Chapter 15 Leveraging VR/AR/MR and AI as Innovative Educational Practices for "iGeneration" Students

Srikanth Vemula

University of the Incarnate Word, USA

ABSTRACT

The use of virtual reality (VR), augmented reality (AR), mixed reality (MR), immersive experiences, and artificial intelligence technologies are more focused on innovative education technologies. Studies show that the use of these innovative technologies helps to improve the quality of education. It is essential to promote these new innovative techniques, which show an immense prominence in the improvement of education technologies. So, this chapter shows how these innovative technologies combined with games are a more effective way of transforming our education from a good old traditional way of teaching and learning to a tech savvy way of teaching. Since the students are not the same, and there has been a lot of evolution over the years, it is important for everyone in the education sector to rethink the methods of teaching and the use of incorporating new education technologies to enhance learning.

INTRODUCTION

In recent times educational technologies has shown massive improvements over the traditional educational media with respect to the students' visual short-term memory, abstract reasoning, spatial recognition and multitasking abilities. Experiencing educational content in immersive environments is gaining popularity now a days with the Educators and has coined a new term for encompassing AR, VR, MR, Immersive Experiences and Artificial Intelligence as Digital Reality. In this student are given a chance of exploring or creating educational content using games (A. Cheng et al., 2017). There is a progressive increase in use of VR in education, as researchers explored its features, advantages, and limitations (Brown & Green, 2016; J. Bacca et al., 2014). As these immersive experiences have the potential to change the way individuals think and behave can be applied to education fields. Using technology in the classrooms has been changing over the years. With the current generation of students more tending towards visual

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learning and new Advancement of technology like MR, AR and VR are gaining more traction with the current generation of learners along with Video Games. Most of the population of current generation students are mainly dependent on some different forms of learning and teaching, very few are tending towards spending the time to read and learn the information. Instead, they are watching videos and learning stuff and are more comfortable in doing. And also, students coming to class are expressing a feeling of some other form of teaching style instead of the traditional style of teaching, not only that teachers are also expressing their concerns over the test-based style of teaching, i.e., teaching to the test.

PEEK INTO FUTURE EDUCATIONAL PRACTICES

VR in Education

VR which is described as a simulation of 3D environments to depict the alternative of reality was originally developed and put in use in order to train pilots for US Military in 1960's. Slowly it has moved its usage into medical fields for effective and safe training. The purpose of using this technology has shown irreplaceable role since then in reducing the damage and danger that caused when using a real-life scenario (Bradley, 2006; Lenoir, 2000; Macedonia, 2002). The factors that stopped its full-fledged use of VR in education sector lately is due to (1) Cost of VR equipment, (2) Deficiency of VR resources, (3) Lack of teacher friendly platform for VR content generation. Due to these factors there is still research going on how to overcome these difficulties and the best possible way to use these innovative technologies to serve better for the next generation students (Merchant et al., 2014; Abulrub et al., 2011). In this section of chapter, we will investigate how so far VR is implemented in different aspects of Education fields and the use cases.

Implementing VR in Education has first registered its use case way back in 1966 in the form of flight simulator which is mainly designed for training United States air force. Since then VR has come a long way in Education and has applied in various fields. For example, In NC State University at Distance Education and Learning Technology Applications (DELTA) is using virtual reality in Introductory Biology: Ecology, Evolution, and Biodiversity (BIO 181). In this case they use VR to immerse students in field experiences where they find and observe organisms in their habitats. The project is designed to develop interactive field trips using 360 videos to give students experience in different ecosystems in North Carolina. These immersive field trips are created with the collaboration of three BIO 181 faculty and teaches about 750 students each year. These virtual field trips will feature multiple location nodes that are shot in 360 videos along with interactive hot spots. Students can investigate the hot spots to see videos and photos to gain additional information about the organisms found in various habitats such as tree holes, rotten logs or streams. The primary goal of it is to immerse students in the ecosystem to learn more about biodiversity and ecological concepts. This is a very interesting use case of how VR Is implemented to teach in Higher education settings.

Another use case that is worth mentioning is the World of Comenius, which was taught at Mendel Grammar School in Opava City, Czech Republic. It is an educational platform, where both students and teacher can build their own educational experiences and share them with others, right in the VR environment in biology classes. Next, we see another use case in law how VR is used In the University of Westminster a "virtual space for criminal law students" was built, in which the students hunt for clues to

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