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Editor

J. Michael Spector
University of North Texas



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CULTURAL CONSIDERATIONS IN TECHNOLOGY-ENHANCED LEARNING AND INSTRUCTION

Cultural considerations in technology-enhanced learning and instruction refer to the various uses of culture in contexts that involve technology, learning, and instruction. They also represent a perspective used to describe learners in technological environments. This entry provides a historical sampling of key issues and topics covered in the research from 1970 to 2010.

The 1970s

In the 1970s, media technology was seen as a tool to be used by learners, with the content of these educational technologies assisting in developing and identifying learners' culture (i.e., race, history, and heritage). Learners engaged in the consumption of information through the technology and were seen as consumers rather than producers of educational technologies. This can be seen in programmed materials (i.e., 8mm film, record players, filmstrips, slides), educational television, and computer-assisted instruction. It was believed that computer technology could eliminate boredom and help to address some social ills such as poverty and school truancy. Computer technology was viewed as a tool for problem solving across academic disciplines. Through programmed instruction, educational technology could more accurately match learner characteristics and equalize instructional quality, thereby bridging the gap between culture and academics for marginalized groups.

The 1980s

In the 1980s, there was a focus on the impact of technology on cultures, specifically examining what happens when technology and cultures interact symbiotically. Some research dealt with educational technology in technologically developing and indigenous cultures. Societies and groups hoped that technology would not impose foreign paradigms but would complement the socioeconomics of the country and integrate the

indigenous culture's contributions. Consequently, technological change in developing countries was slow in its arrival and implementation.

The design of educational technologies for indigenous populations became as important as the technology. The focus of designing educational technologies should begin with the learner. By focusing on the learner, the educational technologies might better reflect a group's values, knowledge, cognitive abilities, and the like.

The 1990s

The 1990s might be characterized as the period of definitions. The field became saturated by research related to cultural considerations in technology-enhanced learning and instruction. There was much clarification and classification, as indicated by some of the most commonly recorded terms such as *culture*, *cultural contextuality*, *cultural pluralism*, and *cultural sensitivity*. *Culture*, as collectively defined in this period, encompassed an individual's or a group's attributes, such as behavior, thinking, interactions, values, norms, beliefs, traditions, artifacts, and people's ability to adapt to their environment. *Cultural contextuality* referred to the varied sociocultural contexts of culture, such as the academic culture of a society, the culture of learners in that society, and the culture of computers and their relationship to the psychological states of the learner. Some sociocultural contexts of culture are derived from research on social cognition and learning, while others are derived from empirical research on ethnically diverse learners. *Cultural pluralism* recognized groups' commonalities, perspectives, contributions, and collective identities in order to maintain the culture or society. *Cultural sensitivity* meant being able to identify, view, understand, and accept one's culture in stark contrast to that of others. This may have required viewing the world from the perspective of other people and validating them, their ways, and differences from other cultures.

The reasons behind maintaining these cultural considerations became specific to the needs of learners, first, and the technology, second. Cultural diversity was considered in understanding culture's influence on the teaching and learning process. For example, cultural aspects of learners included their distinctive communication and learning styles, value systems, expectations, and norms. Cultural considerations were also used as an evaluative tool to assess instructional programs. These considerations extended to how learning environments were enriched and built. For the instructional designer, teacher, or trainer, cultural considerations required changing one's disposition through the enactments of deliberate actions such as having knowledge of

the learner's culture, including family, history, and political, social, and economic issues; respecting the culture of the learner, learning styles, and motivation; and integrating the learner's culture into instruction, tying instruction to the culture.

In 1996, Lyn Henderson proposed the multiple cultural model—not a multicultural model—for designing learning environments pertaining to disadvantaged minority learners. The model was situated in three cultural logics: academic, mainstream, and minority. The multiple cultural model was a framework for evaluating the pedagogic value of interactive multimedia instructional designs. It has been used in research as a framework to explain culture-related approaches to the design of educational technologies.

1999: A Year of Transition

By 1999, cultural considerations had become a major focus in the field, and their influence on educational technology changed forever. Cultural considerations in technology-enhanced learning and instruction became broadly defined. Research about open and distance learning, the Internet, and other technology-enhanced learning systems was integrated with theoretical and other conceptualizations of culture, such as communities of practice, cultural practices, cultural models, and cultural historical theory.

General Conceptions

Educational technology came to be seen as the overarching complex for culture as defined through social, moral, educational, and political issues. Technology was deemed to be not neutral in that it harbored the cultural artifacts of its makers. Educational technologies were seen as socially shaped products that reproduced certain knowledge and social inequalities. Advocates of this perspective argued that educational technology should serve the needs of those who were marginalized in a society (e.g., women, people of color, and the poor), and it should be seen as a tool for the moral development of learners, thereby combating cultural narcissism. It was argued that educational technology is not a solution for educational reform; there must be changes even in school culture, and this includes all stakeholders (teachers, administrators, parents, and students).

The Internet

Cultural issues surrounding the *Internet*, *Web-based instruction*, *open and distance learning* and *online instruction*, as they were termed, presented cultures of learning and the multilevels of culture. The Internet was

considered to be culturally restrictive with mostly Western qualities. Education, via the Internet, was considered a social and cultural practice. The Internet posed ethical and cultural issues such as equitable access and representation of cultures as it was being used in classrooms around the world. Web-based instruction needed to be adaptable to the cultural differences of learners. For example, Web-based instruction for indigenous Australian learners might consider the macrolevel (society) and microlevel (classroom) of designing an online environment in order to achieve a culturally responsive design. The cultural assets and barriers of open and distance learning became a concern, specifically with respect to how this technology might create or inhibit new learning cultures.

Mass Multimedia

Mass-multimedia student-centered learning environments presented many cultural issues, based on the technological format (e.g., virtual or video interactive multimedia learning systems; online [e-mail and chat]; MUD [multiuser domain]; or MOO [an object-oriented type of MUD]). Some of these cultural issues surrounded cross-cultural communication, online social interactions, and virtual approaches to learning. Designing mass-multimedia learning environments required being culturally sensitive to the user and how the technology was implemented. Ultimately, considerations for best meeting the needs of ethnically diverse learners from around the world became a central issue.

2000 to 2005

From 2000 to 2005, cultural issues in technology-enhanced learning and instruction became even more broadly based, reflecting the intricacies of culture. Many of these conceptualizations of cultural issues were situated in theory, concepts, and approaches that could be considered culture based. The key topics covered included culture based theory, organizational culture, culture as people, culture as place, cultural differences, and cultural factors.

Culture Based Theory

Cultural issues became defined and redefined by theories, concepts, and approaches that were situated in cultural contexts. Geert Hofstede's five dimensions of culture framed groups and countries as power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and long- versus short-term orientation. Cultural historical activity theory explained the dynamic adaptability between individuals

and their culture. Sociocultural approaches, attributed to Lev Vygotsky, provided a path to discussions about learners' active engagement with technologies.

Organizational Culture

In examinations of organizational cultures, such as those of universities, businesses, and schools, cultural issues associated with individuals, learning, training, and management were identified. These cultural issues required the mutual understanding of individuals so that the work of producing technologies could be done. This meant that knowing and understanding the cultural and interpersonal issues in a work environment aided in the development of information systems; some of these issues encountered included trust, open communication, sharing information, individual and organizational commitment, and empowerment. Other organizations were concerned with cultural change and how this impacted use of information technologies by organizations and individuals. For example, as information and communications technologies were introduced into the workplace, how were individuals, work performance, and the culture of the organization changed?

Culture as People

Sometimes culture was described as a group of people identifiable by race, ethnicity, geographic location, or collective attributes. Within groups of people, individuals could be identified by their different cultural realities. The technologies most prevalent in these examples consisted of e-learning and computer gaming. Therefore, knowing the culture of individuals and groups aided in determining their acceptance and engagement with technologies of instruction.

Culture as Place

Sometimes culture was described as a society that is identifiable by geographic location. Within these geographic locations, cultures were exemplified through cultural characteristics, cultural differences, and cross-cultural comparisons. The technologies most prevalent in these examples consisted of broadband-enabled learning and e-learning. There was a geographic rootedness to how culture impacted technologies and technological development. This meant that technologies remain tied to their geographic origins.

Cultural Differences

Addressing cultural differences became important for organizations that sought to inform, through educational

technologies, within and outside the institution. These cultural differences impacted individuals, groups, and societies. For individuals and groups, cultural differences needed to be understood in relation to perceptions of self, relationships between individuals and groups, power relationships, communication between learners and instructors, and methods of dealing with conflict. To address cultural differences, there needed to be sensitivity toward learners' preferences and belief systems. Cultural differences between societies included comparative analyses of aspects of the nation, state, or province. To address cultural differences in a society, explicit information about the geographic location had to be considered.

Cultural Factors

Cultural factors affect learning, curriculum, and instruction. Some of the cultural factors noted during this period included gender, learning styles, values, beliefs, and behavior. Excluding considerations of cultural factors meant that certain learners were not engaged in the technology.

2006 to 2010

From 2006 to 2010, there continued to be a surge in international topics that addressed cultural issues in technology-enhanced learning and instruction. Emerging technologies included mobile technologies, Web 2.0, three-dimensional multiuser virtual environments (3-D MUVE), and massively multiple online role-playing games (MMORPGs). Culture was considered in teaching, learning, and design contexts and in geographical, technological, societal, theoretical, and temporal conditions. Key topics included organizational culture, socio-cultural perspectives and theory, cultural contexts, learning cultures, cultural differences, cultural barriers and baggage, cultural identity, cultural heritage, and culture in designs.

Organizational Culture

The foundation of an organizational culture requires an investment, strategic plan, and vision framed by internal and strategic policies and reward structures. During this period, the organizational cultures of businesses and universities concerned themselves with e-learning and computer technology use. For universities, e-learning as a pedagogical tool addressed educational challenges such as critical thinking, English language learning, and lifelong learning. E-learning as an institutional tool disseminated knowledge about the university, its culture, and its resources.

It was believed that e-learning environments provided greater flexibility in teaching and learning, student-centered approaches, higher student engagement, and international collaborations. However, for universities to fully implement an e-learning transformation, institutional change, pedagogic knowledge, and resources were required. E-learning for business and industry seemed to be a lower cost and alternative training solution. The goal was to provide employees exposure to the technology before implementing training through e-learning. This example from business and industry exemplifies the major concern of organizational culture—buy-in. To successfully implement organizational change, there needed to be buy-in at the governmental, institutional, administrative, staff, and student or client levels, and thereafter the resources required included funding, training, and recognition for such development.

Sociocultural Perspectives and Theory

A variety of sociocultural perspectives and theories began to define human interactions and activities as related to technologies. These methodologies described learning engagement and learning activities as applied to e-learning, 3-D multiuser virtual environments, computer use, and similar technologies. The sociocultural perspective on learning focused on social interaction, collaborative learning, and the social dimensions of computing. Sociocultural perspectives and theory provided a research based framework for learning that is discursive, interactive, technology mediated, and situated.

Cultural Contexts

The use of the term *cultural contexts* focused on learner needs and contexts of learning as it related to information and communication technologies. For example, learning materials were grounded in a cultural versus generic context to enable learners to better understand curriculum content. Therefore, the instructional content of these learning materials included local examples of language, personal experiences, learner-centered instruction, and materials specific to the target population of learners.

Learning Cultures

A learning culture was defined as a system of social practices meant to help people develop as lifelong learners. Learning cultures were learner centered and focused on learners' skills, competencies, and attributes. As social practices, learning cultures emerged from the

ways in which technologies were used and were promoted as ways for people to see learning as a habit and lifelong process.

Cultural Differences

There are cultural differences in how people teach, learn, and think. Cultural differences address social norms, histories, traditions, behavior, and more. These differences address what we learn about others, from others, and about ourselves. During this period, there was a recognition that because cultural differences may have presented barriers to what and how people learn, they should be acknowledged and addressed as they related to technologies. Some of the issues related to cultural differences and technologies were characterized as miscommunication, intercultural biases, knowledge transfer, cultural orientations, and perceptions about others. Research on cultural differences has implications for tailoring and adjusting the design of educational technologies.

Cultural Barriers and Baggage

The cultural barriers and baggage of this period focused on those things that hindered or caused concern. An example of a barrier would be cultural lag that caused the slow integration of technology in schools. Gender was proposed as an area of concern when paired with the baggage of technology integration. For example, the integration of computer games in schools may have presented biases if brought into the classroom because computer games could alienate female students. In an example specific to a developing country, researchers measured the likelihood of women using the Internet as their use or nonuse of it determined whether the Internet could be used as an entrepreneurial resource. Gender might have been an issue in inhibiting learning and the use of technologies.

Technology is not culture free because technological tools are created by humans. Humans harbor biases that came to be reflected in the designs of computers and computer software; this is apparent in the organization of information, rules and logic, and patterns of thought.

Cultural Identity

Individuals are bound by their culture and identity. One's cultural identity is situated in how one thinks, behaves, and interacts. The research during this period proposed that technology (e.g., computer games) could be used as a means to develop cultural identity in

learners, and, further, to create effective designs for learning required an understanding of the culture and identity of the individual or group.

Cultural Heritage

The role of cultural heritage in providing the foundation for research designs surrounding people and cultures was acknowledged. For example, Confucian philosophy was offered as a cultural context for examinations of Eastern pedagogical culture. Cultural heritage could also be used as an aspect in designs for learning. When designing any technology, the design may require authentic representations of a group's culture; therefore, the cultural data should reflect an accurate representation of the group's cultural heritage.

Culture in Designs

The impact of culture on design technologies was explored conceptually. Designing with culture in mind meant considering culture-neutral (generic) and culture-specific (specialized) representations and deliberately applying these designs to technological innovations. Patricia A. Young offered the culture based model as a framework for the design and management of information and communication technologies. The culture based model contained eight areas, known by the acronym ID-TABLET: inquiry, development, team, assessments, brainstorming, learners, elements, and training. The model has been used in research as a framework to explain culture based, culture-neutral (generic), and culture-specific (specialized) approaches to the design of technologies. This research offered a solution-based approach to the integration of culture in design.

Conclusion

Cultural considerations in technology-enhanced learning and instruction is an evolving cognate of the field of educational technology. History demonstrates the interest and use of cultural considerations as this is a way to explain the human phenomenon interacting with technology. There is still much to learn and a long way to go in this area. The future of technological designs for learning and instruction with culture based consideration is limitless. Creativity is a place to start.

Patricia A. Young

See also History of Educational Technology; Information and Communication Technologies in Developed Countries; Information and Communication Technologies in Developing Countries; Information and Communication Technologies for Multinational and Multicultural Contexts

Further Readings

- Henderson, L. (1996). Instructional design of interactive multimedia: A cultural critique. *Education Technology Research & Development*, 44(4), 85–104.
- Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. London, UK: McGraw-Hill.
- McLoughlin, C. (1999). Culturally responsive technology use: Developing an on-line community of learners. *British Journal of Educational Technology*, 30(3), 231–243.
- Reeves, T. C. (1997, March/April). An evaluator looks at cultural diversity. *Educational Technology*, 37(2), 27–31.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Young, P. A. (2008). Integrating culture in the design of ICTs. *British Journal of Educational Technology*, 39(1), 6–17.
- Young, P. A. (2009). *Instructional design frameworks and intercultural models*. Hershey, PA: Information Science Publishing.

CURRICULA FOR ADVANCED LEARNING TECHNOLOGIES

Advanced learning technologies refer to the novel and innovative uses of emerging and existing technologies to improve learning experiences in a variety of instructional settings, including formal learning, informal learning, nonformal learning, lifelong learning, learning on demand, and just-in-time learning, to name a few. The area of advanced learning technologies evolved from historic uses of computers in education and has come a long way to include various mobile and ubiquitous technologies, and various emerging areas such as virtual reality, augmented reality, avatar-based virtual immersive environments, and cloud computing. Various terms have been used along the way to refer to advanced learning technologies, such as *educational technologies*, *instructional technologies*, and simply, *learning technologies*. The curricula for advanced learning technologies focus on both technical and pedagogical competencies required in the effective use of those technologies. This entry discusses the need for, the specifications of, and the various themes found in advanced learning technologies curricula.

Need for Advanced Learning Technologies Curricula

Advanced learning technologies are the basis for the success of the e-learning revolution in recent years. They have not only taken the e-learning movement away