

Chapter 10

Technological Tribal Territories: How Culture Influences Learning Beyond Content in Educational Technologies: A Narrative Review of Literature



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Culture impacts how people think and do things and also influences whether educational technology content is accepted or rejected by learners. To some extent, culture also determines learners' persistence in interacting with technology, and some cultures even encourage the repurposing of technology to accommodate their needs. Furthermore, human perception processes are continuously being influenced by their culture (Nisbett & Miyamoto, 2005). Culture assists in forming worldviews for learners, who see information and content through its lenses. Kuhn (1970) illustrated this by suggesting that if two people, standing at the same place, gaze in the same direction and are given a stimulus, they will not experience the same outcome. This, he notes, is because the same stimuli can produce very different sensations for different people because of their cultural backgrounds. Kuhn also suggests that individuals who belong to the same group and share similar education, language, experience, and culture are likely to have a similar response to stimulus. Similarly, culture colors learners' response to educational technology content.

Culture in Educational Technology

Although the study of culture has its origins in the discipline of anthropology where researchers generally studied isolated communities (Tierney & Lanford, 2018), this study uses Hofstede's (2011b) definition of culture as a collective programming of the mind. It manifests itself not only in values but in more superficial ways like symbols, heroes, and rituals. Hofstede (2011) also notes that culture encompasses the unwritten rules of how language, empathy, collaboration, and competition are

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used among groups of people. He further states that culture provides moral standards on how to be accepted into a group through symbols, heroes, rituals, laws, religions, taboos, and other practices. Culture also defines the requirements of being accepted into a group. Hofstede, however, cautions that often culture's core remains hidden in unconscious values. Spencer-Oatey (2008) notes that a definition of culture remains "fuzzy" as it influences people in different ways, even if it is a set of basic assumptions and values, among other parameters, that are shared by a group of people. Young (2008) notes that in instructional design, definitions of culture are based not only on anthropological perspectives but also on sociological and educational perspectives.

Since culture has a profound influence on people, successful learning beyond content must therefore consider the influence of culture on learners. Students do not come to classrooms as *tabula rasa*—blank slates. By the time learners are interacting with an instructor and content, they are already members of some culture or grouping. Benson (2003) notes that students arrive in classrooms with thoughts and practices of daily living that are imbued with their various cultures. She advises that the wide diversity in the cultural background of today's students makes it imperative for educators to consider varying cultural norms in classroom relationships. Frick (2018) further explains that learners should not be required to learn facts and concepts that they do not care about, which have no perceived practical value and are disconnected from unique elements of their culture. Stockman (2018) underlines this by pointing out that the reality for learners is one which they have constructed. That is, learners try to make sense of objects around them, constructing and reconstructing them, to explain and interact with their environment. Stockman notes that people also construct the framework of interacting with technology, and this framework engages their beliefs and actions (intentional or otherwise), and it is an ever-evolving, powerful process of meaning negotiation.

Globalization has had a substantial impact on learning, which has meant that other cultures learn from the dominant culture. Suarez-Orozco and Qin-Hilliard (2004) note that educational systems worldwide continue to mimic each other by borrowing curricula, teaching methods, and assessments and tests. In this way, cultural norms and values may be transferred from one corner of the world to another. Learners are thus expected to acquire a worldly cultural sophistication to be able to navigate such culturally rich and diverse educational content as presented by globalization of learning.

Research Questions

Research questions posed in this paper are as follows:

- (a) To what extent do learners' cultures influence their interaction with educational technology?
- (b) To what extent is learning successful or unsuccessful because of the influence of culture on educational content?
- (c) To what extent do educational technology content creators' cultures influence the content they create?

Methodology

Considering that culture encompasses vast topics and subtopics, this research is based on a narrative review of literature so as to focus only on limited research terms. The search centered on terms like educational technology, culture in educational technology, and impact of culture on educational technology. This review scoured major educational databases like Association for Educational Communications and Technology (AECT) *TeckTrends*, JSTOR, ERIC, SAGE, EBSCOhost, PsycINFO, ProQuest, Springer, Elsevier, and Google Scholar, among others.

Baumeister and Leary (1997) state that one purpose of a review of literature research is to reveal problems, weaknesses, contradictions, or controversies in an area of investigation and from multiple sources. The literature review method was also selected because it enabled the research to examine the gap in knowledge on the effects of culture on educational technology. In addition, the narrative review of literature method was chosen because it connects various articles and provides clarity to the topic. Cronin, Ryan, and Coughlan (2008) point out that a narrative review of literature identifies inconsistencies in a body of knowledge, thus helping the researcher to determine or define research questions or hypotheses. Results from this research could spark a new paradigm of creating educational content that is perpetually consistent with the cultural consideration of the learners.

This research considered culture only in the context of learning design and how this affects learners. Benson, Joseph, and Moore (2017) have noted that meaningful learning occurs when authentic learning activities are designed within natural contexts, which can improve transference to new and real-world problems. Such natural contexts are embodied within learners' cultures, and learning design practitioners should take this into consideration in their plans. Asino, Giacumo, and Chen (2017) state that it is important for learning designers to take into consideration the culture of their target audiences. They observe that without explicit focus on culture as a necessary component of technology learning design, those designing for audiences representing different cultural backgrounds risk creation of a diminished or even exclusionary experience of their audiences.

As it has been noted before, the definition of culture is fluid because it encompasses a myriad aspects of life. Considering that culture is wide and all-encompassing, this review does not intend to interrogate all aspects of culture but only limits itself to how culture influences and impacts learners on the design of educational websites and educational gaming.

Educational Website Design

Increasingly, educational institutions are availing their services and products across hundreds of cultures across the world through online education. In order to effectively interact with such diversified students and faculty bodies, educational

websites and learning technologies must take into consideration their audiences' varied cultures while constructing these resources. Callahan (2005) notes that cultural differences have become an important issue in international interface design, but these website designs rarely pay attention to the cultural differences of their clients.

The language with which educational websites are written also affects how learners interact with them. Language can either enable learners to quickly interact with the content, or it can deter them from understanding the intended meaning, depending on their cultural backgrounds. Language also has powerful significance in culture as it allows communication between learners and the instructor. Often when it is not used within the local cultural context, it can distort meaning. An example is the use of different names for the same thing. For example, the game with 11 opposing players per team, one round ball and two goals, is called "soccer" in the USA, yet the rest of the world identifies it as "football." Another example is the "shopping cart" in the USA, "shopping basket" in the UK, and "shopping trolley" in Australia, all referring to the same thing. Therefore, in designing educational websites, instructional designers should remain alert to the cultural nuances and significance of language in their websites and tailor these to their audience.

In designing educational websites, several researchers caution that the audiences' cultures should play an important part in the process. For example, research on how various colors are culturally perceived by different audiences is an important starting point in addressing cultural biases in website design (Archee & Gurney, 2013). They found that different communities attached various cultural meanings to colors as used in website design. They thus urge designers to be purposeful in choosing colors and contextualizing them to the cultures of their audiences.

A significant amount of educational technology learning is conducted through website access, especially through learning management systems (LMSs). Positive outcomes have been realized when the website design is adapted to users' cognitive styles and abilities, including their cultures. Kralisch, Eisend, and Berendt (2005) especially note that culture can be understood in terms of the distribution of certain cognitive styles, needs, and preferences among the population of a country or a certain region. Using empirical studies, Kralisch et al. (2005) suggest that users have preferences for certain website structures and information presentations based on their culture. These are governed by whether they are from monochronic or polychronic cultures, which play a major role in learners' preferences. These, they note, can be fine-tuned by altering degrees of navigational freedom, reading order, text lengths, number of texts, and cross-referencing, among others.

Educational websites often use audio that is embedded in their websites to retain learner engagement. This audio can be music, which is a significant representation of culture. Over the years, the development of technologies has allowed the dispersion of music to many parts of the world. Music and sound in educational technologies have been used to prompt learners, to provide an interlude between learning units, and to celebrate milestones achieved by learners and other reminders. Because educational technology often derives from North America and Western Europe, this musical expression reflects an Anglocentric tradition in many cases. This means that

the cultures of indigenous people and people who do not identify with Western cultures are often musically underrepresented in educational technology. Music is the salt by which culture is seasoned. Music allows cultural expression, it enriches and defines cultures, and it helps define cultural identity. Similarly, as McLoughlin and Oliver (2000) have noted, successful instructional design is often culturally inclusive such that learners can easily access learning resources in a manner that is aligned to their values, beliefs, and styles of learning. These researchers explain that highly contextualized content that is culturally specific is likely to meet the needs of the learners for whom it is intended.

Educational Gaming

Educational games have increasingly become instrumental in supplementing learner understanding of content. However, games are often laden with cultural overtones and constructs. To understand the rules required to participate in some educational games, learners need to immerse themselves in the cultural content with which the game has been designed. Learners who do not identify with the cultural symbolism within these games may not benefit from this instruction.

One attribute of gaming in educational technology is the use of animation. Animations are an important supplement to improve learners' understanding of the content given how graphics afford learners' comprehension of content and foster insight, especially in understanding abstract concepts. However, graphics are best interpreted when the content designer understands learners' cultural backgrounds. As Tversky, Morrison, and Betrancourt (2002) argue, visual presentation may not be a problem for learners; rather it is the perception and cognitive limitations in the processing of a changing visual that may deny the learner full understanding of the content. These cognitive limitations are partly due to the cultural incongruence between the learner and the content designer.

Educational gaming systems appear to perpetuate the society's dominant cultures. This has led to researchers like Henderson (2007) calling for the exploration of the systemic issues in educational learning systems that address power, control, and disadvantage present in these systems. She notes that the exploration of these issues is not present in models that attempt to address multicultural inclusion in learning technologies design. Dickson-Deane, Bradshaw, and Asino (2018) emphasize this point by noting that in educational technology-related research, culture tends to be ignored, treated with shallowness, invoked to speak about race, or used for blanket characterization of various groups that do not represent and conform to dominant perspectives.

Hamari, Koivisto, and Sarsa's (2014) study found that educational gamification increases learner motivation and engagement in the learning tasks, as well as increasing learner enjoyment in these tasks. However, gamification also has negative outcomes, such as the effects of increased competition, difficulty evaluating learning, and design features that may not address learner needs. The effects of

increased competition are especially felt in cultures which do not promote active competition among learners. Many cultures promote cooperation and group learning among learners; however, educational games that actively promote a single winner at the expense of other learners neither reflect nor integrate the cultural backgrounds of these learners. Often it is also difficult to evaluate learners who use games because the measurement of effectiveness varies from motivation and engagement-related psychological outcomes to use behavior-related outcomes (Hamari et al., 2014). Other researchers have shown that student engagement is useful only if it is based on educational reasons (da Rocha Seixas, Gomes, & de Melo Filho, 2016; Beer, Clark, & Jones, 2010), and much of educational gamification does not show this. On poorly designed gamification features, researchers have found that many gamification-based solutions fail because they have been created on a whim, whereby they mix bits and pieces of gaming components without a clear and formal design process (Mora, Riera, Gonzalez, & Arnedo-Moreno, 2015). Poor attempts at gamification alienate learners, demotivate them, and can never fix a poor learning design model (Kumar, 2013).

Conclusion

In creating educational technology content, it is imperative that the influence of culture be taken into consideration. Al Lily, Borovoi, Foland, and Vlaev (2016) suggest that instead of overlooking societal and cultural values during technological developments in educational settings, these values should be given recognition and political weight by policy-makers and researchers. It is also noteworthy that the importation of educational technologies may contribute to an unbalanced power relationship that may make others reluctant to engage with foreign technologies. To make educational technologies culturally acceptable to locals, they should be modified for local contexts.

Parrish and Linder-VanBerschot (2010) remind instructional designers not to overlook culture in the analysis phase of the ADDIE process. They note that it is essential for instructional designers to familiarize themselves with the learners' cultures throughout the implementation phase, even through the evaluation stage. They suggest the inclusion of a cultural expert as part of the design team or having a team member plan a training event on culture before implementation of a website design. Similarly, Asino (2015) calls for culture-specific learning designs that integrate learners' languages and communicative lenses (e.g., by using visual kinesthetic and textual tools) that exemplify a more culture-specific design for learning that engages the audience to whom the learning is targeted.

Educational technologies are now global learning tools, and their use is continuing to increase. A study on the integration of culture in the unified theory of acceptance and use of technology (UTAT) model by Nistor, Lerche, Weinberger, Ceobani, and Hermann (2014) concluded that since higher education is increasingly being internationalized, the design of content, integration activities, gamification, and

others must consider different expectations for the learners because of their varied cultural backgrounds. Designers of educational technology should thus adopt appropriate pedagogical frameworks that recognize the role of culture in learning. For educational technology to successfully engage learners, it should be designed to take into consideration learners' and instructors' cultural perspectives. As Zhao and Frank (2003) have suggested, technological innovation is less likely to be adopted if it deviates too greatly from the existing values, beliefs, and practices of teachers and administrators in a learning environment. As such, practitioners must consider how to reach diverse learners because education, without regard to culture, may not always address the learners' needs.

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