

AIR WAR COLLEGE

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**Leveraging Virtual Reality to Maximize  
Pre-deployment Cultural Awareness**

by

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## **Biography**

Mr. John Allelo is attending the Air War College, Air University, Maxwell AFB, AL. He is a Crisis, Stabilization and Governance Officer with the United States Agency for International Development (USAID). Over the years, Mr. Allelo has managed various governance and post-conflict efforts in Bulgaria, Kosovo, South Sudan, Colombia, and Pakistan. Following graduation from the War College, Mr. Allelo will assume his onward assignment as the Deputy Mission Director of USAID/Bangladesh. He possesses a Juris Doctor degree from Tulane University Law School in New Orleans, Louisiana and a Bachelor of Sciences in Finance from Louisiana State University in Baton Rouge, Louisiana.

## **Abstract**

The incorporation of Virtual Reality (VR) immersive training components into pre-deployment preparations can increase the readiness and effectiveness of military service members and Foreign Service Officers in the field. VR technology can support more intensive and effective pre-deployment cultural awareness education and training. Thorough cultural awareness includes an understanding of the obvious as well as the nuances of other societies and their traditions. In addition to reading about the destination, it is also necessary to empathize with the people and the challenges they endure. This learning process can be better achieved through the experiential education opportunities offered by VR, which can more effectively introduce individuals to the differences they are likely to face in their new environments prior to deployment. Students will not only observe but will also experience the feeling of being in another location while watching content and hearing local narratives. This type of immersive experience gives students a sense of visual and audible presence that differs from traditional media forms. VR technology improves user experiences due to its high levels of immersion and presence, and it is a better way of training than reading and lecture alone. Therefore, more effective immersive training using VR prior to deployment can ensure that transitioning individuals are more fully informed culturally and immediately effective without the risk of encountering cultural missteps that often undermine the individual's tour and in some cases, the mission at large.

*Most of my important lessons about life have come from recognizing how others from a different culture view things. — Edgar H. Schein*

## **Introduction**

Virtual reality (VR) immersive technology has the potential to assist in building positive overseas relationships through its use as a pre-deployment teaching method. Through a VR teaching approach, our service members will be better informed and better prepared for their missions, and this preparation will facilitate more effective engagement and greater impact. The first section of the paper reviews the United States (U.S.) military's recognition of the importance of cultural awareness for deploying members of the military. The second section discusses constructivist educational theory as a model well suited to support cultural awareness training. The third section assesses the use of VR as a desirable teaching methodology. The final section is an argument that the use of VR is an effective means to build cultural awareness and understanding through pre-deployment education efforts and recommends its incorporation in formal pre-deployment training curricula.

The United States routinely sends Americans to live, work and engage in foreign cultures across the globe. This paper advocates for the incorporation of VR technology into pre-deployment training for service members, however, the approach would be equally effective for Foreign Service Officers and representatives of other agencies dispatched to reside overseas. Whether members of the military or the Foreign Service, these Americans will live among and interact with the local population. To benefit from these engagements, the local population must be comfortable with the service members, who are viewed as guests in the country. The awareness of local cultures, expectations, and respect for traditions are essential to building critical, positive relationships.

Cultural missteps that negatively impact a new relationship can forever impair a mission. Inappropriate behavior, disrespectful cultural references, or unintended physical contact can easily produce disastrous results.<sup>1</sup> New immersive learning methods can more effectively facilitate the understanding of different cultures while also deepening awareness of one's own unconscious habits. Through VR's use of detailed, high definition video, sound, and animation, it can accurately replicate important features of a specific culture, such as architecture, infrastructure, markets, art, dress, speech, and gestures.<sup>2</sup> Extremely detailed teaching modules in VR can create presence, produce empathy, generate intimacy, and build awareness for students – all critical concepts discussed at length later in the paper. When immersed in an accurately designed and crafted virtual environment, the user can experience realistic situations that will further cognitive learning as well as interpersonal engagement with the culture he or she is studying.<sup>3</sup> Fostering respect and appreciation for that culture will also ensure a more enjoyable experience for these deployed Americans and a more positive relationship with the host country and its citizens. VR experiential learning will help build these necessary competencies.

*If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself but not the enemy, for every victory gained you will also suffer defeat. If you know neither the enemy nor yourself, you will succumb in every battle. — Sun Tzu*

### **Cultural Awareness is Critical to Accomplishing the Mission**

Deploying military members and Foreign Service Officers are expected to immediately adapt to their new environments. When these environments are in foreign or unfamiliar places, such adaptation is not always easy. Often these locations present unexpected cultural uncertainties that can lead to social missteps that undermine the individual's (and, in some cases, the mission's) credibility.

Consider a common scenario. A young soldier will deploy in a week. His duffel is full of uniforms and essential equipment. His mind is full of details, protocols, information, and restrictions. His emotions are across the board. He has little time to think about the day after he touches down on foreign soil, much less the people he will meet or the places he will travel. How does one greet a woman in an Islamic state? What is the appropriate protocol when invited to someone's home in Asia? Who makes decisions for a remote tribal village? What is an honor killing and is it acceptable? Why are cats revered in Kosovo? The answers to these common questions require an appreciation and understanding of years of history, tradition, and practice in a given culture. As a further complication, different cultures, although having the same roots, may have developed different practices over the years. Therefore, one can take nothing for granted, and demonstrating a knowledge of a country's culture and a respect for its people and its history will create a strong foundation on which to build a lasting, positive relationship in an unfamiliar place.



## **The Military Recognizes the Need for Cultural Awareness.**

The idea of knowing people suggests understanding their history, their culture, their way of thinking, and possibly their language. Broader knowledge and awareness allows us to gain insight into how a foreign contact might engage us socially or politically.

In his publication, “Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries,” William D. Wunderle explores the importance of cultural awareness for service members. The primer provides excellent resource data to support the need for additional cultural awareness training in the military. Wunderle describes the unexpected results that can occur when military operations do not consider local culture. A perceived indifference for the Iraqi culture demonstrated by American forces in Iraq produced a noticeable animosity among many Iraqis, which led to an increasingly negative image of the U.S. military. Service members also revealed ignorance of Islamic religious practice. For example, when Iraqis were arrested, U.S. troops forced their heads to the ground. This position is prohibited by Islam except during prayers, and the actions offended detainees as well as bystanders and only further alienated the local population.<sup>4</sup>

It is important to remember that the U.S. military has approximately five hundred thousand troops and staff stationed in almost 150 different countries.<sup>5</sup> These Americans overseas should not be viewed as occupiers or imperialists. An awareness of a culture is an increasingly important component of the relationship building effort, and the more different the adversary is, the more important it is for military service members to understand the local society, its cultural dynamics, and its traditions to achieve the mission’s desired results.<sup>6</sup> The higher one’s level of awareness, the less confusing and frustrating a new culture will be. Such awareness is an

indispensable factor in tasks that require close and extended engagement with the local culture, such as post-conflict stability and support operations, peacekeeping, and nation-building.<sup>7</sup>

Adequate pre-deployment preparation can expose service members to cultural differences before being thrust into them. This will give them an opportunity to adapt to and prepare for the new culture and its differences, which will help ensure that they do not immediately perceive foreign behavior as capricious or unpredictable.<sup>8</sup> Additionally, cultural awareness training courses will provide valuable insights that can assist decision-makers at all levels to make more accurate and appropriate decisions that can save lives, materiel, and other critical resources.<sup>9</sup>

### **Current Preparatory Programs are Limited**

The conflicts we face today often include irregular warfare, counter-insurgency and countering violent extremism, all of which regularly place service members in totally unpredictable, erratic environments where insight into the motivations of the adversary is critical to operations.<sup>10</sup> The military, however, has not yet been able to significantly incorporate cultural awareness across the services' training platforms. There are certain resources available through facilities such as the Joint Knowledge Online portal, the Army Research Institute, and the U.S. Army Training & Doctrine Command. However, there is no military directed or designed formal curriculum that is triggered or required when a deployment is planned.

Informal discussions with various service members and Foreign Service Officers confirmed that cultural awareness training is ad hoc and given limited priority in any pre-deployment preparation. Depending on the destination, there may be no preparation option offered at all. In some cases, a one-hour online course on general cultural themes was all that was required as part of the pre-deployment training. In another case, once deployed, service members met with a local expert at the destination who responded to questions. While the

intention to provide pre-deployment cultural training exists, a means to adequately provide it to the many service members remains a daunting challenge. Further, when it is available, it tends to be rushed, abbreviated, and oversimplified, focusing on language basics and a handful of cultural *faux pas* to avoid.<sup>11</sup> Further, efforts to provide such training on the ground is often too late or too focused on superficial elements to create a tangible basis for effective communication and cultural awareness.<sup>12</sup>

The Air Force has taken the lead in designing in-depth cultural awareness programs through its Air Force Culture and Language Center (AFCLC). Its director, Howard Ward, explains that the AFCLC aims to empower airmen to operate seamlessly with other air forces and populations around the world. While other branches focus on ad hoc tactical information, such as do's and don'ts in the field, the AFCLC was created to focus on connections between people and cultures – to understand the *why* in addition to just learning the *what* about other cultures. To accomplish this goal, the AFCLC has piloted a number of programs, and the Center's experts teach a variety of Professional Military Education (PME) classroom and online courses. More importantly, these experts also travel around the world to work with professionals and students in-country to create and expand connections, to develop accurate scenario templates, to address issues of cultural heritage, to explore property protection needs and to examine broader sociocultural dynamics.<sup>13</sup>

Perhaps its two most coveted courses are the General Officer Pre-Deployment Acculturation Course (GOPAC) and the Language Enabled Airman Program (LEAP). The intense senior level GOPAC is a highly customized training and deployment preparation program for general officers and lasts from two to five days. The LEAP Scholars must already possess some level of proficiency in a foreign language to qualify for the program. The criteria to

participate in these programs necessarily limits the number of applicants who can access them.

As the AFCLC grows and develops new innovative programs, it will continue to identify ways to reach and serve the many service members preparing for assignments overseas. Further, the AFCLC has identified VR as an excellent tool for refresher training of its courses and will explore the possibility of preparing follow-up VR modules for its course participants.<sup>14</sup> However, its reach will be limited by budgets and resources.

Much of the currently available information on culture tends toward factual, non-interactive modules in area studies. This is a different discipline distinct from culture studies. Area studies such as those taught at the Foreign Service Institute for deploying diplomats typically teach topics such as history, economy, geography, and group identities. This approach certainly generates a useful overview of a destination country, however, it only scratches the surface. The nuanced cultural information and insights needed to truly appreciate and effectively engage with the local population, however, are lacking. Through a broader understanding, deployed personnel develop the important capacity to compare and contrast the conduct and practices of the local culture with those of their own culture, and with any significant sub-cultures.<sup>15</sup> The question then remains as to how can the military effectively and efficiently develop cultural awareness in its many deploying troops.

*Tell me and I will forget, show me and I may remember; involve me and I will understand. — Confucius*

### **Experiences Can Expand Knowledge**

Jean Piaget<sup>16</sup> shaped the theory of constructivism as a way to explain how people produce knowledge and craft meaning through their experiences. The concept of culture, for example, is not new to the deploying service member; however, building awareness of and respect for a foreign culture requires that it be introduced as something more detailed and more nuanced than what one already knows. There are likely to be common threads, such as religion or costume, on which the new understanding can be built. While there are a number of educational approaches, theories, and techniques that could help build awareness, constructivism stands out as the approach most suited for the topic and the audience, and the one that will most effectively help the student build on existing knowledge.

Constructivism suggests that a student can *construct* his or her own evolving understanding and knowledge of the world by reconciling new ideas and information with what is already known. This can best be accomplished through the use of experiments, problem-solving and other interactive techniques that generate new knowledge and skills that influence one's understanding.<sup>17</sup> Constructivism then facilitates the use of one's existing understanding of culture and its concepts and builds upon them with the new experiences. In this way, constructivism helps transition from what is already known to a new level of understanding that is influenced by the individual's ability for perception and action.<sup>18</sup>

In her research, Wendy Ashby analyzed various educational theories to determine which model best supported cultural awareness building. Her findings supported a constructivist approach as the most appropriate. Ashby describes constructivist learning as being "co-created"

and learner-directed in a highly individualized, adaptive, and non-linear manner. Information is no longer delivered in a linear process, as the internet and online learning tools allow students to search for information in an infinite array of orders. The teaching of culture is facilitated by the ability of students to navigate input and co-create cognitive networks of cultural discovery.<sup>19</sup>

The idea of co-creation is an important one for identifying the best available options to effectively build understanding and engender a cultural awareness in students. Arguably, simple lectures or even online videos lack the essential element needed for co-creation – engagement in the learning process to better understand another’s culture. The need for this type of engagement underscores the benefits of experiential opportunities. Through their experiences, learners build knowledge while they contemporaneously develop empathy and commonality with those sharing that experience. Training through VR offers the user actual experiences to bolster learning.

## **Virtual Reality as an Educational Tool**

### **What is VR?**

At its core, VR is a computer-generated simulation of three-dimensional images woven together to create a virtual environment with which the user can interact. In VR the user wears a headset (referred to as a Head Mounted Display) and can then freely look in all directions. Everywhere the user looks, the headset displays a seamless view of the environment. If the user moves in close to focus on something, the object becomes larger and more visible just as in reality. VR refers to the capacity to move around freely as *degrees of freedom*. In a three-dimensional space, there are a total of six degrees of freedom. Three degrees are rotational – the head can tilt, nod, and turn – and three are positional – the body can move forward, backward, and sideways.<sup>20</sup> Some VR headsets limit the user to three degrees of freedom, which are the three rotational movements. A good example of this is the Google Cardboard. More sophisticated headsets, such as an Oculus or Vive, however, permit the viewer to look in every direction as well as move about within the environment.

Additionally, gloves, vests, and footwear can be fitted with sensors that respond to the users' actions within the environment. These “haptic devices” stimulate the senses of touch and motion and supplement the visual cues within the alternate reality to increase the effectiveness of the experience. For example, when users shake hands with an avatar in a virtual environment, they actually feel the pressure of the palms touching.

VR is a technology that dates back to the mid-1980s. However, the advances in technology, reduction in equipment size and more manageable costs have facilitated a resurgence

of VR and its coming into the mainstream with new, creative uses.<sup>21</sup> These advances in technology and new software allow individuals located across town or across the world to contemporaneously share an experience. For example, one could host a meeting where none of the participants were in the same location in reality but could be in the same virtual conference room. Consider a situation where various interested commanders located in different regions could all virtually fly over contested territory together for visual awareness of the environment as an aid to necessary planning efforts. There is great optimism that VR and related technologies can transform education, entertainment, healthcare, and corporate training. Notably, VR also provides an excellent platform for training, simulations, and therapy where repeated practice or a safe space to fail are needed.<sup>22</sup>

This virtual reality can reproduce a historically accurate or completely new credible world, where users can experience a genuine sense of being there. This sense of “being there” is called presence, and the feeling of presence occurs when your brain is so fooled by a virtual experience that your body responds as though the experience were real.<sup>23</sup> This presence is generated through a realistic digital environment and delivers an enjoyable and appealing immersive experience for users.<sup>24</sup> The wider the range of perceptions and the more accurate they are for the user, the more immersed the user will feel.<sup>25</sup> Immersion occurs when the user becomes so completely engaged in a task or interaction that any distraction or attention to the external environment is ignored. It is this immersion that offers the greatest potential for individual learning.<sup>26</sup>

The educational theorist’s point of view identifies the nature of knowledge as that which results from an interplay of experiences and interpretation based on one’s background and perceptions.<sup>27</sup> The use of VR technologies offers new, creative opportunities to incorporate



constructivist education approaches into training programs.<sup>28</sup> Jaron Lanier<sup>29</sup> describes VR as a scientific, philosophical, and technological frontier. VR permits the creation of “comprehensive illusions” that can transport the user to historical places, modern cities or even fantastical, alien environments. While in the experience, the systems can collect data and learn from the user while testing the user’s cognition and perception.<sup>30</sup> Such collected information can then be used to refine and improve the experiences for future users.

It is through the complete immersion and feeling of presence that a user will copiously experience the virtual setting. The user is able to engage, learn about the environment, and learn from the experience. Notably, the experience can be faithfully reflective of a real environment or digitally enhanced to highlight particular locations or aspects of the story being told. Through its immersive nature, a VR story can induce emotions and empathy that will stimulate learning and will influence action.<sup>31</sup> Following the constructivist theory, the user can then build on his or her preexisting knowledge with multiple new and meaningful experiences.<sup>32</sup>

The information age that introduced the internet, personal computers and digital sharing of data also introduced the idea of computer-based and online games. That early exposure has evolved into a demand for more experiences and more accurate depictions of potential or desired realities in a world of interconnected mobile devices, multiplayer gaming, and social networking. This connectivity will foster continued increasing user demand for experiences and engagement, bolstered by empathic and active, authentic learning opportunities, which VR can deliver in ways that a computer monitor cannot. The virtual reality can be whatever the user or designer can imagine as VR technology permits and encourages the exercise of unlimited creativity in an arena that completely and comfortably supports the visualization of abstract concepts.<sup>33</sup>

Importantly, VR excels in providing opportunities for considering perspectives, feeling empathy, and visualizing difficult models or complex concepts. When students participated in a VR experiment entitled “The Virtual Mirror,” they assumed the avatars of elderly people, and their empathy towards older generations significantly increased.<sup>34</sup> Another excellent example of VR effectiveness is Chris Milk’s *Clouds over Sidra*. The work differs from traditional film and is categorized as a “VR film,” which is filmed in 360 degrees and relies as much on the viewer as the director in dictating how one follows the events. *Clouds over Sidra* transports the viewer to a Syrian refugee camp in Jordan where Sidra’s family is now living. Empathy with Sidra and her situation is triggered by immersing the viewer in the realistic experience of being a refugee.<sup>35</sup> This type of experience and the empathy it creates unconsciously increases the awareness of the viewer to the details and the difficulties of the situation.

As a VR film, *Clouds over Sidra* does not employ music, cinematography, or dramatic close-up shots in the way they are used in more traditional film. The work weaves together simple scenes of Sidra, her family, and her friends. The difference between traditional film and VR film is that the viewer is not watching through the frame of a screen, but is experiencing the situation as though he or she *is actually there*.<sup>36</sup> It goes beyond a simple tug on the heartstrings and allows one to actually experience the environment. *Clouds over Sidra* and similar VR films evoke empathy, but more importantly, they also evoke intimacy. Empathy involves one or more other people and the emotional understanding between them. Intimacy, however, involves the emotion itself.<sup>37</sup> While empathy helps build understanding, the intimacy that comes from the connection produces the emotion needed to build a relationship or to create a link to an issue or an idea. It is the interplay of immersion, empathy, and intimacy that makes VR such a powerful

tool for learning. One of the strongest arguments for VR as a learning tool is this ability to create empathy in users and to change their perspectives.<sup>38</sup>

From a practical viewpoint, one of the most encouraging aspects of VR as a learning tool is its game-like quality. It is easy and fun to use. It is generally believed that games have the potential to exact changes in student's knowledge, skills, and attitudes. Arguably, it is the immersive, affective power of games that will also facilitate a change in students' awareness of other cultures. Emotions like empathy, understanding, and identity are critical parts of intercultural competence.<sup>39</sup> As in gaming, VR allows participants to engage in experiences together, which will encourage them to transfer knowledge from one perspective to another, from one culture to another and in the end, to learn from each other.<sup>40</sup>

Another important game-like aspect of a VR experience is that its simulations require actual problem-solving skills. This level of engagement and the virtual games prevent the user from being a passive participant but forces her or him to be an active contributor, and that constant interaction fosters a fertile learning environment. Consider the game *Surgeon Simulator*.<sup>41</sup> In the experience, the user cannot sit by idly but must perform an autopsy on an alien in a space station. The user has available a full array of medical instruments, power tools, and weapons. As with most video games, the user has the choice to do damage or to do good work. One can learn from the experience as well as from the mistakes he or she will make. Likewise, flight simulators allow one to fly and crash planes without damaging million dollar equipment and to do so in full VR immersion puts the user in the cockpit rather than simply looking at it on a monitor. While in VR, distractions are minimized and focus is increased. The user, as a doctor or a pilot, is able to focus on the task and identify the options available. A quick assessment can be made and problems solved; or, more importantly, the effort fails and the user

can try again, without loss or damage to people or equipment. The full immersion and the presence in the VR experience make the training more effective.<sup>42</sup>

*Virtual reality is a technology that could actually allow you to connect on a real human level, soul-to-soul, regardless of where you are in the world.*  
— Chris Milk<sup>43</sup>

### **Effective Cultural Awareness Training through Virtual Reality**

The immersion and presence experienced in VR make it an outstanding methodology for building cultural awareness for anyone, including deploying service members. Through VR, the user can be immersed in another person's experience or plight, which buttresses his or her capacity to understand and relate to the person or situation. The connectivity and presence felt in their VR environment clearly makes one more interested and invested in other people's journeys and relationships, as the characters one meets along the way take on new depth and dimension. VR slips the user into another's experience and both are there to hear, to enjoy, to love, to hate, to fear *with each other*.<sup>44</sup> This helps to make every experience in VR powerful and impactful.

High-resolution 360-degree photography and a VR headset can transport the viewer from a classroom to the seat of a WWII Bomber in *Berlin Blitz*<sup>45</sup> to defending your castle against invading hordes with a few simple clicks of the controller. The presence one feels while in VR is the foundation of the experience and creates empathy for the characters and respect for the environment. Introducing features of a different culture in this intriguing and enjoyable way opens the mind of the viewer. The experiences do not need to be long and drawn-out as even short experiences have tremendous impact. In fact, most VR simulations are intense, emotionally engaging, and compelling such that five to ten minutes is often enough.<sup>46</sup>

A recent study explored methods to improve cultural awareness specifically in situations confronting members of the military today. This study repurposed an existing Army simulation so that it could be used as an avatar-based game to train personnel in key cultural differences.<sup>47</sup> The game was based in Afghanistan using two scenarios -- an interaction with a local council

and a visit to an urban street market. Both scenarios were detailed and validated in consultation with personnel recently returned from Afghanistan, native Afghans, and other members of the local Muslim community.<sup>48</sup> The training through avatars in the game significantly improved the participants' understanding of the Afghan culture to a level where they could interact in two different scenarios versus other participants who received only simple video-based training.<sup>49</sup> The results disclosed that game-based approaches offer the potential to improve cultural understanding and ensure effective interactions in complex environments and that the approach was easily scalable for other countries and cultures. Importantly, the study affirmed the use of experiential learning for cultural awareness and recommended modification of the simulation into a three-dimensional immersive format. A more experiential VR immersive experience that enhances the qualities, personality, emotions, attitudes, and social awareness should result in even more valuable cultural training.<sup>50</sup>

## **Implementation**

Most pre-deployment training must focus on the current military situation and needs. However, cultural awareness training can be accomplished on a regular basis as part of early preparation well in advance of one's deployment. In this way, the foundations of knowledge will already be in place when the time to go arrives.<sup>51</sup>

The number of service members who will benefit from cultural awareness training is constantly increasing. The use of VR as a training mechanism provides the military with an effective and efficient training approach. The portability and ease of using VR equipment allow it to be made available to a number of students to train contemporaneously without the need of instructors or classroom space. For example, a digital library could be created to house a plethora of desired topics in a module format. Experiences such as a tour of a mosque with an Imam, a

visit to a market and actual interaction with the local merchants via avatars, a history lesson of the region with virtual travel to various locations, a risk-free flyover of the contested border that will be relevant to the mission, virtual travel to non-permissive geographic locations, and a myriad of other examples could be created and filed in the virtual library. There will be necessary upfront costs for equipment and module design, however, once online, the programs could be accessed an unlimited number of times, simultaneously by multiple users allowing for a significant increase in efficiency in training delivery. Importantly, many topics related to cultural issues are based on tradition and history and will seldom need to be updated.

The library could be constantly expanded based on need and shared widely among the services. A curriculum could have initial tailored modules and supplemented as assignments change. Centralized access could support specific services as well as joint efforts across the services with experiences focused on coordinated efforts and support requirements of the various combatant commands. As new experiences and scenarios are needed, custom content can be created.

The experiences in this digital VR library must be accurate and believable to accomplish the full immersion and presence desired. Teams of cultural, military, diplomacy and VR experts should be assembled to design accurate and effective experiences that accomplish the goals of the scenario. Development of content can be time consuming and expensive, however, the investment can pay off in training opportunities for hundreds of service members and long-term use.

The library can also include content supporting regular, more traditional courses such as overview courses for new service members, which can be offered remotely or at any educational facility for any training level. Importantly, the user could experience each topic as often as he or

she wanted at any convenient time and place. The portability of VR headsets also offers the option of including them in transit operations where they can be used in flight. This would allow the service member to refresh and hone skills during a multi-hour flight to the deployment location.

Given the flexibility of VR, the library could eventually be expanded to include a number of experiences from United States culture such as visiting Smithsonian museums, participating in a Fourth of July bar-b-que, riding in a *Mardi Gras* parade, or attending a university speaker series. These illustrative experiences could be shared with the local population so that they could become more culturally aware of the United States and better understand the American service members with whom they will interact.



## **Recommendations**

The military services should incorporate VR technology into pre-deployment training curricula where possible to leverage the effectiveness of preparation efforts and enhance service members' awareness of culture, its importance, and key differences prior to deployment.

One or more military universities should collaborate to create and make available an accessible digital library of VR cultural awareness modules for training of military forces to support readiness.

Additional study should be undertaken by the services to identify which scenario characteristics produce the best outcomes and thereafter have additional, relevant experiences created for inclusion in the digital library.

As VR training methodologies are integrated into training efforts, evolving trends and advancements in VR technologies should be followed and incorporated so as to design more immersive training courses that maximize the use of haptic technology, realistic gestures, and vision tracking that will facilitate more technical training options.

## **Conclusion**

Effective immersion training using VR technology prior to deployment will ensure that transitioning individuals are more fully culturally informed and immediately effective without the risk of making cultural missteps. The military has recognized the link of cultural awareness to the success of operations in foreign locations. For the deploying individual, it is necessary to not only read about the destination, but to truly understand and empathize with the people and the issues they face. To maximize effectiveness, this level of understanding must be made available to as many deploying individuals as possible. Arguably, the military must weave a constructivist education approach into its training efforts to facilitate experiential learning and increased awareness. Through the use of VR, users will not only observe but will also experience the feeling of being in another location and meeting other individuals while watching content and hearing local narratives.

The military can effectively and efficiently improve cultural awareness in its deploying troops through the use of VR immersive technology, which will also allow the training modules to be safely stored, easily accessed, and repeated as often as desired. This immersive experience gives students an enveloping sense of presence that differs from traditional media forms, while the possibilities for mistakes are reduced and the prospects for building new, lasting relationships are exponentially increased. Most importantly, by introducing users to cultural awareness experiences through VR immersion, opportunities to build upon their preexisting knowledge will be maximized for the benefit of the individual and the mission.

## Notes

<sup>1</sup> Donald Brown et al., “Design and Evaluation of an Avatar-Based Cultural Training System,” *The Journal of Defense Modeling and Simulation*, October, 2018, 1.

<sup>2</sup> Chad H. Lane and Amy E. Ogan, n.d. *Virtual Environments for Cultural Learning*, U.S. Army Research, Development, and Engineering Command, 1.

<sup>3</sup> *Ibid.*, 1.

<sup>4</sup> Skelton and Cooper, “You’re Not From Around Here,” 12.

<sup>5</sup> Brown, “Design and Evaluation,” 3.

<sup>6</sup> William D. Wunderle, *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries*, (Washington, DC: Combat Studies Institute Press, 2006), 1.

<sup>7</sup> *Ibid.*, 1.

<sup>8</sup> *Ibid.*, 58-59.

<sup>9</sup> Hershel L. Holiday, *Improving Cultural Awareness in the U.S. Military*, USAWC Strategy Research Project (Carlisle Barracks, PA: U.S. Army War College, 2008), 1.

<sup>10</sup> Brown, “Design and Evaluation,” 3.

<sup>11</sup> Montgomery McFate, “The Military Utility of Understanding Adversary Culture,” *Joint Force Quarterly* 38, (July 2005): 46.

<sup>12</sup> Timothy E. Stenmark, *Looking for Gold Nuggets in the Melting Pot: Language, Cultural Awareness, and the Fourth Generation Warrior*, (Maxwell AFB, AL: Air Command and Staff College, 2006), 4-5.

<sup>13</sup> Howard Ward (Director, Air Force Culture & Language Center, Maxwell AFB, AL), in discussion with the author, 20 March 2019.

<sup>14</sup> *Ibid.*

<sup>15</sup> Wendy Ashby, “Employing Constructivist Models of Culture Teaching for Enhanced Efficacy in Pre-Departure, Cross-Cultural Training,” *Applied Language Learning* 22, no. 1&2 (2012), 9.

<sup>16</sup> Jean Piaget (9 August 1896 – 16 September 1980) was a Swiss psychologist known for his work on child development and a pioneer in the area of the constructivist theory of learning.

<sup>17</sup> WNET Education, “Constructivism as a Paradigm for Teaching and Learning,” (2004), <https://www.thirteen.org/edonline/concept2class/constructivism/index.html>.

<sup>18</sup> P. Aiello, et al., “A Constructivist Approach to Virtual Reality for Experiential Learning,” *E-Learning and Digital Media* 9, no. 3 (2012), 320.

<sup>19</sup> Ashby, “Employing Constructivist Models”, 7.

<sup>20</sup> Peter Rubin, *Future Presence: How Virtual Reality Is Changing Human Connection, Intimacy, and the Limits of Ordinary Life* (New York, New York: HarperCollins Publishing, 2018), 97.

<sup>21</sup> Elliot Hu-Au and J.J. Lee, "Virtual Reality in Education: A Tool for Learning in the Experience Age," *Int. J. Innovation in Education* 4, no. 4 (2017), 217.

<sup>22</sup> *Ibid.*, 217-219.

<sup>23</sup> Rubin, *Future Presence*, 4.

<sup>24</sup> Michela Mortara and Chiara Eva Catalano, "3D Virtual Environments as Effective Learning Contexts for Cultural Heritage," *Italian Journal of Educational Technology* 26 (2) (2018), 7

<sup>25</sup> *Ibid.*, 8.

<sup>26</sup> Henrik Kampling, "Feeling Presence in Immersive Virtual Reality for Individual Learning," (University of Siegen, 2018), 1.

<sup>27</sup> Aiello, "Constructivist Approach to Virtual Reality," 319.

<sup>28</sup> *Ibid.*, 320.

<sup>29</sup> Jaron Lanier is the scientist said to have either coined or popularized the term virtual reality.

<sup>30</sup> Jaron Lanier, *Dawn of the New Everything: Encounters with Reality and Virtual Reality*, (New York: Henry Holt and Company, 2017), 1.

<sup>31</sup> Donghee Shin, "Empathy and Embodied Experience in Virtual Environment: To What Extent Can Virtual Reality Stimulate Empathy and Embodied Experience?" *Computers in Human Behavior* 78 (January 2018), 64.

<sup>32</sup> Hu-Au, "Virtual Reality in Education," 219.

<sup>33</sup> *Ibid.*, 216.

<sup>34</sup> Jeremy Bailenson, *Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do* (New York, New York: W.W. Norton & Company, 2018), 84.

<sup>35</sup> Hu-Au, "Virtual Reality in Education," 221.

<sup>36</sup> Bailenson, *Experience on Demand*, 77

<sup>37</sup> Rubin, *Future Presence*, 86.

<sup>38</sup> Bailenson, *Experience on Demand*, 76.

<sup>39</sup> Lane, *Virtual Environments for Cultural Learning*, 9.

<sup>40</sup> *Ibid.*, 9.

<sup>41</sup> Surgeon Simulator is a surgical simulation video game by Bossa Studios. It is described as a darkly humorous over-the-top operation game where players become a would-be surgeon taking life into his own shaky hands, performing life-saving surgical maneuvers on a passive patient.

<sup>42</sup> Bailenson, *Experience on Demand*, 65.

<sup>43</sup> Chris Milk is an American entrepreneur, innovator, director, photographer, and immersive artist. He is founder and CEO of Within (Virtual Reality) (formerly Vrse), a virtual reality technology company, and co-founder of Here Be Dragons (formerly Vrse.works), a virtual reality production company.

<sup>44</sup> Rubin, *Future Presence*, 94-95.

<sup>45</sup> Berlin Blitz is a VR video experience created by BBC Northern Ireland and Immersive VR Education, and puts you inside a Lancaster bomber as it navigates a most dangerous WWII journey.

<sup>46</sup> Bailenson, *Experience on Demand*, 258.

<sup>47</sup> Brown, "Design and Evaluation," 4.

<sup>48</sup> Ibid., 6.

<sup>49</sup> Ibid., 14.

<sup>50</sup> Ibid., 14-15.

<sup>51</sup> Skelton and Cooper, "You're Not From Around Here," 16.

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