Development of the Metaverse and Learning

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ABSTRACT

The metaverse is a shared virtual space that allows users to interact with each other and a variety of digital media. It has been shaped by technological advances, including the growth of the Internet, the development of virtual and augmented reality technologies, and the increasing power and capabilities of computers and mobile devices. The main goal of the metaverse is to create a seamless and immersive experience for users, allowing them to interact with each other and with digital media in a natural and intuitive way. The metaverse has the ability to provide new opportunities for entertainment, education and communication, and we can expect to see continuous development and innovation in this field in the future. This field aims to develop the field of education in all schools around the world. The declaration of the COVID-19 pandemic forced humanity to rethink how we teach and learn. The metaverse, a 3D digital space mixed with the real world and the virtual world, has been heralded as a trend of future education with great potential. However, as an emerging item, rarely did the existing study discuss the metaverse from the perspective of education. In this paper, we first introduce the visions of the metaverse, including its origin, definitions, and shared features.

Keywords: *metaverse learning, learning, learning framework, metaverse framework, learning analytics*

INTRODUCTION

The concept of a metaverse, or a virtual shared space where users can interact with each other and a variety of digital media, has been around for decades. The term was popularized by science fiction writer Neal Stephenson in his 1992 novel "Snow Crash," in which he described a virtual world in which people could interact with each other and with a variety of digital media.

Over the years, the development of the metaverse has been driven by advances in technology, including the growth of the internet, the development of virtual and augmented reality (VR and AR) technologies, and the increasing power and capabilities of computers and mobile devices.

One of the main goals of the metaverse is to create a seamless and immersive experience for users, allowing them to interact with each other and with digital media in a way that feels natural and intuitive. To achieve this, developers have had to overcome a number of technical challenges, including creating realistic graphics and environments, developing intuitive controls and interfaces, and designing systems for communication and collaboration.

As the metaverse continues to evolve, it is likely to become increasingly integrated with our daily lives, providing new opportunities for entertainment, education, and communication.

There are already a number of metaverse platforms and applications available, and it is likely that we will see even more development and innovation in this area in the coming years.

METHODS

This research is more focused on library research, namely research centered on library data collection. Another meaning of library research is research that uses library facilities such as books, newspapers, magazines, documents, and other records to obtain information and data.

RESULTS AND DISCUSSION

The metaverse is a shared virtual space that allows people to interact in real time, and has the potential to revolutionize the way education is delivered. Here are some of the potential benefits and challenges of using the metaverse in education:

One of the benefits of applying educational technology via metaverse is increased participation and interaction One of the main benefits of using the metaverse in education is the potential for increased participation and interaction between students, teachers and subjects. The immersive nature of Metaverse allows students to actively participate in learning activities and explore virtual environments, which can enhance their understanding and retention of information. Flexibility and Accessibility The metaverse can provide flexible and accessible learning opportunities for students, as they can be accessed from anywhere with an internet connection. This can be particularly beneficial for students with disabilities or who live in rural or remote areas, as it allows them to participate in educational experiences that might not otherwise be available to them. In addition to increasing opportunities for experiential learning, the metaverse allows students to engage in experiential learning, Where they can apply the knowledge and skills they have learned in a simulated or real-world environment. This can be an effective way to help students understand complex concepts and develop practical skills. Through continuous experiences to develop education, personalized learning experiences are added. The metaverse can deliver personalized learning experiences for students, as it allows educators to tailor content and activities to each student's individual needs and interests. This can help students learn at their own pace and in a way that is useful and relevant to them.

One of the most important challenges around the world in the development of educational technology is the technical difficulties One of the main challenges of using the metaverse in education is the possibility of technical difficulties. These can include issues with hardware, software, and internet connectivity, which can disrupt the learning experience and limit access to the metaverse. There are many challenges that researchers and developers can face in the field of education technology, including integration into school curricula. Another challenge to using the metaverse in education is the need to integrate it into the curriculum in a meaningful and effective way. This can require significant planning and resources, and it can be difficult to find the right balance between traditional and virtual learning approaches. Cost Developing and maintaining a metaverse can be a significant financial investment, which can be challenging for some educational institutions. This could limit the adoption and use of the metaverse in education, particularly in resource-limited places like Yemen and some Arab countries. There is also a final challenge of equal access to possibilities. There are also concerns about equal access to the metaverse, as some students may not have the necessary hardware or internet connection to participate in virtual learning experiences. This could drive a digital divide between students, which could have negative effects on their learning outcomes.

Enacting the metaverse rules and principles in education. Although the metaverse is a possible digital space for education with rich boons, there are still potential challenges of privacy, security, and ethics raised in the fifth section. Learners, especially teenagers, are in a critical period of physical and mental development. Current issues in learning activities may have a profound impact on their future life. Therefore, establishing and employing strict rules in

metaverse-based educational settings should be urgently needed. 3. Investigating attitudes of school administrators, teachers, and parents towards adopting the metaverse for educational purposes. It can be foreseen that applying the metaverse can provide not only great opportunities but challenges for teachers and school administrators. In addition, the metaverse can change the way how learners study both in school and at home. Therefore, it is worth investigating the attitudes of school administrators, teachers, and parents towards employing the metaverse for educational purposes, which is expected to provide valuable references for future design, administration, and educational practice of the metaverse Teachers' professional development in relation to the metaverse. It is universally believed that teachers play a fundamental role in successful education and bringing about educational reform. As an emerging educational technology, the metaverse could provide various opportunities for teachers. To this end, how to make a good preparation for teachers to teach by adopting the metaverse is a complex and multitudinous undertaking (Belei et al., 2011). Moreover, the presence of the metaverse also brings about new appearances for teacher education held in a brand new virtual space. Consequently, teacher education and professional development may become indispensable issues in educational research about the metaverse.(Zhang et al., 2022)

Overall, the benefits and challenges of using the metaverse in education are complex and multifaceted. While the metaverse has the potential to offer numerous benefits to students and educators, it is important to carefully consider potential challenges and develop strategies to address them.

CONCLUSION

The metaverse, a virtual shared space that allows people to interact in real-time, has the potential to transform the way education is delivered. With its immersive and interactive nature, the metaverse can offer numerous benefits for students, educators, and institutions. These benefits include increased engagement and interaction, flexible and accessible learning opportunities, personalized learning experiences, and opportunities for experiential learning.

However, it is important to recognize that the use of the metaverse in education is not without challenges. These challenges include technical difficulties, the need to integrate the metaverse into the curriculum, the cost of development and maintenance, and equity issues related to access to the metaverse. To ensure that the metaverse is used effectively in education, it is essential to carefully consider these challenges and to develop strategies to address them.

One potential approach to addressing these challenges is to adopt a phased approach to the implementation of the metaverse in education. This could involve starting with a small-scale pilot project to test the feasibility and effectiveness of the metaverse in a specific educational setting, and then gradually expanding the use of the metaverse as the project progresses. This approach would allow educators to learn from their experiences with the metaverse and to make adjustments as needed to optimize its effectiveness in the educational context.

Another important consideration when implementing the metaverse in education is the need to carefully plan and design the virtual environment and the learning activities that will take place within it. This includes creating a clear and well-organized layout for the metaverse, designing engaging and interactive learning activities, and ensuring that the metaverse is accessible and user-friendly for students and educators.

In conclusion, the metaverse has the potential to transform education, offering numerous benefits for students, educators, and institutions. To ensure that it is used effectively, it is important to carefully consider the benefits and challenges of the metaverse, and to develop strategies to address these challenges. This could involve adopting a phased approach to implementation, carefully planning and designing the virtual environment and learning activities, and continuously evaluating and improving the use of the metaverse in education.

REFERENCES

Belei, N., Noteborn, G., & De Ruyter, K. (2011). It's a brand new world: Teaching brand management in virtual environments. Journal of Brand Management, 18(8), 611–623. https://doi.org/10.1057/bm.2011.6

Zhang, X., Chen, Y., Hu, L., & Wang, Y. (2022). The metaverse in education: Definition, framework, features, potential applications, challenges, and future research topics. Frontiers in Psychology, 13(October), 1–18. https://doi.org/10.3389/fpsyg.2022.1016300

Gamage, K. A. A., Wijesuriya, D. I., Ekanayake, S. Y., Rennie, A. E. W., Lambert, C. G., and Gunawardhana, N. (2020). Online delivery of teaching and laboratory practices: continuity of university programmes during COVID-19 pandemic. Educ. Sci. 10:291. doi: 10.3390/educsci10100291

Gartner (2022). Predicts 2022: 4 Technology Bets for Building the Digital Future. https://www.businesswire.com/news/home/20220207005085/en. (Accessed August 06, 2022).