Innovative in Learning Methodologies - Edu Metaverse for Lifelong Learning

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Introduction

Metaverse is composed of the prefix "meta" and the suffix "verse" (Meta, 2021). "Verse" means "the entirety of something" in Greek, whereas "meta" means "beyond." In this way, the Metaverse alters the human experience by enabling the technological transcendence of physical reality (Meta, 2021). In his novel "Snow Crash," published in 1992, science fiction writer Neal Stephenson used the term for the first time. The Metaverse, according to him, is an online universe comprising numerous environments, each of which is designed to serve a specific function, such as providing opportunities for socialisation, education, and various forms of entertainment. Individuals could utilise head-mounted displays (HMDs), smartphones, and other media technologies from any location to access and interact with these shared areas (Duan et al., 2021). The Metaverse will enable interactive, virtual recreation of our physical world (in terms of people, places, and things) that we will be able to explore via extended reality (XR) platforms, as well as the transition from 2D graphics on flat screens to 3D graphics in head-mounted displays (HMDs). It is a decentralised network of computer-generated worlds where users can participate in real-world activities such as working, playing, and learning (Siyaev & Jo, 2021). How can metaverse resources be utilised to enhance educational practices? How can the Metaverse be utilised in academic settings? What effect will the Metaverse have on the future of education? This article examines the Educational Metaverse for Lifelong Learning, or "Eduverse."

Learning Methodologies

Educators, mentors, teachers, and Learning Guides who employ diverse learning methodologies enrich and enhance the learning experiences of their students. These methodologies are systems and procedures for educational practice. Both students and those who assist them in achieving their objectives can benefit from the instructional strategies we have developed. A variety of instructional methods are implemented to aid all kinds of students. As unique individuals, people will acquire new knowledge in a variety of ways. These diverse approaches to learning and participation levels assist us in achieving our mission of making educational opportunities accessible to people from all walks of life. If students are to develop the ability to learn independently and continue to do so throughout their lives, they must be exposed to a variety of experiences and innovative instructional techniques. The goals of educators should be to assist students in engaging in meaningful learning experiences, providing them with the necessary flexibility to develop fundamental competencies. Innovation allows for the expansion of learning methodologies.

The Role of Technology in Education

At the end of the 1980s, it was widely believed that the educational system "had a long history of burying new technologies." In the 1990s and 2000s, school systems aggressively adopted and integrated cutting-edge technologies like televisions and interactive whiteboards in order to live up to their reputation. The iPad and other tablets, as well as televisions and interactive whiteboards, were among these technologies (Locketz et al., 2017). Even computers were said to be capable of "bombing up the school," but despite predictions that computers would render schools obsolete, classrooms are still in use today throughout the world (Locketz et al., 2017).

Techno-utopians argue, to put it another way, that technology may be the most effective method for improving academic performance and addressing some of the problems within the educational system. Unfortunately, these hypotheses betray a poor comprehension of the otherwise complex phenomenon known as learning (Johnson-Glenberg, 2017). Measuring expected improvements in students' academic performance has proven to be more difficult than anticipated (Dawley & Dede, 2014). Furthermore, it has been repeatedly demonstrated that using technology to solve educational system problems is ineffective. In fact, it has done so more often, especially regarding issues of equity. Technology has transformed learning inside and outside the classroom (Ghazwani & Smith, 2020). Therefore, we must investigate the educational opportunities presented by technological advances. Once the learning objectives of an educational institution have been precisely outlined, it is time to consider how educators can achieve those goals (Ghazwani & Smith, 2020).

Application of The Metaverse in Education

Immersive technology development has been a significant impetus for the expansion of metaverse tools and technologies in educational settings (Hakkinen et al., 2002). Using their avatars, students can interact with their teachers and communicate with their peers in a metaverse world powered by XR technologies. This provides students with an immersive learning experience, which increases their learning motivation. Siyaev and Jo (2021) investigated the application of mixed reality (MR) in industrial maintenance to develop an engaging learning environment for aircraft maintenance. Their research findings were published in the Industrial Maintenance journal. Crespo et al. (2013) conducted research on the educational applications of OpenSim-based virtual learning environments for knowledge sharing and learning in open Metaverse courses. Photomath is an augmented reality (AR) mobile learning app for providing mathematical education, according to Saundarajan et al. (2020). Their findings suggested that augmented reality (AR) could be utilised to improve mathematics education outcomes for students. [Bibliography required] In addition, Park and Kim (2022) categorised the various Educational Metaverse world types. Survival, maze, multiple-choice, racing/jump, and escape rooms were the categories.

Educational Platforms on the Metaverse

SLOODLE: This is a Metaverse-based dynamic learning environment that combines a 3D virtual environment. It is a hands-on, immersive laboratory for instruction in programming and algorithms (Park & Kim, 2022).

Immersive Journalism: Participation in an immersive journalism activity can improve public speaking skills significantly. Real-world images are used to construct a user-controllable spherical stage for displaying virtual representations of events (Park & Kim, 2022).

VoRtex: This is a platform primarily designed to facilitate collaborative endeavours and online learning environments. They are designed to facilitate the attainment of educational objectives (Jovanovic & Milosavljevi, 2022).

VR-making and metaverse-linking for instructional content: Metaverse linking and virtual reality (VR) content creation for pre-service English teachers to be used in the instructional VR content design of K-12 English digital textbooks; represents an open-source, accessible solution based on a contemporary technology stack and metaverse concepts (Lee & Hwang, 2022).

Immersive third-generation social VR environments include VRChat, AltSpaceVR, EngageVR, Virbela, Sansar, High Fidelity, Sinespace, Somnium Space, Mozilla Hubs, Decentraland, Spatial, and Meta Horizon Worlds: In addition, they offer embodied user representations, a variety of online meeting and educational tools, and access via devices other than virtual reality head-mounted displays (HMDs) (Lee & Hwang, 2022).

Cave Automatic Virtual Environment (CAVE) Immersive VR: This is a serious game designed to enhance players' cognitive skills in three areas: (a) fire prevention, (b) fire extinguishing, and (c) school evacuation (Lee & Hwang, 2022).

Virtual worlds types for creating gameful experiences: Access to the Metaverse (a place where users can communicate) and equal educational opportunities are two types of virtual worlds that can generate entertaining experiences (Lee & Hwang, 2022).

Agents Virtual Laboratory (AViLab) gamified system: This is a gamified educational system that permits the evaluation of an agent's attributes and the demonstration of fundamental concepts (Lee & Hwang, 2022).

Extended Reality (XR) and Learning Methodologies

Extended Reality (XR) enables students to interact with seemingly natural objects and environments, enabling them to actively engage in learning while connecting their minds and bodies (Nakamura, 2020). By incorporating virtual objects into both real-world and computer-generated environments, students are able to create new educational methods for themselves. XR is also useful for technical training and skill development, mainly because it permits the practice of scenarios that would otherwise be prohibitively expensive or dangerous, such as operating heavy machinery or performing medical dissections (Nakamura, 2020).

Learning Goals and Extended Reality (XR)

While XR has the potential to aid students in achieving specific learning objectives, it may hinder them in achieving others. Therefore, educators and designers must have a clear understanding of their desired outcomes (Stanney et al., 2003). XR-enabled learning experiences, for instance, can provide learners with 3D representations that are not visible in reality.

This will help students enhance their spatial awareness (Hakkinen et al., 2002). Alternatively, the abundance of stimuli may result in a high cognitive load, making it difficult to recall specific information (Stanney et al., 2003). Universal Design (CAST, 2018) for Learning instructional design frameworks emphasise the connection between the cognitive processes that lead to learning and the activities in which students engage. This guarantees that every student has access to all media and activities (Golding, 2019). Before students don headsets, teachers should assess whether XR can help them achieve their objectives (Stanney et al., 2003).

Learners and Extended Reality (XR)

Throughout the process of designing learning experiences and selecting XR technologies and applications (if applicable), the learner should be kept in mind (Munafo et al., 2017). Hardware and software are not universally accessible and inclusive for all student populations. The designers of these items are one reason for this. The vast majority of virtual reality (VR) content and hardware is created by a small fraction of the world's population, typically Silicon Valley-based businesses owned and operated by individuals who have consistently enjoyed social privilege throughout their lives (Harley, 2020). Despite an increase in the diversity of XR developers, content creators, and leaders, the field is still disproportionately dominated by white, non-disabled men (Munafo et al., 2017).

In addition, some virtual reality (VR) experiences aim to draw attention to tragedies and challenging living conditions. This may be distressing and harmful for those with a personal connection to the topics at hand, but it may open the eyes of and foster empathy in more privileged populations (Munafo et al., 2017). Because we do not yet know how users from different backgrounds will interact with various XR applications, designers must exercise caution and pay close attention to the target audience. The XR industry should aim for long-term workforce diversification from the outset, with the objective of incorporating the voices and skills of underrepresented groups (Hakkinen et al., 2002).

Conclusion

Teachers are often unfairly blamed for classroom technology failures. Technology implementation in low-performing schools is not a panacea. Technology is just one of the many tools available to teachers in the present day. In addition, a tool's worth is determined by how quickly it can complete a particular task. After a century of this destructive cycle, which was fueled by naive conceptions of technology's role in education, it is time to break the cycle. Any advancement in educational technology that is to be deemed successful must incorporate the Educational Metaverse and its instructional design. It lays the groundwork for all types of learning by highlighting the significance of inclusion.

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