Virtual Reality — A Pedagogical Tool for Young Learners

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It is a known fact that role-play helps young learners understand and experience real life situations with ease (Erikson, 1968; Blatner, 2009; Bowman, 2010). It enables them to understand different points of view and situations. Apart from teaching empathy, role-play also gives the learners an opportunity to express themselves creatively. Therefore, in this age of technological advancement, there is a need to shift from conventional classrooms to novel teaching tools in order to make learning a more engaging and enjoyable experience for students. One such way is exposing the students to 'Virtual Reality', which is somewhat similar to role-play that promotes experiential learning.

Using Virtual Reality, a learner is able to get a 360-degree or three-dimensional (3D) view of the environment. This is, particularly, useful when the learners are taught about places that they may not be able to experience in real life. For example, showing the Himalayas to a learner, who lives by the ocean, using Virtual Reality, can go a long way in introducing new vocabulary, themes and concepts.

The key difference between Virtual Reality and other multimedia like videos or two-dimensional (2D) animation is the factor of 'immersion'. Since a Virtual Reality experience places the learner at the centre of exploring a world created by computer graphics, texts and music, it incorporates all positive stimuli of multimedia.

What is Virtual Reality?

Virtual Reality is a technology that uses a headset attached to a computer. It is a device that virtually transports a learner to the environment one is exploring. Virtual Reality has been in existence since the late 1960s but its application to education and classrooms has gained popularity recently because of the increasing usage of digital technology.

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Figure 1: A learner with a Virtual Reality headset

The potential of this technology is immense as its applications can be utilised across the curriculum. For example, through Virtual Reality, students can get a tour of the Milky Way, and celestial objects like the Sun and the Moon without even visiting a planetarium.

Academic curricula are fast changing to keep pace with the rise in digital and mobile interactions. It is becoming common for schools to invest in computer and Internet based learning. There are also devices like smart boards, which make learning more interactive and engaging. It is, therefore, interesting to see how tools like Virtual Reality may be utilised to foster integrated learning environments.

Conventional pedagogy is detached from real world practices. Though field trips, project works and role-play help in experiential learning and exploration, these activities are extensively supervised by teachers. Moreover, each student is expected to study at the pace of the entire class. Besides, conventional pedagogy hardly develops self-study and exploration skills in students, whereas, Virtual Reality allows them to explore, thereby, promoting self-study. For example, during the classroom observation as part of my research, I could see how students responded differently in a Virtual Reality experience about butterflies. One student wanted to see what the blue butterfly did, while another followed an orange one. Eventually, both the students learnt that butterflies suck nectar from flowers. Therefore, the stimulus of joy of being surrounded by realistic flowers, butterflies and sounds of nature will not only make learning enjoyable and exciting for the students but also help them recall whatever they experience easily.

To nurture learners' potential, educators need to analyse the kind of environment that would help them engage with the society they are a part of.

Constructivist pedagogy affirms how contemporary learners are not mere passive receivers of knowledge but actively engaged content creators and meaning makers (National Curriculum Framework, 2005). Learners are also making use of their situatedness in technology to explore and learn as it can provide experiences that were previously off-limit (Allison and Hodges, 2000). Often, parents use Internet based research (text, images and videos) to support the learning of their wards. Virtual Reality is a step ahead because of the 'simulation' and

realistic experience it provides the learners. This has led scholars explore how Virtual Reality can help create an experiential learning platform for greater autonomy and interactivity (Chee, 2001; Bailenson, et al., 2008, and Hamilton, 2016).

Studies have shown that Virtual Reality can enhance problem solving skills and encourage impactful learning through first-hand experiences (Pan, et al., 2006). According to Gutiérrez, et al., (2008), there are three categories of technology and degrees of immersion that can help learners enhance their learning — non-immersive (desktop or screen based), semi-immersive (computer based games and art or cinema projections) and fully immersive (Virtual Reality with head mounted device). Such experiences are low cost, making it a viable option for schools and educational institutions.

Virtual Reality gives a 3D experience to learners. For example, the application, 'Sharecare You', allows them to recognise and learn about different body parts in an interesting manner. 'Show and Tell' exercises are also being carried out using Virtual Reality platforms, which enable learning with the help of models and objects. A learner finds oneself around the object one is describing. It makes for a fun exercise, as well as, helps recall things faster.

Another example of Virtual Reality is a drawing tool called 'Tilt Brush VR'. Learners can choose from a visual list or menu of brush types and draw or paint in 3D.

Yet another application area is building speech through Virtual Reality. Learners, who experience social anxiety and are not confident in public speaking, can be encouraged to practice speaking in an experiential environment of virtual listeners. This will instil confidence in them.

However, it may be ensured that Virtual Reality experiences are shorter for kindergarten and primary stage learners.

Virtual Reality platforms also bridge global boundaries by allowing learners from different countries to live stream their educational seminars or field trips. This inculcates a sense of social learning, thereby, encouraging multicultural and diverse learning. Such a platform would be hugely beneficial for a diverse country like India. Teachers across the globe are switching to Virtual Reality environments to teach life skills to students, which may be difficult to impart in a conventional classroom setup (Youngblut, 1998).

Therefore, it can be said that Virtual Reality propels learners to visualise models and develop problem solving skills. Though Virtual Reality presents solution for a situated learning experience, it should not be used to substitute conventional forms of teaching, rather supplement it. In order to benefit from such an innovative platform like Virtual Reality, it must be ensured that schools are equipped with such devices and teachers are trained in operating them.

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