

Virtual Reality Techniques for Eliciting Empathy and Cultural Awareness: Affective Human-virtual world interaction

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Figure 1: *Recording of the virtual reality simulation.*

ABSTRACT

On the average human beings have about 50,000 thoughts every day. If we consider that thoughts influence how we feel there is little doubt that the way we perceive reality will strongly correlate with how we act upon that reality. Let's contextualize this thinking process within the realm of global business where interacting with individuals from other cultural backgrounds is the norm. Our own perceptions and stereotypes towards those cultural groups will strongly influence how we interact with them in business situations. The problem is that stereotypes, being cognitive shortcuts, not necessarily accurately represent intentions. Stereotypes provide us with a false sense of security enabling us to believe that we "understand" the reasons behind certain actions and reactions. This false sense of security often results in conflict in global business situations. That is one of the reasons why becoming globally competent without falling into stereotyping will provide us with the tools to increase success in cross-cultural business interactions.

This paper describes an approach to design a virtual reality (VR) scenarios aimed at developing abilities to work across cultures using the principles of empathy and perspective taking. The approach we are taking in this design innovation paper moves away from only using the understanding of cultural dimensions in cultural competence skills development as research shows that focusing on "preconceived" differences in cultures can enhance stereotyping. Instead our approach provides users with the opportunity of exploring the thought process as a character in first person whose cultural background is different from that of the user. This scenarios provide opportunities for perspective taking which is conducive to empathy across cultures.

CONCEPTS

Virtual reality, empathy, cultural competence, leadership, global competence

1 INTRODUCTION

Educators everywhere are discovering that Virtual reality, an emergent technology, can potentially provide opportunities for learning to happen (Freina, & Ott, 2015). In the field of business education we can find multiple approaches to skill development through the use of case studies, role plays, technology-mediated simulations, to name a few. Virtual reality (VR) is starting to have traction in the area of skill development. VR can be used to recreate "real-life" situations where interactions can occur in a "safe" environment (Grant, 2008). One area in particular that benefits from the use of VR is the development of Global Leadership skills. These virtual scenarios will become powerful tools in the process of becoming globally competent only when the instructional design is robust enough and is able to address how each component of being globally competent can be broken down and represented in different virtual scenarios.

1.1 Development of global skills: empathy vs cultural dimensions

A traditional approach to develop global skills development (cross cultural competence) has been the understanding of cultural dimensions that may distinguish one culture from another. Cultural dimensions (Hofstede, 2001) are a set of behaviors and attitudes

that are shaped by cultural values. It is not uncommon to see many executive education programs and simulations aimed at understanding and identifying cultural dimensions in global business interactions. Although there is value in the ability of recognizing cultural dimensions, mere intellectual understanding of these differences do not necessarily result in effective cross-cultural negotiations. These can become intellectual exercises that may promote cultural stereotypes. On the other hand, helping executives/managers develop skills such as empathy will help in the process of understanding other cultures, taking perspective and eventually move to action by producing behaviors that address these cultural differences. It is only important to have a virtual reality scenario that resembles real life but it is also very important to create content that is actually aligned with the principles of the teaching of the skill it is aiming to develop. And because VR is starting to gain attention from different stakeholders, trainers and professionals in the field of business education it becomes more relevant that the content that is created using VR actually develops the skills it is saying it develops

1.2 Virtual Reality for empathy development across cultures

Virtual Reality Simulations (VRS) have the potential of being powerful tools for skill development. These VRS have the ability of recreating “real-life” scenarios where the user can be immersed giving him/her the experience of actually being “there”. For example some authors have described how “altered media” (digital environments embedded in real life scenarios) can be used to provide unique opportunities of interaction in Augmented Realities (Lugmayr, Serral, Scherp, Pogorelec, Mustaqim (2014).

Virtual scenarios allow for the practice of skills in “life-like” situations, such as a virtual business meeting between a Chinese and a Canadian executive before facing the real situation. During these virtual encounters executives can learn best practices for different potential business negotiations across cultures increasing the sense of efficacy as well as providing tools to conduct effective cross-cultural negotiations. Mentoring relationships are traditionally used in organizations to help high potentials connect with more experienced executive and get guidance derived from these experienced business people. These mentorship relationships often require formal structures and availability of both parts in order to be effective. VR simulations not only are not time bound but the offer as well element of emotion in the contextualization of the VR experience. These virtual scenarios, when they involve emotions portrayed by the “actors”, allow for a more realistic approach requiring the use of specific skills in order to successfully complete a multicultural business encounter (Sternberg, 2007). Many virtual simulations are starting to intentionally integrate emotions enacted by virtual agents and the use of the virtual space to elicit a response in the user (Zhu, Ma, Chen, & Liang, M. (2016).

Research in the area of cultural competence indicate that this ability requires different skills. Many authors have attempted to define these skills (Byram, Nichols and Stevens, 2001). Daniel Goleman (2006), an expert in emotional intelligence identifies 3 elements involved in empathy: cognitive empathy, emotional empathy and compassionate empathy. In order to better understand the role of empathy in intercultural interactions we will provide a

brief description of each one of them. Cognitive empathy refers to the ability of perspective taking. This implies that individuals are able to see reality from behind “someone else’s eyes”, and are able to act upon this understanding of the world. On the other hand, emotional empathy refers to the ability of “feeling” what the other person is feeling because we have created a strong understanding of their perspective of a specific reality. This connection is related to social intelligence which addresses others’ feelings. It will be the task of the viewer to calibrate his/her responses as a result of emotional empathy. The third kind of empathy is “compassionate empathy” which is the type of empathy that moves the individual to act. After reading these definitions it becomes evident that in the process of becoming cultural competent executives working in global businesses should not stop at understanding someone else’s perspective (cognitive empathy) or creating a connection, but the outcome of this process should be moving to action after having accurately (or as accurate as possible) understood their counterpart’s perspective. Research on empathy in global business has shown that executives who are effective at demonstrating empathy are perceived to have more productive inter-cultural negotiations (House & Javidan, 2004). Finally, some studies have revealed that empathy in global business is more important in high-power cultures, that is, cultures where power is perceived to be held by higher levels of an organization) and where power seems to be the source of stability and social order. Therefore empathic approaches in these situations reveal a climate of support and protection that enhance positive job performance (Yan & Hunt, 2005). The VR scenario needs to provide situations in which the participant is faced with the task of demonstrating empathy at the three different levels: cognitive, emotional and compassionate. It will be the task of the content expert to identify specific tasks that result in the development of these three levels.

The next question is how to measure effectiveness. Even when there are measures of effectiveness the question remains, why are these VR experiences effective?

1.3 What makes a VR simulation engaging?

Keeping students engaged into what they are learning is a question that many educators have tried to answer throughout time in many ways. Integrating technology into education and skill development can potentially be a source of increased engagement in the learning of the content. But the novelty of a new approach can quickly wear out. That is why educators and instructional designers should be asking themselves, what attributes of technology in the context of VR contribute to the learning that is obtained? In a meta-analysis study Howard (2017) concluded that three were the main reasons for a VR simulation to work: excitement, physical fidelity, and cognitive fidelity. This author concludes that a novel situation when presented in an engaging way, such as VR, encourages participants to try new behaviors because of the excitement that novelty brings within. Virtual environments are not widely known yet and create a sense of inquiry and curiosity. Having access to an immersive environment can in itself create excitement and get users engaged into the VR experience, more so if the environment includes exploration and an opportunity of playing (Bowman, Kruijff, LaViola, & Poupyrev, 2004), even when the required behaviors are not that complex.

The second variable that research has identified associated with the effectiveness of VR is “physical fidelity”. This means providing the user with an opportunity to practice a behavior in a similar way (or as close to it) as he/she would in real life. This element has proven to be very relevant in situations that involve physical rehabilitation where it is very important that patients are able to “translate” movements that are observed in a video into movements that are similar to those they engage in real life (Lucca, 2009).

The third variable discussed in the literature refers to increased “cognitive fidelity”, defined as the extent in which a program prompts similar psychological processes as the real environment would. That is, when an individual is rehearsing a new behavior (mental or physical) there are cognitive processes that are happening simultaneously (attention, focus, concentration, etc.). Cognitive fidelity refers as well as the ability to elicit an emotion in the user and is the focus of this project.

The purpose of this document is to present a state of the art approach to Leadership skills development through the use of a simulation mediated by Virtual Reality, specifically empathy. In the following paragraphs I will describe the work involved in the design of the VR mediated simulation aimed at helping in the development of perspective taking as a pre-cursor of empathy. This simulation was created to address the gap in action learning practices for skill development.

2. VR SIMULATION DETAILS

2.1 General Description of the Simulation

The VR simulation provides users with an opportunity of immersing themselves in a virtual reality scenario where they take the role of an **observer or an actor** in a global business meeting happening in Asia. The simulation is divided in two parts: the first one where the participant is an observer and the second one where the participant takes on a specific character’s role within the simulation. The first part of the simulation is set in an office environment. In the meeting there are several executives who reside in different countries (and come from different cultures) and who have chosen the China office as a meeting point. Their goal is to discuss and define the team’s strategy since the team is charged to work on a global project. The scene represents several interactions among these executives who engage into different conversations that lead to conflict. The second part of the virtual experience allows the user to take the role of **one of the executives** involved in these interactions and be immersed into their thoughts. These thoughts reveal cultural assumptions that represent different cultural dimensions that are involved in communication. The ability to be immersed in someone else’s thoughts provides an opportunity for perspective taking strongly associated with the development of empathy. The virtual reality scene must be considered as a component of a more comprehensive approach to developing global competence as we understand that global competence goes beyond recognizing differences in cultures but has to include decisions based on this new knowledge. This virtual reality exercise is aimed at developing awareness of difference and empathy through action learning which are key components of cultural competence, but not enough nor sufficient. By no means have we assumed that participants will be culturally competent after this experience. This is just the awareness component of a greater set of skills that being culturally competent in global business setting requires.

2.2 The setting and characters’ psyche

Most digital simulations will face the challenge of creating virtual agents (virtual humans) that can accurately represent human behavior. Simulations that use digital worlds must be able to meet the following criteria: create environments that act in a 3D world, virtual agents need to be able to engage in one-on-one “dialogues” with the user and with other virtual humans and with real humans (users of the simulation), and those agents need to exhibit human-like behaviors and emotions. None of the above is an easy task. Because we believe that the recreation of human emotion and behavior needs to be as accurate as possible in order to trigger cognitive accuracy we approached this simulation integrating videos of real people as characters in a business setting. These characters need to demonstrate cultural dimensions through their dialogues, thoughts, and behaviors which will be accompanied or influenced by emotions that are triggered during different intercultural interactions. What makes this simulation unique and different from other business simulations is the intentionality in the design of the psyche of each character. This intentionality means that each character will think and react according to pre-defined cultural dimensions. We emphasize the importance of looking at this simulation as a training exercise in global competence and it should not be taken as an exercise in stereotyping. Instructors should be very careful at emphasizing the fact that behavioral and attitudinal manifestations of culture can vary across individuals and that this simulation represents one perspective of how cultural dimensions may be manifested in intercultural business interactions. The design of the dialogues and thoughts within the simulation reflect cultural dimensions and were coded as metadata that included the emotion as well. Emotions give characters energy and momentum to take action to solve problems during the actual recording of the simulation. The following three cultural dimensions were integrated to build each character’s psyche reflected through their dialogues and thoughts: power distance, context, and task orientation. Here is a definition of each one of these dimensions. We define **power distance** (Hofstede’s, 2001) as the “extent to which the less powerful members of organizations and institutions (including family) accept and expect that power is distributed unequally.” A higher power distance reveals that inequality and power is perceived by the followers. It also indicates that hierarchy is clearly established and executed without reason nor resistance. A lower degree of the power distance means that people will question authority and will look for an equal distribution of power.

The second dimension that was included in the characters psyche was **context**. When we talk about context as it relates to culture we assume polarities. That is, there are cultures that represent high-context while others will represent low-context (Forsyth, 2010). In **high-context** cultures meanings are the result of a shared understanding which belongs to a particular group. There are several unspoken rules and symbols that would be difficult to understand to members outside of the group or to the untrained eye. In high-context cultures a great deal of communication happens through symbols and shared meanings. In **low-context** cultures “what you see is what you get” (Forsyth, 2010). Communication is more direct and relies on how the sender uses explicit communication. Messages are generally conveyed through conversation and, generally speaking, engage in business relationships rather faster than high-context cultures. The third dimension integrated into the dialogues was **task orientation** (Forsyth, 2010). Cultures with task orientation tend to approach business interactions focusing first on the task and then on the relationship. In these types of cultures achievement and meeting

goals are more important than forming a relationship. Task and deadlines are at the core of any business transaction. **Relationship oriented** cultures will consider important to create trust before any business transaction can successfully take place. Leaders that use a relationship oriented approach will focus on motivating, developing and meeting the needs of their teams, encouraging team work and collaboration. Then results will flow. Both approaches can be effective. The challenge is having a keen eye, understanding differences in approaches, and finding effective ways to address and act upon each preference when needed.

2.3 Setting empathy-evoking scenarios in VR

As described above Daniel Goleman, in his extensive work related to emotional intelligence, has consistently discussed the importance of empathy in effective leadership (Goleman, 2006). For the purpose of this paper Empathy is defined as the ability to identify and understand someone else's perspective (cognitive empathy), followed by the ability to "feel" what the other person is feeling and finally experience compassionate empathy which is what moves an individual to act. This VR simulation focused first on creating cognitive empathy. This ability starts with "perspective taking" which implies an ability to see the world from someone else's eyes. It is well known that leaders who are able to take perspective are perceived as someone who cares about his/her follower's development (Bass, 1989). With this in mind this simulation allows for users to be immersed in any of the character's thoughts. These characters are Chinese, Indian, Singaporean, and American. Each of the characters' thoughts were carefully designed considering the three dimensions of cultural competence previously identified (context, power distance, task-relationship orientation). Conveying emotions through dialogues is difficult enough. Adding cultural dimensions to these dialogues reveals a second layer of complexity in the creation of the psyche through dialogues and thoughts. This is one of the reasons why the creation of dialogues and thoughts for each character in the simulation requires an iterative process where writers are knowledgeable not only about how to express emotion but also what that expression would look like in different cultures. These dialogues and thoughts designed for each character required validation by different individuals who had the ability to describe and understand emotions across cultures through dialogue and contextual cues. We consulted with executives and natives from the countries represented in the simulations. Their observations were integrated and dialogues and thoughts were modified as needed. Being able to observe and make sense of these cues is part of the skills required to develop empathy in global competence. The simulation provides an opportunity to experience the world from a specific culture's point of view through being immersed in someone else's thoughts, allowing the user to take perspective and open their eyes to better understanding of the potential sources of conflict that arise from interpreting the world from our own cultural perspective. The second component of empathy, emotional empathy, requires a more complex process of design since it is aimed at helping the observer experience and "feel" the way the other is feeling. When users are able to take perspective by taking the role of "the other" and when they are able to listen how "the other" is interpreting the world from their own cultural values, the user will be able to experience emotional empathy. The final element of empathy- compassionate empathy- was not considered for this project but will be integrated into a more advanced simulation.

2.4 Video recording

After the dialogues had been created we hired actors that took on the role of the different "executives" in the VR simulation. These actors represented executives from China, India, Singapore, and the USA. A 360 degree camera was used to record all interactions and other cameras were used as well on each character to provide the user with the ability of taking the role of each actor during the actual simulation. This way the user, when taking the role of the actor, would be able to see the business setting as if he/she was sitting at the table where the meeting was taking place and from a different cultural perspective. The recording was done in such a way that the user could "see" their own hands and legs if he decided to look down recreating as much as possible the sensation of "being there".

3 METHOD

3.1 Conducting the simulation

Throughout this paper we have described the relevance of using simulations for leadership development in global contexts. VR provides a perfect means to bring this learning to life through the integration of action learning. In the following paragraphs we will describe how the VR simulation was used in 3 pilot workshops. The users were given 360 Head Mounting Displays (HMD) where they can see the simulation that has been downloaded to a mobile phone. The user observes the global business interaction that is taking place in an office in China. The user sees this interaction as a "fly on the wall" perspective (third person). The user is asked to remove the HDM and the facilitator prompts the group to identify what has happened in the scene. Discussions are around cultural dimensions impacting global business practices. Participants are asked to put on the goggles again and to choose one character from the business interaction. When the user clicks on the character in the VR world the user becomes that character and observes the interaction from their own cultural perspective. The user is also able to "listen" to his/her thoughts that reveal cultural dimensions as the character is giving meaning to the interaction that is going on where he/she is immersed. After observing this new scene participants are asked to take the HMD off and discussions are facilitated around cultural dimensions that impacted the scene they were being part of and are given the opportunity to analyze how different views (revealed by thoughts and dialogues) represented cultural dimensions, and more importantly, resulted in conflicts and misunderstandings. The user

4 FUTURE WORK

This simulation should be contextualized as the beginning of a more comprehensive approach to empathy development to work across cultures. We understand that perspective taking is only tapping on the tip of the iceberg of what being globally competent means. We see this first simulation as the beginning of a more comprehensive training that will later involve other skills that promote interactivity and decision making on situations that require negotiation, motivation, decision making, and conflict resolution among many other skills related to global leadership development integrating elements of Artificial Intelligence that will address responses to cross cultural conflict. Our final aim is to provide future leaders safe hands-on experiences mediated through the use of virtual reality technologies. We want to provide users interactive virtual experiences that require the use of different skills to handle a variety of interpersonal and intercultural business situations such as motivation, negotiation, conflict resolution, and strategic

decision making in global environments. We also understand that being global competent is a life-long process that requires an ability to be open to experience, nimble and respectful while avoiding stereotyping.

ACKNOWLEDGMENTS

This work was possible thanks to a DELTA grant from NCSU.

REFERENCES

- Bass, B. M. (1989). *Leadership and performance beyond expectations*. New York, NY: Free Press.
- Bowman, D. A., Kruijff, E., LaViola, J. J., & Poupirev, I. (2004). *3D user interfaces: Theory and practice*. New York, NY: Addison-Wesley.
- Byram, M., Nichols, A., Stevens, D. (2001). *Developing Intercultural Competence in Practice*. New York, NY: Cromwell Press.
- Freina, L., & Ott, M. (2015). A literature review of immersive virtual reality in education. State of the Art and perspectives, ELSE Conference, Bucharest, 2015. Bucharest, Romania: Academia.
- Goldstein, A., & Sorcher, M. (1974). *Changing supervisory behavior*. New York, NY: Pergamon.
- Goleman, D. (2006). *Working with emotional intelligence*. New York, NY: Bantam Dell.
- Goleman, D. (2006). *Social Intelligence*. New York, NY: Bantam Dell.
- Grant, R. (2008). UALR's virtual reality center aiding businesses. *Arkansas Business*, 25(33), 20. Retrieved from <http://proxying.lib.ncsu.edu/index.php?url=http://search.proquest.com/prox.lib.ncsu.edu/docview/220417323?accountid=12725>
- Heiden, E., & Lajoie, Y. (2010). Games-based biofeedback training and the attentional demands of balance in older adults. *Aging Clinical and Experimental Research*, 22, 367–373.
- Hofstede, G. (2001). *Culture's Consequences: comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: SAGE Publications.
- House, R. J., & Javidan, M. (2004). Overview of GLOBE. In R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman, & V. Gupta (Eds.), *Culture, leadership, and organizations: The GLOBE study of 62 societies* (pp. 513–563). Thousand Oaks, CA: Sage Publications.
- Howard, M. (2017). A meta-analysis and systematic literature review of virtual reality rehabilitation programs. *Computers in Human Behavior*, 70, 317–27.
- Kesselman, M. (2016). Current CITE-ings from the popular and trade computing literature: Google Cardboard – virtual reality for everyone. *Library Hi Tech News*, 33(4), 15-16.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. Thousand Oaks, CA: SAGE Publications.
- Lucca, L. F. (2009). Virtual reality and motor rehabilitation of the upper limb after stroke: A generation of progress? *Journal of Rehabilitation Medicine*, 41, 1003–1006.
- A. Lugmayr, E. Serral, A. Scherp, B. Pogorelc, and M. Mustaqim, “Ambient media today and tomorrow,” *Multimedia Tools and Applications*, vol. 71, 2014, pp. 7–37.
- McCauley, C. D., & McCall, M. W. (2014). *Virtual reality and leadership development*. San Francisco, CA.: John Wiley & Sons.
- Ott, J. S. (1989). *The organizational culture perspectives*. Homewood, IL: The Dorsey Press.
- Shema, S. R.; Brozgol, M., Dorfman, M, Maidan, I., Sharaby-Yeshayahu, I., & Malik
- Kozuch, H. (2014). Clinical experience using a 5-week treadmill training program with virtual reality to enhance gait in an ambulatory physical therapy service. *Physical Therapy*, 94, 1319–1326.
- Sternberg, R. (2007). A systems model of leadership: WICS. *American Psychologist*, 62(1), 34–42.
- Swartout, W., Hill, R., & Gratch, J. (2001). Toward the Holodeck: Integrating graphic
- Yan, J., & Hunt, J. G. (2005). A cross cultural perspective on perceived leadership effectiveness. *International Journal of Cross Cultural Management*, 5, 49–66.
- Zhu, K., Ma, X., Chen, H., and Liang, M. (2016). Tripartite Effects: Exploring Users' Mental Model of Mobile Gestures under the Influence of Operation, Handheld Posture, and Interaction Space. *International Journal of Human-Computer Interaction*.