Co-funded by the Erasmus+ Programme of the European Union

ANALYZING THE EFFICACY OF VIRTUAL AND AUGMENTED REALITY IN DEVELOPING IMMERSIVE LEARNING ENVIRONMENTS AND SIMULATIONS FOR REAL-LIFE COMMUNICATION SCENARIOS

Stepanova Iryna,
PhD in Philology, Associate Professor, Head of the Department of Foreign Languages
Vinnytsia national technical university, Vinnytsia, Ukraine
ORCID: https://orcid.org/0009-0006-4374-1070.

The main idea of this work is to explore how virtual reality (VR) and augmented reality (AR) technologies can enhance educational experiences by creating immersive learning environments and realistic simulations [1]. It focuses on evaluating the effectiveness of these technologies in facilitating the development of practical communication skills and real-life interaction scenarios, thereby improving learner engagement, retention, and the ability to apply theoretical knowledge in real-world contexts. Theworkdelves into the potential of VR and AR as transformative tools in education, specifically in creating immersive environments that replicate real-world situations, particularly for enhancing communication skills. By offering highly interactive and lifelike simulations, VR/AR can provide learners with opportunities to practice and refine their communication abilities in controlled yet realistic settings [2]. This small analysis will cover the strengths and limitations of VR/AR in creating such immersive and interactive experiences.

Virtual reality and augmented reality technologies offer immense potential in transforming how we learn and practice real-life communication skills. By creating immersive and interactive simulations, these technologies can provide safe and controlled environments for individuals to hone their communication abilities and gain valuable experience [3]. This analysis delves into the efficacy of VR and AR in this context, examining their benefits, challenges, and future implications. Here's an analysis of their efficacy.

Advantages

- ✓ Enhanced engagement and motivation. VR/AR simulations create an immersive and captivating environment, stimulating learners' curiosity and actively involving them in the learning process [4].
- ✓ Safe and controlled practice. These technologies offer a risk-free setting to practice communication skills and interact with virtual humans or avatars in various scenarios, without fear of real-world consequences.
- ✓ Personalized learning. Simulations can be tailored to meet individual learning needs, providing scenarios that address specific skill gaps or challenges [5].
- ✓ Real-time feedback and evaluation. Learners receive immediate feedback on their performance, promoting self-reflection and continuous improvement.

- ✓ Increased accessibility. VR/AR can overcome geographical or physical limitations, making diverse learning experiences more accessible to a wider audience.

Potential challenges

- ✓ Cost and accessibility. High costs of hardware and software may restrict access to these technologies, especially in low-resource settings.
- ✓ Technological limitations. The current state of VR/AR technology may limit the realism and complexity of simulations, impacting the overall user experience [6].
- ✓ Motion sickness and discomfort. Some individuals may experience motion sickness or discomfort during extended use of VR headsets.
- ✓ Limited social interaction. Excessive reliance on VR/AR may hinder opportunities for genuine human interaction and collaboration.
- ✓ Learning curve. Users may need time to become proficient in using the technology, potentially affecting initial learning experiences [7].

Summary

Despite certain challenges, VR and AR offer numerous advantages in developing immersive learning environments and simulations for real-life communication scenarios. These technologies have the potential to transform how we learn and practice communication skills, leading to more effective and confident communicators in various personal and professional settings.

The potential of VR and AR in communication training and simulation is vast. As technology advances and costs decrease, we can anticipate a future where these immersive learning environments become more prevalent and accessible [8]. This could lead to significant improvements in communication skills across various fields, including education, healthcare, business, and public service.

In conclusion, VR and AR have the potential to revolutionize the way we learn and practice communication skills. By creating realistic, safe, and personalized learning environments, these technologies offer numerous benefits over traditional teaching methods [9]. While challenges remain, ongoing advancements and decreasing costs suggest a promising future for VR and AR in the realm of communication training and simulation.

Suggestions for further research may be as follows.

1. Investigating the long-term impact of VR/AR simulations on communication skills and their transfer to real-life situations.

2. Exploring the efficacy of combining VR/AR simulations with traditional teaching methods for optimal learning outcomes.

3. Examining the potential of VR/AR in addressing specific communication challenges, such as public speaking anxiety or cross-cultural communication.

References:

1. Alalwan N., Cheng L., Al-Samarraie H., Yousef R., Alzahrani A. I., Sarsam S. M. Challenges and prospects of virtual reality and augmented reality utilization among primary school teachers: *A developing country perspective. Studies in Educational Evaluation*. 2020. Vol. 66. P. 100876. https://doi.org/10.1016/j.stueduc.2020.100876.

2. Biswas P., Orero P., Swaminathan M., Krishnaswamy K., Robinson P. Adaptiveaccessible AR/VR systems. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. 2021. P. 1-7.DOI: https://doi.org/10.1145/3411763.3441324.

3. Cieri R. L., Turner M. L., Carney R. M., Falkingham P. L., Kirk A. M., Wang T., Farmer C. G. Virtual and augmented reality: New tools for visualizing, analyzing, and communicating complex morphology. Journal of Morphology. 2021. Vol. 282, No. 12. P. 1785-1800. DOI: https://doi.org/10.1002/jmor.21421.

4. Nykyporets S. S. Information and communication technology (ICT) as a catalyst for lifelong learning and professional growth. Distance Education in Ukraine: Innovative, Normative-Legal, Pedagogical Aspects. 2024. Vol. 1, No. 4. P. 125–136. DOI: https://doi.org/10.18372/2786-5495.1.18888.

5. Kot S. O., Nykyporets S. S. Utilization of artificial intelligence in enhancing English language proficiency in tertiary education. In Science and Education in the Third Millennium: Information Technology, Education, Law, Psychology, Social Sphere, Management. Lublin, Poland: International Collective Monograph, 2024. Chap. 10. P. 250-274. DOI: https://doi.org/10.5281/zenodo.11279390.

6. Nykyporets S. S. The impact of modern information technologies on the training of technical translation. In Challenges of philological sciences, intercultural communication and translation studies in Ukraine and EU countries: Conference proceedings, October 30-31, 2020. Izdevnieciba “Baltija Publishing”, 2020. P. 224-227. URL: http://baltijapublishing.lv/omp/index.php/bp/catalog/book/69.

7. Nykyporets S. S., Herasymenko N. V., Chopliak V. V. Cognitive strategies impacting the structural composition of translated technical and scientific texts: An analysis of translation methodologies. In Topical issues of translation of specialized texts: Scientific monograph. Baltija Publishing, 2023. P. 130-154. DOI: https://doi.org/10.30525/978-9934-26-394-1-7.

8. Nykyporets S. S., Kot S. O., Boiko Yu. V., Melnyk M. B., Chopliak V. V. Advanced integration of virtual information environments (VIEs) in contemporary educational methodologies. Society and national interests. Series «Education/Pedagogy». 2024. No. 4(4). Pp. 139-154. DOI: https://doi.org/10.52058/3041-1572-2024-4(4)-139-154.

9. Nykyporets S. S., Pradivlyanny M. H., Boiko Yu. V., Chopliak V. V., Kukharchuk H. V. Innovative techniques in vocabulary acquisition for foreign language learning: the impact of artificial intelligence. Society and national interests. Series «Education/Pedagogy». 2024. № 5(5). Pp. 113-127. DOI: https://doi.org/10.52058/3041-1572-2024-5(5)-113-127.