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Culture as a design “next”: Theoretical frameworks to guide new design, development, and research of learning environments

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Abstract: In the design ecosystem, culture is often ignored or relegated to the periphery, perhaps because some see it as a concept that is hard to explain or completely capture. To contribute to a new direction, our paper presents a portion of an on-going study integrating and recognizing culture in the design process. We argue that the “next” focus of design should be an inclusion of culture into design practices; an inclusion that is merged into every stage instead of being treated as an afterthought – most notably, during the evaluation stage. There exist numerous models and guides exploring the role of culture in learning design of which designers involved in the learning can and should be aware. In this paper we aim to review and present these models as a beginning place for those interested in designing for cross-cultural education ecosystems and programs intended to support learning needs.

Keywords: design, culture, learning, training, theoretical framework

1. Introduction

There are two important components in the design ecosystem that need to be a focus in the “next” design conversation, mainly: 1) culture and 2) learning or instructional designers. Culture as a concept can be hard to explain or completely capture because it has many nuanced components; nonetheless it is at the core of “what we do” and “who we are” (Eugene et al., 2009 p.22). Culture is crucial in the ecosystem not just because it is integral to everyone’s being, but also because as learning continues to be geographically dispersed, there are many more cultures that should be considered when talking about learning in education settings and the global workplace.

The second component of learning or instructional designers is crucial because most of the learning materials and processes implemented in learning environments are created by instructional designers or performance improvement specialists. It is not just important for these professionals to be aware of the importance of culture, but it is necessary to provide tools and strategies that enable the design of learning that is culturally aware and recognizing of the diversity of learners. We believe one of the goals of instructional designers and performance improvement specialists, who would serve a target audience(s) situated in another culture, should be to create culturally responsive and appropriate learning environments.

When it comes to the design of tools and software that are heavily used to support and encourage learning, the role of culture is often treated as an afterthought, or is, at best, grossly undervalued. Rogers, Graham, and Mayes (2007) reported that instructional designers who were involved in cross-cultural design work had a limited awareness of cultural differences and how these differences influence their design work. When Giacomo and Asino (2016) asked about decisions that designers who were working on projects destined for a target audience from another culture made to accommodate for culture differences, of those who reported making adjustments, only a few worked with a representative from the target audience culture, many acknowledged only a focus on language as a change to the design, and less than half of those interviewed did not have any prior training on how to adjust their designs for target audience members situated in another culture. While there is focus on and concern about recognizing the role that culture plays in learning especially intended for cross-cultural audiences, the nexus of culture and learning is worthy of further exploration.

There exist numerous models and guides exploring the role of culture in the designing of learning of which designers involved in the learning can and should be aware. To contribute to the new direction, our paper presents a portion of an ongoing research on integrating and recognizing culture in the design process. We argue that the “next” focus of design should be a recognition and inclusion of culture into design practices. An inclusion that is merged into every stage instead of being treated as an afterthought, most notably, during the evaluation stage. In this paper we review and present these models as a beginning place for those interested in designing for cross-cultural education ecosystems and programs intended to support global workplace learning needs.

2. Culture as a construct for designing learning systems

While culture is recognized as a crucial ingredient to learning systems, how it is enacted is often not discussed. Cooper (1999) reminds us that designers often have an ill-defined and even an incorrect sense of their target audience, and can often base decisions on their own viewpoints. Without explicit focus on culture as a necessary component of Information Communication Technology (ICT) design, those designing for audiences representing different cultural backgrounds risk creation of a diminished or even exclusionary experience of said audiences.

Culture is an incredibly complex construct to define. A unified definition of culture continues to be elusive. Anthropologists Kroeber and Kluckhohn (1952) in their work critically reviewed over 160 terms defining culture. More than 50 years later, Spencer-Oatey and Franklin (2009) compiled a list

of definitions, illustrated that there were still variances in defining the term, and indicated that each definition tended to focus on particular characteristics. Katan (2009) argued that “Originally, culture was simple. It referred exclusively to the humanist ideal of what was civilized in developed society (the education system, the arts, architecture). Then a second meaning, the way of life of a people, took place alongside. Emphasis at the time was very much on 'primitive' cultures and tribal practices. With the development of sociology and cultural studies, a third meaning has emerged, related to forces in society or ideology (pg. 74).” In other words, cultures are crucial to what it is to exist, as such, it is not an overstatement to say that understanding culture has been around since human existence. Hence, as long as humanity exist, and new fields of studies emerge, the concept of culture will continue to change in the human mind and a definition will continue to be sought (Salehi, 2012).

Culture has been shown to have significant effects on the outcomes of learning, knowledge transfer, and performance (Frambach, Driessen, Chan, & van der Vleuten, 2012; Lucas, 2006; Zhang, De Pablos, Xu, 2014). We can conclude that culture influences learning and hypothesize that designs more or less aligned to cultural expectations would affect learning and performance outcomes. In our work, we adopt Cronje’s (2016) definition and define learning as “becoming able to do something one was unable to do before (pg. 5).” The evidence of this learning is particularly of interest, especially when designers attempt to facilitate efficient, effective, and engaging experiences for a given audience and their relevant goals. However, researchers and practitioners working to the design of learning environments across cultures are often unsure of how to accommodate for different target audience needs. Therefore, we contend that the emphasis of culture as design for “next” generation learning environments and research should be focused on the design process and characteristics of design artifacts on learning and performance outcomes of individuals situated in ecosystems.

3. Theory to guide design of “next” generation learning environments

Once one accepts the premise of culture as a “next” crucial stage in design discourse and practice, the glaring question that emerges is, how? In other words if practitioners, researchers, and educators, do indeed value culture and want to integrate culture holistically in the design process, then how do they do it? In this section we present four models that provide guidance in the process. We will provide a summary of each model and conclude by providing examples of their utility. It is, however, important to state here that these are not the only models that exist but for the constriction of space, we shall present only four.

3.1 National Cultural Dimensions (NCD)

One of the most cited models when discussing culture is Geert Hofstede’s National Cultural Dimensions (NCD). NCD stem from an international study of IBM employees in the 1960s and 1970s to explain the differences between cultures. NCD posits that global cultures can be divided into six dimensions based on what the culture values, and it is those dimensions that comprise NCD as depicted in Figure 1. Hofstede states that the national cultural model represents the preference of one state over the other and stresses that the dimensions are relative as human beings themselves are unique and can change. The dimensions of the NCD are summarized as follows:

Dimension	Explanation
Power distance index (PDI)	This concerns inequality, power, and how society handles them.
Individualism versus collectivism (INV)	This is a continuum on the importance of individual goals versus those of the collective or society at large.
Masculinity versus femininity (MAS)	This focuses on which tendencies are more powerful or valued in the community.
Uncertainty avoidance (UAI)	This is concerned with how a society assesses the future and deals with future uncertainty.
Long term orientation versus short term normative orientation (LTO)	This focuses on how a society deals with its past, present, and future and was not part of the original dimensions; it was added on in later years as validation of the research done.
Indulgence versus restraint (IVR)	This reflects on a society's tolerance for individuals to indulge freely as a natural tendency versus suppressing gratification needs and regulating them as a matter of strict social norms; it was also added later on as a validation of the research done.

It is important to stress here that the NCD model was not established to study design. Hofstede's work around national dimensions has been applied widely across disciplines, and one can make an argument that by arguing that the dimensions "relate to very fundamental problems which face any human society, but to which different societies have found different answers," (Hofstede, 1983, pg. 46) perhaps Hofstede intended for his work to be generalized beyond the discipline of organizational communication in which they originated.

3.2 AMOEBA design framework

The AMOEBA design framework (Gunawardena, Wilson, & Nolla, 2003) arose from research conducted in the fields of cross-cultural psychology, intercultural communication, and intercultural computer-mediated communication. AMOEBA (Adaptive, Meaningful, Organic, Environmental-based architecture for Online course design) was a metaphor the authors chose because it is a single-cell organism which adapts to its environment, performs all processes required to function, maintains life without a definite shape, yet still has structure. The design framework includes nine components and was intended to support a participatory approach towards both planning for learning needs and facilitation of learning, between an instructor and learners.

The components of the AMOEBA design framework represent *the decisions that the instructor and students should make together as they plan to meet agreed-upon learning goals*. The components include language, format, communication channel, activities, methods, and knowledge, at both the instructor and student levels. The language component of the AMOEBA model represents the

materials that should be provided based on the language most understood by the majority, including many other languages as resources will allow (Gunawardena, Wilson, & Nolla, 2003). The intent of the format component was to focus on the choices the group may make for colors, icons sets, organization, navigation, and structure of the learning community’s meeting place, communication center, and repository (Gunawardena, Wilson, & Nolla, 2003). The communication component choices in this model reference options for the use of both synchronous and asynchronous tools (Gunawardena, Wilson, & Nolla, 2003). The activity component of this model represents the types of culturally-appropriate actions the instructor and learners would choose to take, such as group or individual work, as well as the deliverables assigned to them, such as research papers, portfolios, and projects, to meet the course goals, discipline, and needs of the learners (Gunawardena, Wilson, & Nolla, 2003). The methods component refers to the choices of roles that learners and instructors may take on, such as students moderating discussions or giving feedback, in place of the instructor. Finally, the knowledge component of the AMOEBA model represents the results of the completion of activities and selected methods, discussions, and reflections, all made through the interaction of each of the previously-mentioned components (Gunawardena, Wilson, & Nolla, 2003).

The AMOEBA model can guide a participatory approach to the design of cross-cultural learning environments through a focus on language choice, format choices, communications channels choices, activity choices, methods choices, and the introduction of knowledge construction through interaction. This is especially significant for designers who need to serve learners and instructors in contexts where it is important to involve target audiences in co-creation activities and also important to create bridges between different learning preferences. The participatory nature of the design process would also help avoid implementing teaching strategies, which may initially be resisted by members of the community of learners.

3.3 Cultural adaptation process (CAP)

The cultural adaptation process model (CAP) was the product of research that was synthesized from findings of cultural studies in education and industrial anthropology (Edmundson, 2007). The model was built to facilitate adaptation of e-learning courses designed to serve one culture to meet the needs of target learners from another culture. The model is displayed in a matrix that illustrates prescribed steps to adapting e-learning courses for specific cross-cultural needs, depending on the complexity of the course.

The CAP model is intended to guide a consistent analytical process and not to guide creation of cultural experts (Edmundson, 2007). Instead, Edmundson (2007) suggests that the process should facilitate exploration of a new group of target learners’ culture such as faculty of international universities, corporations with outsourced personnel, or even development and humanitarian workers providing e-learning for underserved populations. Therefore, the model is conceptualized to guide any instructional designers’ systemic analysis and changes needed to existing instruction, via a systematic process to meet the newly-identified learners’ needs. However, the results of our research into this model show that the CAP model has not yet been tested and validated in scholarly peer-reviewed publications.

One limitation of the model is that it assumes soft skills courses are presented via a constructivist approach aligned to cognitive objectives and unfocused goals. Likewise, it assumes information such

as product updates and operations, or procedural courses, are presented via an instructivist-objectivist didactic approach aligned to precise behavioural objectives. While this continuum and relationships between content and instructional design approaches may be more consistently observed in some customized educational contexts, the same cannot be said of most custom or off-the-shelf purchased e-learning products designed and implemented by corporate educational testing, publishing companies, or workplace settings. While this model does present a more robust group of multicultural characteristics that can be measured at the national level, it still focuses on the relationship between instructional materials design and learners represented by national cultural norms. Consideration for the smaller organizational context in which the e-learning product is designed is not explicitly integrated into the model, although Edmunson's (2007) mock example does compare the organizational culture with the national culture. Lastly, Edmundson (2007) warns that the assumption of designers' familiarity with cultural dimensions research has proved erroneous and more guidance needs to be provided in future models.

The CAP model can serve as a guide for designers wishing to adapt their products to other cultures. This is especially significant in a culture of cross-cultural learning whereby, for example, a course is created in one culture and is adapted to another. This model provides designers ways of avoiding common mistakes such as simply changing colours or replacing an accent of a narrator when moving across cultures when changing the destination culture of learning is undesirable.

3.4 The Culture Based Model (CBM)

The question of 'how' is often posed when discussing integrating culture into design. Patricia Young's (2008) Culture Based Model (CBM) is an illustrative example of how. Young (2009) defines CBM as "an intercultural instructional design framework that guides designers through the management, design, development, and assessment process while taking into account explicit culture-based considerations" (p.37). CBM was created for practicing and researching designers interested in culture-based Information Communication Technologies. As Young (2008) puts it, "CBM evolved from a qualitative study of instructional products made by and for African Americans (Young, 1999). This research began in the late 1990s with the intention to argue that the history of instructional technology failed to include the contributions of African Americans and other minority groups, and that this was reflected in key publications in the field (Jonassen, 2004; 1996; Saettler, 1990). This documentation was important to provide a more accurate picture of the field. The study further explored approaches to the design of instructional products that were culturally and linguistically specific to ascertain the needs of future instructional designs (Young, 1999)."

CBM grew out of the desire for the author to unearth answers to questions such as how:

1. technology influences design and media of instruction?
2. instructional products disclose their nature, and how that nature is culturally and/or linguistically specific?
3. macro and micro social, political, cultural, and economic issues mediate the text and context of a document (Young, 2008, pg. 109)?

CBM is composed of eight areas that form the acronym ID-TABLET: Inquiry, Development, Team, Assessments, Brainstorming, Learners, Elements, and Training (Young, 2008, 2009), which are explained further in the table below.

Table 1: Eight areas of CBM

Area	Explanation
Inquiry	This is about questioning, specifically the project and decisions as a way of monitoring for biases and ensuring focus on the targeted audience.
Development	Consisting of ten sub-criterion, this provides a structure for solving problems.
Team	This is concerned with the team makeup and argues that to have a culturally-sensitive/appropriate design, the team responsible for the decision-making must consist of cultural experts.
Assessments	This is concerned with evaluation options of the project so as to uncover the effectiveness of the product and goals towards the targeted audience.
Brainstorming	This is concerned with ensuring that the project is in the right direction and aligned with the ideals of the design team. This is done in the preproduction stage and also includes examining the financial status of the project to make sure that it can be completed.
Learners	This is concerned with the learning that students engage in by ensuring that the outcomes are in support of the learners’ cultural prism
Elements	This is concerned with the development of content by making sure the content produce is inclusive of all the cultures of which the project is composed.
Training	This is concerned with educating those who will utilize the product created.

CBM is not a sequential model that needs to be followed from beginning to end. The designer or the team involved in the project determines if the whole cycle needs to be followed or if there is a specific area of CBM that fits the goal of that project.

4. Application of models to researching the design of “next” generation learning environments

In this paper we discuss four models as illustrative cases for how culture can be included into the design process. The first model, Geert Hofstede’s National cultural dimensions (NCD), provides for a way to classify culture across six different dimensions. The value of NCD is in making designers and researchers aware that “Regardless of national culture, the diversity of perspectives and purposes in

any public administration means the design of an information system will always require some type of negotiation... Hofstede's national cultural characteristics seem to be a good indicator of cultural values and representation, but not of practice" (Harvery 1997, p. 114). It can provide guidance especially when designing a product that is to be consumed in multiple countries. Rather than simply choosing the dominant culture, this model provides guidance for grouping cultures if that is a requirement.

The second illustrative case was the AMOEBA design framework, which the authors also envisioned as a way of supporting a participatory approach in not just the design process but also the research process. While Gunawardena, Wilson, and Nolla (2003) developed the AMEOBA framework to guide participatory design approaches of theoretical constructs relating to perception, cognition, and the teaching and learning process, in online education, it would also be prudent to apply these ideas in cross-cultural design research. For example, Gunawardena, Wilson, and Nolla (2003) shared three recommendations based on this work and empirical cross-cultural research: to 1) use a more comprehensive model for cross-cultural research in learning environment design; 2) rely upon teams made up of individuals native to each culture represented in any given project; and 3) pay particular attention to research methodology to capture and understand results. Research around this model continues to emerge. In short, the scope of this model suggests that researchers should consider the expectations and relationships among learners, instructors, and the organization(s) in which the cross-cultural learning is to take place (Panda & Sanjay, 2008; Wang, & Reeves, 2004).

In contrast, the CAP model is concerned with adaptation and goes in a slightly different direction. While the AMOEBA model suggests a typical western participatory learning and development method of designing, the CAP model focuses on more of a typical western consultant-client arrangement. This model seeks to provide guidance to those who would work as, or with, cross-cultural experts as consultants to help adapt existing learning environments, embedded in one culture, to meet the needs of learners existing in a different culture and be consumed by the new culture.

While we could find no research conducted with the CAP model in education or workplace learning, it is worth exploring for projects that require standardization, such as implementing new satellite offices in foreign locations with local experts who can compare the two cultures, or significant resource constraints. Also, researchers may use the model to guide the adaptation of materials from their own context to another culture for implementation and design research. However, when possible, we should avoid the assumption that research methods developed in our own culture are better than those developed in other cultures. It may be presumptuous to think that the members of the second culture require, or even desire, an expert consultant approach. Members of the second culture may choose to adapt on their own materials designed for another culture for their own use, and then use the adapted materials to conduct research within their own context.

The last model, The Culture Based Model (CBM) provides a systematic process of how to design with culture in mind. In the CBM designers have options for how to integrate culture throughout the design process. The advantage of CBM is that a designer "asks high-level questions to facilitate the big picture of the management of undertaking the design process" (Eugene, 2009, p.22).

Each of these theoretical design models provides clues to researchers who are investigating ways of avoiding common mistakes, such as simply changing colours or replacing an accent of a narrator when working across cultures. It is imperative to approach research in the design of learning environments across cultures with participatory, representative teams working within rigorous mixed-methods frameworks. This is especially significant in contexts where cross-cultural learning is required; whereby, for example, a course or e-learning product is created in and for one culture but is also needed to support efficient and effective learning in another culture. However, researchers are far from consensus on just how to approach these needs; robust cross-cultural research methodology to investigate the design of “next” generation learning environments is still in the emerging phase. Further, we have yet to explore or consider methods created within the context of other cultures and communicated in other languages than written English.

5. Future research

We are only beginning to question the learning outcomes and potentially diminished performance results arising from learners’ experiences in ecosystems and environments where culture is not considered as part of an explicit decision process of design. Research is needed to further develop a design model and theory to inform work across cultures and to meet the needs of organizations, which are becoming increasingly diverse and with new learning audience targets dispersed in numerous locations across the globe. As mentioned, there is room for more robust research to develop, test, and validate design models and their implications for the work of designers.

6. Conclusion

The expansion and rapid innovations in the use of new technology in the form of robots, machines, manufacturing, computing, and more complex systems processes across medicine, industry, finance, energy, business, logistics, development, conservation, etc., and accompanying ways of working call for education, instructional design, training, and learning and development specialists in organizations to face the challenges associated with facilitating equitable learning and performance outcomes across cultures for as far as those organizations reach around the globe. The early standardized approach to translation of language and sometimes images for reach across cultures just before and during the early part of the new millennium is no longer sufficient. This is, indeed, an exciting time for a renewed interest and focus on localizing and reframing ethical approaches to culture as design for “next” generational learning environments.

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