USING MEDIA EQUATION THEORY TO ASSESS THE EFFECTIVENESS OF VIRTUAL REALITY TECHNOLOGY IN ORGANIZATIONAL DIVERSITY, EQUITY, INCLUSION, AND BELONGING (DEIB) TRAINING

by

Michael L. Oetken

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

Liberty University, School of Communication and the Arts

2024

USING MEDIA EQUATION THEORY TO ASSESS THE EFFECTIVENESS OF VIRTUAL REALITY TECHNOLOGY IN ORGANIZATIONAL DIVERSITY, EQUITY, INCLUSION, AND BELONGING (DEIB) TRAINING

by

Michael L. Oetken

Presented in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

Liberty University, School of Communication and the Arts

2024

APPROVED BY:

Carol Hepburn, PhD, Committee Chair

Crystal Sears, PhD, Committee Member

Robert Mott, PhD, Online Program Chair

Abstract

The emergence of immersive virtual reality media technology is providing human beings with a new communication platform to engage beyond the traditional frameworks of video media, audio media, and static webpages on the Internet. These communication media technologies offer users an immersive environment in which they are able to communicate and interact with fellow human beings and non-human entities in life-like mannerisms. Most importantly, this technology also has the potential to bridge gaps and solve problems within the context of certain cultural and societal issues. The issue of communication deficiencies surrounding the area of diversity, equity, inclusion, and belonging (DEIB) is one that holds significant value for many individuals, organizations, and institutions. This research study explores how the use of virtual reality media in the form of a DEIB training module can aid in more efficient and meaningful organizational training related to diversity, equity, inclusion, and belonging communication strategies.

Keywords: Media equation theory, Interactive media, Virtual reality, Strategic media, Diversity, equity, inclusion, and belonging, DEIB, Communication, Communication training, Immersive media, Immersive technology

Dedication

To: Jeridy, Emily, Bethany, and Chase

You are and will always be the most important people in my life.

Acknowledgments

I want to acknowledge my family, friends, advisors, mentors, and colleagues who have supported and guided me through this scholarly journey. Without your support and guidance, I would not have been able to complete this life goal. You have all encouraged me throughout this process, and I am incredibly grateful.

Special recognition goes to my wife, Dr. Jeridy Oetken. Thank you for your love and inspirational words of support. From day one of my PhD journey, you provided words of encouragement and wisdom. Without you, I would not be where I am today. You are the greatest love of my life.

The importance of family cannot be overstated. Emily, Bethany, and Chase, you are the most important purpose in my life. Thank you for your support and sacrifices during the last four years. I hope each of you accomplishes your dreams and goals. To my parents, Dellane and Carolyn, you are the guiding figures in my life. You taught me the importance of hard work, responsibility, and empathy. To my brother, Matthew, thank you for always supporting me in my goals and aspirations. I would also like to acknowledge the other members of my family—especially John, Jenny, Heidi, Chris, Jennifer, Joni, Phillip, Jaimee, and Tom.

I must acknowledge all of my advisors, mentors, and colleagues for supporting me in this journey. Your expertise and guidance were invaluable. Dr. Patricia Ackerman, thank you for being a great mentor and colleague. To Dr. Bill Genereux, Dr. Annie Hoekman, Dr. Michael Pritchard, Troy Harding, Tim Bower, Dr. Sridevi Pudipeddi, Balaji Balasubramaniam, Dr. Alysia Starkey, and Heather Wagoner, you are all the most incredible colleagues in the world. Thank you for all of your support and help through this journey.

I extend my greatest appreciation to Dr. Carol Hepburn. You have been an excellent mentor and chair during my dissertation process. Thank you for believing in me and my scholarly work. Without your guidance and empathy, I would not be where I am today.

The support of those around me fills me with humility, and I recognize that their presence is crucial to my achievements. I stand in awe of the grace and blessings that God has generously provided. The unfathomable power of the Lord, offering me opportunities and the resilience to persevere, is a profound privilege. Praise be to the Father, the Son, and the Holy Spirit for their guidance and strength.

Table of Contents

List of Tables

List of Figures

List of Abbreviations

Artificial intelligence (AI)

Augmented reality (AR)

Chief diversity officer (CDO)

Complex organizational community (COC)

Diversity, equity, inclusion, and belonging (DEIB)

Employee-organization relationship (EOR)

Human-computer interaction (HCI)

Human resources (HR)

Mixed reality (MR)

Organizational communication design logics (OCDL)

Organizational citizenship behavior (OCB)

Perceived organizational support (POS)

User experience (UX)

Virtual reality (VR)

Visual programming language (VPL)

Chapter 1: Introduction

Overview

Chapter one provides a brief overview of organizational communication strategies and strategic media components within the context of diversity, equity, inclusion, and belonging (DEIB) training. Moreover, the chapter explains the critical need for conducting this specific research. Chapter one achieves this by addressing the topic of DEIB within the confines of organizational structures, the background of DEIB training, the problem statement, a discussion of the organizational setting as it relates to DEIB communication strategies, the purpose statement, the significance of the study, limitations of the study, and key definitions of terms and words used throughout the study.

Background of the Problem

Diversity, equity, inclusion, and belonging (DEIB) have become essential components of many modern organizational structures throughout the world. As organizations and institutions evolve within the societal and cultural frameworks that contain them, many of the organizational stakeholders and leaders are incorporating diversity, equity, inclusion, and belonging training into their organizational goals and objectives. DEIB training has become increasingly more visible in organizations and institutions in recent years. The primary goal of many DEIB initiatives is to foster an environment where everyone, regardless of their background, feels valued, respected, and able to contribute their unique perspectives (Mor Barak, 2017). Despite the growing emphasis on these programs, there remain several challenges to their effective implementation, including resistance to change, tokenism, and issues with the design and evaluation of DEIB training. The effectiveness of many DEIB training programs has been called into question, with critics arguing that they are not always successful in achieving their intended

goals (Bezrukova et al., 2016).

Introduction to the Problem

A significant barrier to the successful implementation of DEIB initiatives is resistance to change. This resistance can stem from various sources, including individual biases and prejudices, a lack of understanding of the benefits of diversity, or a perception that these initiatives are simply political correctness (Kulik, 2014). Employees and stakeholders within the organization may feel threatened by the prospect of change, fearing that it may result in a loss of status or opportunities (Benschop & Doorewaard, 2012). This resistance can be exacerbated by organizational cultures that prioritize homogeneity and discourage dissent (Kreitz, 2008). Moreover, these training initiatives should be sensitive to cultural differences and designed in a manner that accommodates diverse perspectives, values, and norms. Ignoring these cultural nuances may result in misunderstandings, reinforcing stereotypes, and perpetuating exclusion (Ely & Thomas, 2001).

Another primary challenge in DEIB training is the lack of well-defined objectives (Kulik & Roberson, 2008). Without clear goals, it is difficult to measure the effectiveness of these programs and ensure that they are genuinely fostering a more diverse, equitable, and inclusive environment. Establishing specific, measurable, and attainable objectives is crucial for DEIB training programs to be successful (Mor Barak, 2017). Oftentimes, the success of these DEIB training programs is heavily influenced by the level of support and commitment from organizational leadership (Chrobot-Mason & Aramovich, 2013). Without strong backing from top management and leadership, employees may not take these initiatives seriously, limiting their potential impact. Leaders must demonstrate a genuine commitment to DEIB training and create an environment where employees feel safe and supported in their pursuit of an inclusive culture

(Nishii, 2013).

An additional challenge facing DEIB training is tokenism. Tokenism refers to the practice of making symbolic gestures toward diversity without implementing meaningful change (King et al., 2011). This phenomenon can manifest in the appointment of a few individuals from underrepresented groups to high-profile positions or the creation of diversity committees that lack the power to effect substantial change (Mor Barak, 2017). Tokenism can undermine DEIB efforts by perpetuating stereotypes, marginalizing minority group members, and fostering resentment among majority group members who may feel unfairly overlooked for promotions or opportunities (Niemann & Dovidio, 1998). To combat tokenism, organizations must ensure that their DEIB efforts are rooted in substantive changes to their practices, policies, and structures rather than simply symbolic gestures (Ely & Thomas, 2001).

Furthermore, the sustainability of DEIB initiatives presents a serious challenge for many organizations. Organizations must be committed to the long-term success of these programs rather than treating them as short-term projects. This requires ongoing assessment and adjustment of DEIB initiatives, as well as the allocation of sufficient resources and support to ensure their success (Avery & McKay, 2010). Organizational leaders must model a commitment to diversity, equity, inclusion, and belonging by actively engaging in these initiatives and promoting their importance to the organization (Ferdman & Deane, 2014).

Lastly, the design and evaluation of DEIB training programs present additional issues for organizations. Many existing programs rely on one-size-fits-all approaches that may not adequately address the unique needs and challenges faced by different organizations—including corporate businesses, academic institutions, and non-profit organizations (Roberson, 2006). Strategies and training techniques such as general information slideshows, multiple-page training

documents containing policies and procedures, and scripted corporate training videos are used by many organizations to train employees on issues of diversity, equity, inclusion, and belonging. These types of media and the communication strategies tied to them often come across as insincere and generic in nature. DEIB training participants often develop feelings of isolation, disconnectedness, and frustration (Willging & Johnson, 2009). Moreover, there is limited empirical evidence regarding the effectiveness of various DEIB training methods, making it difficult to determine which approaches are most likely to be successful (Bezrukova et al., 2016). To overcome these challenges, one may need to use a variety of training methods, such as workshops, mentoring, and online learning, and incorporate both quantitative and qualitative measures to assess program effectiveness (Holvino et al., 2004).

Problem Statement

The problem central to this study is that the diversity, equity, inclusion, and belonging training sessions implemented by organizations are oftentimes ineffective and outdated due to poor communication and media strategies (Braum, 2021). In order to improve the effectiveness of diversity, equity, inclusion, and belonging training, there are essential factors and considerations within an organization that need to be considered. This study will focus on factors and considerations related to organizational communication, specific DEIB communication strategies, and training media strategies—including immersive virtual reality media technologies.

It is possible that organizations struggling with DEIB overlook these factors and considerations. DEIB training programs aim to foster a more inclusive and equitable workplace by educating employees on diversity issues, challenging biases, and promoting inclusive practices. However, despite their widespread implementation, DEIB initiatives face several current issues and problems that hinder their effectiveness. One major issue with DEIB training

is resistance from participants. Some employees may feel that these programs are accusatory or fear that admitting bias could have negative repercussions, leading to defensive attitudes rather than openness to learning (Bezrukova et al., 2016). Additionally, there is a problem with the one-size-fits-all approach of many DEIB trainings, which may not address the specific needs or cultural dynamics of all organizations or regions (Bezrukova et al., 2016). This lack of customization can result in training that feels irrelevant to participants, reducing engagement and effectiveness.

Another significant challenge is the sustainability of DEIB training outcomes. Studies have shown that while training may initially change attitudes or increase knowledge, these effects often diminish over time without ongoing reinforcement and the integration of DEIB principles into organizational policies and practices (Dobbin & Kalev, 2018). The ephemeral nature of training impacts suggests that DEI initiatives need to be part of a broader, continuous effort rather than standalone events. Moreover, many organizations struggle to effectively assess the impact of their DEIB initiatives, relying on participant satisfaction surveys rather than more robust measures of behavior change or organizational impact (Dobbin & Kalev, 2018). This lack of rigorous evaluation makes it difficult to demonstrate the value of DEIB training or to identify areas for improvement.

The rapid evolution of societal norms and issues around diversity and inclusion presents a challenge for DEI training to remain current and relevant. Topics such as systemic racism, gender identity, and mental health have gained prominence, requiring DEIB programs to continuously update their content and approaches to address these evolving issues (Lindsey et al., 2015). Addressing these issues requires a multifaceted approach that includes customizing training to fit the specific context of each organization, ensuring ongoing reinforcement of

training concepts, implementing rigorous methods for evaluating outcomes, and continually updating training content to reflect current societal issues. Only by recognizing and addressing these problems can DEIB training achieve its full potential to foster truly inclusive workplaces. This includes creating a supportive culture that values diversity and inclusion, with leaders actively engaging in these initiatives and promoting their importance to the organization (Ferdman & Deane, 2014). Lastly, rigorous evaluation of DEIB training programs is crucial to determine their effectiveness and inform future improvements (Bezrukova et al., 2016).

Purpose of the Study

The purpose of the study is to examine diversity, equity, inclusion, and belonging training implemented by organizations in order to address ineffective and outdated communication and media strategies so that organizations facilitate more effective and sincere methods of training employees on DEIB topics and issues. Through the research lens of constructivist worldview philosophy, the study explores whether DEIB training strategies through immersive media communication mediums are effective solutions for organizational implementation. Moreover, the study considers communication frameworks such as customized DEIB training content media and organizational intervention. Customization of training media should consider factors such as organizational culture, industry, and demographic makeup. This approach ensures that the training content is relevant and resonates with employees, increasing the likelihood of achieving the desired outcomes (Kulik & Roberson, 2008). Additionally, DEIB training is more effective when combined with other organizational interventions (Bezrukova et al., 2016). These complementary efforts may include mentoring programs, diversity task forces, or policy changes that support equity and inclusion. A multifaceted approach helps create a more inclusive environment, reinforcing the importance of diversity and inclusion in the workplace.

Participants in the study included volunteer individuals employed at a large public research university in the United States. The participant demographics included male and female participants with age ranges of 18-65 years old. This qualitative study was conducted using the grounded theory methodology. Grounded theory methodology is particularly well suited for research involving human experiences with technology and media due to its focus on generating theory from empirical data. This approach allows researchers to develop an in-depth understanding of the social processes underlying human interactions with technology and media from the perspective of the participants themselves (Charmaz, 2014).

Significance of the Study

The significance of outdated communication strategies used for DEIB training in modern organizations is multifaceted, affecting not only the effectiveness of the training itself but also the broader organizational culture, employee engagement, and the organization's ability to innovate and respond to diverse needs. These outdated strategies can lead to several negative outcomes. First, the communication strategies may not adequately address the current social, political, and economic contexts or the evolving understanding of identity, intersectionality, and systemic inequality (Kaplan et al., 2020). As societal norms and values shift, training that fails to evolve alongside these changes can result in programs that are disconnected from the realities and needs of a diverse workforce, undermining the effectiveness of DEIB initiatives (Roberson, 2019). Moreover, engagement and retention issues may arise when employees perceive DEIB efforts as performative or not reflective of their lived experiences. Outdated training methods or content that does not resonate with employees can lead to skepticism about the organization's commitment to genuine inclusivity, impacting employee morale and loyalty (Jones & Okun, 2021).

From an organizational performance perspective, inadequate DEIB training may limit innovation and problem-solving capabilities. Diverse teams are shown to be more creative and better at solving complex problems; however, this benefit is contingent upon an inclusive culture that values and integrates diverse perspectives (Phillips, 2014). Outdated communication strategies and media technologies might not equip employees with the necessary skills to collaborate effectively in diverse teams, thereby missing out on the potential competitive advantages of diversity. In a globalized economy, organizations must be adept at navigating cultural differences to serve diverse markets effectively. Legacy media strategies used in DEIB training may not prepare employees for the nuances of global communication and cross-cultural understanding, potentially harming an organization's reputation and its ability to expand into new markets (Morrison, 2016).

The research gleaned from this study—which focuses on the convergence of diversity, equity, inclusion, and belonging communication and emerging immersive media—is vital to providing a better understanding of how immersive media technology can better prepare and train humans for a wide variety of cultural and societal situations that are not easy to comprehend. Another significant outcome of this study is to provide a guide for immersive media communication strategies grounded in the media equation theory framework that is best suited to address future issues of diversity, equity, inclusion, and belonging communication throughout various organizational and institutional settings. Immersive media such as VR have the unique ability to simulate real-world environments, allowing people to practice skills and decision-making in a risk-free setting. This study has the potential to highlight experiential learning—which enhances knowledge retention and transfer, as it fosters active participation and firsthand experience. Moreover, this study focuses on the allocation of immersive VR training

for personalized learning. The study emphasizes how immersive media communication strategies can be tailored to individual needs, leading to improved training and learning outcomes.

Research Questions

The research questions of the study are as follows:

RQ1. How effective is the use of traditional communication media such as online web videos, PowerPoint presentations, and PDF documents in diversity, equity, inclusion, and belonging training?

RQ2. How effective is the use of virtual reality communication media in diversity, equity, inclusion, and belonging training?

RQ3. Does the use of virtual reality media in diversity, equity, inclusion, and belonging training provide a richer, more impactful, and more meaningful user experience compared to current diversity, equity, inclusion, and belonging training methods that use traditional media strategies?

Guiding Communication Theory

Media equation theory, first introduced by Reeves and Nass (1996), focuses on a central theoretical concept that human individuals tend to interact with and respond to media, particularly computers, and television, as if they were real people or real social situations. The theory is grounded in two key components: social responses to media and media as social actors. Social responses to media refer to the human tendency to treat media as real social entities and apply social rules to interactions with them (Reeves & Nass, 1996). This component suggests that people may experience emotions, form judgments, and exhibit behaviors toward media content as they would in real-life social interactions (Sundar, 2004). The other essential component centers on the idea of media as social actors and emphasizes that media possess

characteristics and cues that elicit social responses from users. For instance, computers or television characters with human-like attributes, such as voice or appearance, can trigger social responses like those experienced with actual human entities (Nass et al., 1997). Moreover, the way media present information, such as politeness or assertiveness, can also influence users' reactions (Nass et al., 1994).

Definition of Terms

The following term definitions aid understanding of this study's research design, findings, and conclusions.

Augmented reality. A digital technology that superimposes digital information, such as images, sounds, or text, onto the user's perception of the real world, creating a composite view that enhances one's understanding and interaction with the environment (Azuma, 1997).

Diversity, equity, inclusion, and belonging. Diversity, equity, inclusion, and belonging are interrelated concepts that contribute to creating fair, inclusive, and harmonious workplaces and communities. Diversity refers to the range of human differences, including but not limited to race, ethnicity, gender, sexual orientation, age, socioeconomic status, physical abilities, religious beliefs, political beliefs, and other ideologies (Roberson, 2006). Equity is about ensuring fairness and justice in processes, policies, and practices by identifying and addressing systemic barriers that have historically disadvantaged certain groups of people (Bartol, 2019). Inclusion refers to the active and intentional engagement with diversity, creating an environment in which all individuals feel valued, respected, and supported (Ferdman, 2014). Belonging encompasses the sense of psychological safety and acceptance that individuals experience when they are fully included and valued within a group or organization (Walton & Brady, 2017).

Immersive media. Digital technologies that create an immersive experience by

simulating or extending the physical world, engaging users' senses, and fostering a sense of presence in the mediated environment (Dionisio et al., 2013).

Mixed reality. A technology that combines elements of both virtual reality and augmented reality to create an environment in which digital objects and information are integrated into the user's real-world experience, allowing seamless interaction between physical and virtual elements (Milgram & Kishino, 1994).

Virtual reality. A computer-generated, immersive environment that simulates a physical presence in a real or imagined world, allowing users to interact with the environment and its objects through various sensory channels, such as sight, sound, and touch (Burdea & Coiffet, 2003).

Summary

Chapter one has provided an overview of organizational communication strategies and strategic media components within the context of diversity, equity, inclusion, and belonging (DEIB) training. The chapter explained and outlined the critical need for conducting this specific research and addressed the problem of DEIB training within the confines of organizational structures. Chapter two will offer a more in-depth review of the literature surrounding diversity, equity, inclusion, and belonging communication issues within organizations, organizational communication issues as it relates to DEIB training, immersive media communication strategies, virtual reality media usage in organizations, and create a deep understanding for analyzing DEIB training using immersive media technology through the media equation theory.

Chapter 2: Literature Review

Overview

During the last decade, topics and issues surrounding diversity, equity, inclusion, and belonging (DEIB) have become integral components of organizations around the globe. Many employees, stakeholders, and other individuals within organizations might not fully understand the intricacies of DEIB organizational frameworks. Various types of communication strategies and training exercises have been developed to address DEIB awareness. Many of these strategies and training exercises rely on traditional media such as PowerPoint slideshows, static webpages, and printed materials. As new immersive media strategies and technologies emerge, new strategies are emerging that can possibly increase the effectiveness of these DEIB training methodologies.

Three central themes are identified in this review of the literature. The first theme explores the media equation theory and its intersection with the immersive media framework. Second, the theme of strategic organizational communication explores and analyzes literature focusing on topics related to diversity, equity, inclusion, and belonging paradigms within organizational structures. The final theme focuses on immersive media technologies and the research surrounding educational and training scenarios.

Situation to Communication Tradition

The cybernetic tradition of communication, conceptualized by Robert T. Craig, is a framework that emphasizes the process of information exchange and control in systems, including human and technological interactions (Craig, 1999). This tradition is rooted in the idea that communication acts as a mechanism for understanding how individuals and machines process, share, and interpret information. The media equation theory, proposed by Byron Reeves

and Clifford Nass (1996), posits that individuals interact with computers, television, and new media as if they were real people or places, suggesting a deep-seated application of social rules and norms to media interactions. The connection between Craig's cybernetic tradition and media equation theory reveals significant insights into the nature and implications of human-media interaction.

The cybernetic tradition provides a foundational understanding that communication involves feedback loops and control mechanisms, where the roles of sender and receiver are interchangeable and dynamic (Craig, 1999). This perspective is crucial for understanding media equation theory, as it underscores the interactive process between humans and media. Furthermore, the cybernetic tradition highlights the importance of the regulatory function of communication in managing relationships and systems (Craig, 1999). This aligns with how the media equation theory illustrates the regulatory impact of media on human behavior, emotions, and social norms. For example, individuals may adjust their behavior or attitudes based on the perceived social cues from media, which acts as a regulatory feedback loop influencing human cognition and social interaction (Reeves & Nass, 1996).

Robert Craig's cybernetic tradition of communication provides a theoretical backdrop that enhances the understanding of media equation theory. This communication tradition illuminates the intricate dynamics of human-media interaction, emphasizing the role of feedback, regulatory mechanisms, and context in shaping the communication process. This synergy contributes to a deeper comprehension of the psychological and social underpinnings of human interactions with media technologies.

Theoretical Framework and Modeling

Theoretical frameworks and modeling in qualitative research provide a structured lens

through which to interpret and give meaning to the collected data, guiding the research questions, analysis, and discussion. They are critical because they offer a foundation for establishing context, ensuring that the research is rooted in existing knowledge while identifying where new insights can contribute to the broader academic discourse. This section explores the origins of media equation theory, the critical components of media equation theory, current research surrounding media equation theory, and the connections between cognitive load theory and media equation theory.

Media Equation Theory

The current state of research surrounding immersive media technology is ideal for the theoretical framework found in media equation theory. Media equation theory focuses on the central concept of communication between humans and machines and implies that humans respond to and react to communication media in the same manner in which they respond and react to other human beings (Reeves & Nass, 1996). Reeves and Nass (1996) hypothesized that individuals interact with computers, television, and new media as if they were real social entities. The original study aimed to investigate the extent to which people apply social rules, norms, and expectations to these interactions, even when they know that the entities are not human.

Components of Media Equation Theory

Reeves and Nass (1996) conducted a series of experiments to explore the media equation and its implications for human-computer interaction. The research findings revealed that individuals often respond to computers and other media entities in ways that are remarkably similar to their responses to humans (Reeves & Nass, 1996). For example, participants demonstrated politeness, reciprocity, and even flattery when interacting with computers, which are behaviors typically reserved for social interactions with other humans (Reeves & Nass,

1996). The study proposed that these findings could be attributed to individuals' natural tendency to rely on social scripts, which are deeply ingrained and automatic responses to social situations (Reeves & Nass, 1996). This insight has significant implications for the design of computer interfaces and new media technologies such as augmented and virtual reality, as it suggests that designers should consider users' social expectations and needs when creating interactive systems.

Human-centered design is an essential component of media equation theory. Nass et al. (1999) investigated the extent to which individuals exhibit politeness toward computers during interactions. Building on the media equation theory, which suggests that people treat computers, television, and new media like real social entities, the research sought to understand the implications of politeness in human-computer interaction. The study included a series of experiments wherein participants interacted with computer-based interviewing systems. The results demonstrated that participants were, in fact, polite to computers, displaying behaviors such as providing positive feedback and avoiding criticism, even when such politeness was not explicitly required or rewarded (Nass et al., 1999).

Current Research Surrounding Media Equation Theory

Current research surrounding media equation theory continues to explore the implications and applications of this theory across various forms of media and technology, including social media, human-computer interaction (HCI), robotics, and artificial intelligence (AI). In HCI, recent studies have focused on user attachment and trust in voice assistants and other AI interfaces, investigating how these technologies are anthropomorphized and what social cues they trigger in users (Nass & Moon, 2000). Researchers have found that users often apply social rules and etiquette to these interactions, thanking their devices or apologizing for errors,

indicative of the media equation in action (Nass & Moon, 2000).

In the realm of robotics, studies have examined how the physical embodiment of AI in robots can trigger even stronger social responses. The media equation theory has been used to explain why humans can feel empathy toward robots, sometimes to the extent of perceiving them as teammates or companions (Kahn et al., 2012). Additionally, the implications of media equation theory have been explored in education technology, particularly in the design of virtual learning environments and educational software. The incorporation of agent-based learning companions that respond with human-like emotions and behaviors has been shown to positively impact learning outcomes, supporting the theory's premise that social rules extend to media interactions (Mayer et al., 2003).

Media equation theory is also being applied in marketing and advertising research, where understanding the social dimensions of media engagement can inform strategies for digital marketing. The theory helps explain why storytelling and character-driven content can be more effective in digital campaigns, as they leverage the human tendency to respond to media socially (Oh & Sundar, 2015). As technology progresses, the theory is increasingly relevant in understanding the dynamics of user experience in virtual and augmented reality settings. The immersive nature of these technologies can amplify the social responses predicted by the media equation theory, influencing how users perceive and interact with virtual characters and environments (Skalski & Tamborini, 2007). Social media research has also benefited from this theory. Scholars have investigated how users attribute human qualities to online platforms, interacting with them based on perceived personalities and norms (Gambino et al., 2020). This research has implications for the design of social media platforms, suggesting that incorporating social dynamics into their interfaces can increase user engagement and satisfaction. The ethical

implications of such expansive human-media interactions are also being scrutinized. Concerns about user dependency, privacy, and the potential for manipulation have led to calls for ethical frameworks guiding the development of media that engage users on such a profound social level (Madary & Metzinger, 2016).

Digital media and other emerging technologies used around the globe have evolved quickly and have become increasingly complex. Reuten et al. (2021) investigate the uncanny valley and media equation effects on pupillary responses to robotic and human emotions. The study posits that understanding how individuals respond to emotions expressed by robots is important for the development of effective human-robot interactions (Reuten et al., 2021). The uncanny valley is defined as the phenomenon whereby robots or virtual reality agents that are almost but not quite human-like can evoke negative emotional responses in humans, and the media equation as the phenomenon whereby humans respond to media as if it were human (Reuten et al., 2021).

In a similar study, Złotowski et al. (2018) propose a novel model to explain the relationship between the media equation effect and implicit anthropomorphism. Implicit anthropomorphism refers to the unconscious attribution of human-like qualities to non-human entities. The research uses a series of empirical studies to investigate the role of implicit anthropomorphism in the media equation effect. The results show that the media equation effect was stronger when participants were not explicitly instructed to anthropomorphize non-human entities, suggesting that implicit anthropomorphism plays a significant role in this phenomenon (Złotowski et al., 2018). By proposing a dual-process model, the research offers a more comprehensive understanding of the underlying mechanisms, which can inform the design of more effective and engaging human-computer interactions.

A primary factor of immersive media is human-centered connection. Klowait (2018) identifies three primary factors that contribute to the perception of human likeness in media: form, behavior, and interaction. Form refers to the physical appearance of the media entity, while behavior encompasses its actions and responses. Interaction pertains to the communication and relationship between the user and the media entity (Klowait, 2018). The study finds that the perception of human likeness is subjective and context-dependent, as individuals may differ in their assessments of the same media entity (Klowait, 2018).

Human psychology is another important factor when intersecting immersive media technology concepts and media equation theory. Lee (2004) explores the concept of presence and its underlying mechanisms from an evolutionary psychology and media equation perspective. The study highlights the importance of understanding why presence occurs when designing effective virtual environments and human-technology interactions. Presence is defined as the subjective experience of being in a virtual environment or interacting with technology in a way that feels real and immersive (Lee, 2004). The results of the study show that the human brain processes information from virtual environments in the same way that it processes information from the real world and that this process can generate a sense of presence (Lee, 2004).

Current research on media equation theory spans multiple disciplines, highlighting the theory's widespread relevance in the digital age. As media and technology become more sophisticated and integrated into daily life, understanding how people relate to and interact with them on a social level remains crucial. This body of research not only validates Reeves and Nass's original propositions but also expands on them, exploring new implications and applications in an increasingly connected world.

Cognitive Load Theory

Cognitive load theory and the media equation theory explore distinct aspects of human interaction and cognition, yet they intersect in the ways that media and technological interfaces impact cognitive processes. Cognitive load theory, proposed by Sweller (1988), focuses on how information is processed in the human mind and suggests that there is a finite cognitive capacity for processing new information. The theory distinguishes between intrinsic, extraneous, and germane cognitive loads, emphasizing the importance of instructional design that optimizes learning by managing these loads (Sweller et al., 1998). Separately, the media equation theory posits that people tend to interact with media and computers as if they were real humans, attributing human-like qualities to these technologies. This theory uncovers the social dimensions of human-computer interaction, suggesting that social cues from media can elicit responses similar to those in human-to-human interactions.

The connection between the two theories can be observed in the context of educational technology and e-learning environments. When individuals engage with educational media, the design and presentation of information can significantly influence cognitive load. If educational media are designed with human-like characteristics or interactive features that mimic social interaction, as suggested by media equation theory, they can potentially affect the learner's cognitive load in various ways (Moreno & Mayer, 2007). For instance, personalized feedback from a computerized learning environment that mimics human interaction might reduce extraneous cognitive load by providing clear and contextually relevant guidance, thereby enhancing learning efficiency (Clark & Mayer, 2016).

The principles of media equation theory can be utilized to design media interfaces that cater to human social expectations, thereby facilitating a more intuitive and less cognitively

demanding interaction with technology. For example, voice assistants that exhibit social behaviors, such as expressing gratitude or using polite language, can create a more engaging and less cognitively taxing experience for users (Nass & Moon, 2000). This aligns with cognitive load theory by suggesting that reducing extraneous cognitive load through socially intuitive design can enhance the capacity for processing intrinsic cognitive load related to the task at hand.

Additionally, the intersection of cognitive load theory and media equation theory highlights the importance of considering the affective and motivational aspects of learning and human-computer interaction. Emotional design elements in media, informed by media equation theory, can influence learners' motivation and engagement, potentially reducing cognitive load and enhancing learning outcomes (Plass et al., 2014). For example, educational software that uses characters with whom learners can empathize may increase engagement and motivation, reducing the cognitive load associated with learning new information.

The connections between cognitive load theory and media equation theory elucidate the complex interplay between cognitive processes and social interactions in human-computer interfaces. By understanding how social cues and design principles influence cognitive load, educators and technology designers can create more effective and engaging learning environments. The integration of the two theories provides a comprehensive framework for designing educational media and technologies that are both cognitively optimal and socially engaging, thereby enhancing learning outcomes.

Related Literature

Strategic communication is essential for organizational success as it aligns communication efforts with the organization's objectives, ensuring clear and consistent messaging to stakeholders such as employees, customers, and investors. By considering the

audience, context, and desired outcomes, strategic communication strategies help optimize message delivery, making information accessible and persuasive. These strategic approaches can also help to foster internal cohesion by promoting employee engagement, trust, and commitment.

Generalized Communication Strategies within Organizational Settings

Strategic communication plays a critical role in organizational settings by effectively disseminating messages, engaging stakeholders, and cultivating a positive workplace culture. Jiang and Men (2016) examine the impact of authentic leadership, transparent organizational communication, and work-life enrichment on employee engagement. Drawing on survey data from employees in a large corporate setting, the researchers contend that these three factors can significantly influence employee engagement and that they are interrelated and mutually reinforcing. Authentic leadership is defined as a leadership style that is based on transparency, openness, and ethical behavior (Jiang & Men, 2016). The research suggests that authentic leadership can create a sense of trust and psychological safety among employees, which in turn can lead to increased engagement. The importance of transparent organizational communication, which is defined as communication that is open, honest, and two-way (Jiang & Men, 2016), should be considered a vital component of organizational communication. Transparent communication can build trust and foster a sense of shared purpose among employees, which can also contribute to engagement (Jiang & Men, 2016).

Employee relationships within the organization present another vital component of successful organizational communication. Kim (2021) examines the role of strategic internal communication and organization-employee relationships in building organizational resilience. It is suggested that internal communication is a critical component of organizational resilience, as it can facilitate the development of strong relationships between organizations and their employees

(Kim, 2021), which in turn can help to enhance organizational performance and adaptability (Kim, 2021). Organizational resilience is defined as an organization's ability to survive and thrive in the face of external challenges and disruptions, such as economic downturns, natural disasters, or pandemics (Kim, 2021). Strategic internal communication, which involves the deliberate and planned use of communication to achieve organizational goals, plays a key factor in building organizational resilience. Kim (2021) highlights the importance of organization-employee relationships in fostering organizational resilience and argues that strategic internal communication can help to strengthen these relationships by promoting trust, transparency, and a sense of shared purpose. These factors can lead to an increase in employee engagement and commitment and can also improve organizational performance and adaptability in the face of external challenges (Kim, 2021).

There are additional factors found within the framework of successful strategic organizational communication that impact relationships within an organization. For example, Barley et al. (2022) investigate the relationship between interdisciplinary ties and linguistic familiarity using multilevel network analysis. It is proposed that interdisciplinary collaboration is an important aspect of scientific research, and that language plays a crucial role in shaping the development of interdisciplinary ties (Barley et al., 2022). These interdisciplinary ties are defined as connections between researchers from different disciplinary backgrounds, and linguistic familiarity is the degree to which researchers share a common language (Barley et al., 2022).

In a similar study, Barbour et al. (2018) propose a theory of communicative intervention and collective communication design called Organizational Communication Design Logics (OCDL). The theory aims to help organizations develop more effective and inclusive

communication practices by shifting the focus from individual communication skills to collective communication design. Barbour et al. (2018) define communicative intervention as a deliberate and strategic effort to transform communication practices in organizations and collective communication design as a collaborative and iterative process of designing and refining communication practices across the organization. Barbour et al. (2018) identify three logics that inform OCDL: (1) the rational-technical logic, which emphasizes efficiency and standardization in communication practices; (2) the interpretive-symbolic logic, which emphasizes shared meanings; and (3) understanding in communication practices; and the critical-emancipatory logic, which emphasizes social justice and empowerment in communication practices. It is possible that organizations can draw on these different logics to design communication practices that are both effective and aligned with their values and goals.

Strategies involving inter-connected relationship factors within an organization present additional insight into organizational communication frameworks. Brown and Roloff (2015) explore the relationships between organizational citizenship behavior (OCB), organizational communication, burnout, perceived organizational support (POS), and psychological contracts. It is perceived that OCB and communication play important roles in promoting employee well-being and reducing burnout and that POS and psychological contracts can act as buffers against the negative effects of burnout (Brown & Roloff, 2015). Brown and Roloff (2021) define OCB as voluntary behaviors that are not part of an employee's formal job description but that contribute to the effective functioning of the organization. The research suggests that OCB can contribute to positive work environments and reduce burnout by fostering a sense of community and shared purpose among employees.

Another factor vital to successful organizational communication is self-reflection and

measurement of goals within the organization itself. Wheeler (2005) provides an overview of measurement in organizational communication research. It is suggested that measurement is a critical component of empirical research in organizational communication, as it enables researchers to assess the effectiveness of communication interventions, develop and test communication theories, and evaluate the impact of communication on organizational outcomes (Wheeler, 2005). There are various types of measurement in organizational communication research, including self-report measures, behavioral measures, and physiological measures (Wheeler, 2005).

In a related study, D'Urso et al. (2014) explore the use of network connections to uncover micro-histories of organizational communication. The study suggests that network analysis can be a useful tool for understanding the historical development of communication practices within organizations and for uncovering the underlying social and cultural contexts that shape communication patterns (D'Urso et al., 2014). D'Urso et al. (2014) define micro-history as a method of historical analysis that focuses on the experiences and perspectives of individuals rather than on grand narratives or overarching structures. D'Urso et al. (2014) use network analysis to explore the micro-history of communication within a single department of a large university. The study concludes that communication networks within the department were shaped by both formal and informal relationships and that changes in these relationships over time had a significant impact on communication patterns and practices (D'Urso et al., 2014). Negative factors also influence strategic organizational communication. For example, Tye-Williams et al. (2020) present research on workplace bullying from diverse perspectives, bringing together scholars from different backgrounds to explore the complexities and importance of the issue. It is implied that workplace bullying is a pervasive and harmful

phenomenon that can have significant negative impacts on individuals and organizations and that it requires interdisciplinary and collaborative approaches to address effectively (Tye-Williams et al., 2020). Tye-Williams et al. (2020) highlight the importance of understanding workplace bullying from multiple perspectives, including those of targets, bystanders, perpetrators, and organizational leaders. The study suggests that each perspective can contribute valuable insights into the dynamics of workplace bullying and can help to inform more effective prevention and intervention strategies.

Diversity, Equity, Inclusion, and Belonging (DEIB) Communication Strategies within Organizational Settings

Diversity, equity, inclusion, and belonging (DEIB) communication strategies within organizational settings involve the deliberate construction and execution of messaging that promotes a workplace culture embracing and valuing diverse backgrounds and perspectives. These strategies aim to ensure equitable access to information and opportunities for dialogue while fostering an environment where all employees feel included and respected. Key components include the use of inclusive language, diversity training, transparent communication of DEIB goals and policies, and feedback mechanisms to continuously adapt and improve DEIB initiatives. This section explores strategies involving organizational culture, academic research frameworks surrounding DEIB organizational issues, the building of diverse organizational communities, racial issues within organizations, the implementation of DEIB communication strategies, and DEIB training strategies used within organizational settings.

Strategies Involving Organizational Culture

Bernstein et al. (2020) explore the evolution of diversity, inclusion, and equity strategies in organizations. The study focuses on the idea that diversity on its own is not enough to foster

an equitable environment; instead, the concept of generative interactions is proposed to promote equity (Bernstein et al., 2020). Although diversity is essential, it does not guarantee an inclusive and equitable workplace (Bernstein et al., 2020). The research suggests that inclusion goes beyond diversity, focusing on the active engagement of all employees, while equity ensures fairness and equal opportunities for success (Bernstein et al., 2020). Furthermore, generative interactions are defined as those that enable individuals to learn from one another and contribute to the growth of the organization (Bernstein et al., 2020). These interactions build trust, promote shared understanding, and create an environment where everyone can succeed.

Building on the idea of trust, it is essential to establish strong leadership communication within an organization. Seijts and Milani (2021) investigate the ways in which leader character can play a crucial role in promoting diversity, equity, and inclusion (DEI) within organizations. Leader character is defined as a set of values, virtues, and behaviors that shape a leader's decision-making and interactions with others (Seijts & Milani, 2021). The research study shows that leaders with strong character traits, such as integrity, courage, and humility, are more likely to create and sustain DEI cultures within their organizations (Seijts & Milani, 2021). Seijts and Milani (2021) provide several examples of how leader character can be applied to promote DEI, such as modeling inclusive behaviors, engaging in difficult conversations about diversity and bias, and holding others accountable for their actions.

In a related study, Men and Jiang (2016) examine the interplay among organizational leadership, culture, and communication in cultivating quality employee-organization relationships (EORs). It is possible that a positive EOR can enhance employee motivation, commitment, and job satisfaction and ultimately contribute to the success of the organization (Men & Jiang, 2016). The research conducted in the study identifies several key factors that can

contribute to a positive EOR, including effective leadership, a positive organizational culture, and open and transparent communication. Men and Jiang (2016) conclude that leaders who prioritize employee development, support innovation, and demonstrate ethical behavior are more likely to cultivate positive EORs. Furthermore, the research emphasizes the importance of organizational culture in promoting positive EORs. For example, a positive culture should promote respect, trust, and inclusivity and should provide opportunities for employee feedback and participation (Men & Jiang, 2016).

Another factor one should consider when establishing a framework for strategic communication within the area of organizational diversity, equity, and inclusion is organizational commitment. Baum (2021) examines the extent to which organizations are truly committed to diversity, equity, and inclusion (DEI) policies and whether these policies are leading to a workplace culture shift. The study proposes that while many organizations have implemented DEI policies, these policies may not always be backed up by concrete action or a genuine commitment to change (Braum, 2021). Several challenges arise that organizations face in promoting a culture of DEI, including resistance from some employees, a lack of understanding of DEI issues, and insufficient resources or support for DEI initiatives (Braum, 2021). Baum (2021) suggests that organizations need to address these challenges and demonstrate a genuine commitment to DEI by investing in training, providing resources, and holding leaders accountable for progress on DEI goals. One could conclude that measuring progress on DEI initiatives and holding organizations accountable is vital for real change to occur within the organization. Baum (2021) argues that organizations need to track and report on DEI metrics, such as representation, retention, and promotion rates, and use this data to inform future initiatives and goals.

Academic Research Frameworks Surrounding DEIB Organizational Issues

As academic research continues to provide valuable insights into diversity, equity, inclusion, and belonging, it is essential to establish succinct frameworks within these organizational communication areas. Wilhoit et al. (2022) provide a review and research agenda on inclusion research in organizational communication. The study shows that while inclusion has become an increasingly important topic in organizational communication research, there is a need for a more coordinated and systematic approach to studying inclusion, particularly in terms of how it is communicated within organizations (Wilhoit et al., 2022). The study defines inclusion as the degree to which individuals feel valued, respected, and supported within an organization and suggests that effective communication is critical to achieving inclusion (Wilhoit et al., 2022). Wilhoit et al. (2022) identify three key areas of focus for inclusion research in organizational communication: (1) understanding the role of communication in shaping perceptions and experiences of inclusion; (2) exploring the use of communication strategies and practices to promote inclusion; and (3) examining the impact of technology on communication and inclusion in organizations. The study concludes that a more coordinated and interdisciplinary approach is needed to advance inclusion research in organizational communication (Wilhoit et al., 2022).

One might also conclude that there should be a greater increase in interdisciplinary collaboration between scholars in organizational communication, management, psychology, and other related fields, as well as a greater focus on empirical research and the development of practical tools and strategies for promoting inclusion in organizations. For example, Ferdman (2020) provides a critical assessment of the current state of diversity and inclusion (D&I) initiatives and their potential for consulting psychology. The study argues that while progress has

been made in promoting D&I, significant challenges still need to be addressed. Ferdman (2020) suggests that consulting psychologists can play a valuable role in addressing these challenges by providing education, training, and support to organizations and individuals. Furthermore, the study emphasizes the importance of recognizing the intersectionality of D&I issues and the need for a more holistic approach to D&I initiatives (Ferdman, 2020).

Building Diverse Organizational Communities

An area within diversity, equity, inclusion, and belonging that doesn't receive as much attention is age-related discrimination. Woodward and Vongswasdi (2017) explore intergenerational communication preferences in the workplace and argue that there is more that unites than divides different generations. The study suggests that while there are differences in communication styles and preferences among different generations, there is also a shared desire for effective communication and collaboration. Woodward and Vongswasdi (2017) identify several key factors that contribute to effective intergenerational communication, including clear and direct communication, active listening, and a willingness to adapt to different communication styles. The research suggests that organizations can promote effective intergenerational communication by providing training and resources to support communication skills and by promoting a culture of openness and collaboration (Woodward & Vongswasdi, 2017). Furthermore, Woodward and Vongswasdi (2017) argue that intergenerational communication can be a source of strength and innovation for organizations, as different generations bring unique skills and perspectives to the workplace. This type of communication strategy can lead to stronger organizational communities.

Gilpin and Miller (2013) investigate the concept of complex organizational communities (COCs) and how identity is shaped within these communities. It is suggested that COCs are

characterized by multiple overlapping identities and relationships, which can make them difficult to define and understand (Gilpin & Miller, 2013). The study identifies several key factors that shape identity within COCs, including perceptions of membership, boundaries, and relationships (Gilpin & Miller, 2013). One might conclude that identity is emergent within COCs, meaning that it is constantly evolving and shaped by interactions and relationships within the community. Furthermore, Gilpin and Miller (2013) suggest that communication plays a crucial role in shaping identity within COCs, that communication can help define boundaries and relationships within the community, and that communication can facilitate the emergence of new identities.

Organizations that operate in both physical and virtual communal spaces are a common theme in modern times. Gibbs et al. (2021) explore the discursive construction of subgroups in global virtual teams. The study proposes that virtual teams face unique challenges in constructing subgroups due to the lack of physical proximity and the reliance on communication technologies (Gibbs et al., 2021). Several key discursive practices are identified that contribute to the construction of subgroups in global virtual teams, including the use of language, communication technology, and cultural norms (Gibbs et al., 2021). The study suggests that these discursive practices can either reinforce or challenge existing subgroup boundaries, depending on how they are used. Furthermore, Gibbs et al. (2021) imply that virtual teams need to be proactive in managing subgroups and addressing potential conflicts and recommend that virtual teams engage in ongoing communication and reflection to identify and address subgroup dynamics in order to promote cultural understanding and minimize the impact of subgroup boundaries.

Addressing Racial Issues within Organizations

Another area within the topic of diversity, equity, inclusion, and belonging that receives a lot of attention is racial discrimination. Within a societal and cultural context, it is vital that

academic research continues to address this topic. Lee and Li (2021) explore how communicative actions can affect the engagement of racial minority employees who experience discrimination in the workplace. The study suggests that while discrimination can negatively impact employee engagement, certain communicative actions can mitigate these effects. Lee and Li (2021) identify several communicative actions that can promote engagement among racial minority employees, including seeking support from colleagues, engaging in proactive problem-solving, and redefining the meaning of work. The research shows that managers play a crucial role in promoting engagement among racial minority employees and that effective communication from managers can mitigate the negative effects of discrimination (Lee & Li, 2021). Furthermore, Lee and Li (2021) emphasize the importance of intersectionality in understanding the experiences of racial minority employees. Employees who experience multiple forms of discrimination may require different types of support and communication strategies (Lee & Li, 2021).

In a related study that expands the academic research framework, Ngwu (2022) suggests a more fluid methodology in organizational communication inquiry, drawing on African feminist organizational communication historiography. The study contends that the traditional approach to organizational communication research has often been too static and relies on fixed categories and definitions, which can limit the understanding of complex organizational processes and dynamics (Ngwu, 2022). Ngwu (2022) proposes a more flexible and adaptive approach that acknowledges the fluidity and intersectionality of organizational experiences, particularly those of African women. The study emphasizes the importance of historical analysis in understanding organizational communication, drawing on the experiences and perspectives of African women to challenge dominant narratives and power structures. Ngwu (2022) argues that this approach

can help uncover the ways in which gender, race, and class intersect in organizational contexts and how these intersections have shaped communication practices and outcomes.

Implementation of DEIB Communication Strategies

It is important to identify strategies to address DEIB issues within an organizational context, but it is equally vital to understand how to implement these strategies throughout an organization. Mease (2012) examines the strategic approach consultants take to promote diversity in organizations. The study proposes that the business case for diversity, which emphasizes the economic benefits of a diverse workforce, has been widely used by consultants as a tool to promote change (Mease, 2012). However, Mease (2012) posits that this approach has limitations and might not always be the most effective way to foster diversity and inclusion. The business case for diversity tends to focus on the instrumental value of diversity, which can lead to tokenism and a narrow focus on measurable outcomes (Mease, 2012). Additionally, the study suggests that this approach may inadvertently perpetuate stereotypes and marginalize certain groups. As a result, Mease (2012) proposes a more holistic approach to diversity that emphasizes the moral and social value of diversity rather than just its economic benefits.

In a similar study, Graf (2017) examines the communicative approach of European media companies towards ethnic diversity, particularly in terms of the structures and practices that support or hinder the representation of diverse voices. Drawing on interviews with media professionals, Graf (2017) argues that ethnic diversity is still largely absent from European media and that current efforts to address this issue tend to focus on individual initiatives rather than structural change. The study highlights the importance of communicative practices in shaping the representation of ethnic diversity in media. Media companies often rely on established networks and social capital to identify potential contributors and sources, which can

limit the diversity of voices represented (Graf, 2017). One could conclude that a more intentional and structural approach is needed to address the underrepresentation of ethnic diversity in media and that media companies should reflect on their own biases and assumptions and actively seek out and engage with diverse communities.

For meaningful change to occur within an organization, it is essential that organizational leaders help implement a change strategy. Ruiz-Mesa (2022) examines the communicative practices of chief diversity officers (CDOs) in higher education institutions in the United States, focusing on how they navigate and address issues of race. Drawing on interviews with CDOs, the study argues that these professionals play a critical role in advancing diversity and inclusion initiatives on campus but also face several challenges in their work (Ruiz-Mesa, 2022). Ruiz-Mesa (2022) highlights the importance of dialogue and open communication in the work of CDOs, particularly when it comes to addressing issues of race.

The study shows that CDOs often engage in difficult conversations with various stakeholders, including students, faculty, staff, and administrators, and must navigate a range of emotions and perspectives and that the use of storytelling is a key communicative practice among CDOs, as they seek to connect with their audiences and build understanding around issues of diversity and inclusion (Ruiz-Mesa, 2022). CDOs also face a plethora of challenges, including resistance from some stakeholders, limited resources and support, and the need to balance competing demands and priorities (Ruiz-Mesa, 2022). These organizational leaders must navigate these challenges while maintaining a focus on equity and inclusion and being responsive to the needs and concerns of marginalized groups on campus.

DEIB Training Strategies Used within Organizational Settings

Training employees and stakeholders within an organization is common practice.

However, DEIB training within an organization is a complex area. Alhejji et al. (2016) review and analyze the effectiveness of diversity training programs in promoting diversity and inclusion in the workplace. The review analyzed 34 studies, and the results revealed mixed outcomes regarding the effectiveness of these programs (Alhejji et al., 2016). While some studies reported positive outcomes, including improved attitudes toward diversity and increased cultural competence, other studies found no significant impact or even negative outcomes, such as increased prejudice and discrimination (Alhejji et al., 2016). Additionally, the review highlighted several factors that can influence the effectiveness of diversity training programs, including program content, delivery, and evaluation methods. Alhejji et al. (2016) conclude that more research is needed to understand the most effective methods for designing and implementing diversity training programs that can lead to positive outcomes and create a more inclusive workplace culture.

In a similar study, Otten et al. (2022) present a case study of a critical service-learning course that integrates diversity, equity, and inclusion (DEI) into social innovation education. The study argues that social innovation education can play a vital role in promoting DEI by teaching students to address social problems through an equity-focused lens (Otten et al., 2022). The case study describes a course that combines traditional service learning with critical pedagogy to engage students in a critical examination of issues related to power, privilege, and oppression. The course also incorporates experiential learning activities and reflection exercises to help students develop their understanding of DEI issues and their role as social innovators. Otten et al. (2022) conclude that critical service learning can be an effective approach to integrating DEI into social innovation education. It is reasonable to conclude that this approach can help students develop a deeper understanding of DEI issues and their relevance to social innovation, as well as

provide them with practical skills and strategies for promoting equity in their future careers.

Another related study investigates the difference between action and words. Ballard (2021) argues that actions, rather than words, are necessary to effect diversity, equity, and inclusion (DEI) in academic institutions. The study suggests that many academic institutions have relied too heavily on language and symbolic gestures to promote DEI without implementing substantive changes (Ballard, 2021). To address this issue, Ballard (2021) proposes several specific actions that academic institutions can take to promote DEI, such as diversifying leadership positions, promoting transparency and accountability in hiring and promotion processes, and investing in diversity training and resources. The study emphasizes the importance of creating a culture of inclusion, which involves fostering a sense of belonging among all members of the academic community. Additionally, Ballard (2021) argues that academic institutions should prioritize collaboration and collective action to promote DEI rather than relying on individual efforts or token gestures. Interestingly, the study also suggests that academic institutions can partner with community organizations and engage in interdisciplinary collaborations to promote DEI in meaningful ways (Ballard, 2021).

Immersive Strategic Media

Immersive media, such as virtual reality (VR), augmented reality (AR), and mixed reality (MR), have transformed the way society interacts with technology. These innovations provide engaging, interactive experiences that enhance entertainment, education, and communication. Immersive media has revolutionized industries like gaming, healthcare, and training by offering realistic simulations and unique learning opportunities. As this technology advances, its impact on social interaction, collaboration, and empathy continues to grow, reshaping our digital landscape. The following sections explore topics surrounding the history of immersive media

technologies, educational uses of immersive media technologies, VR strategies in education, user experience design for immersive strategic media, the use of immersive media technologies in organizational training, the use of immersive media technologies in DEIB training, societal and cultural topics related to immersive media, and negative issues surrounding immersive media technologies.

Brief History of Immersive Media Technologies

Much of the immersive media technologies found in today's ecosystems are built on ideas that date back as early as the 1800s. The first stereoscope, using twin mirrors to project a single image, was invented in 1838, and that concept eventually morphed into the View-Master toy, which was patented in 1939 and is still in production (Gackenbach et al., 2017). The next big technological leap in immersive systems came from Morton Heilig, who is often regarded as the father of virtual reality (Gackenbach et al., 2017). Heilig had the vision to create a multisensory theater experience that would be more immersive than anything people had previously experienced. His Sensorama simulator was a fully immersive, multisensory theater experience that encompassed 3-D images, stereo sound, wind, smells, and vibrations (Gackenbach et al., 2017).

Bown (2017) provides an overview of the history of virtual reality (VR) technology, tracing its development from the early experiments of the 1960s to the more advanced systems of the 1990s. In 1965, an inventor named Ivan Sutherland created a head-mounted device that Sutherland marketed as a window into a virtual world (Sutherland, 1968). Sutherland's device was the first head-mounted display to incorporate computer technology to mediate a VR system (Bown, 2017). The term "virtual reality" was first used in the 1980s when Jaron Lanier started to design and develop goggles and gloves needed to experience what he called virtual reality

(Burdea & Coiffet, 2003). Visual Programming Languages (VPL) was one of the first companies to design, develop, and sell VR products to consumers. VPL developed the DataGlove, the EyePhone, and AudioSphere. These devices, when used together, create an immersive experience (Burdea & Coiffet, 2003).

Harley (2018) explores the history of Palmer Luckey, the founder of Oculus VR, and his contributions to the development of contemporary virtual reality. Luckey is described as a passionate inventor who started working on VR technology as a teenager, ultimately creating a prototype in the late 1990s that would eventually become the Oculus Rift virtual reality headset (Harley, 2018). Luckey's invention of the Oculus Rift, combined with a successful Kickstarter campaign, led to Oculus VR being acquired by Facebook in 2014 for $2 billion (Harley, 2018). Harley (2018) notes that this acquisition helped fuel the growth of the VR industry and led to the creation of many new VR products and experiences that are currently found throughout the world.

Educational Uses of Immersive Media Technologies

As technology advances throughout societies around the globe, immersive media technology is becoming more prevalent in education and training use cases found within many organizations and institutions. Volkow and Howland (2018) explore the potential of immersive media technology to enhance human performance across various domains, including education, training, and work environments. The study emphasizes the unique capabilities of immersive technology to combine the best aspects of virtual reality (VR) and augmented reality, creating immersive and interactive experiences that can improve learning outcomes and productivity (Volkow & Howland, 2018). Moreover, the study highlights several benefits of this technology, such as its ability to provide real-time feedback, facilitate collaboration, and simulate complex

scenarios for hands-on practice (Volkow & Howland, 2018). It is possible that immersive technology can help bridge the gap between theoretical knowledge and practical application, allowing users to develop and refine their skills in a realistic context. Volkow and Howland (2018) acknowledge the challenges associated with implementing immersive technology, including technical limitations, high development costs, and potential health concerns.

Virtual Reality (VR) Immersive Media Technology Strategies in Education

Virtual reality (VR) technology has emerged as a transformative tool in education, offering innovative strategies to enhance learning experiences across various disciplines. Current VR media strategies in education focus on immersive learning, simulation-based training, collaborative environments, gamification, and accessibility improvements, each contributing uniquely to educational outcomes. VR technology creates immersive learning environments that allow students to explore and interact with content in a three-dimensional space. This immersion facilitates a deeper understanding of complex subjects by providing a sense of presence within a virtual world. For instance, VR has been utilized to transport students to historical sites, enabling them to explore ancient civilizations firsthand (Radianti et al., 2020). Such experiences are not only engaging but also enhance retention and comprehension by situating learners in contexts that closely mimic real-life scenarios.

In fields that require hands-on experience, such as medicine, engineering, and aviation, VR offers simulation-based training that is both cost-effective and risk-free. Medical students, for example, can perform virtual surgeries, providing an opportunity for practice without the ethical and practical concerns associated with training on live patients (Kyaw et al., 2019). These simulations can replicate critical situations that are difficult to recreate in real life, preparing students for the complexities of professional practice. VR also supports the creation of virtual

collaborative spaces where students can work together regardless of geographical limitations. This strategy promotes teamwork and communication skills, essential competencies in today's globalized world. Collaborative VR projects can involve students from different parts of the world working together on scientific experiments, architectural designs, or cultural exchanges, fostering a sense of global citizenship and intercultural understanding (Bower et al., 2015).

The integration of gamification elements in VR educational applications has proven effective in motivating learners by incorporating elements such as points, badges, and leaderboards into educational content. This approach leverages the intrinsic motivation and engagement facilitated by game-like experiences, making learning more enjoyable and compelling (Hamari et al., 2016). Gamified VR experiences can transform mundane subjects into exciting challenges, thereby enhancing learner engagement and motivation.

VR has the potential to make education more accessible to students with disabilities by offering customizable learning environments tailored to individual needs. For instance, VR can simulate tactile experiences for visually impaired students or provide sign language avatars for those who are deaf or hard of hearing, thus removing barriers to learning and participation (Lancaster et al., 2020). Despite these promising strategies, the implementation of VR in education faces challenges, including high costs, the need for technical support, and the potential for cyber sickness. However, as technology advances and becomes more affordable, VR is poised to become an integral part of educational landscapes worldwide.

Scavarelli et al. (2021) examine the potential of VR technologies for facilitating social learning experiences. The study highlights several advantages of using VR in social learning spaces, such as increased engagement, improved collaboration, and the ability to simulate complex scenarios for hands-on learning (Scavarelli et al., 2021). The study concludes that these

technologies can support the development of social skills and foster a sense of community among learners, enhancing the overall educational experience. However, Scavarelli et al. (2021) acknowledge the challenges and limitations associated with implementing VR technologies in social learning contexts, including technical barriers, high development costs, and potential adverse effects on users' health and well-being.

In a related study, Gudoniene and Rutkauskiene (2018) explore the potential of virtual reality in revolutionizing educational experiences and enhancing learning outcomes. The study hypothesizes that VR can create immersive, interactive learning environments that facilitate students' understanding and engagement (Gudoniene & Rutkauskiene, 2018). The results of the study highlight the benefits of incorporating VR in education, including increased motivation, improved retention, and enhanced collaboration among students (Gudoniene & Rutkauskiene, 2018). The research highlighted in the study emphasizes the potential of VR to facilitate personalized learning by adapting the educational content to individual student's needs, preferences, and learning styles (Gudoniene & Rutkauskiene, 2018). It is possible that this can result in more effective learning experiences and improved educational outcomes.

In an examination of VR media technology usage in the classroom, Garzón et al. (2019) conducted a comprehensive review and meta-analysis of studies exploring the effectiveness of immersive media in various educational contexts. The research aims to synthesize the existing literature and provide a robust understanding of the potential benefits and limitations of VR in education. Through the analysis of numerous studies that investigate the use of VR in different educational settings, focusing on learning outcomes, motivation, and engagement, the review reveals that immersive media technology has a positive impact on learning outcomes with students who use immersive-based educational materials, demonstrating better performance than

those using traditional methods (Garzón et al., 2019). However, Garzón et al. (2019) also identify several limitations in the existing literature, including a lack of consistency in the study designs and methodologies, small sample sizes, and insufficient attention to the potential negative effects of this technology on learners.

Bailenson (2018) highlights the immersive and interactive nature of virtual reality that allows users to experience situations and perspectives vastly different from their own, potentially leading to greater understanding and compassion. Moreover, Bailenson (2018) addresses the psychological effects of VR, discussing both its benefits in therapeutic settings and the challenges related to psychological impacts and privacy concerns. Bailenson (2018) contemplates the future of VR, speculating on its evolving role in society and potential ethical dilemmas.

Virtual reality technology in higher education is an area of growing interest among researchers, with current studies exploring its application, effectiveness, and student engagement across various disciplines. The immersive nature of VR provides an opportunity for innovative pedagogical approaches that can enhance learning and retention. Current research is investigating how VR can be integrated into higher education curricula to support experiential learning. For instance, VR is being used in medical education for anatomy instruction, allowing students to visualize and interact with 3D models of the human body (Kyaw et al., 2019). In fields such as archaeology and history, VR enables students to virtually visit and explore ancient sites and artifacts, offering a perspective that textbooks cannot provide (Markowitz et al., 2018).

Studies measuring the effectiveness of VR in higher education often focus on student outcomes such as knowledge gain, skill acquisition, and retention. A meta-analysis by Merchant et al. (2014) found that VR-based instruction can lead to higher learning gains compared to more

traditional methods. However, the effectiveness of VR can be influenced by factors such as the quality of the VR content, the learners' immersion, and the presence of guidance or scaffolding during the learning process (Radianti et al., 2020). VR's potential to increase student engagement and motivation is a key focus of current research. The immersive experiences provided by VR can lead to higher levels of student interest and enthusiasm for the subject matter (Makransky et al., 2019). Research by Parong and Mayer (2018) suggests that the use of VR can lead to increased intrinsic motivation, which is linked to deeper learning and better performance. Another area of research involves the use of VR for skill development and practical training. For example, VR simulations are used in engineering education to provide hands-on experience with complex machinery or processes in a safe and controlled environment (Martin-Gutiérrez et al., 2017). This practical application extends to soft skill development, such as public speaking, where VR provides a platform for students to practice and receive feedback in a simulated environment (Chollet et al., 2018).

Research into the accessibility and inclusivity of VR in higher education is addressing how VR can support diverse learning needs. Studies are exploring how VR can be designed to be accessible to students with disabilities, considering aspects such as visual impairment, hearing loss, or mobility challenges (Lancaster et al., 2020). Furthermore, there is an exploration of how VR can foster inclusivity by allowing students from different backgrounds to experience and learn about diverse cultures and perspectives (Li et al., 2017).

Despite the potential benefits, current research also identifies challenges and limitations associated with the use of VR in higher education. These include the high cost of VR hardware and software, the need for technical support, and the potential for cybersickness, which can affect the user experience (Cai et al., 2017). Additionally, there is a need for faculty training and

development to effectively integrate VR into teaching (Garrett, 2021).

Future research is likely to explore the long-term impacts of VR on learning, how VR can be scaled for larger class sizes and the development of best practices for VR implementation in higher education. Researchers are also interested in the potential of VR for remote and hybrid learning environments, particularly considering increased online learning due to global events such as the COVID-19 pandemic (Bailenson, 2021). VR technology in higher education is a field with many opportunities for enhancing learning experiences. Current research supports the use of VR for immersive, experiential learning, skill development, and increased student engagement. However, challenges related to accessibility, cost, and technical support must be addressed to fully realize VR's potential in higher education settings.

User Experience Design for Immersive Strategic Media

User experience (UX) design for immersive media technology, such as virtual reality, is an evolving field that demands designers adapt traditional UX strategies to fit the unique characteristics and capabilities of immersive environments. Hassenzahl (2010) explored UX design strategies for immersive media, focusing on user engagement, intuitive interaction, accessibility, and the creation of meaningful experiences. The research highlights situations in which designers are leveraging the immersive nature of VR and AR to create highly engaging experiences that capture users' attention and emotions. Additionally, storytelling is a powerful tool in immersive media, and UX designers are crafting narratives that users can not only witness but also participate in and affect the outcome (Hassenzahl, 2010). By creating compelling storylines and characters, designers can foster a deeper connection between the user and the virtual environment.

Moreover, intuitive interaction is crucial in immersive media. Norman (2013) notes that

designers aim to create interfaces and controls that feel natural and mimic real-world interactions. This can involve the use of gestural controls, gaze-based navigation, and voice commands, which reduce the learning curve and allow users to navigate the virtual space as they would the physical world (Norman, 2013). Haptic feedback is also utilized to provide tactile responses to actions, enhancing the sense of realism.

Accessibility is another vital component of UX design. Accessibility in immersive media is about ensuring that all users, including those with disabilities, can access and fully experience the content (Fritz, 2020). Fritz (2020) noted that UX designers are integrating features such as subtitles, audio descriptions, and alternative control schemes to accommodate users with visual, auditory, or motor impairments. This inclusivity not only expands the user base but also aligns with the ethical responsibility of designers to create technology that serves a diverse audience. Creating meaningful experiences in immersive media involves designing interactions that resonate with users on a personal level. UX designers incorporate elements that are contextually relevant to the user, promote exploration, and allow for personalization (McCarthy & Wright, 2004). By doing so, they can create experiences that are not only immersive but also personally significant to the user, which can lead to increased satisfaction and long-term engagement. Ethical considerations in UX design pose additional considerations for designers and developers. Madary and Metzinger (2016) noted in their study that with the power of immersive media to influence user perceptions and behavior, ethical considerations are increasingly becoming a part of UX design strategies. Designers must consider the potential for overuse or dependency and design experiences that encourage healthy usage patterns (Madary & Metzinger, 2016). Furthermore, the privacy of user data in immersive environments, where personal reactions and behaviors can be tracked with precision, is a growing concern that must be addressed through

transparent data practices and user consent mechanisms.

Immersive media offers the opportunity to engage multiple senses, and current UX strategies emphasize multisensory design. By incorporating visual, auditory, haptic, and even olfactory elements, designers can create a more holistic and immersive experience (Speicher et al., 2019). Multisensory design not only enhances realism but can also improve accessibility by providing multiple modes of perceiving information. Furthermore, UX design for immersive media relies heavily on user testing and iterative design. Designers must frequently test their experiences with real users to gather feedback on usability and engagement (Zimmerman et al., 2007). This feedback informs iterative revisions, ensuring that the final product is finely tuned to user needs and preferences (Zimmerman et al., 2007). UX design strategies for immersive media are continually adapting to the possibilities and challenges presented by these technologies. By focusing on engagement, intuitive interaction, accessibility, meaningful experiences, ethical considerations, multisensory design, and continuous testing, designers can create immersive media experiences that are not only technologically impressive but also deeply resonant with users.

Usage of Immersive Media Technologies in Organizational Training

Like the academic usage of immersive media technology, many corporate and non-profit organizations are incorporating virtual reality technology in their training frameworks. Khandelwal and Upadhyay (2019) explore the potential of virtual reality technology to transform human resource (HR) management and development practices. Khandelwal and Upadhyay (2019) assert that VR offers immersive, interactive experiences that can facilitate effective learning and skill development. The findings of the study highlight various ways in which VR can be employed in HR processes, such as training and development, recruitment and selection,

and performance management (Khandelwal & Upadhyay, 2019). Moreover, the study emphasizes the role of VR in enhancing employee engagement and well-being. By incorporating VR technology in team-building activities, organizations can foster collaboration, communication, and camaraderie among employees, even if they are geographically dispersed (Khandelwal & Upadhyay, 2019).

In a related study, Shiradkar et al. (2021) explore the potential of virtual reality technology in transforming safety training by creating immersive, interactive, and realistic training environments. The study asserts that VR-based training platforms can improve the effectiveness of safety training, increase learner engagement, and reduce training costs. The results of the study found that the use of VR technology allows trainees to practice their response to dangerous situations without the risk of actual harm, leading to better preparedness and enhanced safety performance (Shiradkar et al., 2021). Furthermore, VR-based training can be customized to meet the specific needs of different industries and job roles, ensuring that the training is relevant and applicable to the learners (Shiradkar et al., 2021).

Virtual and augmented technologies are starting to increase in various corporate use cases. Zielinski (2021) investigates the increasing influence of virtual reality technology in the field of training and development. The study maintains that VR provides immersive, interactive experiences that can significantly improve learning outcomes and enhance the overall effectiveness of training programs (Zielinski, 2021). Zielinski (2021) highlights the benefits of incorporating VR in training initiatives, such as increased learner engagement, improved skill acquisition, and reduced training costs. By offering immersive and realistic simulations, VR can capture learners' attention, making them more engaged in the learning process and enabling better retention of knowledge (Zielinski, 2021). Additionally, VR allows trainees to practice

complex tasks and procedures in a safe and controlled environment, leading to improved skill development and performance. Furthermore, the study points out that VR-based training can be cost-effective in the long run, as it reduces the need for physical training facilities, materials, and instructors while also accommodating a larger number of trainees (Zielinski, 2021).

Usage of Immersive Media Technologies in DEIB Training and Awareness

As many academic institutions, corporate businesses, and other organizations facilitate communication, discussions, and training regarding DEIB issues, some organizations and entities are beginning to incorporate immersive media into various frameworks. Hasler et al. (2017) investigate the impact of virtual race transformation on racial biases using immersive virtual reality technology. The study explores the potential of VR to alter individuals' racial self-representation and affect their attitudes toward other racial groups, ultimately examining whether such transformations can reduce racial biases. In the study, participants were exposed to virtual environments where their racial appearance was altered to that of another race. The research aimed to assess whether this virtual race transformation would influence the participants' racial attitudes and biases. The results of the study indicate that the virtual race transformation led to a reversal of racial ingroup biases, as participants displayed more positive attitudes towards the racial group they were virtually transformed into (Hasler et al., 2017). It is possible to assume that this outcome demonstrates the potential of VR technology to foster empathy and understanding between different racial groups.

In a similar study, Bujić et al. (2020) explore the impact of virtual reality technology on people's attitudes toward human rights issues. The study suggests that VR can serve as an empathy machine that enables users to experience the reality of others, thereby promoting a greater understanding and concern for human rights (Bujić et al., 2020). The study found that

participants who experienced a VR simulation of a refugee camp were more likely to donate to refugee causes than those who simply read a description of the camp. Additionally, it was found that VR experiences of police brutality increased participants' perceptions of police misconduct and reduced their support for police violence. It is also noted that there are limitations to the use of VR in promoting human rights, such as the potential for users to become desensitized to the experience or for the technology to be used for propaganda purposes (Bujić et al., 2020).

Augmented reality has also been shown to be effective in DEIB topics. Frydenberg and Andone (2018) explore the potential of immersive technologies to improve and reshape global learning communities. Frydenberg and Andone (2018) propose that integrating immersive media into educational settings can facilitate more engaging and immersive learning experiences, fostering collaboration and connections among learners worldwide. The study emphasizes the potential of immersive media to bridge geographical and cultural gaps, connecting learners from different backgrounds and promoting global understanding and collaboration (Frydenberg & Andone, 2018).

Montagud et al. (2020) investigate the potential of virtual reality and 360-degree content to create inclusive and accessible cultural experiences for individuals with disabilities. The study places emphasis on the importance of providing equal access to cultural content for all, regardless of physical or cognitive abilities (Montagud et al., 2020). The research is centered on the development and implementation of Culture 4 All, a project aimed at leveraging VR360 technology to create immersive and accessible cultural experiences. The project combines VR360 content with accessibility features, such as audio descriptions, sign language, and subtitles, to cater to a diverse range of user needs. The findings of the study emphasize the importance of user-centered design in creating accessible VR360 experiences, involving users

with disabilities in the development process to ensure their needs are adequately met (Montagud et al., 2020).

Many academic, corporate, and non-profit organizations are interested in DEIB outreach within their local communities. Mikelli and Dawkins (2020) explore the potential of virtual reality technology in promoting media literacy and fostering community engagement through the creation of immersive, interactive experiences. The study proposes that VR can be a powerful tool for reimagining and reconfiguring spaces and places, allowing users to engage with their environment in innovative ways. Mikelli and Dawkins (2020) highlight the benefits of incorporating VR in community-based media literacy interventions, such as fostering a sense of belonging, enhancing cultural understanding, and empowering marginalized communities. By creating immersive experiences, VR can help individuals develop a deeper connection to their environment and foster a sense of belonging and identity within their community (Mikelli & Dawkins, 2020).

Marino et al. (2020) investigate the role of virtual reality in examining the influence of perceived race and ethnicity on credibility assessments within urban and suburban settings. The researchers posit that VR can be a valuable tool in studying biases and credibility judgments in controlled environments. The study itself utilized VR to immerse participants in urban and suburban settings while interacting with virtual characters of different racial and ethnic backgrounds. The study aimed to determine if the perceived credibility of these characters was influenced by their race/ethnicity and the environment in which the interaction took place (Marino et al., 2020). The findings of the study suggest that there is a significant interaction between the virtual environment and perceived race/ethnicity in determining credibility judgments (Marino et al., 2020). This highlights the importance of considering contextual factors

when examining racial and ethnic biases in credibility assessments.

Societal and Cultural Topics Surrounding Immersive Media Technologies

In recent years, various societal and cultural issues have come to light in conjunction with new immersive media technologies. Steffen et al. (2019) propose a comprehensive framework of affordances for immersive virtual reality technologies. The study aims to provide a systematic understanding of the capabilities and potential applications of these emerging technologies. Steffen et al. (2019) define affordances as the opportunities and constraints provided by a technology that enable specific interactions and outcomes. By identifying the unique capabilities and potential applications of these technologies, the study contributes to a more systematic and comprehensive understanding of various domains, including education, entertainment, and communication (Steffen et al., 2019).

Abdullah et al. (2019) investigate the impact of virtual reality on group work skills and self-directed learning in problem-based learning (PBL) narratives. The study proposes the concept that VR can enhance student engagement, collaboration, and learning outcomes in PBL settings (Abdullah et al., 2019). The research conducted used a mixed-methods approach to determine the effects of VR on PBL narratives. The participants were divided into two groups: one utilizing traditional PBL methods and the other using VR-based PBL methods. The study assessed the participants' group work skills, self-directed learning, and overall learning outcomes. The results revealed that the group using VR-based PBL methods displayed significantly improved group work skills and self-directed learning compared to the traditional PBL group (Abdullah et al., 2019).

Social interaction presents both challenges and benefits of immersive media technologies. Miller et al. (2019) examine the potential of immersive and interactive media to transform social

interactions by providing immersive, interactive, and context-aware experiences. In the study, the researchers investigate how immersive technology can create shared environments, enhance communication, and foster collaboration among users. Miller et al. (2019) discuss the various ways this media can be utilized to facilitate social interactions, such as allowing users to interact with virtual content in a real-world context, overlaying digital information on physical objects, and providing new channels for communication. The study highlights the concept that immersive media can create shared experiences by enabling users to see and manipulate the same virtual objects simultaneously, thus promoting a sense of presence and togetherness (Miller et al., 2019). Challenges are also identified when implementing immersive media in social interactions. These include issues related to privacy, security, and user acceptance (Miller et al., 2019). Miller et al. (2019) suggest that overcoming these challenges requires addressing technical limitations, ensuring the protection of users' personal information, and promoting a positive user experience.

In a related study further exploring the sense of presence, Felton and Jackson (2022) provide an overview of the concept of presence in the context of virtual reality and other immersive technologies. The study puts forward various factors that contribute to the sensation of presence, as well as its importance in creating engaging and effective virtual experiences. Presence is defined as the subjective feeling of "being there" in a virtual environment, which is influenced by multiple factors, including the realism and interactivity of the environment, the user's cognitive and emotional engagement, and the technology's ability to provide multisensory feedback (Felton & Jackson, 2022). The study emphasizes the idea that a strong sense of presence is essential for achieving the full potential of VR and other immersive technologies in applications such as education, training, and entertainment (Felton & Jackson, 2022). Furthermore, Felton and Jackson (2022) discuss various methods used to measure presence,

including subjective self-report measures, physiological measures, and behavioral indicators.

Cultural aspects of immersive media present additional challenges and rewards in relation to human interaction. Liberati (2017) delves into the phenomenological aspects of augmented reality games, particularly focusing on the popular game Pokémon Go. The study investigates how immersive games blend the digital and physical worlds, leading to unique experiences and interactions with digital objects. Liberati (2017) adopts a phenomenological approach to analyze the experiences of players as they navigate the boundary between the virtual and real worlds. The study suggests that immersive games, such as Pokémon Go, create a new form of reality in which digital objects coexist with physical objects, leading to novel interactions and experiences (Liberati, 2017). Moreover, the study emphasizes the conceptual notion that players' experiences with digital objects in immersive games are not merely visual but also involve other senses and emotions (Liberati, 2017). This suggests that multisensory interaction contributes to a more immersive and engaging gaming experience, which in turn fosters a sense of presence and connection to the digital world.

Negative Issues Surrounding Immersive Media Technologies

As with many new technologies, there are negative issues that envelop immersive media—specifically virtual reality. This scrutiny often begins with research surrounding the topic. Ramirez (2018) addresses the ecological validity and ethical concerns surrounding virtual reality research. The study urges for greater scrutiny of VR studies to ensure both the quality and ethical integrity of the research. Ramirez (2018) highlights the issue of ecological validity, questioning the extent to which VR environments accurately represent real-world scenarios, and argues that the lack of ecological validity may limit the generalizability of VR research findings to real-life situations. Furthermore, the immersive nature of VR experiences can potentially lead

to negative psychological consequences for participants, such as anxiety or distress (Ramirez, 2018). The study calls for researchers to carefully consider the ethical implications of their studies and implement measures to minimize potential harm to participants.

In a similar study focusing instead on augmented reality media, Neely (2019) explores the ethical implications of augmented reality technology and addresses the question of who has the right to augment a specific physical space. There are concerns raised about the impact of this new technology on privacy, property rights, and public spaces, as well as the potential for immersive media to create a digital divide between users and non-users of the technology (Neely, 2019). Neely (2019) argues that new immersive technology can alter the way individuals perceive and interact with their environment, leading to conflicts between different stakeholders, such as property owners, media developers, and users. There is an emphasis on the need for a fair and balanced approach to determining the rights and responsibilities of each party involved. Furthermore, Neely (2019) highlights the potential for immersive technology to exacerbate social inequalities by creating a digital divide between those who can access and afford the technology and those who cannot. The study suggests the development of ethical guidelines and policies to ensure that immersive media technology is used responsibly and equitably.

Digitization of the physical world creates a multitude of issues involving societal boundaries. Royakkers et al. (2018) investigate the various ethical and societal concerns arising from the rapid digitization of modern society. The study explores the implications of digitization in areas such as privacy, surveillance, data ownership, and digital divides, emphasizing the need for a thoughtful approach to address these issues (Royakkers et al., 2018). Additionally, a concern is raised about the issue of data ownership and the challenges associated with determining who has the right to access, control, and profit from the data generated by

individuals. The central theme of concern is centered on the digital divide, as Royakkers et al. (2018) point out that the benefits of digitization may not be equally distributed among society, leading to inequalities in access to information, technology, and opportunities.

Conclusion

The literature reviewed provides insights into the topic of diversity, equity, inclusion, and belonging (DEIB) communication strategies using immersive media. The three central themes of strategic organizational communication, immersive media technologies, and media equation theory frameworks provide essential information that connects all three themes within the constructs of the overarching DEIB topic. The literature highlights each of these themes and their overall relationship to DEIB-centric research.

Immersive media, such as interactive virtual reality, affords users an interactive environment in which they can communicate and interact with human and non-human entities in life-like mannerisms. Moreover, the literature shows that immersive media technology has the potential to bridge gaps and solve problems within the context of cultural and societal issues. The issue of communication and understanding that surrounds the area of DEIB is one that holds significant value for many individuals, organizations, and institutions. Future research within this specific area is essential to providing a better knowledge base surrounding how the use of interactive and immersive virtual reality media can aid in more efficient and meaningful organizational training related to diversity, equity, inclusion, and belonging communication strategies.

Chapter 3: Methods

Overview

The purpose of this chapter is to introduce the research methodology for this qualitative grounded theory study centered around the exploration of diversity, equity, inclusion, and belonging (DEIB) organizational communication using traditional media and the incorporation of newer immersive virtual reality media. The approach allowed for a better understanding of how organizations can provide more impactful and meaningful DEIB training activities for their employees and stakeholders. A critical outcome of this study is to provide future researchers and external stakeholders with a guide for immersive media communication strategies best suited to address the issues of DEIB training and communication related to DEIB training throughout various organizational settings.

The study intersects two primary topics. First, the study aims to gather data on communication strategies used for diversity, equity, inclusion, and belonging training within an organizational setting. Secondly, the study is intended to gather data on the use of new immersive virtual reality media in a DEIB training scenario. The applicability of grounded theory and a constructivist approach to the study are discussed in-depth throughout this chapter. The study research plan, including the methodology, study participants, procedures, analysis method, and ethical concerns, is a primary component of the chapter.

Research Method and Design

Research Questions

The goal of this study was to build a theory in answer to the following research questions:

RQ1. How effective is the use of traditional communication media such as online web videos, PowerPoint presentations, and PDF documents in diversity, equity, inclusion, and

belonging (DEIB) training?

RQ2. How effective is the use of virtual reality communication media in diversity, equity, inclusion, and belonging (DEIB) training?

RQ3. Does the use of virtual reality media in diversity, equity, inclusion, and belonging (DEIB) training provide a richer, more impactful, and more meaningful user experience compared to current DEIB training methods that use traditional media strategies?

Participants

The study sample was drawn from a population of individuals who were full-time and part-time employees of a large research university in the Midwest region of the United States. The participants ranged between the ages of 23 and 65 years old. All participants had to be fluent in the English language, but English did not have to be their native language. Gender demographics for participants of this study include a make-up of 47% women and 53% men. Additionally, all participants had to be comfortable using a virtual reality device—although there was no requirement for any previous experience using such a device. The population to which the results of the participants will be generalized include full-time and part-time employees of medium to large-sized organizations in the United States that incorporate a mandatory diversity, equity, and inclusion (DEI) training session.

Participants were recruited through my home university using three methods of recruitment. I emailed current part-time and full-time employees through a faculty and staff email listserv using the Email to Potential Participants found in Appendix A. The email directed potential participants to a brief online screening survey and demographic questionnaire found in Appendix D. I also physically posted printed Recruitment Flyers found in Appendix B in common areas around campus. The flyers also directed potential participants to the online

screening survey and demographic questionnaire. The third method of recruitment was individual phone calls to potential participants using the Verbal Recruitment Script found in Appendix C. Again. This script invited potential participants to fill out the screening survey and demographic questionnaire online. I anticipated approximately 10-15 participants for the study. The final number of participants was 15, as determined by saturation.

Setting

Conducting this qualitative research study at a large research university offered numerous benefits, including access to a diverse and sizable participant pool, increased generalizability, and a rich academic environment (Creswell & Creswell, 2018). The diverse population allowed for a better representation of various demographic factors, improving external validity (Creswell & Creswell, 2018). Additionally, the academic setting facilitated collaboration with experts from multiple disciplines, enhancing the rigor and quality of this study. The workforce population of the university used in this study is populated by a diverse and multidisciplinary group of individuals who contribute to the institution's academic, research, and administrative functions. Moreover, the institution used in this study offered a diverse population in terms of age and gender. The population consisted of the following:

Faculty: Professors, associate professors, assistant professors, lecturers, and adjunct faculty members who are responsible for teaching, researching, and mentoring students. They may specialize in various academic disciplines and conduct cutting-edge research in their respective fields.

Researchers: Postdoctoral fellows, research scientists, and research assistants who work on grant-funded projects, contribute to scholarly publications, and support the research goals of the university.

Administrative staff: Individuals who manage the day-to-day operations of the university, including admissions, financial aid, student services, human resources, marketing, and public relations.

Technical staff: Professionals who support the university's infrastructure, such as information technology specialists, laboratory technicians, and audio-visual experts.

Library staff: Librarians, archivists, and other personnel who manage the university's library resources provide research assistance and maintain the library's collections.
Facilities and maintenance staff: Workers who ensure the university's physical environment is clean, safe, and well-maintained, including custodians, groundskeepers, and maintenance technicians.

Campus security: Professionals who maintain a safe and secure campus environment by enforcing university policies, responding to emergencies, and providing general security services.

Procedures Followed

The study also maintained strict ethical standards. Approval from the Institutional Review Board (IRB) was sought from Liberty University. Once the approval letter was received (see Appendix G), I emailed individuals within his home university, using the Email to Potential Participants; posted recruitment flyers in common areas on campus; and directly reached out via phone calls to potential participants using the verbal recruitment script (see Appendix C). Potential participants were screened using an online screening survey and demographic questionnaire (see Appendix D) to make sure they met the selection criteria. Based on the responses to the screening survey and demographic questionnaire, three participants were selected for the first group of interviews. An informed consent form, as shown in Appendix F,

was required for each participant prior to participating in the study.

During the study procedure, a total of fifteen participants completed a 20-minute DEIB training using traditional media-based technology as well as a 20-minute DEIB training using the Bodyswaps® virtual reality-based DEIB training application (see Appendix I) on a Meta® Quest 2 VR device. All fifteen participants were interviewed immediately following the two training sessions. After every third individual interview, the batch of three interviews was transcribed using NVivo® 14 qualitative research software. This process aided in the overall transcription accuracy.

The transcribed interviews were sent to the interviewees for a single review, during which they had the opportunity to omit any content, though such action was discouraged. Interviewees were also inquired if they wished to add any reflections. Upon participant approval, necessary edits, including the incorporation of reflective thoughts, were applied to the transcription. However, participants did not contribute to the writing or editing of the analysis and results, lacking insight into the collective perspectives of the group due to restricted access to other interviews.

Memo writing was a regular activity throughout the duration of the study. This practice, along with constant comparative analysis, played a crucial role in minimizing bias by fostering reflexivity, thereby enhancing objectivity within the research process. Specifically, the memos acted as a mechanism for me to document my initial thoughts, enabling a distinction between my preconceptions and the theories that naturally emerged from the data. The content of these memos ranged from personal reflections and concerns related to the study to interpretations of relevant literature, assessments of the research process's integrity, and deliberations on developing codes, categories, and theoretical frameworks.

Researcher's Role

I have worked in the communications and marketing industry for 19 years and have been teaching digital media courses at a public university for over six years. I hold a Bachelor of Arts in Graphic Design and a Master of Liberal Studies in Digital Media. No participant had a direct relationship that represented a conflict of interest or any relationship that may have imparted bias on the research study.

Data Collection

This study used a structured interviewing method, found in Appendix E, where the interview questions are presented. The research study took place in a closed-door room that provided privacy for the participants. For individual interviews, the participants were questioned in the same closed-door room with only me present, so privacy was maintained. The study procedure and interviews were digitally recorded both visually and auditorily using a Canon® VIXIA HF G70 video camera and a Sony® ICD-UX570 digital voice recorder. No interview was conducted without confirming the participants signed the informed consent document, which can be found in Appendix F. Interviews began with open-ended questions about the participants' initial experience with the DEIB training and virtual reality technology. More intensive questions followed, with the intent to gather data with more depth on motivation (Charmaz, 2014).

Additionally, I maintained data security during the data collection process by storing all research participant data on a Microsoft-certified dual-authenticated and password-protected cloud storage server. Only I had access to the cloud storage server. Furthermore, I monitored the data collection process and procedures, as well as documenting the data collection. Accurate records of the data collection process, including response rates, dates, and any deviations from the planned procedures, were recorded, ensuring that this study yielded meaningful and reliable

insights into the cause-and-effect relationships of the DEIB training.

Methodology Selected

Qualitative research approaches are well suited for the exploration of complex and nuanced ways in which humans interact with technology and media. Qualitative methods, such as interviews, focus groups, and ethnography, allow for an in-depth understanding of human behaviors, experiences, and perceptions (Creswell & Poth, 2018). These methods enable researchers to capture the subjective meanings that individuals assign to their personal interactions with technology and media. It is possible that these critical interactions can be missed by quantitative approaches that focus on numerical data and generalization.

Additionally, qualitative research provides a more flexible and adaptive approach to study designs, allowing for a more comprehensive exploration of emerging phenomena in the rapidly changing landscapes of technology and media (Hammersley & Atkinson, 2007). This adaptability is crucial for understanding new forms of media consumption and technology use that may not yet be widespread or fully understood. Additionally, the interpretive nature of qualitative research supports the development of theories that are grounded in participants' real-world experiences, providing insights that are rooted in the context of human-technology interaction (Charmaz, 2014).

Grounded Theory Methodology

This qualitative study was conducted using the grounded theory methodology. Grounded theory methodology is particularly well suited for research involving human experiences with technology and media due to its focus on generating theory from empirical data. This approach allows researchers to develop an in-depth understanding of the social processes underlying human interactions with technology and media from the perspective of the

participants themselves (Charmaz, 2014). Grounded theory's iterative process of data collection and analysis enables researchers to explore complex behaviors and attitudes, identify patterns, and propose explanations that are closely tied to the empirical world (Glaser & Strauss, 1967).

Grounded theory methodology is highly effective in areas where existing theories may not adequately explain new phenomena, such as the rapidly evolving digital landscape. Grounding research in the experiences and perceptions of users provides insights into how individuals make sense of and navigate new technologies and media platforms. Furthermore, grounded theory's emphasis on the constant comparison of data fosters a nuanced understanding of variations in human-computer interactions, thereby accommodating the diversity of user experiences (Corbin & Strauss, 2015). This type of approach is invaluable for developing theoretical frameworks that can guide both future research and practical applications, including the design and implementation of technology and media that better meet users' needs and expectations.

Charmaz (2014) posited that grounded theory embodies elements of both positivist and constructivist orientations, highlighting the method's comprehensive nature. Charmaz (2014) articulated that the positivist perspective emerges from an understanding of human experiences characterized by an aspiration toward objectivity despite acknowledging human perception as inherently flawed. Conversely, they delineated the constructivist stance as deriving from an understanding that human experiences are inherently subjective and shaped by societal, cultural, and other external influences.

In this research study, the methodological approach of grounded theory was employed, specifically leveraging a constructivist framework. The constructivist tradition within interpretive grounded theory strives to abstractly conceptualize phenomena, make theoretical

assertions, recognize the subjectivity inherent in theoretical development, and provide innovative interpretations (Charmaz, 2014). Accordingly, this study aimed to abstractly conceptualize the experiences of participants by systematically coding interview data, with the goal of constructing a theory grounded in the collective interpretations of their experiences.

Data Analysis

Transcripts were coded in the sequence of interviews conducted in sets of three, enabling me to periodically assess the data as theories emerged. This coding process facilitated my comprehension of participant perspectives and their collective experiences, with codes being developed from the data for analysis purposes. Both manual techniques and computer-assisted qualitative data analysis software were employed for coding.

The technique of coding, essential for analyzing the transcriptions into significant, manageable segments, was pivotal in analyzing interviews within the framework of grounded theory. This method ensured a structured examination of participant experiences and helped maintain a balanced emphasis throughout the study, preventing premature focus on any particular aspect (Charmaz, 2014). The practice of constant comparison, the iterative analysis and reanalysis of data to identify connections until reaching saturation, was central to this methodology.

The terminology for coding in this dissertation adheres to Urquhart's (2013) delineation into open, selective, and theoretical phases. Open coding involved meticulous line-by-line analysis, a fundamental aspect of grounded theory methodology, facilitating in-depth engagement with each interview and ensuring that theory was derived directly from the data. Selective coding commenced when new codes ceased to emerge or when they pertained solely to core categories, guiding me toward identifying emerging categories with fewer selective than

open codes.

Theoretical coding involved the comparison of codes and categories identified during open and selective coding to discern relationships and develop theories. This iterative process, supported by memo writing and constant comparative analysis, seeks to densify new categories as they emerge. NVivo® 14 software supported data management and analysis, facilitating the comparison of keywords with manually coded categories and themes. However, the primary coding and analysis were conducted by me, not the software.

All the individual structured interviews were coded manually during open coding. The subsequent interviews were analyzed in batches of three participants, allowing for an adequate amount of analysis time before moving on to the next participants. I coded each batch of interviews and analyzed the audio transcript data for categories or themes. Additionally, video recording data of everyone's participation in the study activity was thoroughly reviewed to ensure the ensuing structured interview was grounded in active participation in the DEIB training activity using traditional media and participation in the DEIB training using virtual reality media.

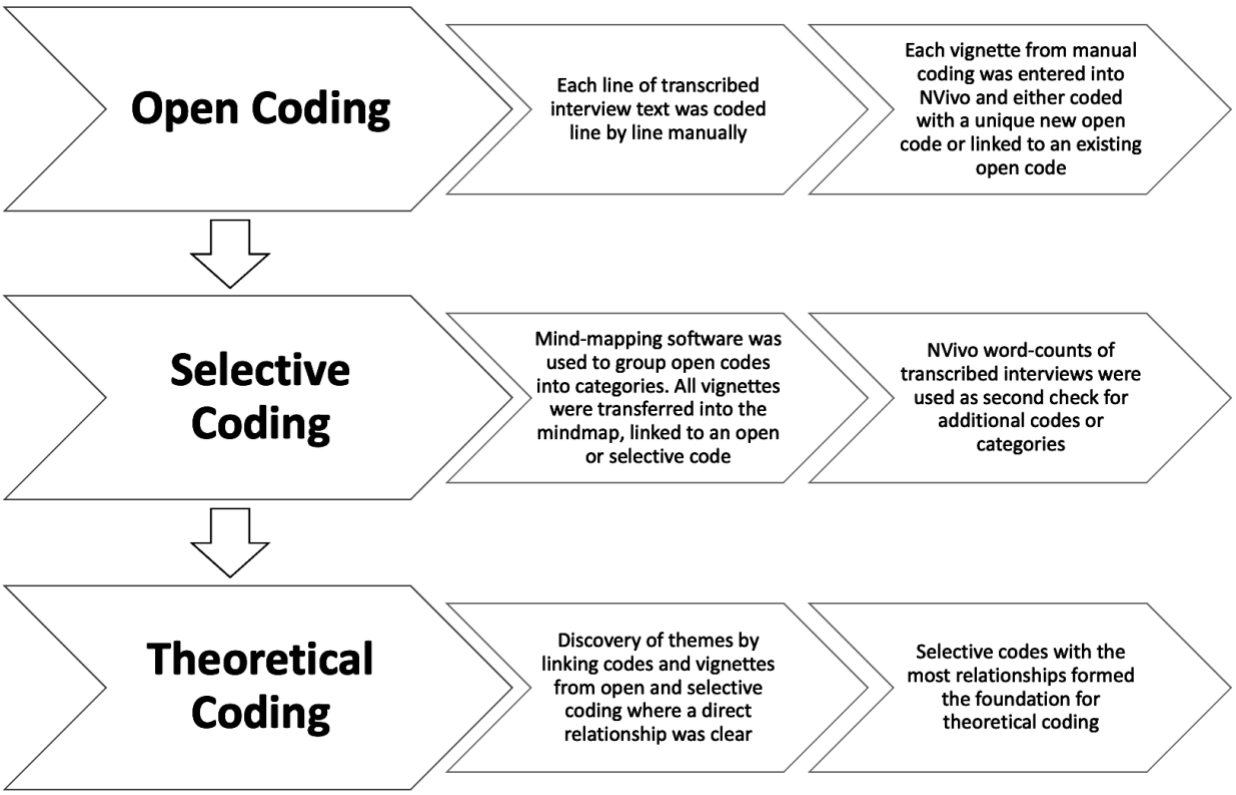
Audio data and interview transcripts were uploaded into the computer software NVivo® 14 for additional analysis. Each individual interview was coded manually using the NVivo® software and then compared against the manual coding completed during the initial interview process. The ability to code the interview transcriptions again through the NVivo® software aided the constant comparative analysis techniques essential to properly grounded theory methodologies. This process aided me in consistently emphasizing key points during coding. The open coding results included 28 codes from manual coding.

During the selective coding phase of analysis, I inspected the data to find specific categories emerging from similarities in the 28 open codes. Using NVivo® mind-mapping

software, all vignettes, and open codes were visualized and mapped into a single mind-map infographic. Figure 1 shows a summary of the data and analysis process for open, selective, and theoretical coding.

Figure 1

Open, Selective, and Theoretical Coding Process



Note: The coding process starts with open coding and progresses towards theoretical coding

Additionally, NVivo® 14 software was used to perform word-count queries to aid in discovering selective codes from the data. Through the process of analyzing the depth of open codes, selective codes emerged from the data. For the purposes of this qualitative research study, depth is defined as having eight or more vignettes assigned to a specific code.

Theoretical coding culminated from the relationships found embedded within and found to transverse both the open codes and selective codes. I used the NVivo® mind-mapping

software to assist with this analysis. The resulting relationships found across the selective codes were analyzed and compared against the mind-map structure. When creating the mind-map, each time a participant vignette linked directly to a specific code, the vignette was reviewed for possible relationships with other codes. If a relationship was established, I connected those codes. The selective codes found to have the most relationships were then used to create the various thematic codes.

Adhering to the principles of grounded theory methodology, some questions were asked of certain participants but not of others. I made sure constant comparison was implemented to ensure that additional weight was not added on a per-code basis. For example, every participant was asked if they recall completing the university's DEIB training, but only participants who answered "yes" were given a follow-up question asking whether they found that training to be effective. The latter was a question only asked of five participants since the other 10 participants did not recall or remember completing the training.

Trustworthiness

The credibility of qualitative research is significantly influenced by my observations and interpretations. Lincoln and Guba (1985) emphasized that credibility, transferability, dependability, and confirmability are essential criteria for establishing the trustworthiness of qualitative studies. To enhance credibility and transferability, it is crucial to interview participants who possess relevant experiences concerning the phenomenon under investigation (Lincoln & Guba, 1985). In this study, vignettes from the interviews were utilized to highlight key themes, thereby reinforcing the study's findings. Confirmability was sought through efforts to eliminate researcher bias, focusing on an unbiased interpretation of the data. The thorough transcription and manual coding of interviews facilitated a crucial understanding of the content

and intentions of the participants.

Employing constant comparative analysis was instrumental in making systematic comparisons, thereby strengthening the link between the analysis and the theories derived. This approach also contributed to the credibility of the emerging theories by identifying those codes and categories that significantly influenced theory development (Charmaz, 2014). Demonstrating data saturation ensured the credibility of the proposed theory by confirming that the collected data was sufficient (Charmaz, 2014). Moreover, ensuring the accessibility of the research is vital for trustworthiness. Although the data from this study will be available for five years post-study, its subsequent disposal poses a potential challenge to the study's long-term trustworthiness and credibility.

Bias minimization was addressed through several strategies, including the establishment of clear rules and procedures. Recording interviews via video cameras and digital audio devices prevented data omission or alteration. Manual coding of interviews through grounded theory methodology and the use of memos facilitated objective data interpretation and supported my adherence to the emerging theory.

Ethical Considerations

Throughout the research process, I prioritized ethical considerations. Adhering to the methodologies described in this chapter was crucial for maintaining the study's validity and reliability. Prior to conducting interviews, an informed consent form, detailed in Appendix C, was presented to each participant. This consent form complied with U.S. federal regulations for ethical research involving human subjects, which included providing a clear explanation of the procedures, outlining potential risks and benefits, offering the opportunity for inquiries about the procedures, and ensuring participants understand their right to withdraw at any time. The study

posed minimal risk to participants, all of whom were adults above the age of 18 and demonstrated no signs of impairment, as evidenced by their professional roles. This eligibility criterion was essential for their participation in the study. Furthermore, to protect confidentiality, all recordings will be destroyed five years after the study receives final approval from the research committee.

Summary

The purpose of this chapter was to delineate the research methodology employed to address the study's research questions. It encompassed a detailed examination of the procedural steps, the demographics of the study participants, the methods of data collection, and the specific interview questions, thereby elucidating the execution of the study and the characteristics of its participants. Utilizing a constructivist grounded theory approach, the study aimed to formulate a theoretical model concerning the factors centered around the exploration of diversity, equity, inclusion, and belonging (DEIB) organizational communication using traditional media and the incorporation of newer immersive virtual reality media. Contributions from all participants, through their shared experiences and insights with DEIB training, were instrumental in the development of a motivation model. Chapter 4 is dedicated to presenting the findings of the study, affirming the adherence to the methodology outlined in Chapter 3.

Chapter 4: Results

Overview

This chapter contains the findings of the grounded theory methodology study using a structured interview approach to address the three research questions. The findings of the study focus on the effectiveness of various communication media in the context of diversity, equity, inclusion, and belonging (DEIB) training. Within many organizations, traditional communication media such as online web videos, PowerPoint presentations, and PDF documents are widely used for this type of DEIB training. However, the advent of virtual reality (VR) technology offers learners a new dimension of communication in relation to these training programs. The findings of the study highlight the effectiveness of VR and how its use as a communication medium measures up against the traditional media-based methods used in DEIB training. Furthermore, the findings offer critical insight into the thematic factors that virtual reality media provides in the context of creating a more enriched, impactful, and meaningful experience for users when it comes to DEIB training, as opposed to the traditional media strategies currently in use by many organizations.

The fifteen research interviews with individuals currently employed at the large public university served as the primary source of research data. The screening surveys and demographic questionnaires served as supporting research data. During the study, fifteen participants completed a 20-minute DEIB training using traditional media-based technology as well as the 20-minute Bodyswaps® VR DEIB training using a Meta® Quest 2 VR headset device. All fifteen participants were interviewed immediately following the two training sessions. After every third individual interview, the batch of three interviews was coded manually and reviewed for emerging themes. Following this method, I guaranteed that the grounded theory methodology

was adhered throughout the data collection process. The standardized interview protocols and the structured interview questions presented throughout the longevity of the study are provided in Appendix E.

Participants

Fifteen participants were interviewed using a structured approach for this study. Appendix H highlights the participant demographics that represent the minimum requirements sought for the study as described in Chapter 3. All fifteen participants are currently employed by the university. Thirteen participants indicated they are full-time employees (working 40 or more hours per week,) and two participants indicated they are part-time employees (working up to 39 hours per week). The age range varied among the fifteen participants that were sampled.

Participants who were 65 years or older represented 6.5% of the sample, 6.5% were between 55 and 64, 27% of the sample were between 45 and 54, 27% were between 35 and 44, 13% of participants were between 25 and 34, and 20% of the sample were in the age range of 18-24 years old. No participants under the age of 18 were allowed to take part in the study. Additionally, participant gender information was collected in the study screening survey. Participants were given the option of selecting male, female, or other. All participants indicated a gender preference. Participants who indicated female as their gender represented 47% of the sample. Participants who indicated male as their gender represented 53% of the sample. No participants indicated other as their gender choice. Graphic visualizations of participant demographics are provided in Appendix H.

Research Questions Findings

The research question findings are organized by the guiding topics found through the analysis of interview data. The combined manual and NVivo® 14 analysis yielded nine selective

codes, detailed in Table 1. Three overall categories emerged in relation to the types of selective codes found in the analysis of data: (a) user experience-centric codes, (b) technology-centric codes, and (c) strategic communication-centric codes. Each of the nine selective codes and the three theoretical themes specifically address how the findings connect to individual research questions. Additionally, these correlations provide insight into topics addressing user experience, media preferences among participants, media richness, participant empathy, and information retention.

Table 1

Selective Coding Results from NVivo® Analysis

(a) User Experience Centric Codes	(b) Technology-Centric Codes	(c) Communication-Centric Codes
User Engagement	Interactive Media Components	Foundational Storytelling
Immersive Environment	Digital Learning Platform	Human-Computer Interactions
Task Involvement	Technology Standardization	Effective Communication Strategies

Note: Selective coding results were determined from the manual coding process and analysis**.**

User Experience-Centric Codes

User experience-centric codes were present in most of the participant interviews. User experience encompasses many of the aspects of an end-user's interaction with an organization, its services, and its products, focusing on enhancing user satisfaction by improving usability,

accessibility, and efficiency. In the context of training such as the DEIB training participants completed, an optimal user experience is crucial as it directly influences learners' ability to absorb and retain information, making the learning process more intuitive, engaging, and effective. The analysis of the interview data found three selective codes tied to user experience: (a) user engagement, (b) immersive environment, and (c) task involvement.

User Engagement

The term user engagement refers to the level of interaction and participation that an individual has with a digital product, platform, or service. High user engagement is often indicative of content that is compelling, valuable, and resonates well with the audience, leading to increased user retention. In the study analysis, fifteen vignettes were assigned to the selective code of user engagement. Nine out of the 15 participants mentioned at least one of these descriptors for the term user engagement.

Two participants distinctly captured the overall essence of what many of the participants shared regarding the engagement level of participating in the virtual reality training. One participant shared her thoughts on the experience of being in virtual reality.

> *I like that you can see the avatars interacting with you, and I think as the technology increases, the virtual avatars are going to look more and more real — more human-like. I think that seeing them in front of you and having to actually engage with them is probably going to be better than any sort of computer training*. (Participant 1)

Another participant shared his thoughts on how the virtual reality training environment lends itself to creating and establishing a more engaging platform than the traditional media used in similar training scenarios.

> *For me, the VR (training) was more engaging. I guess, just in terms of the process of going through the VR training, it could be the content mixed with the interface. I think the experience was really good with VR because, I guess it puts me in a situation within the environment. So, I believe that the engagement piece was really good*. (Participant 3)

Some of the participants shared specific details regarding the differences they found in engagement levels of the training that used traditional media versus the training that used virtual reality media. When asked about her thoughts on whether she found the traditional training using digital slides on the computer, one participant shared her thoughts on that specific engagement level. The findings in this vignette connect directly to both research question one and research question three.

> *The traditional computer training was very much information sharing and the VR one is more engaging. I feel like the first one is kind of standard. I like that there were people in the VR training and it was 3D, a little bit more engaging — instead of just like a PowerPoint slide.* (Participant 6)

Another participant shared his experience with traditional computer training and went into detail about his struggle to keep engaged with the content. He explained that it is harder for him to keep focused on the content in those types of trainings when he doesn't feel engaged in the overall experience.

> *When I'm staring at a computer screen for training, it's sometimes hard to stay completely focused on what's in front of me, and it's just not as engaging, I suppose. So, there were times when I felt like I was tuning out to what they were saying. I thought I was missing instructions. And then, when the menus popped up because I wasn't really*

engaged, I was freaking out that I can't remember the instructions. I just didn't know what to do. (Participant 10)

Additionally, some participants found that the virtual reality training scenario provided a more engaging experience about the overall visual aesthetic of incorporating digital human avatars into the user experience. One of the participants shared his thoughts on how the look and feel of digital human avatars in the virtual reality experience affected this overall engagement.

I felt like, you know, I was just kind of there. Other than I was looking at the mountains out the window a couple of times, it was like I was there in the actual space. And so again, I think it was more engaging just because that's kind of natural. The human response to get engaged if you have people in front of you. (Participant 15)

Another participant discussed how that interaction with the digital avatars in virtual reality seemed to provide him with more engagement than just watching a similar experience on the computer screen.

Just because you are kind of actually sitting there in front of people. It's like you're in a real conversation with them. So, it's more like you're actually there instead of just watching it through a computer screen. You're paying more attention because you can't really look anywhere else, and you are more engaged with it. So it's just an overall better experience, I'd say. (Participant 5)

Immersive environment

The concept of immersiveness was a popular topic in the participant interview sessions. In the context of this study, an immersive environment can be thought of as a digital space designed to completely engage an individual's senses, often through media technologies such as virtual reality. This helps to create a sense of being fully absorbed in a non-physical world. This

environment provides a highly interactive and lifelike experience, allowing users to interact with 3D worlds and simulations in a way that feels real and engaging. Eighteen vignettes were assigned to the selective code of immersive environment. Fifteen out of the 15 participants mentioned at least one of these descriptors for the term immersive environment. The interview data findings highlighted in the vignettes presented in this section connect directly to research question three.

Through the interview process, many of the participants discussed the immersive experience of virtual reality training. Two of the participants directly related the immersiveness of the virtual reality environment to a more complete understanding of certain DEIB topics. Participant 9 describes this immersive style of learning in virtual reality.

> *I feel the VR was more effective. You were more immersed. It really felt like you were in the room talking to those people. I liked being involved in the conversations so you could really sit and think about the microaggressions part of the training and really listen. I found it to be effective. I felt like I needed this training and I felt that more with the VR version than the other one.* (Participant 9)

Another participant describes how the immersive nature of the virtual reality media helped her feel more invested in the training.

> *I felt like I was more invested in the VR headset training. Like when they were asking me to identify the microinsults and microinvalidations, I was actually in a conversation with someone, so it did feel like I was more invested. I mean, immersive was a good word for what I was experiencing.* (Participant 8).

Virtual reality media was the preferred choice of training modalities for many of the participants. Twelve out of the 15 participants preferred the DEIB training that used virtual

reality media versus the training that used traditional media on the computer. Findings presented through the following three vignettes in this section suggest that these participants feel the VR training provided a more impactful experience, which connects to research question three. The immersive impact found in virtual reality was a central talking point in many of the interviews. One of the participants explained why the immersive environment was more appealing than the static computer screen.

> *I think that because the VR was more immersive, I felt more like I was there. Therefore, it had more of an emotional impact, whereas the other one I was just watching it, but it wasn't the same. There is a level of feeling or emotional impact of actually being there, and it felt like you're really sitting there as part of the conversation.* (Participant 13)

Additionally, participant 11 explained how the virtual reality environment used in the training provided her with a more impactful experience than the traditional media-based computer training.

> *I think that the VR definitely had more impact on me and allowing me to immerse into the session and allowing me to make the selections going over the story. Being immersed in that, I was definitely more involved. I just felt like, again, it just immersed me more into the situation and into the content that was being addressed. It allowed me to be involved. Just sitting at the computer, I could see that I was kind of gazing off.* (Participant 11).

Participant 7 talked about how he felt more excited when participating in the virtual reality training versus the traditional computer training. He describes how the combination of the VR technology and the story related to one of the DEIB topics taking place in the training provided a more immersive experience.

> *I felt more excited by the VR, just because I like technology and it felt a little bit more immersive. I just felt a little bit more involved in the situation. The stories that were happening were immersive and more involved. I would definitely choose VR in the future just because I know it's going to be more interactive. It's just more exciting. I'm bound to pay more attention, I guess.* (Participant 7)

Task involvement

Eight out of the 15 participants in the study mentioned at least one descriptor for task involvement. In the context of this study, task involvement refers to the degree of attention, interest, and effort that an individual dedicates to a specific task, focusing on the process and mastery of the activity. It emphasizes personal engagement and intrinsic motivation, where the satisfaction derived from doing the task well is the primary driver of participation and persistence. Ten vignettes were assigned to the selective code of task involvement.

Over half of the participants expressed the benefits of being involved in a task, specifically during the virtual reality training. One of the participants explained how being involved helped her pay more attention to what was happening in the training.

> *I liked the VR because I like the immersive component of it. It makes it more interesting. It made it more fun. And I paid attention. I was really involved, and I didn't think about anything else. When I get more involved and pay more attention, I think I'm going to learn more.* (Participant 9)

Another participant described how the immersive and interactive nature of the virtual reality training gave her a feeling of being more involved in the training. The task of making interactive selections in the virtual reality environment stood out in her experience.

> *I think that the VR definitely had more impact on me and allowing me to immerse myself into the session and allowing me to make the selections that were going on in the story. Being immersed in that was definitely more involved for me.* (Participant 11)

One of the participants discussed the effectiveness of being more involved in the training. The findings from this vignette tie directly to research question three. He felt like there was more involvement in the virtual reality training than in the traditional computer training.

> *I felt it was more effective than the one on the computer. It made me feel like I was more involved in that I had to maybe answer quicker. So more involved, I guess. Definitely more immersed. It just felt like instead of being on a computer screen where it feels like you can wait to answer since it was right in front of me, it felt like I was doing something and that I needed to be more natural and just respond quicker.* (Participant 10)

Technology-Centric Codes

The participant discussions surrounding technology produced a prevalent set of codes throughout the analysis process. Many organizational training techniques prioritize the use of digital tools, platforms, and methodologies to facilitate learning, streamline training processes, and enhance accessibility and flexibility for learners. Many of these technologies leverage the latest in educational pedagogy, such as e-learning, mobile learning apps, and virtual reality simulations, to deliver personalized, engaging, and effective training experiences that meet the diverse needs of a modern workforce. The analysis of the interview data found three selective codes related to technology: (a) interactive media, (b) digital learning platforms, and (c) training standardization.

Interactive media

A significant number of codes were found describing interactivity in the DEIB training.

Interactive media components are digital elements designed to engage users through direct participation and interaction, allowing for a two-way flow of information between the user and the content. These components actively involve the user in the experience, making the process of learning more dynamic and personalized. Eleven vignettes were associated with the selective code of interactive media. Ten out of the 15 participants mentioned at least one of these descriptors for the term interactive media. The interview data findings highlighted in the vignettes presented in this section connect directly to research question one and research question two.

Interactive media was described and discussed among participants, both regarding the traditional media-based computer DEIB training and the virtual reality media-based DEIB training. Participant 2 described the interactive components and actions found in both trainings and how she reacted to both.

> *Thinking about the computer content, I liked the little bit of interaction. But it wasn't quite clear sometimes what I needed to do and some of the situations give you a scenario and then I didn't understand that I was getting three attempts on screen. It just was a little confusing how I should respond. I kind of liked the VR one better. It seemed more interactive.* (Participant 2)

Moreover, the interview data showed some distinct differences between the interactive components of traditional digital media and virtual reality media. One of the participants explained how he thought the interactive technology in virtual reality seemed more natural and closer to the type of interactions he would have in a real-life scenario.

> *I have to say I preferred VR for the same reasons that I would prefer to be in a room with somebody and having those interactions. I felt like I was at least one step closer to that*

> *when I was doing (the training) in VR versus doing it on the computer. So, from that standpoint, it felt more freeing and more natural.* (Participant 13)

However, not all participants solely preferred the interactive components of virtual reality over traditional computer technology. Participant 14 shared when and how she would prefer to utilize the different interactive media in different scenarios. The findings in this vignette offer a different view than most other participants regarding research question one.

> *I'd say if I was really wanting to learn the material and engage, I'd rather use the headset, okay. But to be able to see and to interact a little bit easier I would use the computer. So going back to the VR one, you feel like to better learn the material, you would use the VR one.* (Participant 14)

Participant 6 had a similar point of view in regard to when she would prefer virtual reality media versus traditional computer media during trainings.

> *I guess if it was just static text in the training, I would probably not choose a VR setup and go with the computer. It was the interaction of (the digital avatars) talking and feeling like your present that would make me choose VR.* (Participant 6)

Digital learning platform

Participants also provided feedback on their learning experience throughout the DEIB training modules—specifically addressing the differences between a virtual reality digital learning platform and a traditional computer platform. A digital learning platform is a framework that offers a wide range of educational resources, tools, and services, facilitating learning and teaching processes in a virtual environment. It enables learners to access courses, materials, and interactive activities anywhere and anytime, supporting a personalized and flexible learning experience that caters to individual needs and pacing. Nine vignettes were assigned to the

selective code of digital learning. Seven out of the 15 participants mentioned at least one of these descriptors for the term digital learning.

One of the most common discussion points brought up in the interview process by many of the participants was how different and new it was to learn about the various DEIB topics using the virtual reality platform. One of the participants has been involved with a variety of organizational trainings for over ten years in her career and articulated how different the VR training was compared to more traditional methods.

> *Having the VR headset kind of makes you think about your learning in a different way. Like it's not normal. It's not standard. It's not something we've done for ten years or for most of our professional careers in different trainings. I feel like to better learn the material I would actually use the VR one.* (Participant 1)

Some of the participants found that the virtual reality training platform was beneficial to their learning. Participant 7 described his learning behavior using virtual reality technology. The findings in this vignette relate to research question two.

> *I felt the VR training content and the VR device helped me learn more. And it made me change my behavior more. I don't know if that was based on the actual technology or the actual scenarios that were presented.* (Participant 7)

Moreover, one of the participants described in detail how the virtual reality training aided in the learning strategies linked to the DEIB content. He provides a well-articulated description of the learning platform.

> *The VR makes me feel like I'm learning more because I'm actually doing something rather than just staring at a screen and just clicking buttons. It makes me feel like I'm actually in a conversation in that situation. Better than if you were using that kind of*

module where I'm just clicking buttons on a computer screen. With VR, it's more like I'm actually having to do something and think about this. (Participant 3)

Training standardization

The topic of standardization was another popular term found in the open coding process. Training standardization involves establishing uniform procedures, materials, and assessment methods across a training program to ensure consistency, quality, and fairness in the delivery of educational content. This approach facilitates the measurement of learning outcomes and enables scalable and repeatable training processes. Eleven vignettes were assigned to the selective code of training standardization. Nine out of the 15 participants mentioned at least one of these descriptors for the term of training standardization.

Three of the participants commented on how they felt that the traditional media-based computer DEIB training was very standardized. The participants did not assign any negative connotations to that feeling of standardized training, but expressed how it was different than the virtual reality training. The findings in this vignette provide insight into research question one.

I thought (the computer training) was effective enough. I think there is a lot that can be improved upon. Maybe it's kind of harder to step into. What's the word I'm looking for? Just it's kind of harder to visualize after using something like the VR headset. It felt kind of standardized. Not as memorable because it's just not as impactful as VR, I guess. (Participant 5)

Participant 14 shared that the traditional media-based training was very similar to other trainings she had completed in the past. The standardization of it stood out in her mind.

It's like all other training modules I've done. So, you listen, try to read the material, and answer the questions. Typically, most of them are useful for when you don't get it, right?

You go back and do it again. Pretty standardized, like most trainings are the same. (Participant 14)

One of the participants described some physical attributes that correlate to the standard type of computer-based training. These physical attributes were reported as different than the physical attributes associated to the virtual reality training.

Let's see—it was very standard. Feels like other webinars and trainings that you take that are online. And I don't know, I felt like I got in the zone with it, just like I usually do. It was like the muscle memory for it was more standard for me. (Participant 6)

Strategic Communication-Centric Codes

The topic of communication and strategies related to successful communication were prevalent in the analysis of interview data. Through the lens of this qualitative study, strategic communication is described as the purposeful use of communication by an organization to fulfill its mission, where messages are deliberately crafted and disseminated to target audiences to influence perceptions, attitudes, and behaviors. It involves a comprehensive approach that integrates various communication channels and tools. The analysis of the interview data found three selective codes related to strategic communication: (a) foundational storytelling, (b) human-computer interactions, and (c) communication effectiveness.

Foundational storytelling

The concept of storytelling and the terms surrounding it were found in many open coding data points in the study analysis. Foundational storytelling refers to the art of crafting and conveying narratives that serve as a basis for understanding, connecting, and communicating experiences. Ten vignettes were assigned to the selective code of foundational storytelling. Nine out of the 15 participants mentioned at least one of these descriptors for the term foundational

storytelling.

Four of the participants described how they felt immersed in the story that was unfolding in the virtual reality training module. The combination of immersiveness and storytelling was a common positive experience for all four of the participants. Participant 13 described this immersive connection to the story.

> *I liked the VR and maybe it was because I've already had some experience with that, but I just felt like I was more immersed in the story. And so, again, I felt like the immersion made it easier to follow the story.* (Participant 13)

The concept of being a part of the story is key to many virtual reality applications. One of the participants expressed her thoughts on how the interactive and immersive nature of the virtual reality training made her feel more like she was a part of the story. The findings from this vignette provide insight regarding research question two.

> *It was a good experience. I started feeling like part of that story and listening to him like they were real people I found that effective. I feel it was more effective because you were more immersed in the story.* (Participant 9)

One of the participants also brought up the idea of storytelling during the traditional media-based computer training. However, she mentions that she had to close her eyes to picture herself in the story.

> *I thought that the computer version was good. I liked particularly when I closed my eyes and kind of envisioned the story of being in the airport. And when the two characters were talking about the TV show and about Asian stereotypes in media, I did find that effective.* (Participant 8)

Human-computer interactions

Key elements of media equation theory are the interactions and communication between humans and computers. The multidisciplinary approaches of human-computer interaction (HCI) aim to better understand user needs, preferences, and limitations within the context of communication and interactive processes. These interactions and acts of communicating with the computer system were prevalent in the interview data analysis. Eleven vignettes were assigned to the selective code of human-computer interaction. Nine out of the 15 participants mentioned at least one of these descriptors for the term human-computer interaction. The interview data findings highlighted in the vignettes presented in this section connect directly to research question three.

Six of the participants specifically mentioned that they felt like they were having a real conversation with someone while interacting with the digital avatars in the virtual reality training module. One of the participants articulated this sense of communication during her experience in VR compared to how she felt during the traditional media-based computer training.

> *Although I was given the option to talk on the computer (training) as well as the VR one, I did talk in the VR one, where I didn't feel like doing that with the computer. I also felt like I'm having a conversation with someone in the VR one, which was, in my opinion, more helpful.* (Participant 2)

Participant 5 expressed a similar experience with his conversations in virtual reality versus the experience with the traditional media-based training.

> *Picking out microaggressions in front of the person, I would say, was a lot easier in VR. And just hearing the conversation. Through the computer, you're picking choices by*

clicking and it was harder to get than just being like actually physical in the conversation and sitting in front of them in VR. (Participant 5)

Communication effectiveness

The analysis of interview data provided insight into the effectiveness of communication between the two modalities of DEIB training. Within the context of this study, communication effectiveness is the measure of how well an individual conveys and receives messages, achieving the intended understanding, response, or action from the target audience. Ten vignettes were assigned to the selective code of communication effectiveness. Eight out of the 15 participants mentioned at least one of these descriptors for the term communication effectiveness.

Two of the participants described the traditional media-based computer training as being just as effective for communicating the desired learning outcomes. These findings address research questions one and two. One of the participants explains his experience with both training modalities regarding this idea of effectiveness.

I thought (the computer version) was reasonably effective. It just seemed a little slow. Just like progressing through it was slow. I also think the VR was effective. There were some things that if I did more often, I'd want to try to figure out how to do better. But I think they were the same as far as effectiveness. (Participant 12)

Six of the participants revealed in the interview process that they felt the virtual reality-based training provided a more effective mechanism for communication. Participant 1 describes how one of the training scenarios in VR helped her understand the concepts.

The locker room conversation part was very effective. Having to kind of simulate a conversation with that individual who was giving microaggressions—I felt like that was very effective. (Participant 1)

One of the participants discussed how his personal comfort level of having a conversation in virtual reality, as compared to what he experienced with the computer training, affected the overall communication effectiveness.

> *I'm thinking about my comfort level and how effective it was. So, for me, it was very comfortable for me to sit at the laptop and communicate. I'm not used to wearing VR glasses, so maybe I felt a little bit uncomfortable. If I'm planning to do that for more than an hour, then I would prefer the laptop one. If it is like 10 or 20 minutes, then probably the VR because its more engaging.* (Participant 3)

NVivo® Analysis Results

After manually coding the 15 interviews, a word frequency analysis was conducted using NVivo® 14 software to identify additional themes. This analysis included various search ranges to compare the frequency of exact words, similar word groups, and a mid-range frequency search. The results, presented in Table 2, show the most frequent terms.

Table 2

Frequent Word Count Results from NVivo® Word Query

Exact Query	*Count*	*Similar Words*
Trainings	44	Train, Training
Immersive	31	Immerse, Immersed, Immersiveness
Feel	27	Feelings, Feels
Involved	23	Involvement
Engaging	20	Engage, Engaged, Engagement

Learn	19	Learned, Learning
Effective	18	Effectiveness
Interactive	12	Interact, Interaction
Story	11	Stories

Note: Function words were not included in the word query analysis.

Theoretical Coding Summary of Results

The combination of using a mind-mapping technique and NVivo software analysis revealed three themes related to motivating factors for effective DEIB training for the participants of the study, which were derived from theoretical coding. I employed mind-mapping software built into NVivo to explore the connections within open codes and between selective codes, facilitating the identification of theoretical codes. This analysis of interrelations across selective codes was visualized through the mind-map. The selective codes that exhibited the most connections were prioritized at the commencement of the theoretical coding process. The motivating factor themes that resulted from the theoretical coding process included: (a) an engaging and immersive user experience is critical to learner success, (b) storytelling is a key component of effective communication in DEIB training, and (c) interactive media in virtual reality is a critical factor in learning effectiveness.

Engaging and Immersive User Experience is Critical to Learner Success

Immersiveness was the only code that had a 100% response rate, indicating that for all the participants, the immersive nature of virtual reality was notable and stood out during their training experience. Engaging and immersive user experiences were revealed to be pivotal for the learner participants in the virtual reality environment, as these qualities significantly enhance

the learning process. Immersion acts as a catalyst for deeper learning by providing users with a lifelike context that closely simulates real-world experiences, thereby facilitating practical understanding and retention. Moreover, the interview data analysis revealed that engaging VR content captured the learner's full attention, minimizing distractions and increasing the focus on the educational material.

The analysis further indicated that the interactive nature of VR enabled learners to actively participate rather than passively consume information, which bolsters learning through doing and experiential engagement. Participant 9 encapsulates the conceptual nature of this theme in her description of the virtual reality training experience.

> *I feel the VR was more effective. You were more immersed. It really felt like you were in the room talking to those people. I liked being involved in the conversations so you could really sit and think about the microaggressions part of the training and really listen. I found it to be effective. I felt like I needed this training and I felt that more with the VR version than the other one.* (Participant 9)

Storytelling is a Key Component of Effective Communication in DEIB Training

The data from the interview analysis suggests that storytelling is a key component to establishing effective communication in DEIB training. The selective code assigned to storytelling was found in nine participants and ten vignettes, indicating that for many of the participants, storytelling is important when they are engaged in the training process. The interview data analysis suggests that storytelling is a fundamental element of effective communication as it harnesses the power of narrative to engage the learner's emotions and imagination.

Furthermore, the data analysis illustrates that storytelling is shown to help transform

abstract concepts into relatable and memorable experiences, making information more accessible and impactful. Participant 11 describes how the virtual reality training made the stories seem more immersive during his learning experience.

> *I felt more excited by the VR, just because I like technology and it felt a little bit more immersive. I just felt a little bit more involved in the situation. The stories that were happening were immersive, more involved*. (Participant 11)

Interactive Media in Virtual Reality is a Critical Factor in Learning Effectiveness.

Ten participants indicated in eleven vignettes that the interactive media used in the virtual reality training was noticeable. The interview data analysis suggests that interactive media used within virtual reality applications are critical to learning as they foster an active rather than passive educational experience. It allows learners to engage directly with the material. Additionally, the data indicates that the interactive nature of VR media also aids in creating realistic scenarios that can adapt to each learner's actions, providing individualized feedback and a tailored learning path.

One of the participants describes how the sensory-rich environment of interactive VR media helped him form strong memory associations, making the educational content more memorable and easier to recall outside the virtual space.

> *I think the VR version helps you keep the information better. I would remember more about it than I would with a computer version just because it's interactive and you are immersed in it. And so, it's like, really going to training with people instead of just watching people on a screen.* (Participant 5)

Similarities and Differences Across Demographics

Demographic trends found in the study indicate that virtual reality usage is more

prevalent among younger, tech-savvy generations, such as Millennials and Gen Z, who are more open to adopting new technologies. These users were found to often engage with VR for gaming, education, and social experiences, attracted by the immersive and interactive nature of the medium. Out of the 15 participants in the study, only three noted that they owned a VR device. Two of those participants were identified in the 18–24-year-old age category, and the third participant who owned a VR device was identified in the 25–34-year-old age category.

Conversely, older demographics showed a lower usage rate, potentially due to less familiarity with technology and a higher prevalence of motion sensitivity issues or headset discomfort associated with VR. Out of the 15 participants in the study, four noted that they had never used a VR device. Three of those participants were identified in the 55–64-year-old age category, and the fourth participant who had never used a VR device before was identified in the 65 or older age category.

Gender did not appear to play a significant role in previous usage of virtual reality. Out of the eleven participants who had previous experience using a VR device, four females indicated that they had used virtual reality at least once, and seven males indicated that they had used the technology at least once before. In the sample of participants who had never used virtual reality in the past, two were identified as female, and two were identified as male. Additionally, all three participants who indicated that they own a VR device were identified as male.

Previous DEIB Training Experience

One of the initial screening questions for the study was whether the participant is currently employed at the university. Part of university employment requirements is an annual DEIB training. During the interview process, each participant was asked if they recall completing the university DEIB training. Only 33% of the participants remembered completing

the university DEIB training. A follow-up question was asked of each of the five participants, who stated they did recall completing the training. The question asked the participant to describe that training experience.

Four out of the five participants had similar answers. One of the participants described the training as not very effective, stating that she mainly remembers there being a lot of reading material in the training.

> *Yeah, this VR training was more effective I would say. I felt the (university) training was ineffective because you could just kind of guess your way through. Because if I remember correctly, it was just reading materials.* (Participant 9)

Summary

This chapter contains the results of the study analysis, connects the analysis back to the research questions, and demonstrates the consistency of the analysis with grounded theory methodology. During the study, fifteen participants completed a 20-minute DEIB training using traditional media-based technology as well as a 20-minute DEIB training using virtual reality-based technology. All fifteen participants were interviewed immediately following the two training sessions for this grounded theory methodology study. Interview questions were structured to understand the effectiveness of both traditional communication media and virtual reality media in DEIB training. Additionally, the interview questions were designed to explore whether virtual reality media in DEIB training provided a richer, more impactful, and more meaningful user experience compared to current DEIB training methods that use traditional media strategies. All participants were part-time or full-time university employees. Participants ranged in age from 23 to 65. Seven participants identified as female, and eight participants identified as male.

Consistent with grounded theory methodology, there were three levels of analysis: open coding, selective coding, and theoretical coding. Twenty-eight codes were identified from the open coding process. Constant comparison analysis was exercised using a mind-mapping application and NVivo 14 software to discover nine selective codes, which were derived from the emerging categories of the open codes. Additional constant comparison analysis was used to discover the relationships between and within the open and selective codes, leading to three themes. The analysis revealed three themes related to motivating factors for effective DEIB training for the participants of the study: (a) an engaging and immersive user experience is critical to learner success, (b) storytelling is a key component of effective communication in DEIB training, and (c) interactive media in virtual reality is a critical factor in learning effectiveness.

Additional data surrounding demographic trends indicated that virtual reality usage is more prevalent among younger, tech-savvy generations. Furthermore, the demographic data suggests that older participants showed a lower usage rate, potentially due to less familiarity with technology and a higher prevalence of motion sensitivity issues or headset discomfort associated with virtual reality. Additional data was also included regarding information from participants' experience with the university DEIB training. During the interview process, each participant was asked if they recalled completing the university DEIB training, and those who said that they did recall completing the training were asked to provide their personal thoughts on that training experience.

The findings of the study suggest there are clear differences in the two modalities of DEIB training. Interview data from participants' experience with the training modality using virtual reality-based media indicate a much different experience than the traditional media-based

training. Chapter 5 includes a summary of the critical analysis of the study and a discussion of the three themes.

Chapter 5: Discussion

Overview

The purpose of this qualitative grounded theory study was to examine diversity, equity, inclusion, and belonging (DEIB) training implemented by organizations in order to address ineffective and outdated poor communication and media strategies so that organizations facilitate more effective and sincere methods of training employees on DEIB topics and issues with immersive media such as virtual reality. This chapter includes a discussion of notable findings related to the literature on strategic organizational communication, DEIB communication strategies within organizational settings, immersive media strategies using virtual reality technologies, and user experience strategies within the context of virtual reality applications. Additionally, this chapter includes a discussion on the connections of this study to media equation theory and its implications within the workplace. The chapter concludes with a discussion of limitations found within the study, areas for future research, and a brief summary. This chapter contains discussion and future research implications to help answer the following research questions:

RQ1. How effective is the use of traditional communication media such as online web videos, PowerPoint presentations, and PDF documents in diversity, equity, inclusion, and belonging (DEIB) training?

RQ2. How effective is the use of virtual reality communication media in diversity, equity, inclusion, and belonging (DEIB) training?

RQ3. Does the use of virtual reality media in diversity, equity, inclusion, and belonging (DEIB) training provide a richer, more impactful, and more meaningful user experience compared to current DEIB training methods that use traditional media strategies?

The theory as to what creates impactful and meaningful DEIB training through the use of communication technologies such as virtual reality media is multi-dimensional and is comprised of three themes: (a) an engaging and immersive user experience is critical to learner success, (b) storytelling is a key component of effective communication in DEIB training, and (c) interactive media in virtual reality is a critical factor in learning effectiveness. Moreover, specific factors emerged during the study that relate directly to user experience design, human-computer interaction, and strategic communication. These factors help contribute to more engaging DEIB training frameworks and strategies.

Summary of Findings

While technology and digital learning platform preferences varied among participants, each one of the three common theoretical themes was found to be a prominent factor in the delivery of impactful and meaningful DEIB training. During the duration of the study, these themes exhibited dynamic qualities that pinpoint the critical attributes of meaningful and impactful DEIB training media strategies. The following sections describe and provide an interpretation of each theme in detail.

Engaging and Immersive User Experience is Critical to Learner Success

This study's conclusion that an engaging and immersive user experience (UX) is critical to learner success is consistent with literature focusing on user experience strategies. The study suggests that engaging and immersive user experiences are pivotal in enhancing learner success, as they contribute significantly to maintaining attention, motivation, and the effective assimilation of knowledge. This insight is grounded in practical observations of instructional design, where the quality of user experience can profoundly influence learning outcomes. Data

collected throughout the interview sessions of the study imply that as learners interacted with the educational training content, UX design played a critical role in shaping their ability to understand, retain, and apply new information.

The importance of user experience in learning environments can be understood through the lens of cognitive load theory, which posits that learners have a limited capacity for processing information (Sweller et al., 2011). The study showed that immersive UX design helps manage the cognitive load by reducing extraneous processing and enhancing relevant processing, therefore facilitating deeper learning. UX design principles, when applied thoughtfully, can create learning experiences that align with the cognitive architecture of learners, thereby improving retention and understanding (Mayer, 2009).

Additionally, the analysis of data from the study implies that personalization in UX design plays a crucial role in learner success. Adaptive learning technologies that tailor content and pedagogical strategies to the individual learner's needs and preferences can enhance learning efficiency and outcomes (Xie et al., 2019). This mode of personalization helps to ensure that the learning experience is relevant and challenging enough to keep learners engaged without overwhelming them.

Furthermore, the study suggests that principles of gamification embedded within virtual reality UX design can significantly enhance engagement and motivation for the learner. For example, the VR training module incorporated interactive elements such as challenges, immediate feedback, and rewards. These elements are shown to help stimulate interest and promote a growth mindset among learners (Deterding et al., 2011). This approach not only makes learning more enjoyable but also encourages persistence, particularly in subjects where learners may experience difficulties or lack intrinsic motivation.

Social interaction is another facet of user experience that contributes to learner success. Participants in the study noted that collaborative features were an important component of their learning experience. These types of social features found in digital learning platforms can foster a sense of belonging and support among learners (Zhao & Bishop, 2011). That sense of social presence not only enhances learning through the sharing of knowledge and perspectives but also provides emotional support, which is crucial for learner perseverance and success. This study highlights the values that engaging and immersive UX design brings to learner success. It aligns with cognitive theories to reduce cognitive load, applies gamification principles to enhance motivation and engagement, leverages personalization to meet individual learning needs, and fosters social interaction to support collaborative learning.

Storytelling is a Key Component of Effective Communication in DEIB Training

Through personal interview data collected during the study, storytelling emerged as a fundamental element of effective communication in DEIB training. The efficacy of storytelling found in the DEIB training used in the study stems from the humanization of complex issues, the bridging of cultural gaps, and the facilitation of a deeper emotional connection with the material. The findings of the study suggest that at the heart of DEIB training, the storytelling component serves as a tool for empathy-building, allowing individuals to see the world through others' perspectives. Stories, such as the ones presented in virtual reality-based training, have the unique ability to transport listeners into the shoes of someone else, breaking down barriers and preconceived notions that may exist (Solomon, 2020). That type of immersive storytelling experience not only increases awareness of diverse experiences but also fosters a sense of empathy and understanding among participants, which is crucial for cultivating an inclusive culture.

Moreover, storytelling in DEIB training seems to help enhance memory retention and engagement. Narratives that incorporate real-life experiences and emotions are more likely to be remembered than abstract concepts or statistics alone (Clark & Rossiter, 2008). This increased engagement and retention are vital for the long-term application of DEIB principles. Building on that engagement factor, storytelling can act as a catalyst for change by illustrating the real-world impact of inclusion and exclusion. Study participants noted that through the storytelling framework, the DEIB training vividly depicted the consequences of biases and discrimination. Larson and Moss (2020) highlight that stories of personal struggle and triumph can inspire participants, motivating them to take action and advocate for change within their spheres of influence.

Furthermore, the findings of the study imply that storytelling in virtual reality provides a safe space for sharing and vulnerability. This type of safe space is essential for the deep, reflective work required in DEIB training. By sharing stories, facilitators and participants alike contribute to a culture of openness and trust, making it easier to discuss sensitive topics and explore complex issues related to identity, privilege, and systemic inequality (Johnson, 2019).

In conclusion, this study suggests that storytelling is a key component of effective communication in DEIB training. The storytelling aspect noted by many of the participants builds empathy, enhances engagement and memory retention, acts as a catalyst for change, and fosters a safe and open environment. Through the power of storytelling, DEIB training can more effectively challenge and transform perspectives, encourage reflective thinking, and promote actionable steps toward creating a more inclusive and equitable workplace.

Interactive Media in Virtual Reality is a Critical Factor in Learning Effectiveness.

The use of interactive media in virtual reality training is thought to have an impact on

learning effectiveness through the implementation of immersive, experiential learning environments. This study supports findings related to previous literature that imply virtual reality media creates immersive, interactive learning environments that facilitate students' understanding and engagement (Gudoniene & Rutkauskiene, 2018). VR technology is shown to harness the principles of active engagement, multisensory input, and contextual learning, making it a critical factor when enhancing educational outcomes.

Through the analysis of participant interview data, this study implies that the learning effectiveness of virtual reality media can primarily be attributed to its immersive nature, which fosters user engagement by placing learners in a controlled, simulated environment that closely mirrors real-life scenarios. According to Jensen and Konradsen (2018), VR environments facilitate experiential learning where learners can interact with their surroundings in meaningful ways, thereby promoting active learning rather than passive reception of information. This type of active participation is essential for DEIB-related training, as it requires learners to apply critical thinking and problem-solving skills in context, leading to better retention and understanding of the material.

Moreover, the study shows that the multisensory components of virtual reality technology cater to diverse learning styles, addressing the visual, auditory, and kinesthetic needs of users. By engaging multiple senses, VR provides a rich, multi-dimensional learning experience that can help enhance memory retention. Participant interview data highlights the importance of personalized learning experiences, a factor increasingly recognized as crucial for educational effectiveness. The study implies that interactive media in VR can adapt to the learner's pace, allowing for the customization of learning paths. This adaptability ensures that learners are neither overwhelmed nor under-challenged, maintaining an optimal level of engagement

(Bailenson, 2018). Furthermore, this study suggests that the collaborative features embedded within VR applications can enhance social learning by enabling learners to interact with digital avatars in a virtual space. This interaction not only mirrors the social aspect of traditional learning environments but also extends it by transcending geographical limitations and fostering a global learning community (Hamilton et al., 2019). This study implies that interactive media in virtual reality is a critical factor in learning effectiveness, offering immersive, personalized, and safe learning experiences that cater to diverse learning styles. By enabling active engagement, providing multisensory input, and facilitating social interaction within a contextual learning environment, VR has the potential to significantly enhance DEIB training.

Implications

Chapter 2 included a description of the theoretical framework and model surrounding media equation theory. The origins and scholarly components of media equation theory provide a pathway for updated communication and media research that enables new constructs to be formed around both technology and human behaviors. The following section discusses the implications of virtual reality media research, how this study fits within the theoretical framework of media equation theory, and the practical implications of the study findings.

Methodological

Media equation theory, proposed by Reeves and Nass (1996), suggests that individuals tend to treat media and computer interfaces as real people or places, engaging in social interactions with them. In this study, a large majority of participants interacted with and responded to computerized virtual reality media in manners similar to interactions with other humans. Additionally, the study highlights the implications of media equation theory, suggesting a higher level of engagement and social interaction with mediated environments. Interactive VR,

by offering immersive experiences that closely mimic real-life interactions, potentially intensifies the psychological and emotional responses predicted by the media equation theory.

As Bailenson (2018) notes, immersive virtual reality environments allow users to experience a presence and agency that traditional media cannot offer, thereby amplifying the effects of the media equation theory. Data from this study showed that some of the participants not only interacted with the media on a social level but also physically engaged with the virtual environment, leading to more profound social and emotional responses. This heightened sense of presence and interaction seemed to lead to more intense feelings of empathy, engagement, and emotional investment in the virtual experience—as noted in their post-training interview sessions.

Consequently, the implications of interactive VR media on the media equation theory suggest a need to reconsider the current understanding of human-media interaction. As VR technology evolves, it becomes crucial to explore how these immersive experiences influence our social behaviors, emotional responses, and overall engagement with digital media. Moreover, the integration of artificial intelligence (AI) into VR media applications has the potential to significantly alter human perception of reality and blur the lines between computer and human interactions.

Practical

Virtual reality training represents a modern approach to enhancing diversity, equity, inclusion, and belonging (DEIB) initiatives within organizations. By leveraging the immersive and interactive capabilities of VR, organizations have the capability to create powerful, empathy-driven learning experiences that foster a more complete understanding of DEIB principles. This study highlights the greater level of immersion found in virtual reality-based training that

traditional media-based training methods cannot match. Through VR, participants experienced firsthand the perspectives of individuals from diverse backgrounds. This immersive experience is critical for building empathy, a key component of effective DEIB training. According to Hasler et al. (2017), VR's ability to simulate real-life experiences from different perspectives can significantly enhance users' empathy towards others. Virtual reality allows individuals to experience situations from viewpoints they might never encounter in their own lives, thereby reducing biases and stereotypes.

Additionally, the user experiences embedded within virtual reality training applications can be designed to simulate a wide range of scenarios that may arise in the workplace, including microaggressions, bias, and other exclusionary practices. By navigating these scenarios in a virtual environment, learners can better understand the impact of their actions and words on others. Dede (2009) emphasizes that such simulations can prompt a better cognitive and emotional understanding of complex social issues, promoting a more inclusive behavior among participants.

Another advantage of VR training modalities within an organizational setting is its ability to provide a safe space for users to explore sensitive DEIB topics. This study showed that within the traditional media training modality, the discussion of race, gender, and sexuality caused some discomfort among a few of the participants. VR environments, however, offer a controlled and private space where learners can engage with these difficult subjects without fear of judgment or reprisal. This aspect of VR training is crucial for fostering an open and honest dialogue about DEIB issues, as noted by Yee and Bailenson (2007), who argue that the anonymity and control provided by virtual environments can encourage more open communication and risk-taking behaviors.

Furthermore, VR training can be highly personalized, adapting to the specific needs and learning styles of each participant. The study implies that a personalized approach ensures that all learners, regardless of their starting point, can benefit from the training. Tailoring scenarios and feedback to individual users allows for a more effective learning experience, addressing each participant's unique biases and knowledge gaps. Personalization in VR training can lead to greater engagement and retention of DEIB principles, as learners are more likely to internalize lessons that feel directly relevant to their experiences and needs (Mantovani et al., 2003).

This study suggests that virtual reality-based training offers a transformative approach to DEIB training, providing immersive, empathetic, and personalized learning experiences that can potentially improve understanding and behavior around diversity, equity, inclusion, and belonging issues. By allowing participants to experience life from different perspectives, engage with sensitive topics in a safe space, and receive personalized feedback, VR has the potential to foster a more inclusive and equitable workplace culture. As organizations continue to seek effective ways to promote DEIB, the adoption of VR training could play a pivotal role in achieving these goals.

Delimitations and Limitations

In employing grounded theory methodology for a qualitative research study on the use of virtual reality (VR) technology in DEIB training, certain limitations and delimitations are pivotal. Delimitations, purposefully set, might narrow the investigation to specific VR platforms, DEI training programs, or participant demographics, thereby excluding broader applications of VR in training. The study could also limit its geographical scope or sector focus, aiming to develop a theory deeply rooted in specific contexts rather than aiming for universal applicability. These research boundaries are essential for ensuring depth and focus in exploring the nuanced

impacts of VR on DEI training outcomes. Limitations inherent to this approach include the possibility of researcher bias affecting data collection, analysis, and the eventual theory developed, given the interpretive nature of grounded theory. The methodology's intensive focus on participant experiences and the iterative process of theory development may also limit the study's scalability and the generalizability of its conclusions to wider populations. Additionally, the qualitative nature restricts the ability to quantify impacts, potentially overlooking broader statistical trends.

It is maintained that qualitative research was appropriately selected for this study, yet it acknowledges that tools such as interviews may not effectively gather concrete facts. Incorporating quantitative research could enhance the study's credibility by providing a robust foundation of hard data. Utilizing surveys and statistical analysis as quantitative methods could further substantiate the findings derived from qualitative research tools.

Qualitative research, particularly this study, which involved participant interviews, presents several limitations that have the potential to impact the depth, breadth, and generalizability of findings. One primary limitation is the subjective nature of qualitative data, which relies heavily on individual perceptions and experiences. This subjectivity can introduce biases, both from the participants, who may have preconceived notions or experiences influencing their responses, and from the researchers, whose interpretations of the data are influenced by their perspectives (Creswell & Poth, 2018). The reliance on interviews in this qualitative research study somewhat limited my ability to capture the full scope of the VR training experience. Virtual reality is a highly immersive and interactive medium, and some participants struggled to explain this experience through their verbal descriptions.

Another significant limitation is the issue of generalization. Qualitative research typically

involves smaller, more focused sample sizes, which are not intended to represent a larger population. While this study allowed for in-depth exploration of the specific phenomena, it also means that the findings from participant interviews about VR training may not be broadly applicable to different contexts, populations, or other types of VR training programs.

Moreover, the time-intensive nature of conducting and analyzing the interviews for this study could be viewed as a limitation. Qualitative research requires substantial effort in data collection, transcription, and analysis, which can be resource-intensive and limit the scope of the study. This intensive process can also slow down the research timeline, potentially making the findings less relevant in fast-evolving fields such as virtual reality technology (Saldaña, 2015). While the qualitative research involving participant interviews found in this study offers valuable insights into the experiences and perceptions of individuals undergoing VR training, it also faces limitations related to subjectivity, articulation challenges, generalizability, and resource intensity.

Future Research

Future research studies involving virtual reality media in DEIB training could explore several promising avenues. One area of interest is the long-term impact of VR-based DEIB training on workplace culture and employee behavior. Studies should examine whether immersive VR experiences lead to sustained changes in attitudes and communication practices regarding diversity, equity, inclusion, and belonging. Another potential study could investigate the effectiveness of different VR training application designs—comparing interactive simulations that allow users to experience various perspectives versus those that focus on bystander intervention strategies. Additionally, research could be conducted on the scalability of DEIB training using virtual reality across different organizational sizes and sectors. Researchers could assess how VR training can be tailored to meet the unique needs of various organizations

and industries. These research directions could significantly contribute to optimizing virtual reality media as a tool for effective and impactful DEIB training.

Additionally, transportation theory, which examines how individuals become mentally absorbed in and emotionally connected to narratives, has significant implications for the future of virtual reality (VR) research and application. VR's immersive nature offers a unique platform for deep narrative engagement, with potential impacts across education, therapy, entertainment, and marketing. In training and education applications, VR can transport learners to historical events, scientific phenomena, or cultural experiences, enhancing learning through vivid, experiential narratives (Parong & Mayer, 2018). Research on transportation theory in VR suggests that such immersive experiences could improve comprehension and retention by fostering a deeper emotional and cognitive connection to the material.

In a closely related field, the future implications of anthropomorphism research are vast and multi-dimensional, impacting various sectors of industry and education. Anthropomorphism, the attribution of human characteristics or behavior to non-human entities, plays a critical role in shaping human interactions with artificial intelligence (AI), robots, consumer products, animals, and natural environments (Epley et al., 2007). In technology and AI, the continuing advancement of anthropomorphic designs is likely to enhance user engagement and trust. Research suggests that robots or AI systems designed with human-like features or social behaviors can facilitate more natural and effective human-machine interactions. This has significant implications for education, healthcare, and customer service, where anthropomorphic agents could offer personalized support, thereby improving outcomes and user satisfaction.

Summary

This study suggests that virtual reality provides an effective medium for DEIB training

by immersing participants in diverse perspectives through realistic simulations and fostering empathy and understanding of different backgrounds. Its interactive nature allows for experiential learning, enabling users to practice and navigate complex social situations in a safe and controlled environment. Additionally, VR's capability for customization ensures that DEIB training can be tailored to address specific organizational needs and learning styles, enhancing the overall impact and retention of the training.

The study found that effective DEIB training utilizing virtual reality involves three key themes: (a) an engaging and immersive user experience is critical to learner success, (b) storytelling is a key component of effective communication in DEIB training, and (c) interactive media in virtual reality is a critical factor in learning effectiveness. The study suggests that successful user experience design, along with a strategic human-computer interaction framework, significantly increases the effectiveness of DEIB training. These insights are instrumental in developing DEIB training strategies that are more interactive and engaging for learners.

Engaging and immersive user experiences are crucial in most virtual reality environments. When designed correctly, they can significantly improve the learning process. Additionally, immersion serves as a learning enhancer by offering a realistic context that mirrors real-life scenarios, which in turn aids in the practical understanding and memory retention of training content. Data from the interviews conducted in this study indicate that captivating VR content holds learners' attention effectively, reducing distractions and sharpening focus on the learning material.

The data from the interview analysis suggests that storytelling is a key component to establishing effective communication in DEIB training—as it harnesses the power of narrative to

engage the learner's emotions and imagination. Building on that engagement factor, storytelling can act as a catalyst for change by illustrating the real-world impact of inclusion and exclusion. Furthermore, the data analysis illustrates that storytelling is shown to help transform abstract concepts into relatable and memorable experiences, making information more accessible and impactful.

The analysis of interview data collected during the study indicates that interactive media within virtual reality applications is vital for active learning through direct engagement with educational content. The interactive quality of VR not only fosters engagement but also facilitates the creation of adaptive, realistic scenarios tailored to individual actions. Consequently, VR provides personalized feedback and customizes the learning journey to suit each learner's unique needs.

When implemented properly, virtual reality has the potential to enhance DEI training by creating an immersive and engaging environment where participants can experience the realities of others, leading to a profound understanding of diverse perspectives. This immersive technology simulates real-world interactions and social dynamics, allowing individuals to witness and address biases and discrimination in a visceral, impactful way. VR's experiential learning facilitates deep empathy, enabling users to embody different identities and confront challenges that marginalized groups face, which can lead to lasting behavioral change. By providing a safe space for exploring sensitive issues, VR encourages open dialogue and critical reflection without the fear of real-world repercussions. The interactive scenarios can also be tailored to an organization's specific DEIB goals, ensuring relevance and direct application to workplace situations. Through these features, VR can transform DEIB training from a passive learning

experience to an active practice in empathy and understanding, making it more impactful and meaningful for participants.

References

Abdullah, J., Mohd-Isa, W. N., & Samsudin, M. A. (2019). Virtual reality to improve group work skill and self-directed learning in problem-based learning narratives. *Virtual Reality: The Journal of the Virtual Reality Society, 23*(4), 461-471. https://doi.org/10.1007/s10055-019-00381-1

Alhejji, H., Garavan, T., Carbery, R., O'Brien, F., & McGuire, D. (2016). Diversity training program outcomes: a systematic review. *Journal of Diversity Management, 16*(2), 1-20. https://doi.org/10.19030/jdm.v16i2.10649

Avery, D. R., & McKay, P. F. (2010). Doing diversity right: An empirically based approach to effective diversity management. *International Review of Industrial and Organizational Psychology, 25*, 227-252.

Azuma, R. T. (1997). A survey of augmented reality. *Presence: Teleoperators & Virtual Environments, 6*(4), 355-385. https://doi.org/10.1162/pres.1997.6.4.355

Bailenson, J., & Machi, V. (2018). Experience on demand: What virtual reality is, how it works, and what it can do. *National Defense, 102*(772), 4. https://link.gale.com/apps/doc/A533556579/GBIB?u=vic_liberty&sid=summon&xid=aad36a97

Bailenson, J. (2021). Nonverbal overload: A theoretical argument for the causes of zoom fatigue. *Technology, Mind, and Behavior, 2*(1). https://doi.org/10.1037/tmb0000030

Ballard, D., Allen, B., Ashcraft, K., Ganesh, S., McLeod, P., & Zoller, H. (2020). When words do not matter: Identifying actions to effect diversity, equity, and inclusion in the academy. *Management Communication Quarterly, 34*(4), 590-616. https://doi.org/10.1177/0893318920951643

Barbour, J. B., Gill, R., & Barge, J. K. (2018). Organizational communication design logics: A theory of communicative intervention and collective communication design. *Communication Theory, 28*(3), 332-353. https://doi.org/10.1093/ct/qtx005

Barley, W. C., Dinh, L., Workman, H., & Fang, C. (2022). Exploring the relationship between interdisciplinary ties and linguistic familiarity using multilevel network analysis. *Communication Research, 49*(1), 33-60. https://doi.org/10.1177/0093650220926001

Bartol, K. M. (2019). Equity, diversity, and inclusion: Insights for managing in a multicultural world. *Organizational Dynamics, 48*(3), 100-108.

Baum, B. (2021). Diversity, equity, and inclusion policies: Are organizations truly committed to a workplace culture shift? *Journal of Business and Behavioral Sciences, 33*(2), 11-23. https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/diversity-equity-inclusion-policies-are/docview/2641917251/se-2

Benschop, Y., & Doorewaard, H. (2012). Gender subtext revisited. *Equality, Diversity and Inclusion: An International Journal, 31*(3), 225-235. https://doi.org/10.1108/02610151211209081

Bernstein, R.S., Bulger, M., & Salipante, P. (2020). From diversity to inclusion to equity: A theory of generative interactions. *Business Ethics, 167*, 395–410. https://doi.org/10.1007/s10551-019-04180-1

Bezrukova, K., Spell, C. S., Perry, J. L., & Jehn, K. A. (2016). A meta-analytical integration of over 40 years of research on diversity training evaluation. *Psychological Bulletin, 142*(11), 1227–1274. https://doi.org/10.1037/bul0000067

Bower, M., Sturman, D., & Alvarez, V. (2015). Using virtual reality in educational settings: A review of empirical research. *Educational Technology Research and Development, 63*(4), 551-573.

Bown, J. (2017). Looking for the ultimate display: a brief history of virtual reality. In *Boundaries of self and reality online: Implications of digitally constructed realities* (239–259). essay, Academic Press.

Brown, L. A., & Roloff, M. E. (2015). Organizational citizenship behavior, organizational communication, and burnout: The buffering role of perceived organizational support and psychological contracts. *Communication Quarterly, 63*(4), 384-404. https://doi.org/10.1080/01463373.2015.1058287

Bujić, M., Salminen, M., Macey, J., & Hamari, J. (2020). "Empathy machine": How virtual reality affects human rights attitudes. *Internet Research, 30*(5), 1407-1425. https://doi.org/10.1108/INTR-07-2019-0306

Burdea, G. C., & Coiffet, P. (2003). *Virtual reality technology.* Wiley & Sons.

Cai, S., Wang, X., & Chiang, F. K. (2017). A case study of Augmented Reality simulation system application in a chemistry course. *Computers in Human Behavior, 72*, 634-642. https://doi.org/10.1016/j.chb.2014.04.018

Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Sage.

Chollet, M., Scherer, S., & Morency, L. P. (2018). A survey of multimodal sentiment analysis. *Image and Vision Computing, 65*, 3-14. https://doi.org/10.1016/j.imavis.2017.08.003

Chrobot-Mason, D., & Aramovich, N. P. (2013). Mentoring as an inclusionary practice. In E. A. Haddock & C. L. Haddock (Eds.), *The psychology of workplace technology* (pp. 147-165). Routledge.

Clark, R. C., & Mayer, R. E. (2016). *e-Learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning* (4th ed.). Wiley.

Clark, M. C., & Rossiter, M. (2008). Narrative learning in adulthood. *New Directions for Adult and Continuing Education, 2008*(119), 61-70. https://doi.org/10.1002/ace.306

Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). Sage Publications.

Craig, R. T. (1999). Communication theory as a field. *Communication Theory, 9*(2), 119-161.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approache*s. Sage publications.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

D'Urso, S. C., Fyke, J. P., & Torres, D. H. (2014). Exploring organizational communication (micro) history through network connections. *The Review of Communication, 14*(2), 89-106. https://doi.org/10.1080/15358593.2014.944871

Dede, C. (2009). Immersive interfaces for engagement and learning. *Science, 323*(5910), 66-69. https://www.jstor.org/stable/20177121

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining "gamification". *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9-15.

Dionisio, J. D. N., Burns, W. G., & Gilbert, R. (2013). 3D and immersive media. In R. K. Brath & M. A. Peters (Eds.), *Innovative approaches of data visualization and visual analytics* (pp. 259-288). IGI Global.

Dobbin, F., & Kalev, A. (2018). Why diversity programs fail. *Harvard Business Review, 94*(7-8), 52-60.

Ely, R. J., & Thomas, D. A. (2001). Cultural diversity at work: The effects of diversity perspectives on work group processes and outcomes. *Administrative Science Quarterly, 46*(2), 229-273. https://go.openathens.net/redirector/liberty.edu?url=https://www.proquest.com/scholarly-journals/cultural-diversity-at-work-effects-perspectives/docview/203949509/se-2

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review, 114*(4), 864-886. https://doi.org/10.1037/0033-295X.114.4.864

Felton, W. M., & Jackson, R. E. (2022). Presence: A review. *International Journal of Human-Computer Interaction, 38*(1), 1-18. https://doi.org/10.1080/10447318.2021.1921368

Ferdman, B. M. (2014). The practice of inclusion in diverse organizations: Toward a systemic and inclusive framework. In B. M. Ferdman & B. R. Deane (Eds.), *Diversity at work: The practice of inclusion* (pp. 3-54). Wiley.

Ferdman, B. M. (2020). The state of progress in diversity and inclusion initiatives: Perspectives for consulting psychology. *Consulting Psychology Journal, 72*(4), 243-246. https://doi.org/10.1037/cpb0000191

Ferdman, B. M., & Deane, B. R. (2014). *Diversity at work: The practice of inclusion*. John Wiley & Sons.

Fogg, B. J., & Nass, C. (1997). Silicon sycophants: The effects of computers that flatter. *International Journal of Human-Computer Studies, 46*(5), 551-561. https://doi.org/10.1006/ijhc.1996.0104

Fritz, R. (2020). *Inclusive design for a digital world: Designing with accessibility in mind*. Apress.

Frydenberg, M., & Andone, D. (2018). Enhancing and transforming global learning communities with augmented reality. *Journal of Information Systems Education, 29*(1), 37-44. https://link.gale.com/apps/doc/A533695091/GBIB?u=vic_liberty&sid=summon&xid=9321e017

Gackenbach, J., Bown, J., Suler, J., Yu, G., Apperley, T. H., Clemens, J., Doyle, D., Zong-kui, Z., Geng-feng, N., Qing-qi, L., Wu, C., B., O. de G. A., Griffiths, M. D., Sampson, T. D., Beier, M. A., Wijeyaratnam, D., Flockhart, C., Bosman, F. G., Preston, J. M., & Campbell, T. (2017). *Boundaries of self and reality online: Implications of digitally constructed realities.* Academic Press, an imprint of Elsevier.

Gambino, A., Fox, J., & Ratan, R. (2020). Building a stronger CASA: Extending the computers are social actors paradigm. *Human-Machine Communication, 1*, 71-86. https://doi.org/10.30658/hmc.1.5

Garrett, B. (2021). The effects of virtual reality on learning in higher education: A randomized controlled trial. *International Journal of Educational Technology in Higher Education, 18*(1), 42.

Garzón, J., Pavón, J., & Baldiris, S. (2019). Systematic review and meta-analysis of augmented reality in educational settings. *Virtual Reality: The Journal of the Virtual Reality Society, 23*(4), 447-459. https://doi.org/10.1007/s10055-019-00379-9

Gibbs, J. L., Boyraz, M., Sivunen, A., & Nordbäck, E. (2021). Exploring the discursive construction of subgroups in global virtual teams. *Journal of Applied Communication Research, 49*(1), 86-108. https://doi.org/10.1080/00909882.2020.1851745

Gilpin, D. R., & Miller, N. K. (2013). Exploring complex organizational communities: Identity as emergent perceptions, boundaries, and relationships. *Communication Theory, 23*(2), 148-169. https://doi.org/10.1111/comt.12008

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine.

Graf, H. (2017). What structures?: A communicative approach to ethnic diversity in German media companies. *Journalism Practice, 11*(5), 544-558. https://doi.org/10.1080/17512786.2016.1155969

Gravetter, F. J., & Wallnau, L. B. (2016). *Statistics for the behavioral sciences* (10th ed.). Cengage Learning.

Gudoniene, D., & Rutkauskiene, D. (2019). Virtual and augmented reality in education. *Baltic Journal of Modern Computing, 7*(2), 293-300. https://doi.org/10.22364/bjmc.2019.7.2.07

Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior, 54*, 170-179. https://doi.org/10.1016/j.chb.2015.07.045

Hamilton, D., McKechnie, J., Edgerton, E., & Wilson, C. (2019). Immersive virtual reality as a pedagogical tool in education: A systematic literature review of quantitative learning outcomes and experimental design. *Journal of Computers in Education, 6*(1), 1-32. https://doi.org/10.1007/s40692-020-00169-2

Hammersley, M., & Atkinson, P. (2007). *Ethnography: Principles in practice* (3rd ed.). Routledge.

Harley, D. (2020). Palmer Luckey and the rise of contemporary virtual reality. *Convergence (London, England), 26*(5-6), 1144-1158. https://doi.org/10.1177/1354856519860237

Hasler, B.S., Spanlang, B., & Slater, M. (2017) Virtual race transformation reverses racial in-group bias. *PLoS ONE 12*(4): e0174965. https://doi.org/10.1371/journal.pone.0174965

Hassenzahl, M. (2010). *Experience design: Technology for all the right reasons*. Morgan & Claypool Publishers.

Holvino, E., Ferdman, B. M., & Merrill-Sands, D. (2004). *Creating and sustaining diversity and inclusion in organizations: Strategies and approaches.* In M. S. Stockdale & F. J. Crosby (Eds.), The psychology and management of workplace diversity (pp. 245-276). Blackwell Publishing.

Jensen, L., & Konradsen, F. (2018). A review of the use of virtual reality head-mounted displays in education and training. *Education and Information Technologies, 23*(4), 1515-1529. https://doi.org/10.1007/s10639-017-9676-0

Jiang, H., & Men, R. L. (2017). Creating an engaged workforce: The impact of authentic leadership, transparent organizational communication, and work-life enrichment. *Communication Research, 44*(2), 225-243. https://doi.org/10.1177/0093650215613137

Johnson, L. (2019). The role of storytelling in diversity and inclusion training. *Journal of Workplace Learning, 31*(7), 483-495.

Jones, K., & Okun, T. (2021). *The characteristics of white supremacy culture.* Dismantling Racism.

Kahn, P. H., Kanda, T., Ishiguro, H., Freier, N. G., & Severson, R. L. (2012). "Robovie, you'll have to go into the closet now": Children's social and moral relationships with a

humanoid robot. *Developmental Psychology, 48*(2), 303. https://doi.org/10.1037/a0027033

Kaplan, M., Sharma, S., & Weinberger, D. (2020). How to develop a diversity and inclusion initiative. *Harvard Business Review.*

Khandelwal, K., & Upadhyay, A. K. (2019). Virtual reality interventions in developing and managing human resources. *Human Resource Development International*, 1-15. https://doi.org/10.1080/13678868.2019.1569920

Kim, Y. (2021). Building organizational resilience through strategic internal communication and organization-employee relationships. *Journal of Applied Communication Research, 49*(5), 589-608. https://doi.org/10.1080/00909882.2021.1910856

King, E. B., Dawson, J. F., West, M. A., Gilrane, V. L., Peddie, C. I., & Bastin, L. (2011). Why organizational and community diversity matter: Representational democracy and the psychological well-being of residents. *Journal of Applied Psychology, 96*(2), 342-358. https://doi.org/10.5465/amj.2010.0016

Klowait, N. (2018). The quest for appropriate models of human-likeness: anthropomorphism in media equation research. *AI & Society, 33*(4), 527-536. https://doi.org/10.1007/s00146-017-0746-z

Kreitz, P. A. (2008). Best practices for managing organizational diversity. *The Journal of Academic Librarianship, 34*(2), 101-120. https://doi.org/10.1016/j.acalib.2007.12.001

Kulik, C. T. (2014). Working below and above the line: The research–practice gap in diversity management. *Human Resource Management Journal, 24*(2), 129-144. https://doi.org/10.1111/1748-8583.12038

Kulik, C. T., & Roberson, L. (2008). Diversity initiatives in organizations: A review and critique. In J. L. Farr & T. L. Tippins (Eds.), *Handbook of employee selection* (pp. 319-341). Routledge.

Kyaw, B. M., Saxena, N., Posadzki, P., Vseteckova, J., Nikolaou, C. K., George, P. P., & Car, L. T. (2019). Virtual reality for health professions education: Systematic review and meta-analysis by the digital health education collaboration. *Journal of Medical Internet Research, 21*(1), e12959. https://doi.org/10.2196%2F12959

Lancaster, P. E., Moore, M., Putter, S., Chen, Q., & Cudd, P. (2020). Virtual reality and augmented reality in social learning spaces: A literature review. *Virtual Reality, 24*(4), 645-664. https://doi.org/10.1007/s10055-020-00444-8

Larson, E., & Moss, G. (2020). The impact of storytelling on the perception of DEI training. *Journal of Diversity Management, 15*(2), 39-49.

Lee, K. M. (2004). Why presence occurs: evolutionary psychology, media equation, and presence. *Presence: Teleoperators and Virtual Environments, 13*(4), 494–505. https://doi.org/10.1162/1054746041944830

Lee, Y., & Li, J. (2021). Discriminated against but engaged: The role of communicative actions of racial minority employees. *Communication Monographs, ahead-of-print*(ahead-of-print), 1-25. https://doi.org/10.1080/03637751.2021.2021432

Li, C., Lalani, F., & Choi, J. H. (2017). The effect of computer-mediated communication on empathy. *Journal of Offender Rehabilitation, 56*(8), 559-570.

Liberati, N. (2017). Phenomenology, Pokémon Go, and other augmented reality games. *Human Studies, 41*(2), 211–232. https://doi.org/10.1007/s10746-017-9450-8/

Lindsey, A., King, E., Hebl, M., & Levine, N. (2015). The impact of method, motivation, and empathy on diversity training effectiveness. *Journal of Business and Psychology, 30*(3), 605-617. https://doi.org/10.1007/s10869-014-9391-4

Madary, M., & Metzinger, T. K. (2016). Real virtuality: A code of ethical conduct. Recommendations for good scientific practice and the consumers of VR-technology. *Frontiers in Robotics and AI, 3*, 3. https://doi.org/10.3389/frobt.2016.00003

Makransky, G., Terkildsen, T. S., & Mayer, R. E. (2019). Adding immersive virtual reality to a science lab simulation causes more presence but less learning. *Learning and Instruction, 60*, 225-236. https://doi.org/10.1016/j.learninstruc.2017.12.007

Mantovani, F., Castelnuovo, G., Gaggioli, A., & Riva, G. (2003). Virtual reality training for health-care professionals. *CyberPsychology & Behavior, 6*(4), 389-395.

Marino, M. I., Bilge, N., Gutsche, R. E., & Holt, L. (2020). Who is credible (and where)? Using virtual reality to examine credibility and bias of perceived race/ethnicity in urban/suburban environments. *The Howard Journal of Communications, 31*(3), 297-315. https://doi.org/10.1080/10646175.2020.1714514

Markowitz, D. M., Laha, R., Perone, B. P., Pea, R. D., & Bailenson, J. N. (2018). Immersive virtual reality field trips facilitate learning about climate change. *Frontiers in Psychology, 9*, 2364. https://doi.org/10.3389%2Ffpsyg.2018.02364

Martin-Gutiérrez, J., Mora, C. E., Añorbe-Díaz, B., & González-Marrero, A. (2017). Virtual technologies trends in education. *EURASIA Journal of Mathematics Science and Technology Education, 13*(2), 469-486. https://doi.org/10.12973/eurasia.2017.00626a

Mayer, R. E., Sobko, K., & Mautone, P. D. (2003). Social cues in multimedia learning: Role of speaker's voice. *Journal of Educational Psychology, 95*(2), 419. https://doi.org/10.1037/0022-0663.95.2.419

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

McCarthy, J., & Wright, P. (2004). *Technology as experience*. MIT Press.

Mease, J. J. (2012). Reconsidering consultants' strategic use of the business case for diversity. *Journal of Applied Communication Research, 40*(4), 384-402. https://doi.org/10.1080/00909882.2012.720380

Men, L. R., & Jiang, H. (2016). Cultivating quality employee-organization relationships: The interplay among organizational leadership, culture, and communication. *International Journal of Strategic Communication, 10*(5), 462-479. https://doi.org/10.1080/1553118X.2016.1226172

Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education, 70*, 29-40. https://doi.org/10.1016/j.compedu.2013.07.033

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation.* Jossey-Bass.

Mikelli, D., & Dawkins, S. (2020). VR kaleidoscope: Reconfiguring space and place through community-based media literacy interventions. *Media Practice and Education, 21*(1), 54-67. https://doi.org/10.1080/25741136.2019.1681223

Milgram, P., & Kishino, F. (1994). A taxonomy of mixed reality visual displays. *IEICE Transactions on Information and Systems, E77-D*(12), 1321-1329.

Miller, M. R., Jun, H., Herrera, F., Yu Villa, J., Welch, G., & Bailenson, J. N. (2019). Social interaction in augmented reality. *Plos One, 14*(5), e0216290. https://doi.org/10.1371/journal.pone.0216290

Montagud, M., Orero, P., & Matamala, A. (2020). Culture 4 all: Accessibility-enabled cultural experiences through immersive VR360 content. *Personal and Ubiquitous Computing, 24*(6), 887. https://doi.org/10.1007/s00779-019-01357-3

Mor Barak, M. E. (2017). *Managing diversity: Toward a globally inclusive workplace* (4th ed.). SAGE Publications.

Moreno, R., & Mayer, R. E. (2007). Interactive multimodal learning environments. *Educational Psychology Review, 19*(3), 309-326. https://www.jstor.org/stable/23363954

Morrison, A. (2016). *Navigating cultural complexities in a global market*. Harvard Business Press.

Nass, C., & Moon, Y. (2000). Machines and mindlessness: Social responses to computers. *Journal of Social Issues, 56*(1), 81-103. https://doi.org/10.1111/0022-4537.00153

Nass, C., Moon, Y., & Carney, P. (1999). Are people polite to computers? responses to computer-based interviewing systems. *Journal of Applied Social Psychology, 29*(5), 1093–1109. https://doi.org/10.1111/j.1559-1816.1999.tb00142.x

Nass, C., Moon, Y., & Green, N. (1997). Are computers gender-neutral? Gender stereotypic responses to computers. *Journal of Applied Social Psychology, 27*(10), 864-876. https://doi.org/10.1111/j.1559-1816.1997.tb00275.x

Nass, C., Steuer, J., & Tauber, E. R. (1994). Computers are social actors. *Proceedings of the SIGCHI conference on human factors in computing systems*, 72-78.

Neely, E. L. (2019). Augmented reality, augmented ethics: Who has the right to augment a particular physical space? *Ethics and Information Technology, 21*(1), 11-18. https://doi.org/10.1007/s10676-018-9484-2/

Ngwu, N. (2022). Toward a fluid, shape-shifting methodology in organizational communication inquiry: African feminist organizational communication historiography. *The Review of Communication, 22*(1), 42-59. https://doi.org/10.1080/15358593.2022.2027505

Niemann, Y. F., & Dovidio, J. F. (1998). Relationship between racial identity and perceived racial discrimination: Acculturation and ego-defense in Blacks. *Journal of Personality and Social Psychology, 74*(4), 1024-1037. https://doi.org/10.1037/0021-9010.83.1.55

Nishii, L. H. (2013). The benefits of climate for inclusion for gender-diverse groups. *Academy of Management Journal, 56*(6), 1754-1774. https://doi.org/10.5465/amj.2009.0823

Norman, D. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books.

Oh, J., & Sundar, S. S. (2015). How does interactivity persuade? An experimental test of interactivity on cognitive absorption, elaboration, and attitudes. *Journal of Communication, 65*(2), 213-236. https://doi.org/10.1111/jcom.12147

Otten, R., Faughnan, M., Flattley, M., & Fleurinor, S. (2022). Integrating equity, diversity, and inclusion into social innovation education: A case study of critical service-learning. *Social Enterprise Journal, 18*(1), 182-200. https://doi.org/10.1108/SEJ-11-2020-0101

Parong, J., & Mayer, R. E. (2018). Learning science in immersive virtual reality. *Journal of Educational Psychology*, *110*(6), 785-797. https://doi.org/10.1037/edu0000241

Phillips, K. W. (2014). How diversity works. *Scientific American, 311*(4), 42-47.

Plass, J. L., Heidig, S., Hayward, E. O., Homer, B. D., & Um, E. (2014). Emotional design in multimedia learning: Effects of shape and color on affect and learning. *Learning and Instruction, 29*, 128-140. https://doi.org/10.1016/j.learninstruc.2013.02.006

Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgenannt, I. (2020). A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. *Computers & Education, 147*, Article 103778. https://doi.org/10.1016/j.compedu.2019.103778

Ramirez, E. J. (2018). Ecological and ethical issues in virtual reality research: A call for increased scrutiny. *Philosophical Psychology, 32*(2), 211–233. https://doi.org/10.1080/09515089.2018.1532073/

Reeves, B. & Nass. (1996). *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places.* Bibliovault OAI Repository, the University of Chicago Press

Reuten, A., Van Dam, M., & Naber, M. (2018). Pupillary responses to robotic and human emotions: the uncanny valley and media equation confirmed. *Frontiers in Psychology, 9*. https://doi.org/10.3389/fpsyg.2018.00774

Roberson, Q. M. (2006). Disentangling the meanings of diversity and inclusion. *Group & Organization Management, 31*(2), 212-236. https://doi.org/10.1177/1059601104273064

Roberson, Q. M. (2019). Diversity in the workplace: A review, synthesis, and future research agenda. *Annual Review of Organizational Psychology and Organizational Behavior, 6*, 69-88.

Royakkers, L., Timmer, J., Kool, L., & van Est, R. (2018). Societal and ethical issues of digitization. *Ethics and Information Technology, 20*(2), 127-142. https://doi.org/10.1007/s10676-018-9452-x/

Ruiz-Mesa, K. (2022). 'We're talking about race!:' communicative practices of chief diversity officers. *Journal of Applied Communication Research: "Race Matters" in Applied Communication Research, 50*(3), 309-326. https://doi.org/10.1080/00909882.2022.2083432

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Sage.

Scavarelli, A., Arya, A., & Teather, R. J. (2021). Virtual reality and augmented reality in social learning spaces: A literature review. *Virtual Reality: The Journal of the Virtual Reality Society, 25*(1), 257-277. https://doi.org/10.1007/s10055-020-00444-8

Seijts, G. H., & Milani, K. Y. (2021). The application of leader character to building cultures of equity, diversity, and inclusion. *Business Horizons, 65*(5), 573-590. https://doi.org/10.1016/j.bushor.2021.07.007

Shiradkar, S., Rabelo, L., Alasim, F., & Nagadi, K. (2021). Virtual world as an interactive safety training platform. *Information (Basel), 12*(6), 219. https://doi.org/10.3390/info12060219

Solomon, C. (2020). Storytelling as a strategy for integrating diversity and inclusion training in the workplace. *Human Resource Development International, 23*(4), 382-398.

Speicher, M., Hall, B. D., Nebeling, M., & Zagalo, N. (2019). What is mixed reality? *In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (paper 537). ACM.

Steffen, J. H., Gaskin, J. E., Meservy, T. O., Jenkins, J. L., & Wolman, I. (2019). Framework of affordances for virtual reality and augmented reality. *Journal of Management Information Systems, 36*(3), 683-729. https://doi.org/10.1080/07421222.2019.1628877

Sundar, S. S. (2004). Loyalty to computer terminals: is it anthropomorphism or consistency? *Behaviour & Information Technology, 23*(2), 107-118. https://doi.org/10.1080/01449290310001659222

Sutherland, I. E. (1968). *A head-mounted three dimensional display.* In Proceedings of the December 9–11, 1968, fall joint computer conference, Part I; 12/9/1968 (pp. 757–764) Retrieved from http://design.osu.edu/carlson/history/PDFs/p757-sutherland.pdf.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*(2), 257-285. https://doi.org/10.1016/0364-0213(88)90023-7

Sweller, J., Ayres, P., & Kalyuga, S. (2011). *Cognitive load theory*. Springer.

Sweller, J., Van Merriënboer, J. J., & Paas, F. (1998). Cognitive architecture and instructional design. *Educational Psychology Review, 10*(3), 251-296. https://www.jstor.org/stable/23359412

Tye-Williams, S., Carbo, J., D'Cruz, P., Hollis, L. P., Keashly, L., Mattice, C., & Tracy, S. J. (2020). Exploring workplace bullying from diverse perspectives: A journal of applied communication research forum. *Journal of Applied Communication Research, 48*(6), 637-653. https://doi.org/10.1080/00909882.2020.1830148

Volkow, S. W., & Howland, A. C. (2018). The case for mixed reality to improve performance. *Performance Improvement (International Society for Performance Improvement), 57*(4), 29-37. https://doi.org/10.1002/pfi.21777

Walton, G. M., & Brady, S. T. (2017). The many questions of belonging. In A. J. Elliot, C. S. Dweck, & D. S. Yeager (Eds.), *Handbook of competence and motivation: Theory and application* (2nd ed., pp. 272-293). Guilford Press.

Wheeler, M. L. (2005). Managing diversity: Developing a strategy for measuring organizational effectiveness. In M. J. Davidson, & S. L. Fielden (Eds.), *Individual diversity and psychology in organizations* (pp. 57-75). John Wiley & Sons, Ltd. https://doi.org/10.1002/0470013354.ch4

Wilhoit Larson, E., Linabary, J. R., & Long, Z. (2022). Communicating inclusion: A review and research agenda on inclusion research in organizational communication. *Annals of the International Communication Association, 46*(2), 63-90. https://doi.org/10.1080/23808985.2022.2069045

Willging, T. E., & Johnson, T. P. (2009). Factors associated with openness to diversity in a national sample of mental health counselors. *Journal of Multicultural Counseling and Development, 37*(1), 15-25.

Woodward, I. C., & Vongswasdi, P. (2017). More that unites than divides: Intergenerational communication preferences in the workplace. *Communication Research and Practice, 3*(4), 358-385. https://doi.org/10.1080/22041451.2017.1275259

Xie, H., Chu, H. C., Hwang, G. J., & Wang, C. C. (2019). Trends and development in technology-enhanced adaptive/personalized learning: A systematic review of journal publications from 2007 to 2017. *Computers & Education, 140*, 103599. https://doi.org/10.1016/j.compedu.2019.103599

Yee, N., & Bailenson, J. (2007). The Proteus effect: The effect of transformed self-representation on behavior. *Human Communication Research, 33*(3), 271-290. https://doi.org/10.1111/j.1468-2958.2007.00299.x

Zhao, Y., & Bishop, M. J. (2011). Social interaction in K-12 online learning environments: A review of the research. *Quarterly Review of Distance Education, 12*(2), 127-138.

Zielinski, D. (2021, July 7). The growing impact of virtual reality training. *SHRM.* https://www.shrm.org/hr-today/news/hr-magazine/spring2021/pages/virtual-reality-training-spreads-its-wings.aspx.

Zimmerman, John; Forlizzi, Jodi; Evenson, Shelley (2018). Research Through Design as a Method for Interaction Design Research in HCI. *Carnegie Mellon University. Journal contribution*. https://doi.org/10.1184/R1/6470393.v1

Złotowski, J., Sumioka, H., Eyssel, F., Nishio, S., Bartneck, C., & Ishiguro, H. (2018). Model of dual anthropomorphism: the relationship between the media equation effect and implicit anthropomorphism. *International Journal of Social Robotics, 10*(5), 701-714. https://doi.org/10.1007/s12369-018-0476-5

Appendix A: Email to Potential Participants

Email Recruitment Letter

Dear Potential Participant,

As a doctoral candidate in the School of Communications & the Arts at Liberty University, I am conducting research as part of the requirements for a Ph.D. in Strategic Media. The purpose of my research is to examine diversity, equity, inclusion, and belonging (DEIB) training implemented by organizations in order to help address ineffective and outdated poor communication and media strategies, and I am writing to invite you to join my study.

Participants must be 18 years of age or older and a part-time or full-time employee at Kansas State University. Participants will be asked to complete a webpage-based DEIB training module, complete an interactive virtual reality-based DEIB training module, and participate in a post-training interview session with the researcher. It should take approximately 45 minutes to complete the procedures listed. Names and other identifying information will be requested as part of this study, but participant identities will not be disclosed.

To participate, please click here to complete the screening survey or contact me at [redacted] or [redacted] to receive a copy of the screening survey and consent document. If you meet my participant criteria, I will contact you to schedule a time for the pilot study and interview.

A consent document is provided as the first page of the screening survey and is also attached to this email. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me at the time of the pilot study and interview.

Sincerely,

Michael L. Oetken
Doctoral Candidate
[redacted]

Appendix B: Research Study Recruitment Flyer

Research Participants Needed!

Using Media Equation Theory to Assess the Effectiveness of Virtual Reality Technology in Organizational Diversity, Equity, Inclusion, and Belonging (DEIB) Training.

- **Are you 18 years of age or older?**
- **Are you a part-time or full-time employee at** [redacted]

If you answered **YES** to each of the questions listed above, you may be eligible to participate in a research study.

The purpose of this research study is to examine diversity, equity, inclusion, and belonging (DEIB) training methods implemented by organizations in order to help address ineffective and outdated communication and media strategies.

Pilot study participants will be asked to complete a DEIB training module using two different methods and participate in a post-training interview session. Method One will use a Webpage-based DEIB training module and Method Two will use an Interactive Virtual Reality-based DEIB training module.

If you would like to participate, **scan this QR code** and complete the screening survey or contact the researcher at the phone number or email address provided below.

[redacted]

A consent document is provided as the first page of the screening survey. If you choose to participate, you will need to sign the consent document and return it to me at the time of the pilot study and interview.

Michael Oetken, a doctoral candidate in the School of Communications & the Arts at Liberty University, is conducting this study. Please contact Michael Oetken [redacted] or [redacted] for more information.

Liberty University IRB – 1971 University Blvd., Green Hall 2845, Lynchburg, VA 24515

Appendix C: Potential Participant Recruitment Verbal Script

Verbal Recruitment Script

Hello [Potential Participant],

As a doctoral candidate in the School of Communication & the Arts at Liberty University, I am conducting research as part of the requirements for a Ph.D. in Strategic Media. The purpose of my research is to examine diversity, equity, inclusion, and belonging (DEIB) training implemented by organizations in order to help address ineffective and outdated poor communication and media strategies, and if you meet my participant criteria and are interested, I would like to invite you to join my study.

Participants must be 18 years of age or older and a part-time or full-time employee at [redacted]. Participants will be asked to complete a webpage-based DEIB training module, complete an interactive virtual reality-based DEIB training module, and participate in a post-training interview session with the researcher. It should take approximately 45 minutes to complete the procedures listed. Names and other identifying information will be requested as part of this study, but participant identities will not be disclosed.

Would you like to participate?
[Yes] Great, could I get your email address so I can send you the link to the screening survey and a copy of the consent document?
[No] I understand. Thank you for your time. [Conclude the conversation.]

A consent document will be provided as the first page of the screening survey. The consent document contains additional information about my research. If you choose to participate, you will need to sign the consent document and return it to me at the time of the pilot study and interview.

Thank you for your time. Do you have any questions?

Appendix D: Potential Participant Screening Survey & Demographics Questionnaire

Screening Survey Questions
(Secure Online Form)

What is your age range?
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or older

What is your gender?
- Male
- Female
- Other

What is your current employment status?
- Full time (40 or more hours per week)
- Part time (up to 39 hours per week)

Are you comfortable and willing to use a virtual reality (VR) headset?
- Yes
- No

Name (Last, First): _____

Email: _____

Phone: _____

Appendix E: Study Structured Interview Questions

Using Media Equation Theory to Assess the Effectiveness of Virtual Reality Technology in Organizational Diversity, Equity, Inclusion, and Belonging (DEIB) Training.

Interview Questions

1. Have you ever used a virtual reality device before today's activity? If so, do you own a virtual reality device and how often would you say you use VR?

2. Describe your experience with the webpage training module you just participated in and describe how effective you found it to be?

3. Describe your experience with the virtual reality training module you just participated in and describe how effective you found it to be?

4. In your opinion which training mode had a larger impact on your understanding and appreciation of different human perspectives, and experiences? Please explain the reason or reasons for your choice.

5. In your opinion did the webpage training module help you understand the topic of unconscious bias? Please explain why.

6. In your opinion did the virtual reality training module help you understand the topic of microaggressions? Please explain why.

7. Share your thoughts on which training mode you believe provided the best user experience?

8. Do you recall completing the [redacted] DEIB training within the last 12 months?

    a. If yes, please share your thoughts on how that training compared to the virtual reality training you just participated in.

9. In your opinion, what aspects of the webpage training module could be improved to increase its effectiveness?

10. In your opinion, what aspects of the virtual reality training module could be improved to increase its effectiveness?

11. Do you prefer the webpage training mode or the virtual reality training mode? Please explain the reason or reasons for your choice.

Appendix F: Informed Consent Document

Consent

Title of the Project: Using Media Equation Theory to Assess the Effectiveness of Virtual Reality Technology in Organizational Diversity, Equity, Inclusion, and Belonging (DEIB) Training.
Principal Investigator: Michael Oetken, Doctoral Candidate,
School of Communication & the Arts, Liberty University.

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be 18 years of age or older and a part-time or full-time employee at [redacted]. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of the study is to examine diversity, equity, inclusion, and belonging (DEIB) training implemented by organizations in order to help address ineffective and outdated poor communication and media strategies so that organizations facilitate more effective and sincere methods of training employees on DEIB topics and issues.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Complete a webpage-based diversity, equity, inclusion, and belonging training module on a laptop computer. The training module will take no more than 20 minutes to complete. You will be audio and video-recorded during the activity.
2. Complete a virtual reality-based diversity, equity, inclusion, and belonging training module using a VR headset device. The training module will take no more than 20 minutes to complete. You will be audio and video-recorded during the activity.
3. Participate in an interview session, where I will ask questions about your experience with both training activities. The interview session will take no more than 20 minutes to complete. You will be audio and video-recorded during the interview session.

How could you or others benefit from this study?

The direct benefits participants should expect to receive from taking part in this study include a better understanding of diversity, equity, inclusion, and belonging topics within an organizational setting. Participants may also gain experience and a better understanding of virtual reality technology.

Appendix F: Informed Consent Document

Benefits to society include providing a better understanding of how virtual reality media technology can better prepare and train humans for a wide variety of cultural and societal situations that are not easy to comprehend. Another benefit of this study is to provide a guide for virtual reality media communication strategies grounded in the media equation theory framework that is best suited to address future issues of diversity, equity, inclusion, and belonging communication throughout various organizational and institutional settings.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records.

- Participant responses will be kept confidential by replacing names with pseudonyms.
- Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data collected from you may be used in future research studies and/or shared with other researchers. If data collected from you is reused or shared, any information that could identify you, if applicable, will be removed beforehand.
- Data will be stored on a password-locked computer using dual-authentication security and in a locked file cabinet. After five years, all electronic records will be deleted, and all hardcopy records will be shredded.
- Recordings will be stored on a password-locked computer using dual-authentication security for five years. The researcher will have access to these recordings.

How will you be compensated for being part of the study?

Participants will not be compensated for participating in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University or [redacted]. If you decide to participate, you are free to not answer any question or withdraw at any time.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from the pilot study data, will be destroyed immediately and will not be

Appendix F: Informed Consent Document

included in this study. Pilot study data will not be destroyed, but your contributions to the pilot study will not be included in the study if you choose to withdraw.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Michael Oetken. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted] or [redacted]. You may also contact the researcher's faculty sponsor, Carol Hepburn, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record/video-record me as part of my participation in this study.

_____

Printed Subject Name

_____

Signature & Date

Appendix G: IRB Study Approval Letter

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

July 18, 2023

Michael Oetken
Carol Hepburn

Re: IRB Exemption - IRB-FY22-23-1596 Using Media Equation Theory to Assess the Effectiveness of Virtual Reality Technology in Organizational Diversity, Equity, Inclusion, and Belonging (DEIB) Training

Dear Michael Oetken, Carol Hepburn,

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:104(d):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

For a PDF of your exemption letter, click on your study number in the My Studies card on your Cayuse dashboard. Next, click the Submissions bar beside the Study Details bar on the Study details page. Finally, click Initial under Submission Type and choose the Letters tab toward the bottom of the Submission Details page. Your stamped consent form(s) and final versions of your study documents can also be found on the same page under the Attachments tab. Your stamped consent form(s) should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document(s) should be made available without alteration.

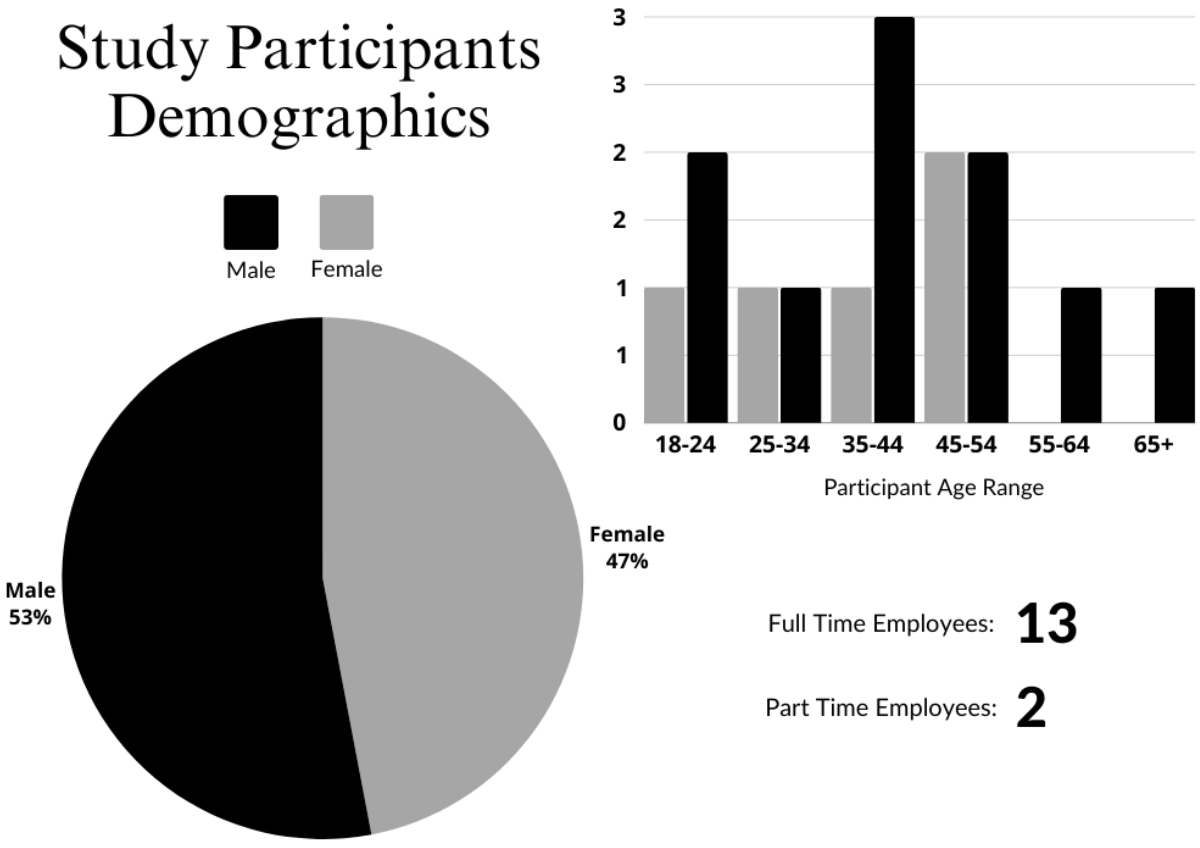
Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

G. Michele Baker, PhD, CIP
Administrative Chair
Research Ethics Office

Appendix H: Participant Demographics



Appendix I: Bodyswaps® VR Application Screenshots