn and teach something new and innovative in a more proactive manner [13]. Certainly, there are several things which can be enhanced by use of virtual reality in a educational institution and the first and foremost things that, it can helps the student and teacher to increase the bonds in a effective manner and helps to gain impactful learning outcomes which can help the students and teach further to learn and teach something new and innovative in an impactful manner.

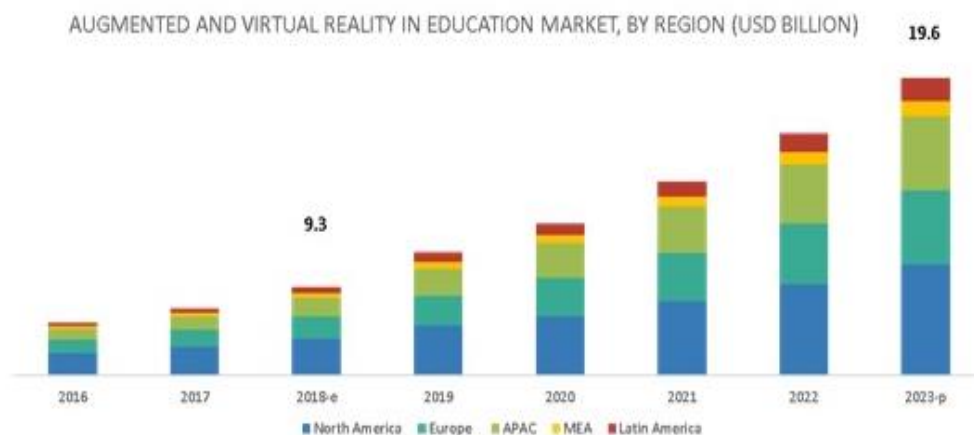


Figure 1: Virtual reality and augmented reality in education sector

In the present situation, the use of augmented and virtual reality is increasing day by day which helps the education sector. Thus, the education sector, virtual and augmented reality is expected to develop from USD 9.3 billion in 2018 to

USD 19.6 by 2023 [14]. Another benefit of implementing virtual reality within the classroom is to gain virtual field trips which can be beneficial for the students to see the subject from another perspective and also, the virtual field

trips helps the students to make the students more potential to teach others students to gain more flexibility towards studies and subject as well. Fields trips are an important segment of

educational culture and these field trips help to provide such experience which can be immensely helpful for the students and teacher as well.

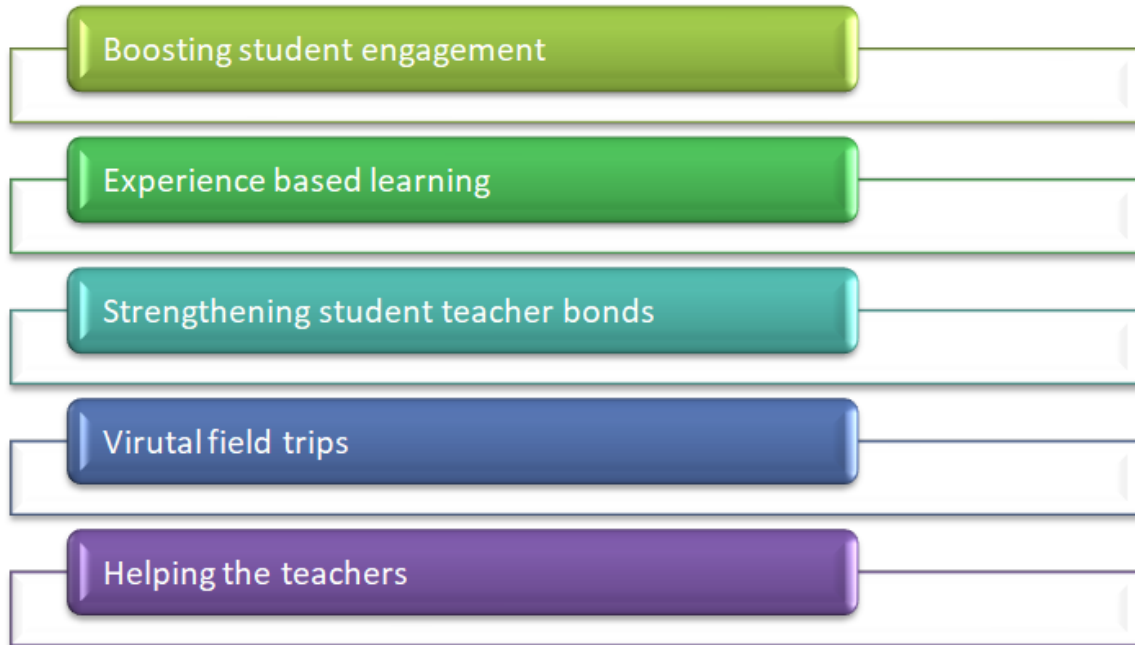


Figure 2: Importance of Virtual reality in education sector

Challenges in incorporating VR in education sector

An obvious factor about implementing VR within the education sector is that there are some challenges which can be faced by the education sector while incorporating virtual reality within the classroom. There are some crucial challenges which can be faced by several educational institutions in case virtual reality has been implemented by them to strengthen the process of teaching and learning in a more successive manner [15]. Besides having an affirmative impact of using virtual reality, there are such kinds of challenges which can raise questions against using virtual reality within the education sector. While implementing virtual reality in schools, it consists of a plethora of advantages and it does not come without any sorts of issues.

The first and foremost challenge which can be raised while using virtual reality within an educational sector is the lack of awareness regarding virtual reality. There are several educational institutions which are not aware of this technology and for this reason; the institution may not be able to meet the expression of the students. As a result, the students who belong from this generation are not satisfied with these stereotypical classes and it desperately decreases the rate of student engagement within the classroom [16]. Lack of awareness about the use of technology can also make the students teachers bonds fragmented which can decrease student engagement and teacher’s interest in teaching.

Therefore it can be a huge challenge while incorporating virtual reality within a classroom or within several educational institutions.

Another issue which can be raised while incorporating virtual reality in a classroom is that the process is immensely expensive and it cannot be affordable easily by several schools and educational institutions. One of the initial and crucial hurdles in using VR is the rate of this technology which cannot be affordable easily. In order to effectively use virtual reality for schools, classroom, and the teacher panel needs to invest in such equipment by which VR headsets can be affordable [17]. However, most of the schools and colleges do not have any investment or savings which can bring them such facilities of this technology to learn and teach students in an impactful manner. The gadgets of virtual reality do not come with an affordable price tag and the cheap gadgets would not meet expectations about learning innovative with these features.

The most effective challenges in implementing virtual reality within a classroom is that the teachers are not tech savvy which is an important factor to use these types of technology within classrooms. It is immensely crucial for the teachers to become more technologically upgraded to teach the students in the education sector of the new era. Without getting well trained about technology and technological implementations, it would be immensely difficult to use virtual reality within the classroom [18]. For this reason, the

lack of tech savvy-ness of the students can put a pause on the process of teaching and learning for the new generation and again can decrease the rate of student engagement at a maximum rate.

DISCUSSION

The following study is based on the application of virtual reality in the education sector and all of the insights which have been collected for this study are authentic and collected from reliable sources. In this study, the subject matter has been illustrated with a clear overview of virtual reality. In this section of giving an overview on virtual reality, its importance over different types of fields have been demonstrated and also, the effectiveness of virtual reality in today's technologically well-constructed society has been depicted by collecting valid insights regarding virtual reality and its importance. Also, the use of VR in the education sector has been discussed in the introductory part of the following study. At the beginning of the study, an overview of the significance of using virtual reality in education has been discussed and after the execution of this overview, comes the in- depth analysis of the importance of virtual reality within the education sector.

At the initial phase of the following context, the importance of virtual reality has been generalized in the education sector and there are several types of importance that have been discussed with sheer elaboration. With the help of virtual reality, the rate of student's engagement can increase at a maximum rate which can bring massive amounts of recognition to that educational institution. In this following study, the importance of virtual reality has been depicted in boosting up the morale and student engagement within the classroom and in any educational institution. With the help of virtual reality, students can be able to get enthusiasm within study and virtual reality can enhance the problem solving skills which can help the students to interact within the classroom. Also, with the help of virtual reality, the experience based learning can increase within the student and they would be able to become interested to learn easily without getting any sorts of trouble with their education in an extended manner.

The experiences based learning helps the students to understand the desired subject and make the students more reluctant about both of the aspects of teaching and learning. Also, virtual reality helps students and teachers both to strengthen the bond within them and simplify the process of learning and teaching in an immensely fruitful manner. Apart from the importance of virtual reality, there are several types of crucial challenges which can be raised for the incorporation of virtual reality within the classroom and the challenges have been depicted as the core aspects which can hamper the procedure of teaching and learning for the incorporation of VR.

CONCLUSION

The following study is based on the impact of virtual reality within the education sector and this study has been served with valid and proper insights which are related with this subject matter of virtual reality in the education sector. At the beginning of this study, a brief introduction has been made over the topic and here, several kinds of usages of virtual reality have been depicted within various sectors, apart from the education sector. After giving an introduction, the importance of virtual reality in the education sector has been showcased this is actually the central topic of this study. Later on, a crucial factor has been represented without which, this study cannot be executed without having proper resources. In this study, several types of materials and methods have been collected and evaluated in a proper manner.

As the study is based on the importance of virtual reality on the education sector, several types of benefits have been showcased within the study. It can be stated that virtual reality plays a key role to give an educational institution a proper structure. In the education sector, there are several aspects which can make a positive or adverse impact on students or teachers. After the strike of global pandemic, the use of virtual reality in the education sector has been increased to give the students a proper education apart from the stereotypical form of education. Also, for those rural areas which have not faced any kind of benefits from the use of virtual reality, it must be implemented in those rural areas to educate the students to give a promising future ahead. Therefore, it can be concluded that the use of virtual reality within the education sector is a blessing which should be implemented by all educational institutions and invest the required amount of revenue accordingly.

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