The University of Texas at Austin
School of Design and Creative Technologies
College of Fine Arts

Journal of Design and Creative Technologies

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Proactive Approach to Diversity and Inclusion

Designing an Immersive, Performance-driven, Virtual Reality-based Diversity and Inclusion Training Program

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Virtual reality (VR) has become a multi-billion-dollar industry (Petrock, 2020). A specific area of growth outside the gaming area is enterprise training (Marr, 2019). Many companies are embracing immersive learning techniques because of their ability to mirror real-life situations, remove distance barriers, reduce operating costs, allow trainees to learn through mistakes, increase engagement, and provide better analytics (Accenture, 2020). VR transports users inducing perspective-taking experiences, which can often increase the narrative's persuasiveness. It has shown to not only be an effective platform for learning, but can also facilitate behavior change through the perception of presences in virtual environments (Ahn, 2014). This creates a unique opportunity to design engaging training scenarios.

It is no surprise that design of these experiences plays a major role in the efficacy of learning. Human interaction with the environment changes the people, not the technology (McLuhan & Fiore, 1967). An argument is made that storytellers have become lazy and take the audience for granted by relying on over one hundred years of passive consumption of mass media (Rose, 2011). This is not to say design has not changed over the years. It has evolved over time from traditional media to incorporate UX (user experience) and interaction design. Norman's (2013) design principles: visibility, feedback, constraints, mapping, consistency, and affordances, are a good starting point for a training program using VR.

Such an experience of being transported into the virtual world enhances vicarious learning through identification with the transitional character and perspective-taking through role playing. Narrative transportation is "defined as absorption into a story" (Green & Brock, 2000, p. 701). It is a mental process that integrates attention, imagery, and feelings. Transportation theory posits that when people feel transported or lost in a story, they come out with conformity to the story's persuasive intent.

However, designing immersive experiences requires additional consideration of the environment. An immersive user experience with scenarios acts as a form of transportation into the training's interactive narrative. Riggs (2019) outlines the end of narrative storytelling with immersive media that now must include aspects of theatre production in the design of virtual experiences. This relies heavily on three areas: story, humanity, and technology.

1. **Story**
   Immersive storytelling techniques have moved design from linear to a post-linear phase wherein worldbuilding and generative experiences will become the norm (McDowell, 2019). For example, escape rooms allow for interpretation of and improvisation with the designed room. Additionally, the experience design of branded events and museum exhibits now encourage visitors to look for "Instagrammable" moments to share.

2. **Humanity**
   Understanding of how we acquire knowledge continues to expand. However, the information processing model (Atkinson and Shiffrin, 1968) provides a simple framework to understand that attention to sensory input and repetition in working memory leads to encoding into long-term memory. This begins with agency where humans act independently and make choices. The Theory of Interactive Media Effects (TIME) gives designers a framework to use affordances to predict cues and actions, setting up mediated variables to influence outcomes (Sundar, Jia, Waddell, & Huang, 2015). Simply put, designers must balance giving up control to user agency with understanding the structures to guide towards specific outcomes when building virtual environments.

3. **Technology**
   Although humans are making choices, having platforms and interfaces that facilitate those interactions is still important. There are many varieties of extended reality (XR) that include: virtual reality (VR), augmented reality (AR), and mixed reality (MR). VR transports the user to a different environment that normally is fully immersive. AR brings information to a user's location by overlaying digital

objects and information on top of their physical environment. Last, MR is a hybrid where digital objects merge with the physical world where they can interact with the user's real environment. All continue to improve fidelity and capabilities as the technology advances. Understanding the benefits and limitations of each ensures designed experiences are built appropriately.

Even though the technology is still emerging, there are many examples of VR being used to benefit humans. Flight simulations have been around for many years, but now the technology is becoming more portable and affordable. Microsoft Simulation now is accessible to millions for the cost of a gaming PC (Hall, 2020).

VR exposure therapy is used to treat everything from overcoming fears in the general public to post-traumatic stress disorder in combat veterans. The effects rely on transportation with a level of immersion that the user perceives as presence within the space. Through guided experiences they are able to relive events, adjust time, and control the situation. Agency over the experience balances the flow by adjusting to the user's comfort level at any given time. Over time, through repetition and rehearsal, people are able to address difficult situations.

Building empathy and understanding different cultures is an area of training that is unique with immersive media. The Movers and Shakers NYC project embeds artwork with digital layers to provide a deeper understanding of events around civil rights in the United States. The goal is to let people experience activism, past and present, through art and AR to change the way we protest in the future.

Additionally, the 1000 Cuts Journey project provides an immersive VR experience where the user becomes Michael Sterling, a Black male, who encounters racism as a young child, an adolescent, and a young adult. Both projects use immersive media design to allow the user to embody what it feels like to experience another person's reality. Through immersion, users learn those realities to develop a deeper understanding of the various lived experiences that make up our society.

The DIVR Project

Currently, the Diversity and Inclusion Virtual Reality (DIVR) Project seeks to incorporate these concepts into an immersive training experience. The overarching goal for the project is to create measurable, accessible, and sustainable VR-based diversity and inclusion training that promotes awareness, knowledge, empathy and practice of diversity, inclusion and equity. The program is specifically aimed to counteract unconscious bias with training, teaching openness to learn, engagement in interpersonal interactions, and team decision-making.

The DIVR Project adopts entertainment education and immersive VR roleplaying strategies. The VR experience, as a form of entertainment education, promotes vicarious learning of diversity, inclusion and equity by roleplaying of various diversity and inclusion scenarios, i.e., modeling through vicarious experiences. Entertainment education is "a strategy of purposefully designing and implementing a media message to both entertain and educate, in order to increase knowledge about the social issue, create favorable attitudes, shift social norms, and change overt behaviors." (Singhal & Rogers, 1999, p.9). Such an experience transports users to virtual worlds through total immersion and creates the feeling of presence in the virtual environment.

As a result, DIVR increases trainees' motivation to participate in the training and enhance their self-efficacy and outcome expectancy of tackling challenging diversity and inclusion issues. In this case, the intention is to promote awareness, knowledge, empathy and practice of diversity, inclusion and equity.

The strategy uses interactive 360º video that transports trainees into narratives of various issues related to diversity, inclusion and equity. The scenario is a small group setting where team members are beginning a group project. The viewer becomes a group member who must decide how to interact with peers. The scenes are linked with an interface with which the viewers choose their responses to various situations.

By mirroring real-life situations and removing distance barriers, DIVR aims for college students to learn through mistakes by creating the ability to repeat scenarios. Similar to exposure therapy, a series of guided experiences provides users a safe environment within which to practice difficult situations they may encounter in real life.

DIVR is currently a pilot project developing the first series of scenarios. The development team is composed of faculty, diversity and inclusion experts, and students at the University of Nebraska-Lincoln, all co-creating the experience to represent scenarios based on real situations and interactions commonly experienced by college students. Research is beginning to measure effectiveness in the story, technology and learning in order to improve the quality of the experience and to develop additional scenarios.

Ethical Considerations

Design of mediated communication has a responsibility to be fair and accurate, particularly when we decide what to show and hide as part of the immersive media experience. Where we choose to transport users requires trust.

As a result, a code of ethics has been developed called Real Virtuality: A Code of Ethical Conduct. Recommendations for Good Scientific Practice and the Consumers of VR-Technology (2016) which includes the following:

- the limits of experimental environments
- informed consent with regard to the lasting psychological effects of VR
- risks associated with clinical applications of VR
- the possibility of using results of VR research for malicious purposes (dual use)
- online research using VR
- a general point about the inherent limitations of a code of conduct for research

Immersive media such as VR has the ability to alter human connections and relationships. Designers and developers must consider the aspects of worldbuilding through story, humanity, and technology so that virtual experiences result in a positive change for society. The DIVR project aims to harness these concepts to co-create virtual experiences around diversity and inclusion, ultimately leading to a better in real life (IRL) experience for everyone.

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