Assignment #3 -

Informal Learning in Virtual Reality

Melissa Welz

EDTC 807: Implementation and Evaluation of Curriculum

Dr. Tracy Amerman

Introduction

Virtual reality (VR) has revolutionized the way we experience immersive theater. With VR technology, we can now create realistic and interactive environments that allow audiences to be fully immersed in a story. Informal learning can also be incorporated into these VR experiences to provide audiences with a unique and educational experience. In this paper, we will explore how informal learning is used in virtual reality experiences in immersive theater.

History of Virtual Reality

Nowadays, there is an interest in technology to see the world around them in a different dimension and to experience things that may not be possible or even exist in real life. The world of three-dimensional graphics has no limits or restrictions and can be created and modified according to our preferences, and even extended to a fourth dimension: our imagination. This technological idea and breakthrough is called Virtual Reality (VR). Ivan Sutherland (1965) introduced the initial concept in 1965, stating that Virtual Reality had the potential to create a virtual world that appeared and felt authentic and could respond realistically to the user's actions.

In 1960, Morton Heilig developed the "Sensorama," a multi-sensory stimulator.. This was the initial attempt to establish a virtual reality system, possessing all the characteristics of such an atmosphere, but it lacked interactivity. In the 1980's, several VR devices were built to improve the quality of VR such as HMDs, optical trackers and the Pixel-Plane graphics engine. Nowadays, Virtual Reality goggles are being made more complex such as Meta Oculus, Google Cardboard and many more.

Theory

Bordwell (1986) states that VR's theory plays into Plato's narrative approach and its relevance. Using the Platonic concepts of "Diegesis" (direct communication to the audience) and "Mimesis" (communication through characters) (p. 23), the narrative theories and various media, including VR, are analyzed. Diegetic theories and narrative forms are categorized as "telling," (p. 23) similar to oral storytelling, Greek drama, and the novel, while Mimetic forms and theories are labeled as "showing," (p. 23) as seen in theater or cinema. This classification enables the analysis of narrative as a representation, structure, or process. The visual components of VR may suggest a preference for mimetic considerations, but both diegetic and mimetic forms are considered equally important.

Informal Learning in Virtual Reality Experiences

Virtual reality experiences in immersive theater are designed to provide audiences with a sense of presence in a simulated environment. Through the use of VR headsets, audiences can see and interact with a virtual world that feels real. Informal learning can be incorporated into these experiences in a variety of ways.

One way to incorporate informal learning into VR experiences is through historical reenactments. For example, audiences can be transported back in time to experience historical events in a realistic way. These experiences can help audiences learn about history and gain a deeper understanding of the events that shaped our world.Historical museums find virtual reality displays and computer-generated interactive experiences particularly appealing because they

enable visitors to explore different time periods and places without leaving the museum premises (Roussou and Efraimoglou, 1999).

Another way to incorporate informal learning into VR experiences is through interactive games and puzzles. For example, audiences can be challenged to solve a series of puzzles to progress through a story. These experiences can help audiences develop critical thinking and problem-solving skills. According to Snowdon and Oikonomou (2018), contemporary educational games utilize advanced video technologies like stereoscopic 3D or Head-Mounted VR environments. These technologies create a sense of spatial depth on the screen, providing users with immersive and engaging learning opportunities.

Virtual reality experiences can also be used to teach audiences about science and technology. For example, audiences can be immersed in a virtual laboratory to learn about scientific concepts and principles. These experiences can help audiences gain a better understanding of complex scientific ideas.

VR experiences can also be used to teach audiences about different cultures and traditions. For example, audiences can be transported to different parts of the world to experience different customs and traditions. These experiences can help audiences gain a deeper appreciation for different cultures and promote cultural understanding.

Benefits of Using Informal Learning in Virtual Reality Experiences

There are several benefits to using informal learning in virtual reality experiences. These experiences can be highly engaging and memorable. By immersing audiences in a virtual world, VR experiences can create a powerful emotional connection that can enhance learning and retention.

VR experiences can also be customized to meet the needs of different audiences. For example, educational VR experiences can be tailored to the age and skill level of the audience to provide an optimal learning experience. VR experiences can provide audiences with hands-on learning opportunities that are not possible in the real world. For example, audiences can conduct experiments in a virtual laboratory without the risk of injury or damage to equipment.

Hussein (2015) carried out a research project involving numerous participants who played different educational games on various VR headsets and platforms. Those who reported having a good experience were the ones who used a high-quality HMD such as Gear VR or Rift. Conversely, those who had a negative experience and attitude towards the games tried a less advanced and less optimized HMD such as Google Cardboard.

Hardware is not the sole factor that influences the outcome of the VR experience; optimized software also plays a crucial role. The findings indicate a connection between the acceptance of the technology and the differences in both hardware and software. To ensure a positive experience and greater acceptance towards VR technology, it is essential to offer participants the most optimal VR solution available.

Conclusion

Virtual reality experiences in immersive theater provide audiences with a unique and engaging way to learn. Through the use of historical reenactments, interactive games and puzzles, scientific simulations, and cultural experiences, audiences can gain a deeper understanding of the world around them. The use of informal learning in VR experiences can enhance engagement, retention, and understanding, making it a powerful tool for education and entertainment.

References

Sutherland, I. E. (1965, May). The ultimate display. In *Proceedings of the IFIP Congress* (Vol. 2,

    No. 506-508, pp. 506-508).

Hussein, M., & Natterdal, C. (2015). *The Benefits of Virtual Reality in Education A Comparison*

    Study. Master's thesis, Chalmers University of Technology University of Gothenburg.

    https://core.ac.uk/download/pdf/43559881.pdf

Oyelere, S. S., Bouali, N., Kaliisa, R., Obaido, G., Yunusa, A. A., & Jimoh, E. R. (2020).

    Exploring the trends of educational virtual reality games: a systematic review of

    empirical studies. *Smart Learning Environments*, *7*, 1-22.

Roussou, M., & Efraimoglou, D. (1999, August). High-end interactive media in the museum. In

    International Conference on Computer Graphics and Interactive Techniques: ACM

    SIGGRAPH 99 Conference abstracts and applications (Vol. 8, No. 13, pp. 59-62).

Snowdon, C. M., & Oikonomou, A. (2018, November). Analysing the educational benefits of 3D

    virtual learning environments. In *European Conference on E-Learning* (pp. 513-XVIII).

    Academic Conferences International Limited.