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The Culture Based Model: Constructing a Model of Culture

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ABSTRACT

Recent trends reveal that models of culture aid in mapping the design and analysis of information and communication technologies. Therefore, models of culture are powerful tools to guide the building of instructional products and services. This research examines the construction of the culture based model (CBM), a model of culture that evolved from historical and linguistic analyses of instructional products designed by and for African Americans. The findings extrapolated from the analyses reveal a treasure of cultural remnants. The cultural remnants provide evidence of how culture manifested in the instructional products. This data was further refined and generalized for a cross-cultural audience, resulting in the design factors of CBM. CBM is an intercultural instructional design framework that guides designers through the management, design, development, and assessment process while taking into account explicit culture-based considerations. The structure of CBM is presented and some ideas on its practical application are offered.

Keywords

Culture, Models of culture, Instructional design, African Americans

Nationally and internationally, researchers and designers are experimenting with models and frameworks that can guide the design and analysis of information and communication technologies (ICTs). This demand continues to grow as the needs of diverse users and learners of these technologies must be met in an increasingly globalized world (Aykin, 2005; Edmundson, 2007a). To aid in this inquiry, models of culture have been applied to studies for theoretical, methodological, and practical applications. Therefore, it seems that there is a growing need for guidance in the design of ICTs and models of culture may provide that guidance.

Models of culture have traditionally been constructed to explain humanity and our planetary existence, explore diverse learners and learning, and provide a framework for cross-cultural analysis, research, and design. These models of culture are multi-disciplinary and conceptualized in order to contemplate what is known, unknown, and yet to happen. In the field of psychology, researchers formulated models of culture to explain processes of the mind (D'Andrade, 1990; Quinn, 1987; Schank & Abelson, 1977). In anthropology, models of culture take a holistic examination of cultures looking for shared behavior and knowledge (Hall, 1976). Researchers in intercultural communications have designed models of culture to explain value systems, value orientations, and the differences in values across cultures (Condon & Yousef, 1975; Hofstede, 1980). Models of culture in the field of business help personnel to better understand how culture affects management and specifically the impact of cultural values and practices in business (Javidan & House, 2001; Trompenaars & Hampden-Turner, 1998). In the field of instructional design (ID), models of culture focus on integrating culture in the design and development process and on improving learning through culture-based design specifications (Edmundson, 2007b; Henderson, 2007, 1996; Kim; 1999; Lee, 2003; Thomas, Mitchell, & Joseph, 2002). This multi-disciplinary inquiry suggests that models of culture provide a framework to examine cultures, guide the design of culture-based products and services, and foster cross-cultural communications, relations, and meanings.

In this vein, this article provides insight into the construction of the culture based model (CBM), a model of culture. CBM is an intercultural, instructional design framework that guides designers through the management, design, development, and assessment process while taking into account explicit culture-based considerations. The model is intercultural because it operates inside, outside, and across cultures.

The perception of what a "model of culture" can do and be used for is limited by the present state of available models. In examining the importance of models, delGaldo & Nielsen (1996) argue that models of culture act as databases for gathering information pertinent to the needs of a target audience; and therefore, designers need to understand the cultures and cultural context of their users or learners. The implementation of a model of culture in the design of instruction aids designers in the following: distinguishing between generic and specialized design specifications, internationalizing or localizing designs, identifying cultural biases, minimizing mistakes that are

culture based, evaluating designs, and better meeting the learning needs of their target audience. This inquiry of models of culture in ID, and more specifically CBM, provides a glimpse into the dynamic nature of culture in design. In this research, culture is defined as a design construct; therefore, culture is dynamic, malleable, fluid, and always in motion. Culture is created and recreated by human production. (These definitions of culture are informed by the works of Giles & Middleton, 1999; Hall, 1996; Kroeber & Kluckhohn, 1966; Scheel & Branch 1993; Williams, 1958).

This article begins with a review of models of culture in ID. This is followed by an overview of the empirical path that constructed CBM. The major features of CBM are presented, with ideas of its practical applications, and this is followed by a conclusion. This conceptual paper is not meant to provide a comprehensive review of the empirical research that formulated CBM, but it highlights 10 years of research, analysis, revisions, and reconceptualizations and provides the basic structure of CBM. A complete analysis of the empirical study can be found in Young, 1999.

Models of culture in ID

Models, in general, deconstruct the complexity of reality into a more simplistic form, meaning, or practice (Gustafson & Branch, 2002; Seel, 1997). ID models seek to enhance instructional concepts (Seel, 1997) that assist the design process. ID models of culture focus on the role of culture in the design process, using culture to enhance learning and the integration of specialized versus generic design specifications (Edmundson, 2007b; Henderson, 2007, 1996; Kim, 1999; Lee, 2003; Thomas et al., 2002; Young, 2008). Outlined below are the purpose, components, and origins of some existing ID models of culture.

Henderson's (2007, 1996) multiple cultures model (MCM) enables the creation and adaptation of e-learning and e-teaching materials; the model helps instructors to offer "culturally-specific knowledge" to learners while balancing academic, industry, and global cultures (p. 131). MCM focuses on the integration of epistemological, pedagogical, and cognitive aspects. The model consists of "various cultural logics," such as: global academic cultures; societies' dominant culture; indigenous and ethnic minorities' cultures; gender, religion, and class cultures; and workplace cultures and pedagogies (p.136). Henderson adapted features of MCM from the curriculum design of an empirical study that focused on integrating cultural contexts in the delivery of a distance education program (Henderson & Putt, 1993).

The third dimension model, by Thomas et al. (2002), extends the ADDIE (analyze, design, develop, implement, evaluate) model making it iterative, multi-directional and three dimensional. This third dimension is conceptualized in three parameters that include intention, interaction, and introspection. The design parameters in this model provide a lens to focus on culture and tools to begin cultivating culturally sensitive products.

Lee's (1997) cultural modeling framework (CMF) is a "culturally responsive approach to design ... computer-based tools" or non-computer based tools (p. 42). The four "design steps" of the model are: (1) task analysis (generic and not culturally responsive); (2) prior knowledge and cultural models as ways of knowing; (3) engagement and motivation; and (4) social and civic empowerment. Cultural modeling focuses on the examination of the academic discipline and the problems associated with that discipline. CMF evolved from Lee's (2003, 1997, 1993) theoretical and empirical research in culturally responsive teaching and learning and expanded into a model that could incorporate cultural socialization and identity into learning.

Edmundson (2007b) designed the cultural adaptation process (CAP) model as a guide for pre-existing e-learning courses. CAP connects designers to the "cultural profiles" of learners from different cultures (p. 267). The model evolved from empirical and theoretical research conducted in the areas of culture, cultural dimensions, education, and industrial anthropology (Edmundson, 2005); and it contains properties from Henderson's (1996) adaptation of Thomas Reeves' (1992) fourteen pedagogic dimensions of interactive learning and Dunn & Marinetti's (2002) spectrum of adaptation strategies. There are four levels designating courses that are generic (level 1) to more specialized (level 4). Each level is cross listed by five steps. Steps 1 to 5 contain the course characteristics from the most generic to those more specialized. Step 1: Evaluate course content; Step 2: Identify instructional methodology; Step 3: Classify media; Step 4: Identify learners and Step 5: Determine course adaptation plan.

Kim's (1999) transcultural customization model (TCM) guides the development of customized training courses through a systematic approach. TCM has five instructional design phases: analysis, customization design, development, formative evaluation, and implementation. Each design phase has several steps. Each step is further defined by six elements, which include objectives, activities, questions, team, resources, and products. TCM evolved from Kim's (1999) research on culture, transcultural transfer, training processes and products, and instructional systems design.

CBM complements these models by taking a broad examination of culture, instruction, and learning and applying these factors to cross-cultural audiences, designs, and analyses. Similar to MCM, CBM can be used for the production of a product (e.g., e-teaching materials) or service (e-learning). The third dimension and CBM include all the components of ADDIE. CBM, like the CAP model, is empirically based; however, it evolved from actual instructional products that were more specialized. That is, these instructional products were focused specifically on the cultural needs of a target audience. TCM seeks to be a comprehensive model for building customized courses. Similarly, CBM attempts to be a comprehensive model that addresses culture-based issues throughout the design process; CBM offers 70 design factors that are multi-layered and multi-dimensional. (Design factors are design-related features that assist in the management, design, development, and assessment of products and/or services).

Background to constructing CBM

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).

The questions this research sought to answer included the following: How does technology influence the design and media of instruction? How do instructional products disclose their nature, and how is this nature culturally and/or linguistically specific? How do macro and micro social, political, cultural, and economic issues mediate the text and context of a document? and What features of these designs can be used in creating contemporary instructional products (Young, 1999)?

Qualitative research methods require the identification of a corpus of texts meaning that, in lieu of examining all culture-based instructional products, a representative sample can be chosen (Ryan & Bernard, 2000, p. 780). Thereby, a sampling of African American instructional products disclosed three examples that were selected based on their historical significance, cultural identification with the target audience, the designer's classification that the product's purpose was instructional, and the designer's use of technologies available at that time.

The periods in history and the corresponding instructional products included:

Reconstruction: 1866, *The Freedman's Torchlight*

The Freedman's Torchlight (*TFT*) was the earliest educational periodical produced by and for Black people (Bullock, 1971), and it was classified as both a newspaper and a textbook by Morris (1980). The African Civilization Society (ACS) published *TFT* in their Brooklyn, New York, office (Perry, Freeman, & Wilson, 1866). The ACS was "an organization officered and managed entirely by colored men" (Perry et al., 1866, p. 2). The members of the organization consisted of Black ministers from churches of varied denominations (African Methodist, Episcopal, Congregational, Presbyterian, Baptist, and Methodist). Of their members, three participated as editors or designers of *TFT*: Rufus L. Perry (editor) and associate editors Amos N. Freeman and Henry M. Wilson (Morris, 1980). These men were ministers or educators of religion and elementary instruction. Their goal for freed Blacks was to instill the concepts of self-help and pride in one's race (Morris, 1980; Richardson, 1986; Young, 2001, 1999).

Harlem renaissance: 1920–1921, *The Brownies' Book*

The Brownies' Book (*TBB*), a monthly children's periodical, was published from January 1920 to December 1921. The magazine was divided into departments that included: *The Judge*, *The Jury*, *Playtime*, *As The Crow Flies*, *Little People of the Month, Playtime,* and *The Grown-Ups Corner*. Other materials included poems, fiction and nonfiction, graphics (i.e., sketches, photographs), and advertisements (Dubois, 1920–1921). William Edward Burghardt DuBois produced and designed *TBB*. Augustus Granville Dill held the position of business manager, and Jessie Redmon Fauset was the literary editor. These ivy league educated designers were teachers or professors at some time in their lives. Their vision was to educate people for the life ahead of them. Black people needed to know about the ways of the world, Black culture, Black identity, and Black life (Young, in press-a, 1999).

Post civil rights years: 1977, *Bridge: A cross-culture reading program*

Bridge: A cross-culture reading program was an intervention reading program that sought to improve the reading levels of Black junior and senior high-school students in America's public schools. The program was normed for inner-city Black students in grades 7 through 12 who were reading between second- and fourth-grade levels. The design team included Gary A. Simpkins, a psychologist and educator, Charlesetta Stalling (formerly Charlesetta Simpkins), a reading specialist, and Grace Holt, a linguist. The designers created a skills-based reading program that included a linguistic and cultural context and participatory activities. This reading curriculum hoped to empower students, support their language, maintain their culture, and teach them how to read (Simpkins, 2002, 1977; Young, 1999).

Finding culture

These instructional products were analyzed using two qualitative research methods: historical analysis and critical discourse analysis (CDA). Historical analysis seeks to examine "social phenomena in their historical contexts" and can include the exploration of historical documents and records (e.g., newspapers, diaries, novels, etc.) (Denzin & Lincoln, 2000, p. 375). The historical analysis was consistent with Wodak's (2002) discourse historical approach in that the historical context becomes an integral part of the examination and explanation (p. 70). The study of history incorporates many discourses that enable researchers to infer the attitudes and sociocultural contexts of the past (VanDijk, 1993). This study utilized CDA because it allowed an in-depth analysis of written and verbal texts that are culturally influential to society (Huckin, 1995; Wodak, 2002). Using CDA, the instructional products received a text and context analysis. The text analysis examined the areas of genre, framing, omission, backgrounding, foregrounding, and visual representations (Huckin, 1995). This type of text analysis provides an overview of the design; it is a broad or general analysis based on information in the text. The context analysis identified the social, political (vanDijk, 1993), cultural, or economic occurrences within the text. This section paralleled macro issues as represented in society with micro issues as represented in the instructional products.

Biographies on the designers brought a balance to the overall analysis. Equilibrium was achieved through the psychological analysis; that is, the designer's goals, intellect, meaning, and life's purpose. Equity became apparent in the relationships between statements that the designer was unaware or in those created by another author. Biographies also aided in defining relationships among groups of statements that were the same or different, or formal or informal. There were connections in relationships between statements, events, and groups that were different (i.e., economic, social, political) (Foucault, 1972). These biographies were gathered from the instructional products and a variety of secondary sources. In the case of *Bridge*, the designers were interviewed and their contributions incorporated into the analysis (Young, 1999).

The findings indicated that the instructional products disclosed their nature through a methodical analysis of the designer's ideologies, historical analyses of the time period, and a text and context analysis of the instructional products. The analyses of *TFT*, *TBB*, and *Bridge* revealed cultural remnants embedded in the instructional products. The cultural remnants contained the themes and concepts most prevalent through the analysis. Cultural remnants are the racial, ethnic, cultural, linguistic, political, social, historical, educational, and economic artifacts embedded in discourses. These cultural remnants were then translated into CBM and generalized to reach a broader audience. Over 100 cultural remnants were found amongst the three instructional products (Young, 1999).

Table A. Translation of cultural remnants into CBM

Instructional Product	Analysis Conducted	Cultural Remnants	Translation into CBM
TFT	Context	Classical elementary curriculum	Learners (L5) Identify educational objectives
TBB	Text	Photographs of Black people	Inquiry (I6) Visual representations. I6a. How do the visual representations frame the product? I6c. Who is portrayed in these visual representations?
Bridge	Context	▪ idiomatic expressions ▪ use of language of the 1970s	Elements (E8) Cultural history; (E10) Cultural language

Many of the cultural remnants were translated into broader concepts that are consistent with definitions of culture and how culture has been delineated in societies (Kroeber & Kluckhohn, 1966). As indicated in Table A, one of the cultural remnants found in the context analysis of *TFT* focused on providing freed Blacks, those people released from enslavement during US slavery, with a "classical elementary curriculum." In *TFT*, the classical elementary curriculum can be generalized to mean that there is a need to meet the educational needs of the target audience. This translated to the area/design factor CBM Learners (L5) Identify educational objectives. *TFT* met the educational needs of its target audience by providing a classical elementary curriculum. This classical curriculum was the designer's educational objective.

Another cultural remnant found in the text analysis of *TBB* was the focus on photographs of Black people (Table A). The designers of *TBB* used photography as their primary visual medium. These graphics enhanced the text surrounding the photographs; therefore, photography framed the product (Kress & van Leeuwen, 2006). This translated to the area/design factor CBM Inquiry (I6) Visual representations question: I6a. How do the visual representations frame the product? Children were also portrayed in most of *TBB* publications because it was a magazine for children. Throughout its two years of publication, children wrote into the department Little People of the Month and remarked at the beautiful pictures of other children who looked like themselves. This led to another question in the area/design factor CBM Inquiry (I6) Visual representations: I6c: Who is portrayed in these visual representations?

In *Bridge*, two of the cultural remnants found in the context analysis were idiomatic expressions and the use of language indicative of the 1970s (Table A). These cultural remnants were found in the stories of the dialect readers and the audiotapes. The designers included children's folklore that contained the idiomatic expressions and Black vernacular spoken by African Americans in urban neighborhoods during the 1970s. This translated to the area/design factor CBM Element (E10) Cultural language. The designers of *Bridge* provided authentic representations of language form, content, use, and meaning in the context of their audio and printed instructional product.

The historical analysis assisted in the development of the area CBM Element (E8) Cultural history (Table A). The historical analysis provided a context in which the instructional products thrived and lived. There were connections to macro issues in society and the micro issues in the instructional products that were important to culture in general and African American culture specifically.

The intention was never to design a model of culture; however, the model evolved from the data. These data suggest that technologies carry a history and that these histories can be revealed through analysis. Further, historical artifacts can aid in the design of contemporary instructional products. This section sought to reveal the path to CBM; however, further in-depth study of this path can be explored in the unpublished dissertation entitled *Roads to travel: A historical look at African American contributions to instructional technology* (Young, 1999).

The culture based model: ID-TABLET: a summary

The unifying of the framework of CBM came together after several years of revisions and feedback from colleagues. The acronym ID-TABLET was created to identify the eight areas of CBM that include inquiry, development, team, assessments, brainstorming, learners, elements, and training. Each area contained subsequent features; therefore,

these features were designated as design factors. In total, there are 70 design factors that are meant to aid the designer or researcher in better understanding the intricacies of a society, culture, or target audience.

There was a need to provide a synthetic idea, image, or metaphor of complex ideas but ultimately a visual language to represent CBM (Botturi, 2006; Botturi & Stubbs, 2008). Figure 1 illustrates this visual language and demonstrates CBMs iterative functioning and selection process. The model functions like a machine in that each active component responds to the next. The selection process is completed by the designer in choosing the appropriate areas for the project.

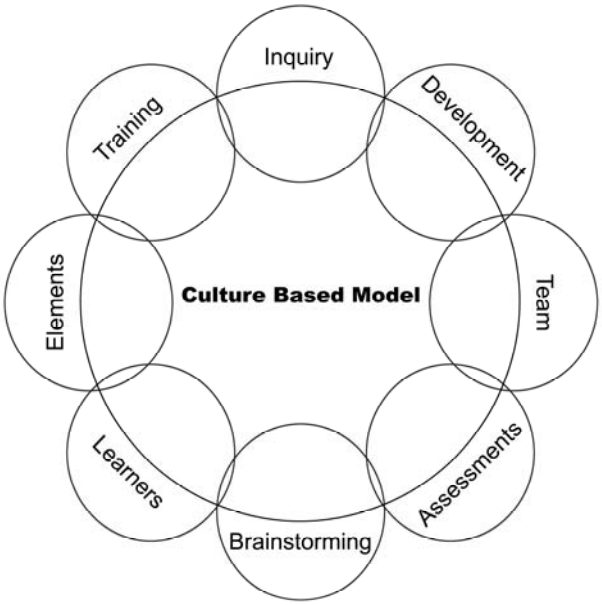

Figure 1. The culture based model ID-TABLET: a model of culture

In analyzing the different areas of CBM, it became apparent that some areas focused more on project management and others on design. Project management involves educating, evaluating, decision making, learning, planning, and problem solving. Those areas of CBM consistent with project management include Brainstorming (B1–B10), Team (T1–T3), Development (D1–D10), Learners (L1–L10), Assessments (A1–A4), and Training (Tr1–Tr2). The project design focuses on content development and monitoring. The areas under project design include Inquiry (I1–I6) and Elements (E1–E25).

The next section provides a summary of each area in the order of the acronym ID-TABLET. This summary provides the area's definition, function, and overview of the design factors. Each design factor is bolded for identification purposes.

Inquiry (I1–I6)

Inquiry provides monitoring for the project design. In this area, there is a set of questions to be asked and answered throughout the design process. These questions function as internal sensors to check and recheck the product and process. The questions are not exhaustive but they provide a basis to screen for product bias, maintain a focus on the target audience, and manage the design process. There are six design factors under Inquiry; they include: I1. **Genre**, I2. **Framing**, I3. **Omission**, I4. **Backgrounding**, I5. **Foregrounding**, and I6. **Visual representations**. Each design factor serves a different function in the design process. Genre aids in the selection of ICTs. The questions in this area focus on the type of ICT selected for the project, affordability of the product to the target audience given the ICT, and how the ICT influences the product's design. For example, question (I1a) asks the following: *What ICTs are being used and why?* Framing assists in maintaining the target audience's perspective. These questions align the project to the target audience with a focus on content. For example, question (I2d) asks the following: *Is the content*

appropriate for the target audience and why? Omission helps in assessing a design to determine what has been omitted. Certain content could be omitted intentionally or unintentionally. Other content may not have been considered and may be detrimental to the project. For example, question (I3b) asks the following: *What has been unintentionally omitted and why?* The design factor Backgrounding helps in providing a balanced design. A balanced design is assessed by determining what content has been backgrounded intentionally or unintentionally and whether this backgrounding is detrimental to the project. For example, question (I4b) asks the following: *Is the backgrounding intentional or unintentional and why?* Foregrounding helps in providing an objective design. This objectivity is determined through an analysis of what and why something is emphasized. For example, question (I5a) asks the following: *What is emphasized and why?* Visual representations assists in conveying meaning about purpose, product, process, selection and placement of images. For example, question (I6a) asks the following: *How do the visual representations frame the product?*

Development (D1–D10)

Development directs problem solving for the project management. There are 10 design factors that aid in managing the overall development of a product. D1 **considers the technical, aesthetic, content, culture-based, and target audience (TACCT) design specifications** of an ICT. It is a quick way of assessing an ICT. TACCT is meant to provide some preliminary data to improve the design of the ICT and determine the direction to proceed. It is not an in-depth evaluation tool. D2 focuses on the best **mass distribution format** for the target audience that is also economical, accessible, and equitable. The formats for mass distribution may include: audio, print, software, video, web-based, etc. D3 considers the most efficient and **effective technology** available to produce a product. Efficiency is measured by the amount of content, and effectiveness is measured by the transfer of information between human and machine. D4 proposes that there is a need to **diversify the ICT format**. This diversification is needed to better meet the learning modalities of the target audience. D5 suggests that every project must **understand the target audience**. This means to have a deep knowledge of the culture of the target audience through the data collected using CBM Elements. D6 **explores environmental and individual/group cultures** as commonly known and referenced representations of culture. Environmental cultures explore a society's or culture's way of life (e.g., workplace or school culture). Individual and/or group cultures explore people (e.g., Japanese or Native American culture). Both of these representations are needed to balance the structure of culture-based designs. D7 recommends creating a **quality design** so that others can replicate similar products. This idea of product quality is also supported in D8 in that there is a need to **authenticate the product** to validate its design. Authentication comes through the accurate portrayal of societies, cultures, and peoples; CBM Elements can be a resource to collect this data. D9 suggests that there is a need to **control for interference**. This means to produce products that limit attitude, bias, and prejudice. The goal is to try to control for interference by humans, machines, and the environment. D10 recommends a need to **model the product or process** through some form such as a prototype, storyboard, sketch, or visual language. The goal is to bring ideas to life in another form or format.

Team (T1–T3)

Team executes the decision making throughout the project management. This team consists of a cultural expert, educators, and other members who all possess cultural sensitivity and interests in the target audience. For design factor T1, the **cultural expert** is recruited. This person is an insider in the target audience's community but also works explicitly with the design team. T2 suggests the need to **enlist educators** who are subject matter experts or experts in educating the target audience. Design factor T3 promotes the need for a **culturally informed team** with valid interests in the target audience.

Assessments (A1–A4)

The area of assessments is where evaluating happens during the project management. The design factors in this area cover a variety of assessment options. A1. **Multiple evaluation opportunities** promotes the use of more than one measurement to affirm validity. These evaluations measure the learner's acquisition of knowledge or the effectiveness of a product's design. A2. **Assess the assessment** focuses on the evaluation of the assessment tool with the goal of determining bias and providing the best assessment tool. Design factor A3. **External review** implements other evaluations of the product in the form of external reviews and reviewers to achieve summative evaluations of

the learner's progress and the effectiveness of the product. A4. **Culture-specific assessments** centers on creating specialized evaluations that meet the needs of the target audience through culturally aligned content.

Brainstorming (B1–B10)

Brainstorming manages the planning during project management. The design factors in this area determine the overall direction of the project. B1 promotes a comprehensive plan for the **financial support** of the project. Given the intricacies of the design, the creativeness needed, and the cultural wherewithal, funding these initial projects can cost considerably more than designs that meet a mainstream or a generic audience. B2 looks at the implementation of **pilot studies and field tests of the product**. These evaluative measures provide data on the target audience's interactions with the product and serve as a measure to authenticate the product's design. B3 encourages the need to **assess the community's response** to the product. This assessment might be in the form of focus groups, surveys, or public-opinion polls (i.e., in-person, telephone, or online). B4 calls for a **community representative on the team**. This person knows the culture of the target audience and is involved in all aspects of the design. B5 **investigates the target audience to authenticate the product**. This means gathering information about the target audience through ethnographic methods (i.e., observations, interviews, artifact collection). B6 requires that the design team **reflect and assess learning goals** as they pertain to the target audience. This happens by participating in ongoing reflections and assessments about the product. B7 focuses on providing an **affordable design** that is financially accessible to the target audience. B8 seeks to **meet the needs of the target audience** by addressing instructional and culture-based concerns. In this case, the target audience becomes an integral part of the design process. B9 suggests that the design team **discuss and consider the cultural context**. The cultural context includes economic, educational, historical, social, and political reasons for implementing this project. Design factor B10 proposes that there is a need to **present and consider outcomes** for the learner or goals for the user. This means that defining learning outcomes that the product expects to produce or user goals that the product expects to provide is essential.

Learners (L1–L10)

The area of learners controls the learning aspects of the project management. The design factors in this area support the learner's cultural frame of reference while meeting the learning outcomes of the project. L1 proposes that opportunities to **extend learning** promote an adaptive design that meets learners where they are, and that these opportunities have the ability to extend or advance instruction when needed. This means that the proficient and struggling learners are provided with challenging tasks to work on at their own pace. L2 looks at the need to **differentiate opportunities to learn** by providing many learning options. By applying these learning options more broadly to the design of ICTs, there can be differentiation in hardware, software, teaching, instruction, and learning. L3 seeks to provide opportunities to **empower and engage learners**. It fosters the development of a reciprocal relationship between learner and technology. L4 supports the need to **teach proactive learning**. This means helping learners be responsible for improving their own learning. L5 seeks to **identify educational objectives** early in the design process. The educational or learning objectives serve to guide the design of instruction. L6 considers **culture-specific instructional strategies** that are specialized to the individual or group. This entails the collection of ethnographic data specific to the target audience. L7 focuses on the need to **enrich instructional content** beyond subject matter. This means to incorporate all aspects of the lives of the individual, group, or community (e.g., politics, morality, ethics, beliefs, language, identity, social actions, etc.), thereby providing a more authentic representation. L8 proposes the need to **adapt instruction to the learner**. This begins with providing adaptable instruction that is not grade or age specific. L9 offers a **plan for instruction**. This plan concentrates on the short- and long-term instructional needs of the target audience. L10 recommends the need to **enculturate the learner** into the culture or society. Products can be used as social tools to acclimate versus alienate learners.

Elements (E1–E25)

Elements facilitate content development for the project design. The design factors in this area provide elements that represent the fundamental total of which all culture is composed. Some elements are classified as tangible and have material qualities. Some elements are classified as intangible and have nonmaterial qualities. Elements aid in defining, evaluating, and understanding a society, culture, or target audience. Elements is composed of 25 design factors divided into three sections.

The section The Anthropology of Culture covers design factors E1–E13. This section draws from key concepts in the fields of anthropology, language, history, economics, demography, communications, and the physical and environmental sciences to explore the depth of culture. The Anthropology of Culture takes into consideration that human beings, other species, and entities have various ways of being and seeing the world (Ember & Ember, 2001). Therefore, a broad examination of the humanities and sciences is required to meet these needs. The design factors consistent with this section include E1. **Cultural aesthetics**; E2. **Cultural artifacts**; E3. **Cultural capital**; E4. **Cultural classification**; E5. **Cultural communications**; E6. **Cultural demographics**; E7. **Cultural environment**; E8. **Cultural history**; E9. **Cultural knowledge**; E10. **Cultural language**; E11. **Cultural physiology**; E12. **Cultural relations**; and E13. **Cultural resources**.

The section The Psychology of Culture covers design factors E14–E20. This section draws from the fields of cognitive anthropology and cultural psychology that focus on cognitive, psychological, and social realms. Culture affects the psychology of human existence (D'Andrade, 1995) in its ability to configure the mind of human beings. Human beings use their minds to negotiate and make sense of the world. Whether human beings are part of a society, culture, or group, they search for shared meanings with others and an understanding of self. These meanings are best understood in their cultural contexts; therefore, culture is at the core of creating, understanding, and being human (Bruner, 1996). The design factors consistent with this section include E14. **Cultural beliefs & values**; E15. **Cultural experiences**; E16. **Cultural ideas**; E17. **Cultural identity**; E18. **Cultural interests**; E19. **Cultural misconceptions**; and E20. **Cultural ways**.

The section The Science of Culture covers design factors E21–E25. This sections draws from key concepts in the fields of physical science, biological science, earth science, ecology, futures research, and cross-cultural studies to explore the scientific nature of humanity and the possibilities of cultural futures. The Science of Culture seeks to assist human beings in adapting to their environment so that living can be achieved. This scientific way of thinking cuts across the natural, cultural, social, physical, and biological. Science is one of many ways of interpreting human reality (White, 1949). The design factors consistent with this section include E21. **Cultural anomalies**; E22. **Cultural cultures**; E23. **Cultural futures**; E24. **Cultural infinities** and E25. **Cultural nature**.

Training (Tr1–Tr2)

In the area of Training, educating is conducted under project management. The design factors in this area provide product and culture-based training. Tr1 conducts **product training** as needed for facilitators, instructors, practitioners, or others who will use the product. Tr2 provides **culture-based training** incorporating content information from CBM Elements and interactions with the cultural expert and target audience.

Practical applications of CBM

Using the framework of CBM begins with determining the purpose of the project. Does the project require engaging in a custom-development, add-ons, re-engineering or diagnostic evaluations (CARD)? A product that is constructed from scratch is considered a custom development. Add-ons make additions to an existing product. Re-engineering requires making major changes to software codes, restructuring, and rebuilding a product. Diagnostic evaluations serve as a means of measurement for researching ICTs and ethnographic data.

Next, the designer or researcher selects those areas of CBM that best fit the goals of their project. A designer of a new e-learning website for Japanese children may need to implement all areas of the ID-TABLET. However, a researcher may only need CBM Elements to analyze the culture of an indigenous group.

The applications of CBM are only limited by one's imagination. As stated by delGaldo & Nielsen (1996), models of culture can serve as databases or knowledge management systems. Therefore, CBM can be used as a database to collect information about a target audience. This information enables the design of multiple products or services that meet the specialized design needs of a target audience (Young, 2008). As an assessment tool, designers might begin with an analysis of ICTs using CBM Development D1, TAACT table. Alternatively, CBM Elements provides 25 design factors and many subcategories (not included in this paper) that can be used to evaluate and develop all forms of ICTs. In general, CBM can help designers and researchers create a fictitious virtual world; replicate an organic or

inorganic culture in any media (e.g., entertainment games, film); model an instructional strategy, task, or activity; plan the entire design process; understand people and societies; monitor product development; research the culture-based qualities of a target audience or environment; analyze media (e.g., e-learning websites, children's books, etc.); integrate features of culture throughout ICTs; enhance existing designs; communicate across cultural contexts; manage the design and development process; and assess a product's design.

Conclusion

Constructing a model of culture begins from a place of inquiry and wanting to know how to solve problems or craft solutions to unanswered questions. This search for knowledge led to an unexpected discovery but one that needs to be shared and explored.

As a model, CBM provides a framework to enhance the design process through the integration of culture-based design specifications. The implementation of CBM by designers and researchers could further validate the model as an instructional design framework.

There is a need for alternative instructional design models and models of culture that meet the globalization of technologically advanced societies. This type of modern research aids designers in enhancing the designs of products and services and helps researchers in providing a comprehensive analysis of cultures. The inclusion of culture, in all its depths and definitions, must emanate throughout the design process. CBM is just one example of a model of culture. These types of models are necessary and needed to meet national and international design challenges.

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