# Chapter 5.6
# Virtual Learning Environments for Culture and Intercultural Competence

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## ABSTRACT

*The authors review six virtual learning environments built to support the acquisition of cultural knowledge and communication skills: ATL, BiLAT, Croquelandia, Second China, TLCTS, and VECTOR. Each leverages modern 3D video game engine technology which allows high-fidelity simulation of new cultural settings, including representations of buildings, streets, art work, dress, voice, gestures, and more. To bring more realism to simulated cultural interactions, several of the systems are driven by artificial intelligence (AI) models of culture, communication, and emotion. Additionally, several rely on narrative-based techniques to place the target culture in context and enhance motivation of those using the systems. The authors conclude with a discussion of the reviewed environments and identify potential research directions that focus on (1) intercultural competence skills, (2) learner assessment, and (3) cultural model building and validation.*

## INTRODUCTION

Many of the chapters in this volume focus on the problem of adapting computer systems to the culture of the user. In this chapter, we are concerned with the other direction: how to use computer-based learning environments to *help the user learn to adapt to a new culture*. The basic problem we address is how immersive learning environments can be used to teach cultural knowledge and provide experiential learning opportunities for intercultural communication. Virtual learning environments provide new and unique ways in

which to convey cultural knowledge and develop intercultural communication skills. High-fidelity graphics, sound, and animation make it possible for them to simulate many tangible aspects of a specific culture, such as buildings, streets, art, dress, speech, gestures, and more. This enables the provision of more authentic computer-based practice environments than may otherwise be feasible using traditional live role-play and media-based approaches. Further, recent advances in artificial intelligence (AI) and cognitive modeling now permit rich modeling of emotions, language, tasks, and more (e.g., Swartout, Gratch, Hill, Hovy, Marsella, Rickel, & Traum, 2006; also see Rehm, 2010 in this volume for more information on cultural modeling for training and embodied conversational agents). When built with cultural accuracy, these models–and the virtual humans who utilize them–open new avenues for teaching the cognitive and interpersonal aspects of other cultures.

Below, we begin with a brief summary of cultural learning theory and describe current teaching practices. We then review six immersive cultural learning environments and discuss them in the broader context of intercultural education. There is not only significant potential to use systems such as these to enhance intercultural education programs, but also to formatively track intercultural development and for summative learner evaluation. That said, far more empirical studies are still necessary to fully gauge the efficacy of virtual environments to promote cultural learning and intercultural development. We conclude with a discussion of the future of virtual learning environments in intercultural training and suggest several research areas of interest.

## CULTURAL AND INTERCULTURAL LEARNING

Cultural training programs have evolved substantially in the last six decades. The earliest examples began to surface after World War II when international travel and collaboration became more prevalent in business and government work. As the need for these programs became more evident, scientific interest in creating theories of intercultural growth, identifying underlying cognitive processes, and demonstrating their effectiveness also grew. The field of intercultural training is highly interdisciplinary, attracting researchers from a variety of fields, including anthropology, cognitive psychology, social science, business, and more. Surprisingly, very little of this work leverages state of the art computing technology.

The usual structure of intercultural training programs includes a blend of didactic and experiential components, including methods such as lectures, discussion, film, case study, and role playing (Landis, Bennett, & Bennett, 2004). Many of these methods are based on a classroom instruction model and seek to leverage peer interaction and debate to engage learners. Typically, the goal is to induce changes in knowledge, skills, and/or attitudes. Knowledge includes basic facts about a new culture, such as common values and beliefs, preferences for physical contact, or typical eating and drinking patterns. Skills usually refer to the learner's ability to interact with someone from the new culture, including communicating their desires and interpreting the behaviors of others. Finally, attitudes have to do with basic beliefs a learner has about people of a different culture and whether a positive, neutral, or negative disposition exists towards them. Evaluations of intercultural training programs also tend to focus on these three dimensions.

Although intercultural training is often motivated by immediate need, such as international travel, researchers and educators are also interested on its longer term impact on cultural learning and development. There is widespread agreement that intercultural growth occurs in stages and can take many years (Savicki, 2008). Whether it be a student studying abroad, or a business executive starting a new branch in a foreign country, the as-

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