Chapter XI
Cross Cultural Adaptation in E-Learning

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ABSTRACT

This chapter introduces the concepts of culturally aware systems (CAWAS), a new family of adaptive systems that try to adapt learning contents and pedagogical strategies according to learners' cultural background. CAWAS is based on the notion of cultural intelligence and on the representation of a culture as both a static system, that is, a "relatively stable system of shared meanings, a repository of meaningful symbols…" and a dynamic one, that is, "a process of production of meanings." A methodology for cultural evaluation and selection of appropriate resources is described. A system implementing this methodology is finally introduced. The aim of this work is to develop systems that will be better accepted by learners and de facto will work more efficiently by showing a cultural proximity with learners during a learning session.

INTRODUCTION

E-learning, the way of teaching people through the Internet, is a growing practice in educational systems. High-speed Internet, lower costs of computers, and the increase of the computer science understanding in the population make this methodology accessible to more people over the years. This "democratization" is undoubtedly positive news, but it also implies new objectives

for this study. While information is globally accessible and networking technologies have greatly evolved, we can now think of e-learning applications accessible and available, where thousands of learners coming from all six continents could coexist synchronously and learn together.

Current literature (Hofstede, 2001) suggests that culture can have a great impact on the way people and learners behave in particular situations. This impact concerns the way the learner or student interacts with his/her environment, with his/her peers, and on the meaning he/she gives to specific concepts or symbols. In this respect, within the cross-cultural studies framework, the relationship between cultural membership and concept/symbols interpretation is obvious.

If the content of a global e-learning activity is not adapted according to culture, there are risks that learners with different cultural backgrounds will interpret the same concept in a different manner. The representation that an author (within the framework of a particular country) makes of the domain to be learned could also be disturbing for learners with different cultural values. Following this same idea, we have noticed that the positive impact of pedagogical strategies used in intelligent tutoring systems (ITS) (i.e., software systems that use artificial intelligence techniques to adapt the teaching to the profile of the learner) may differ depending on the cultural background of the learner. How to adapt content displayed to a learner and how to choose the most suitable pedagogical strategy for this learner depending on his/her cultural specificities. This is the question we try to deal with in this work.

BACKGROUND

According to Kashima (2000), there are two schools of thought when defining culture. Some researchers see a culture as "a process of production and reproduction of meanings in particular actors' concrete practices or actions or activities in particular contexts in time and space." For others, it is a "relatively stable system of shared meanings, a repository of meaningful symbols, which provides structure to experience." From our perspective, a major distinction between the two definitions is the way culture is seen as a static or dynamic system. Both definitions agree on the fact that culture and concept/symbol interpretation are closely linked. In fact, many studies have shown that, depending on one's cultural background, the learner can give drastically different meanings to concepts, symbols, and practices (Hofstede, 2001).

But concept representation is just one among others' examples of elements that are important in the e-learning and ITS research fields and can be influenced by the cultural background of a learner. The following are examples that illustrate the aforementioned points:

- **Emotions:** Emotions have a growing importance in the e-learning and ITS research field (Chaffar & Frasson, 2004; Conati, 2002). It appears that there are strong links between culture and emotional behaviors. According to Scollon, Diener, Oishi, and Biswas-Diener (2004), the frequency to which someone feels positive or negative emotions is culturally dependant, and the categorization itself of an emotion as positive or negative can in some cases depend on the cultural background (Kim-Prieto, Fujita, & Diener, 2004). There is also the belief that, depending on the culture, emotions of the learners can be expressed in a very different manner (Shaver and Schwartz, 1992).
- **Preference for a pedagogical strategy:** Learners from some cultures tend to prefer collaborative works, whereas in other cultures, the preference is given to individualistic works (Blanchard & Frasson, 2005).
- **Reward allocation:** Depending on the culture, the way teachers reward their students and the ways these students react to these rewards have been found to be different

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