THE FUTURE OF EDUCATION: HOW XR AND THE METAVERSE WILL CHANGE THE WAY STUDENTS ARE VIEWED TODAY

Hendra Jonathan Sibarani[1], Dompak Pasaribu[2], Debora Tambunan[3], Dewi Rafiah Pakpahan[4], Victor Maruli Pakpahan[5], Frans Gideon Sinuhaji[6], Grestin Ekalina Turnip[7], Tony Blayer Simangunsong[8]

[1,2,3,4,5,6,7] Faculty of Social Science, Universitas Mahkota Tricom Unggul, Indonesia.

Corresponding Author: hendrajonathansibarani@mtu.ac.id

Abstract

The dynamic world of education, of course, will always experience developments so as not to be left behind and can produce successors or generations who have expertise and have high competence. Conventional or old-fashioned teaching methods are of course still done orally or lecture methods, reading books, watching videos, currently undergoing many changes following the development of existing technology. The development that is currently being discussed in the world of education is by utilising the metaverse. Metaverse is a technology-based virtual space concept that allows people to interact immersively in a digital world similar to the real world. In the Metaverse, users can enter the virtual world using devices such as Extended Reality (XR) which includes VR (Virtual Reality) or AR (Augmented Reality) to communicate, work, play, and do other activities. Metaverse provides many benefits to education, especially by creating a more immersive and interactive learning experience. In the Metaverse, students can learn through virtual simulations, such as exploring history in the past, learning science in a virtual laboratory, or practicing practical skills in an environment that resembles the real world. With Metaverse and Extended Reality (XR), it not only increases student engagement, but also helps students understand the material more deeply through experiential learning. In addition, Metaverse enables collaboration without geographical boundaries, where students and teachers from different parts of the world can meet and interact in a virtual space. As such, the metaverse supports a more inclusive and personalised learning system, giving access to materials and experiences that may be hard to reach in traditional education.

Keywords: ***Metaverse; Extended Reality (XR); Learning System***

1. Introduction

Currently, the world of education is undergoing a significant transformation, fuelled by technological advancements and the changing needs of society. Digitalisation is dominating, with the adoption of devices such as laptops, tablets and online learning platforms expanding access and learning flexibility for students in different parts of the world. Curricula are also evolving to be more inclusive, prioritising not only academics, but also soft skills such as problem solving, creativity and teamwork. Trends such as project-based learning, hybrid learning, and the integration of technologies such as AI, VR, and Metaverse are becoming increasingly common in the modern classroom, allowing students to have a more hands-on and interactive learning experience.

In addition, awareness of the importance of student mental health is driving schools to provide better support and services, creating a more holistic learning environment. This transformation helps make education more adaptive and relevant, equipping students with the skills needed for a dynamic future (Abdillah & Alinawati 2018). The development of Metaverse technology in learning encourages students and teachers to learn new applications that support learning experiences in virtual worlds. With Metaverse-based virtual classrooms, teachers must understand the use of devices and

applications that allow them to create interactive and immersive learning environments, such as VR platforms and Augmented Reality-based teaching tools (Asikin et all., 2019). Students are also required to master these technologies so that they can actively participate in virtual learning, explore digital spaces, interact with 3D materials, or collaborate on projects in real-time with friends from different locations. In fact, the world of education certainly cannot reject the results of these technological advances. The world of education must be able to maximise technological developments and advances into positive things and help to further maximise the learning system so as to produce graduates who have strong abilities. The development of metaverse technology brings new challenges for teachers and students in education. For teachers, mastering new technologies such as metaverse requires time and training, which can add to their workload beyond their teaching responsibilities. Furthermore, not all teachers have the ability or access to these technologies, resulting in a gap in how to use technology as a teaching tool. In addition, adapting to a complex digital environment can also disrupt the traditional teaching-learning process and reduce direct interaction between teachers and students.

Meanwhile, for students, the use of the metaverse may result in focus and discipline issues due to the interactive and engaging virtual environment. Students may be distracted by the digital elements rather than focusing on the subject matter. Limited access to these technology-enabled devices also has the potential to create inequalities in the learning experience, especially for students from low economic backgrounds (Buchori et all., 2022). From the background of the problem described earlier, the lecturer team from Mahkota Tricom Unggul University provides one way to solve the problem, namely by conducting activities for Community Service and raising the theme 'The Future of Education: How XR and Metaverse will Change the Way Students Look Today'. Furthermore, the purpose of carrying out this form of community service activity is to provide understanding and motivation to teachers and students and increase the provision of basic knowledge about XR and Metaverse used in the world of education today.

2. Methodology

The community service activities carried out by the lecturer team at Mahkota Tricom Unggul University can be said to be of international standard. This is because the speakers invited in the activity or delivery of material are speakers who are experts and already have expertise even abroad. The following steps are taken for the implementation of this community service activity, namely:

1. The activity was carried out by inviting several schools around Medan. Invited schools can bring teacher and student representatives.
2. The speakers have certainly prepared material that is in accordance with the theme chosen in this community service activity.
3. The delivery or presentation of the material is certainly done by using and utilising technology. Furthermore, the speakers also provide question and answer sessions and discussions as well as demonstrations in making Virtual Reality media.
4. The presentation that has been delivered is then followed up by asking representatives of students and teachers to submit suggestions and responses from the activities carried out.

3. Result and Discussion

On this occasion, the activities of community service carried out are directly or face-to-face at Mahkota Tricom Unggul University. Activities carried out at the Mahkota Tricom Unggul University Campus on the 24th Floor which is located at Grand Jati Junction, Jalan Perintis Kemerdekaan No. 3A. running smoothly and safely. The speakers who delivered the material were: Dr. Edmund Chia Keng Wei (Consul-General of the Republic of Singapore), Mr. Budianto Tandianus, PhD (Senior Professional Officer Singapore Institute of Technology) Yosin Anggusti, B.Sc (ISM), M.Tch (Professional practitioners IT National University of Singapore), Dr. Hendra Jonathan Sibarani, S.ST., M.Si (Lecturer at Mahkota Tricom Unggul University), and other Mahkota Tricom Unggul University lecturers who became a team and committee so that this

community service activity ran smoothly.

Stage of the Event

In this community service activity carried out, of course, it was carried out with the preparation of the team and committee from Mahkota Tricom Unggul University. This is done so that activities can run smoothly and on target. The following are the stages carried out in this activity, namely:

No	Time	Activities undertaken
1.	Monday, 5th August 2024	The presentation on 'The Future of Education: How XR and Metaverse will Change the Way Students Look Today' by the speakers.

Participants in this community service activity were attended by eight schools (SMA and SMK) in Medan. The number of participants who attended were: 40 people consisting of students and teachers. The community service activities went smoothly as seen from the effective communication between the committee and the participants as well as good cooperation among the members of the service team, also an indicator of the smoothness of the activities. The participants, namely teachers and students, asked many questions and were enthusiastic in listening to the presentation of material from the speakers. The participants also gave input so that the committee often carried out similar activities to provide insight and knowledge to the participants who attended.

Conclusion

From the results and discussion of the community service activities that have been carried out, it can be done that the activity was successful. This can be seen from the number of participants who attended and were very enthusiastic. The participants were very enthusiastic about the questions given to the representatives of each school submitting questions and they gave appreciation to this activity because it really provided new insights and knowledge for teachers and students of course in dealing with and using XR and Metaverse in learning activities.

Activity Documentation

REFERENCES

Abdillah, F., Riyana, C., & Alinawati, M. (2018). Pengaruh Penggunaan Media Virtual Reality Terhadap Kemampuan Analisis Siswa Pada Pembelajaran Ilmu Pengetahuan Alam Kelas VII Sekolah Menengah Pertama.

Asikin, N., Nevrita, N., & Alpindo, O. (2019). Pelatihan pemanfaatan media pembelajaran berbasis virtual reality untuk guru-guru IPA kota Tanjungpinang. Jurnal Anugerah, 1(2), 71-76.

Buchori, A., Rahmawati, N. D., Prasetyowati, D., & Setiawan, A. (2022). Pelatihan Hypermedia Berbasis Virtual Reality Bagi Guru Guru MAN 2 Kudus. Muria Jurnal Layanan Masyarakat, 4(1) Edutcehnologia, 2(2), 36–38.

Heidi Williams, (2021), No Fear Coding - 2nd Edition, International Society for Technology in Education, USA

Ioannidou, A., (2011). Computational Thinking Patterns. Annual Meeting of the American Educational Research Association (AERA)

Norani Lapawi & Hazrati Husnin, (2020). Investigating Students' Computational Thinking Skills on Matter Module, (IJACSA) International Journal of Advanced Computer Science and Applications, Vol.11, No.11,2020, National University of Malaysia