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Revision And Validation Of A Culturally-Adapted Online Instructional Module Using Edmundson's CAP Model: A DBR Study

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Revision And Validation Of A Culturally-Adapted Online Instructional Module Using Edmundson's CAP Model: A DBR Study

by

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Dedication

First, I recognize that God made the mind of man. Therefore, I dedicate this work to Him and thank Him for the wisdom and knowledge that He has given me. I would also like to dedicate this work to my husband, Carlos, and my daughter, Kailyn. Words cannot convey my love for both of you. Carlos, thank you for the continuous love and support you have given me all days of our lives together. I would also like to dedicate this work to my parents, Julio and Lydia, parents-in-law, Antonio and Escilda, my brother and sister-in-law, Pedro and Brenda, my niece, Ilian, and cousin, Elsa. I thank God and all of you for your love always.

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Abstract

In the present study, the Cultural Adaptation Process Model was applied to an online module to include adaptations responsive to the online students' culturally-influenced learning styles and preferences. The purpose was to provide the online learners with a variety of course material presentations, where the e-learners had the opportunity to select their preferred structure for learning. The research methodology for the study is Design-Based Research (DBR), which has been identified by many prominent researchers in Instructional Technology as the most productive research approach for the field. DBR integrates different data types and data collection methods (quantitative, qualitative, and mixed) with experience in instructional development and the participants' collaboration. The study produced design principles that are expected to be useful for practitioners when adapting online courses to multicultural audiences. To provide thorough information to instructional designers, the research report includes a detailed description of each phase, an estimate of hours invested per development and testing stages, a list of outcomes found, and a set of recommendations for improving the cultural adaptation model applied. The study is expected to be valuable for educational institutions and corporations that offer online courses to multicultural groups of e-learners.

Chapter 1: Introduction

In the present study, the Cultural Adaptation Process model was applied to a Level 3 online module within a Design-Based Research methodology. The purpose was to provide online students with a variety of course material presentations where the e-learners may select their preferred structure for learning. The research methodology provided the researcher with data from numerous sources, and in the process helped to develop design principles and model improvements that are expected to help instructional designers and instructors in their practice of culturally-adapting online courses for multicultural settings.

In this chapter, a brief description of the problem addressed in the study is presented, along with the study's conceptual framework, instructional design models, description of the research design methodology and framework, the significance of the study, and its expected implications and contributions. The limitations and delimitations are also discussed.

Statement of the Problem

E-learning programs are becoming more diverse with respect to culture. With the increasing use of online learning technologies to reach students from a variety of countries, multiculturalism in the online classroom emerges as a relevant area of study. Moreover, one foundational principle of online education is that it be designed to provide

educational opportunities responsive to the needs of different students, including the culturally diverse (Wang & Reeves, 2007). Therefore, there is a growing need for support and guidelines for instructional designers to help them successfully integrate educationally relevant cultural factors while designing and developing online courses for e-learners around the world (Dunn & Marinetti, 2007).

Even though cultural differences are common in traditional educational settings, the issue in online learning may be more difficult to address without face-to-face interactions (Mason, 2003). Cultural and social problems in online learning become more relevant and challenging when such courses cross cultural and national boundaries (Bates, 1999) or are developed for multiple cultures (Dunn & Marinetti, 2007), leading to increasingly culturally heterogeneous groups of learners in online education (Wang & Reeves, 2007).

Culture plays a significant role in the learning process of individuals and in the design of online courses (Sieffert, 2006). Gunawardena and McIsaac (2003) identified the implications culture exerts on online learning with questions such as: "How do we build on the conceptual and cultural knowledge that learners bring with them? How do instructors engage in culturally responsive online teaching?" (p. 364).

Instructional design and culture. E-learning courses are products of the culture in which they are designed and developed (Dunn & Marinetti, 2007). Instructional designers and instructors are influenced by their cultural views of teaching and learning. Therefore, more work is needed to understand how various cultural perspectives interact in practice and to investigate the connections between educationally relevant cultural dimensions and the design of more effective online instruction (Wang & Reeves, 2007).

Dunn and Marinetti (2007) classified the culturally-informed selection of instructional strategies as the most critical aspect of the design and development process of an instructional course or module. Many researchers have expressed the need for empirically tested methods of instructional design for different cultures (Edmundson, 2007; Gunawardena, Wilson, & Nolla, 2003; McLoughlin, 2007; Tapanes, Smith & White, 2009). Such methods must include localization and adaptation techniques of instructional strategies, activities, language, and semiotics that move beyond stereotypes and tokenism. This is not simply for the purpose of converting the original learning environment to the learners' culture, but also for building mutual accommodation and providing opportunities for all students to master different ways of learning and assessment for their academic success. As McLoughlin (2007) said, we must ensure cultural pluralism in instructional design, pedagogy, and all aspects of the educational experience to achieve global inclusivity and accommodation for online learners.

In the present study, the application of a cultural adaptation model provided the guidelines to assess an online module and adapt it to the educationally relevant cultural preferences of online students. The guidelines provided by the model are wide-ranging, meaning that a single adaptation may simultaneously include educationally relevant adaptations for online students from many cultures.

The cultural adaptation model was applied to an otherwise well designed online module. Based on information given by the online students, instructor, and instructional designer of the course (i.e., nationality and other data gathered), relevant cultural adaptations were implemented to the online module to accommodate culturally relevant differences. The students' perceived learning outcomes, final scores on the module,

satisfaction, and motivation in relation to the improved online module are important to assess the outcomes of the application of the cultural adaptation model. In addition, the instructor's engagement in the process of culturally-adapting the module, perception of the process and its importance, motivation, and satisfaction with the product are relevant to evaluate the extent to which the application of the model is successful and provide a plan for its further improvement.

Conceptual Framework

Few research-based studies are published regarding the cultural aspects of online learning (Gunawardena, Wilson, & Nolla, 2003). Biggs (1999), as cited by McLoughlin (2007), noted that international e-learners might experience problems of socio-cultural adjustment, language, and learning with respect to perspectives and expectations. Wang and Reeves (2007) suggested some principles for constructing and implementing culturally sensitive online instruction based on recommendations drawn from the literature on this subject:

- Adopt an epistemology supportive of multiple perspectives.
- Create flexible learning goals, tasks, and modes of assessment.
- Design authentic learning activities and tasks where the learners can apply their existing skills and cultural values.
- Attempt to increase students' self-confidence and motivation early in the course.
- Discuss explicitly the cultural values of the course.

- Provide clear guidelines for online communication to avoid confusions and encourage students to keep participating.
- Use simple sentence structures and clarify the level of English required.
- Avoid slang, local humor, and colloquialisms.
- Provide communication tools for social interaction, such as online discussion forums.
- Provide a wide variety of combinations of supplementary media and resources for learners and instructors to expand their knowledge.
- Minimize technical demands.
- Allow different communication configurations, including anonymous or private messages.
- Make the course materials available for students to preview and review.

In the present study, these guidelines were integrated into a rubric to assess the culturally adapted online module. According to the literature on this topic, if the course demonstrates integration at some predetermined level of the guidelines proposed by Wang and Reeves (2007), then some relevant cultural adaptations were applied to the online module.

Henderson's (2007) Multiple Cultures Instructional Design Model (MCM). The model proposed the integration of the various cultural value systems of students to maximize equity in online learning. The purpose of the model is to increase the learning outcomes for all e-learners and recognize the value of multicultural practice. To achieve its purpose, the course must meet the students' needs and acknowledge their cultural

backgrounds with inclusive pedagogies, helping students to merge with the majority rather than capitalizing on their differences (McLoughlin, 2007).

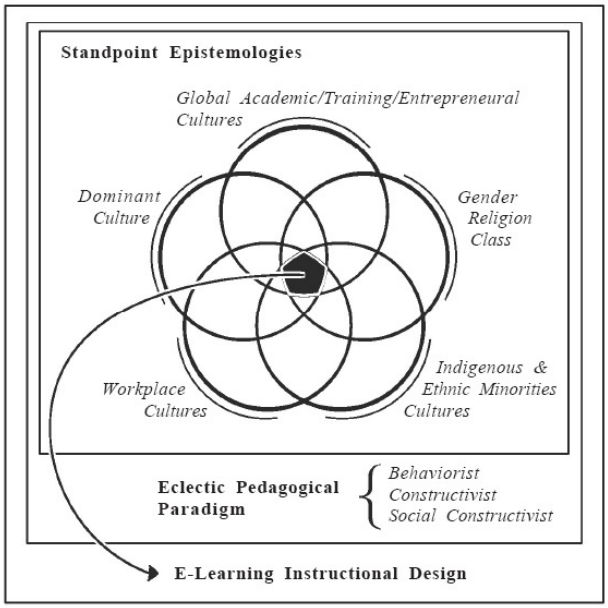


Figure 1. *Henderson's Multiple Cultures Instructional Design Model (MCM)*

Source: Henderson (2007, p.136)

Edmundson's Cultural Adaptation Process Instructional Design Model (CAP). The CAP model is based on seminal studies of culture and on a simplified version of Henderson's MCM. Edmundson's model fits within the framework of an overall needs analysis. The model serves as a guide through the process of identifying the characteristics of an existing e-learning course or module and determining if those characteristics match the cultural profiles of the learners for whom the course is designed. If the course characteristics do not match the cultural profiles of the learners, the model provides guidance to create an action plan of possible adaptations in the case that such adaptations are deemed necessary. The purpose of the model is to provide the

opportunity for equitable learning outcomes for e-learners from different cultures while avoiding unnecessary and costly adaptations (Edmundson, 2007).

Edmundson suggested that seminal studies of cultural dimensions (e.g., values) should be used in conjunction with the CAP model to help identify the educationally relevant cultural values and characteristics of the participants. The current version of the model assumes knowledge about such studies, such as Hofstede's (2001) seminal work on cultural dimensions in organizations. In future revisions of the model, Edmundson will provide more guidance in case the instructional designer is not familiar with such studies. In the context of the present study, the researcher is familiar with culture studies and how to apply Hofstede's studies to research in online learning environments (Tapanes, et al., 2009).

As explained by Edmundson (2007), the CAP model is organized in Levels and Steps (Figure 2). Steps 1-3 help the instructional designer analyze the degree of the course's cultural influence and complexity (Levels 1-4). Steps 4-5 help the instructional designer identify specific cross-cultural learners' characteristics based on critical and assistive cultural dimensions. Step 6 provides adaptation strategies based on course complexity and decisions from previous steps.

	Level 1	Level 2	Level 3	Level 4
Step 1: Evaluate content type and examples	Simple information, core knowledge, news, or updates, such as product knowledge, company procedures	Low-level, cognitive hard skills; simple knowledge and concepts, such as those used in application software; most computer-related skills	Some soft-skills; complex knowledge, such as project management, presentation skills, marketing strategy	Mostly soft skills; attitudes and beliefs, such as negotiation skills, motivation, teamwork, conflict resolution
Step 2: Identify pedagogical paradigm, include instructional methods, activities, and so forth	Instructivist-objectivist with behavioral objectives and sharply-focused goals; low-context communication; Mimetic	More closely related to instructivist-objectivist than constructivist-cognitive paradigm	More closely related to constructivist-cognitive than instructivist-objectivist paradigm	Constructivist-cognitive with cognitive objectives, unfocused goals; High context communication; Transformative
Step 3: Identify media	Lecture, handouts, simple demonstrations	Satellite broadcasts, audio-conferencing, recordings, television	Threaded discussions, list servers, online chat, e-mail	Videoconferencing, Web-based training, streaming with media and Web conferencing

Step 4: Identify national level cultural dimensions of learners and *critical* cross-cultural dimensions (associated features and characteristics) of the course.

The following dimensions of e-learning appear to be *closely related* to cultural dimensions found at the national level. Research indicated that a user's cultural profile (e.g. see the works of Hofstede) will dictate what learners are likely to prefer with respect to these dimensions.

Critical cross-cultural dimensions	Unsupported	← Cooperative learning →	Integral
	Extrinsic	← Origin of motivation →	Intrinsic
	Non-existent	← Learner control →	Unrestricted
	Didactic	← Teacher role →	Facilitative
	Errorless learning	← Value of errors →	Learning from experience

Step 5: Identify national level cultural dimensions of learners and *assistive* cross-cultural dimensions (associated features and characteristics) of the course.

The following dimensions of e-learning are related to the potential preferences of groups of e-learners. Assess their preferences before modifying or developing any e-learning course because these are known to change based on variables other than cultural dimensions at the national level.

	Mathemagenic	← User activity →		Generative
	Abstract	← Experiential value →		Concrete
	Non-existent	← Accommodation of individual differences→		Multifaceted
Step 6:	Translation	Localization	Modularization	Origination

Figure 2. *Edmundson's Cultural Adaptation Process Instructional Design Model (CAP)*

Source: Edmundson (2007, p.269)

An important aspect of the CAP model is that input from the targeted learners is necessary throughout the steps. Through the use of questionnaires, the educationally relevant cultural dimensions of the e-students were identified, as well as their cultural profile and learning preferences.

CAP Model Research Framework. Edmundson (2007) provided a framework to test and validate the CAP model in a variety of instructional design scenarios. The framework was adapted to the proposed study using the following steps:

1. Research at a high level the educational characteristics of the targeted culture.
    a. A questionnaire was administered before the students participated in the online module to identify their educationally relevant cultural values and culturally-based learning preferences.
2. Differentiate the characteristics of the targeted learners from the general population.
3. Apply the CAP model to compare the characteristics of the targeted learners with the characteristics of the proposed e-learning module. Identify and apply potential adaptations.
4. Pilot test the resulting module with a sample of the representative learners.
    a. In the case of the present study, the pilot test of the online module cultural adaptations was achieved by evaluating the cultural adaptations applied from those identified in the previous step (3). The culturally-adapted module was presented to at least two current students or recent graduates from the Instructional Technology or Measurement/Evaluation doctoral programs for evaluation using a

rubric (see Appendix A-4). An 80% agreement was sought between the evaluators on each category: pedagogy, content, technology, and communications. Each category should be given a score of at least 2 (design includes half or more than half of the principles, but not all) to be considered acceptable. If the first round of evaluations did not reflect that each category was given the expected minimum score with at least 80% percentage of agreement, a revision to the design applying the CAP model was considered necessary in an attempt to raise the scores to at least 2 on each category. The maximum number of possible cycles was two, including the first adaptation cycle and the revision cycle, if needed, before presenting the proposed e-learning module to the targeted learners.

5. Present the proposed e-learning module to the group of targeted learners.
    a. In the proposed study, the targeted learners are the students enrolled in the selected online course or module.
6. Measure pre-selected outcomes (quantitative). In the case of the present study, pre-selected outcomes were the online students' perceived learning, final scores, satisfaction, and motivation.
7. Gather feedback from the learners with respect to perceived learning outcomes, satisfaction, and motivation (quantitative and qualitative).
    a. Feedback from the students, instructor, and instructional designer through questionnaires and interviews provided information regarding

the appropriateness of the cultural adaptations of the course and the application of the model.

b. Students' final scores on the module were obtained from the learning management system for informational purposes. These may help to assess the appropriateness and usefulness of the cultural adaptations applied to the module.

8. Publish the results to be used by instructional designers and researchers.

The framework proposed by Edmundson (2007) was applied in the present study to test the model for the adaptation of a Level 3 online module. The application of the framework was done within a Design-Based Research methodology.

Design-Based Research (DBR). Educational researchers face two important challenges: to study messy, real-life learning situations (Collins, Joseph, & Bielaczyc, 2004) and to try to define the complex conditions required for success in effective instructional interventions (Dede, 2004). Reeves, Herrington, and Oliver (2005) urged researchers to consider the DBR approach as a more fruitful path in instructional design and technology. DBR advances design, research, and practice concurrently (Wang & Hannafin, 2005). In a nutshell, DBR consists of a progressive refinement approach: generate a first version of the e-learning course or module, evaluate (formative evaluation), and revise based on formative evaluation results and experiences until the instruction works out the way it is intended, or until predefined goals are met.

Design-Based Research studies are recommended to help build the foundation for a robust framework to guide further development in diverse online learning environments (Wang & Reeves, 2007). DBR requires significant literature review and theory

generation, utilizes many data collection methods, uses formative and summative evaluations, and challenges the assumption that research is contaminated by the influence of the researcher (Wang & Hannafin, 2005).

Although some researchers may see the results of DBR as simple common sense for anyone with experience in educational settings (Dede, 2004), conscious decisions in the design process are necessary for the selection of strategies to be effective. In the context of online learning design and development, common sense decisions are biased by the instructional designer's own culturally induced worldviews, and this may lead to problems in cross-cultural learning environments (Dunn & Marinetti, 2007).

Purpose

In the present study, the CAP model and Wang and Reeves' (2007) principles were applied to an online course module to include adaptations responsive to the online students' culturally-influenced learning styles and preferences. The purpose was to provide online learners with a variety of course material presentations and modes of evaluation, giving learners the opportunity to select their favored structure for learning. In addition, they were allowed and encouraged to experiment with instructional paradigms and evaluations outside of their preferences to help them become multi-culturally competent online students. This flexibility was expected to increase online students' retention rates as well as their perceived learning, satisfaction, and motivation levels with the online course. Final scores on the module were collected from the learning management system to examine if they provide further information regarding the outcomes of the CAP model application to the online module.

The present study produced an online module where all online students, including international online students, reported equitable perceived learning outcomes, high levels of satisfaction as demonstrated by positive attitudes towards the course, and high levels of motivation. In addition, the research is expected to produce design principles that practitioners will consider usable when adapting Level 3 online courses to multicultural audiences. To provide thorough information to instructional designers, the researcher included in the report a detailed description of each phase of module development, an estimate of hours invested per development and testing stage, a list of outcomes found, and a set of recommendations for improvement of the cultural adaptation model applied.

Research Questions

The purpose of the present study was to assess the utility of the CAP model in a real setting following the steps and framework detailed by Edmundson (2007) in addition to the principles provided by Wang and Reeves (2007). The study produced a module where all online students, including the culturally diverse, reported positive attitudes towards the online module, high levels of motivation, and achieved equitable learning outcomes. In addition, the researcher generated a detailed description of each phase, an estimate of hours invested per development and testing stage, a list of outcomes found, a set of recommendations for improvement of the CAP model, and a section of lessons learned.

The purposeful sample for the study was those students enrolled in the selected online course who were willing to participate, the instructor(s) of the course, and any

instructional designer or programmer collaborating on the study. The researcher served as instructional designer and programmer in the study.

The research questions that guided the study were:

1. *What are the effects on the instructional design process of applying a systematic approach to the assessment, adaptation, and validation of a Level 3 online module in a higher education environment using the Cultural Adaptation Process Model to guide the development of a culturally-adapted and accessible e-learning module?*
2. *To what extent does the use of the Cultural Adaptation Process Model help to provide a culturally diverse range of learners the opportunity to achieve equitable perceived learning outcomes, satisfaction with the online course, and levels of motivation?*

Significance of the Study

"Instructional design cannot, and does not, exist outside of considerations of culture."

(Henderson, 1996, p.85)

The present research study is expected to expand our knowledge of the instructional design process of adapting multicultural Level 3 online courses, using the CAP model as well as the principles compiled by Wang and Reeves (2007) from their extensive literature review. The application of the model throughout the design led to important lessons learned and guidelines that may prove useful for instructional designers

and instructors. The study is based on seminal studies on culture, such as Hofstede's (2001) extensive research about cultures in organizations and Henderson's MCM (2007).

The DBR approach utilized in the study provided the opportunity to culturally adapt a Level 3 online module, integrating into the design the input from learners and practitioners throughout the process, to generate a very detailed documentation of the procedures derived from formative and summative evaluations, as well as from design and development decisions. In addition, the CAP model is in need of improvement and testing in a variety of online learning environments (Edmundson, 2004), providing an excellent opportunity for DBR research in an authentic setting.

The study, taking place in an authentic online educational setting, was expected to help improve the current state between researchers and practitioners within the context of multicultural online classrooms. Rose (2005) argued that more studies about the instructional design of online courses for diverse groups of learners are needed to make sense of the variety of cultural perspectives in practice. Moreover, it is not only important to develop studies addressing the pedagogical concern, but also studies that consider the instructional design embedded in the development of online education for multicultural audiences (Wang & Reeves, 2007).

Definition of Terms

Culture- Refers to the integrated patterns of human knowledge, beliefs, and behaviors learned and transmitted through generations (Hofstede & Hofstede, 2004). Culture is considered to include the customary beliefs, social forms, and traits such as race, religion, social orders, and ways of perceiving and living life. It is the shared set of attitudes,

values, goals, conventions, and practices associated with a particular group of people (Merriam Webster Dictionary, 2007).

ADDIE model- An acronym referring to the major processes that comprise the generic instructional system design and development process: Analysis, Design, Development, Implementation, and Evaluation (Molenda, 2003).

CAP model- Edmundson's Cultural Adaptation Process Model (Edmundson, 2007).

DBR- Design-Based Research. A "systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (Wang and Hannafin, 2005, p.6).

Level 3 online module- Closely related to a constructivist-cognitive paradigm. The content includes some soft skills, complex knowledge, or presentation skills. The media used to deliver the content will probably be in the range of threaded discussions, online chats, or other online communication and presentation tools (Edmundson, 2007).

MCM- Henderson's Multiple Cultures Instructional Design Model (Henderson, 2007).

Needs analysis- In this phase, the instructional designer examines the specific needs of the students, determines the standards and competencies they should demonstrate after instruction, and what they bring to the course.

Online module- A single educational module or unit of an online course. An online module may be comprised of a particular section of the course.

Perceived learning outcomes- The online students' perception about how much they learned from the course.

Delimitations

In this study, the CAP model was applied and tested in a real-world setting. This application classifies the DBR study as Type II, where the conclusions may only be generalized at the model level. Therefore, conclusions and results are expected to only apply to situations that are similar to the current study and apply the same cultural adaptation model. Therefore, generalizing statements can only be made in terms of similarity of situations or settings.

Limitations

Design-Based Research studies present several challenges. First, it is considered an immature methodology by some researchers (Wang & Hannafin, 2005), although very similar methods have long traditions in engineering and other technology related fields. In addition, because DBR studies generate considerably large amounts of quantitative and qualitative data from numerous sources, some researchers worry about selection bias in choosing what to analyze (Dede, 2004). One way to control this issue is to keep a weekly journal in which the researcher annotates observations, problems encountered, developments, and results by week to keep track of the data collected by stages to help report and analyze it without losing information in the process. The journal also provides an audit trail for expert evaluation of decisions made during the development and analyses stages of the research study. In the context of this study, all the data collected was reported in its entirety for the reader's scrutiny.

The procedures for the identification of cultural diversity also cause a limitation to the study. In the case of the CAP model, cultural diversity is measured only through the

critical and assistive cross cultural dimensions of the participants and their nationalities. This model presents a very narrow approach to detect cultural diversity in an online course, especially when online students might face challenges such as screen layout, colors, and other types of problems that are of known relation to cultural issues in online learning. However, one of the researcher's intent is to test the CAP model as it has been developed by Edmundson in an authentic setting and find possible improvements to the model.

One more limitation could be researcher bias. One possible way to bring bias into the study might be in the identification of the cultural values of the course and the process of evaluating the online module with the rubric. In this study, the researcher confirmed her pre-evaluations with independent experts and did not post-evaluate the online module with the rubric to avoid introducing bias into the analysis of the identification of the course module cultural dimensions and improvements.

Another challenge is the control of the variables. Being conducted in real-life learning situations, researchers of design based studies make no attempt to hold variables constant (Collins, Joseph, & Bielaczyc, 2004). Many extraneous variables that may affect the success of the design cannot be controlled. However, one of the goals of DBR is to identify all variables and characteristics of the situation that impact any dependent variables of interest (Collins et al., 2004).

Chapter 2: Literature Review

In the present study, the ADDIE instructional design model was applied in alignment with Edmundson's Cultural Adaptation Process model research framework, adhering to a Design Based Research methodology, to apply appropriate cultural adaptations to an online module. This chapter presents the body of research relating to culture and online learning design and development, Henderson's Multiple Cultures and Edmundson's Cultural Adaptation Process models, along with a description of the course levels, the ADDIE model within the context of the present study, and Design Based Research characteristics and expectations.

Culture and Instructional Design for Online Learning

With globalization, the students enrolling in online courses are becoming increasingly more diverse in terms of culture (Wang & Reeves, 2007). The instructional technology field is currently concerned with the implications of globalization and diversity for instructional design (Richey, Klein & Nelson, 2003). Learning to communicate with another culture requires awareness, knowledge, and understanding of cultural differences, as well as the skills to put that knowledge to use in encounters between local teachers and foreign students and/or encounters between foreign teachers and local students in online learning (Hofstede & Hofstede, 2004). As Dunn and Marinetti (2007) said, it is important to consider all levels of culture in the instructional

design of online courses, not just the more obvious or superficial ones. Understanding detailed but superficial variations at the levels of symbols is a necessary condition, but does not provide a sufficient knowledge base for instructional design.

Culture. There are many different definitions of culture, with variations based on the author's point of view in terms of sociology and anthropology. As defined by Hofstede and Hofstede (2004), culture is the collective software of the mind that distinguishes the members of one group or category of people from others. Such mental programming refers to the integrated patterns of human knowledge, beliefs, and behaviors learned and transmitted through generations. Culture comprises symbols, social orders, attitudes, goals, practices and values. Hofstede noted that our mental software affects instructional materials, processes, expectations, and cognitive abilities, in the sense that each culture may emphasize knowledge that may be irrelevant in another culture.

Problems can arise when one considers the different dimensions of diversity that learners, instructors, and instructional designers bring with them to the course, i.e. behavior, expectations, roles and relationships, language and communication patterns, learning styles, and other culturally embedded traits (Bentley, Vawn-Tinney, & Chia, 2005; Kondratova, Goldfarb, Gervais, & Fournier, 2005; Morse, 2003; Rogers, Graham, & Mayes, 2007; Selinger, 2004; Sieffert, 2006). Such dimensions of diversity could impact the effectiveness of online courses in terms of perceived learning outcomes, satisfaction with the course, and motivation. If the influences that culture exerts on the learning and teaching processes are not studied, then instead of providing increasing

opportunities to distance learners through online learning environments, we may create new barriers to their academic success.

Students' motivation, participation, and communication patterns are based on their cultural background (Sieffert, 2006). Attrition rates, feelings of alienation, and silenced learners are becoming common problems with diverse online learners (Rovai, 2007; Rovai, & Wighting, 2005). Such problems might be alleviated if cultural differences are taken into consideration in the design and development of online courses.

Hofstede cultural values or dimensions. Online learning institutions have the capacity to receive students from any part of the world, making the online classroom a multicultural educational setting. Hofstede's (2001) seminal study of cultures in organizations has been used as a base for various publications on multicultural online learning environments (Bentley, et al., 2005; Kondratova, et al., 2005; Morse, 2003; Rogers, et al., 2007; Selinger, 2004; Sieffert, 2006, Tapanes, et al., 2009). However, few of those publications are research studies. Given that values, or dimensions, are the most constant element of culture, Hofstede recommends that research in culture must focus primarily on studying the cultural dimensions or values. He identifies four dimensions of culture and their relation to educational settings: *collectivism vs. individualism, uncertainty avoidance vs. uncertainty acceptance*, *power-distance*, and *femininity vs. masculinity*.

Based on Hofstede's definition, *individualistic societies* refer to cultures where the ties between individuals are loose, meaning everyone is expected to look after themselves and their immediate family. It is commonly referred as a loosely knit social framework. *Collectivist societies* refer to cultures where individuals are integrated into

strong and cohesive groups based on protection and loyalty. Such groups compose a tight social framework where people from the inside and the outside of the group are easily distinguished. Learners from collectivist societies regularly speak up in small groups and are expected to learn how to perform tasks, whereas, learners from individualist societies generally speak up in large groups and are expected to learn how to learn (Sieffert, 2006).

Hall's concept of low and high context cultures is very similar to Hofstede's individualism-collectivism cultural dimensions. People from *low context cultures* tend to be individualistic and explicit, allowing words to carry most of the meaning. On the other hand, people from *high context cultures* tend to be collectivist, and reliance on common understanding usually implies less need to be explicit (Rovai, 2007; Morse, 2003).

Based on Hofstede's definition, uncertainty refers to a society's tolerance for situations that are ambiguous, unknown, surprising, and unusual. People in *uncertainty avoiding countries* tend to have strict laws, rules, safety, and security measures. They usually believe that they have the absolute truth in philosophical and religious matters. Hofstede explains that these societies tend to be more emotional and motivated by inner nervous energy. Generally, countries that fall into this cultural dimension tend to avoid ambiguity (Selinger, 2004). Students from uncertainty avoiding countries tend to be comfortable in structured learning situations where teachers are expected to have all the answers.

On the other hand, *uncertainty acceptance cultures* tend to be more tolerant of differences in opinions and try to have as few rules as possible. At the philosophical and

religious levels, they tend to be relativist and allow for differences. People are more phlegmatic, contemplative, and are not expected to express emotions. Selinger (2004) related this type of culture to learners that prefer open-ended and unstructured learning environments. Selinger identified the influence of this dimension as an area of relevance to the design of e-learning materials. Tapanes, et al. (2009) studied the uncertainty avoidance/uncertainty acceptance dimension in relation to diverse online learning environments, particularly looking at e-learning courses created within the uncertainty acceptance/individualist cultural framework (majority culture) where learners from uncertainty avoidance/collectivist cultures (minority culture) are increasingly registering.

The *power distance* dimension was defined by Hofstede and Hofstede (2004) as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (p.46). Students from small power distance countries tend to treat teachers as equals, viewing them as experts who transfer impersonal truths. Students are expected to take the initiative in class, and the quality of learning depends on two-way communication and the excellence of the students. On the other hand, students from large power distance cultures tend to give teachers the utmost respect even outside the class, viewing them as experts who transfer personal wisdom. Teachers take the initiative in class, and the quality of learning depends on the instructor's excellence.

The *masculinity* dimension refers to how assertive or modest a culture is (Hofstede & Hofstede, 2005). For instance, excellent students from masculine cultures tend to receive praise from their teachers, while teachers in feminine cultures tend to praise weak students. Friendly teachers in feminine cultures are appreciated, while

brilliant teachers in masculine cultures tend to be admired. In masculine cultures, student failure in school is perceived as a disaster, while in feminine cultures it tends to be perceived as a minor incident.

Online learning and culture. One foundational principle of online education is that it can be designed to provide educational opportunities responsive to the needs of different students, including the culturally diverse (Wang & Reeves, 2007). However, guidelines should be provided to practitioners to help them successfully integrate culturally relevant factors in the design and development of online courses.

Wang and Reeves (2007) principles. They postulated that only a few instructional technology researchers have incorporated cultural dimensions in their studies. Moreover, there is a greater and more important problem, namely, the lack of research investigating the connections between the students and practitioners' cultural dimensions and the design of effective online instruction.

Based on an extensive literature review, Wang and Reeves (2007) presented a compilation of principles to guide the development of culturally-sensitive online courses for multicultural audiences. Based on the principles Wang and Reeves provided, a rubric (see Appendix D) was developed to evaluate the application of the CAP model to the online module under study. The cultural adaptations applied to the online course were evaluated and considered appropriate if the module presented half or more of the principles on each category (e.g., Pedagogy, Content, Technology, and Communications). These categories were derived for the present study from the principles compiled by Wang and Reeves (2007).

Multiple Cultures Instructional Design Model. Henderson's Multiple Cultures Instructional Design Model (MCM) provides strategies to develop e-learning for local, national, and international online learning settings. The MCM served as the foundation for the development of the CAP model, the model applied in the present study. The most important lesson to be learned from the MCM is the importance of recognizing the value in the multicultural practice (Henderson, 2007). The MCM stipulates and encourages the integration of various cultural value systems to maximize equity in online learning, i.e., maximizing the learning outcomes for all students, international or not.

The MCM draws from the needs analysis to inform the integration of culture into the instructional design. However, this practice is not meant to limit the students to their preferred learning styles or modes of presentation of the course material. Instead, it is meant to teach and guide them to learn and master new modes of course presentations and assessments over time (Henderson, 2007). In the previous chapter, a summarized version of the MCM model was presented in Figure 1. The complete graphical version of the model is presented in Figure 3.

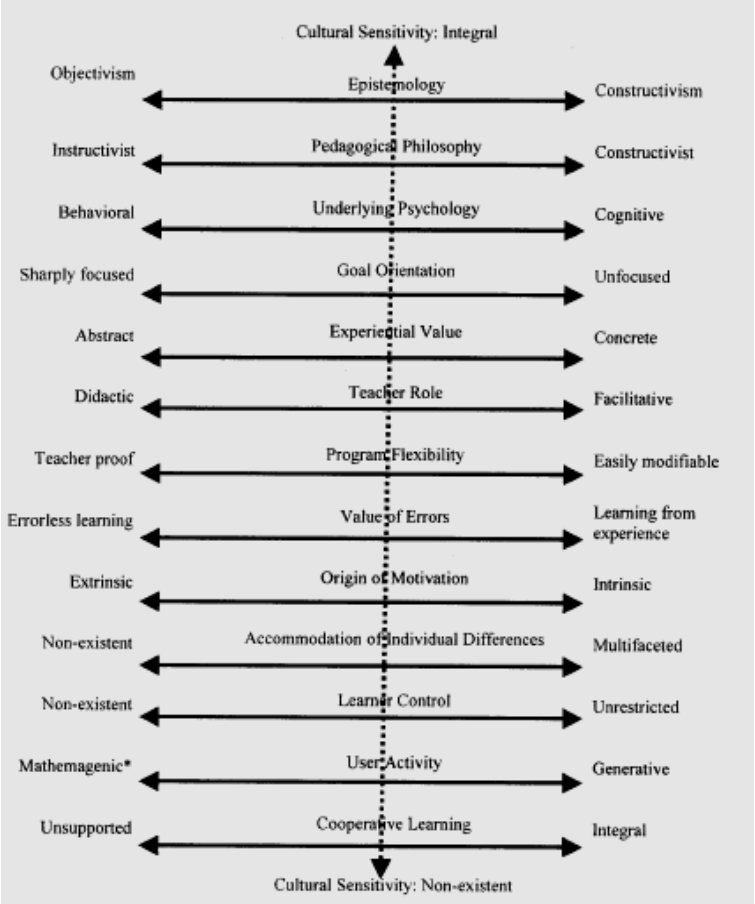


Figure 3. *Henderson (1996) Multiple Cultures Model*

Cultural Adaptation Process Model. An e-learning course is a cultural artifact, being influenced by the culture of the instructor or instructional designer who develops it. Thus, the Cultural Adaptation Process (CAP) model was developed to help practitioners test their assumptions and challenge their accustomed cultural values (Edmundson, 2007). As established by Edmundson, learning styles are affected by culture and thus should be considered in the instructional design and development process of an online course. The main idea behind the CAP model is to apply the necessary educationally relevant cultural adaptations, while avoiding unnecessary and costly adaptations.

Based on Edmundson studies, Level 1 courses, such as those that teach technical content, are less expected to require cultural adaptations since they seem to be mostly culture-free. Online courses that present simple knowledge and concepts that are more closely related to an instructivist-objectivist pedagogical paradigm are classified by the model as Level 2. Level 2 courses may use audio-conferencing and satellite broadcasts for their media and may include translation and localization techniques. Localization techniques may require planning and developing the presentation of concepts in accordance with the students' culture in terms of examples and practice exercises.

A Level 3 course, like the one considered in the present study, is more closely related to a constructivist-cognitive paradigm where the content includes some soft skills, complex knowledge, or presentation skills. The media used to deliver the content was in the range of threaded discussions, online chats, or other online communication and presentation tools. From the CAP model, it was expected that the course module selected for the study would need modularization strategies for its adaptation, which means creating different modules to provide a variety of opportunities, using different instructional strategies and tools.

A Level 4 course, as classified by the model, will consist of mostly soft skills, attitudes, and beliefs. Level 4 courses may present unfocused goals and high context communications within a constructivist-cognitive pedagogical paradigm. Media for Level 4 courses may be comprised of video-conferencing and web-based training. Because Level 4 courses tend to be the most closely related to critical cultural factors, origination of the online course may be the appropriate adaptation strategy. Origination

implies developing the course directed specifically to the particular culture of the intended audience.

However, in a real educational setting, the levels, pedagogical paradigms, and media implementation can be considered as part of a continuum, allowing for overlap of methods, educational strategies, and media. A Level 1 course may draw from a Level 2 media or paradigm and vice versa. A Level 2 course may employ lectures and handouts (Level 1) as the media to teach cognitive hard skills with behavioral objectives and sharply focused goals (Level 1). The same overlap occurs with Level 3 and 4 online courses. A Level 4 online course may, in a real setting, use threaded discussions or online chats (Level 3) to teach mostly soft skills. In essence, the level might not necessarily determine the pedagogical paradigm or the media. However, it is important to keep in mind that if movement between paradigm or media classification occurs, then the recommended adaptation strategies will also move to that level.

Critical and assistive cross-cultural dimensions. The critical cross-cultural dimensions of e-learning appear to be closely related to the cultural dimensions found at the national level. Research indicated that a user's cultural profile will dictate what they are likely to prefer with respect to these dimensions (Edmundson, 2007). Critical cross-cultural dimensions are: cooperative learning ranging from unsupported to integral, origin of motivation from extrinsic to intrinsic, learner control from non-existent to unrestricted, teacher role from didactic to facilitative, and value of errors from errorless training to learning from experience (see Figure 2).

The assistive cross-cultural dimensions of e-learning are related to the potential preferences of the participants. Assistive cross-cultural dimensions are: user activity

ranging from mathemagenic to generative, experiential value from abstract to concrete, and accommodation of individual differences from non-existent to multifaceted. Assessing the participants' preferences before modifying or developing any e-learning course is important because these preferences are known to change based on variables other than cultural dimensions at the national level (Edmundson, 2007).

The ADDIE Model. In instructional design and development, many models are available for the development of instruction using technology. Within the context of this study, one of the most commonly used models, the ADDIE, was applied in alignment with the CAP model research framework adhering to a DBR research methodology to apply the appropriate cultural adaptations to the online module. ADDIE refers to the major processes that comprise the generic instructional system design and development process: Analysis, Design, Development, Implementation, and Evaluation (Molenda, 2003). In a recent DBR study, the ADDIE model was found to provide construct validity and a solid and flexible guideline to the development of an interactive web-based module (Singh, 2009). The ADDIE model is an iterative instructional design process. Thus, results from formative evaluation of the individual phases can lead back to any of the previous phases and the output of one phase becomes the input for the next phase (see Figure 4).

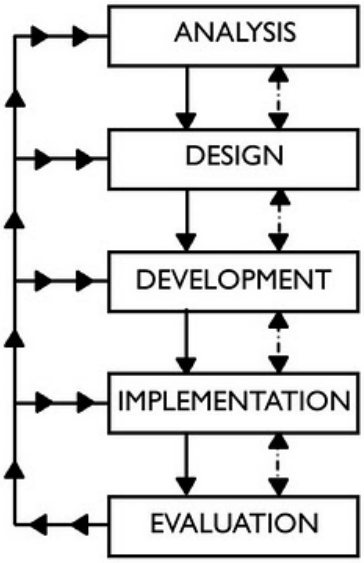


Figure 4. *The ADDIE Model (Grafinger, 1988)*

Analysis. During the analysis phase, the instructional designer focus is on the target audience to identify the needs and competencies of the students, identify the instructional problem, and determine the amount of instruction needed by analyzing the needs and tasks. Specifically, the needs analysis helps the instructional designer examine the specific needs of the students, determine what standards and competencies they should demonstrate after the instruction, and what they bring to the course. The designer then identifies the instructional content to be included in the course derived from the task analysis. The instructional analysis helps the designer to establish the content and amount of instruction needed from the information obtained through the needs and task analyses.

At this stage, the instructional designer also determines if variability exists among the e-learners, where some students may need more or different instruction (Peterson, 2003). In the case of the present study, the researcher sought to understand the

educational characteristics and preferences influenced by the culture of the online students. The CAP Model was applied at this stage to compare the characteristics of the targeted learners with the characteristics of the proposed e-learning course to identify potential adaptations. The application of the CAP model to the online module helped determine the characteristics of the online module as well as the critical/assistive cultural characteristics of the e-learners and instructor.

The needs analysis provided the information relevant for selecting the appropriate adaptation strategies to incorporate educationally relevant cultural characteristics in the instructional design of the online module. Wang and Reeves (2007) suggested conducting a comprehensive needs analysis to guide the design process and maintain flexibility through the implementation. They provided some questions that should be addressed in order to design culturally sensitive online courses:

- From where the course is originating?
- Who designed the course?
- Who are the students that are taking the course?
- Who is (are) the instructor(s) teaching the course?
- What is the nature of the content and to what degree is the content subject to different interpretations?
- What is the nature of the pedagogy used in the design of the course?
- To what degree does the pedagogical design accommodate cultural differences?

Design. Referring to the results from the Analysis phase, the instructional designer plans the instruction through identifying the objectives, determining how the objectives will be met, the instructional strategies to be employed, and identifying the

media and methods that will be most appropriate and effective for the delivery of the instruction (Peterson, 2003). Because the course module selected for the current study was a well-designed Level 3 online module, it was expected that the content required constructivist-cognitive instructional strategies with threaded discussions, list servers, online chat, and/or e-mail as the media. In essence, the design stage in the context of the proposed study addressed issues such as educationally relevant cultural adaptations and design improvements that were identified as needed from the analysis phase by the CAP model. Instructional objectives, being an otherwise well-designed course, stayed the same as before the cultural adaptations were planned and applied.

Development. Based on the previous phases, the instructional designer constructs a draft for the delivery of instruction. This stage transforms in part the role of the researcher to practitioner in production mode. Emphasis is given to drafting, production, and formative evaluations. Formative evaluations address the product quality and help determine if the e-learners will learn from the online module and how it can be improved before its implementation (Peterson, 2003).

During the development phase, the researcher integrated the cultural adaptations recommended by the application of the CAP model to the prototype and formatively evaluated if such adaptations were appropriate for the target audience. In addition, formative evaluations at this stage helped the researcher determine if the cultural adaptations would help the target audience learn better before their implementation.

Implementation. During the implementation phase, the researcher continued to analyze and redesign the online module to enhance the product. Tryout(s), evaluations, revisions and data from participants helped to inform the necessary

modifications to ensure effectiveness (Peterson, 2003). In the context of the present study, the researcher presented the proposed e-learning course module to a group of representative learners, following the CAP model research framework.

Evaluation. Formative evaluations occur during the entire ADDIE cycle with the collaboration of participants (i.e., students, instructor). A pilot test of the resulting course module with a sample of the targeted learners is conducted following the CAP model research framework. Summative evaluation occurs at the end of the implementation to determine if problems detected in previous stages have been solved, if the objectives of the course development/redesign have been met, the impact of the instruction, and necessary future changes (Peterson, 2003). In the case of the present study, the revisions stopped when the level of satisfaction with the course design and levels of motivation, based on questionnaires provided to the students, achieved a predetermined percentage.

Design-Based Research

Design-based research studies are recommended to help build the foundation for a robust framework to guide further development in diverse online learning environments (Bannan-Ritland, 2003 as cited by Wang & Reeves, 2007). In the context of the present study, the DBR methodology represents a series of similar approaches used in educational research such as: Design studies, Design experiments, Design research, Design-based research methods, Development research, Developmental research, Formative research, Formative inquiry, Formative experiments, Formative evaluation, Action research, and Engineering research (Singh, 2009). Reeves's (2000) diagram,

depicting the difference between empirical and developmental research, can be found in Figure 5.

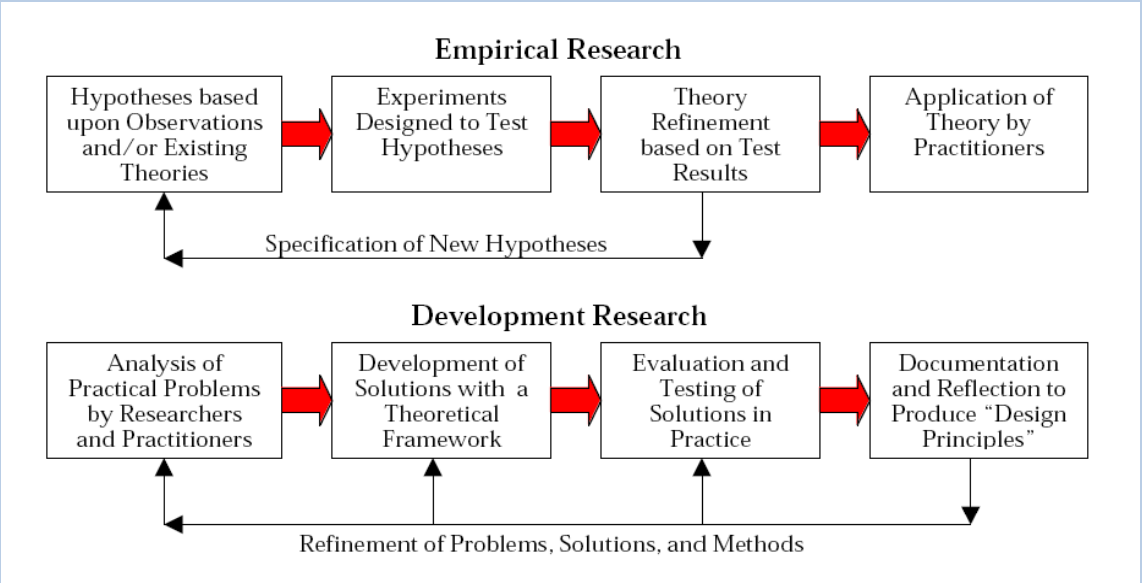


Figure 5. *Empirical and developmental approaches to IT research*

DBR Definition. Various researchers have defined DBR. Richey, et al. (2003) defined DBR as "the systematic study of designing, developing and evaluating instructional programs, processes and products that must meet the criteria of internal consistency and effectiveness" (p. 1099). Within the context of this definition, the researcher may study processes and their impact on development efforts, or may perform a development or evaluation where the researcher studies the instructional design, development, and evaluation processes as whole or particular parts of it. The purpose of DBR within this definition is to improve the processes of instructional design, development and evaluation, involving the production of useful knowledge for researchers and practitioners.

A more comprehensive definition that captures the characteristics of DBR studies was given by Wang and Hannafin (2005): DBR is a "systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p. 6). The authors explained that DBR studies require extensive literature review, theory generation, use of formative evaluations as part of the research methods, and frequently employ qualitative and quantitative data collection and analysis techniques.

Because DBR draws on the experiences of the researcher for the design, development, and data collection decisions, Wang and Hannafin (2005) also pointed out that DBR challenges the assumption that the research is to some degree contaminated by the influence of the researcher. In DBR studies, the influence of the researcher can be accounted for by providing all the relevant information that could be speculated to influence the research. The investigator must put forward on the report, through use of questionnaires and self-reflection, all of the relevant personal and professional information that may influence the research one way or the other, be cognizant of such influences, and compensate for that in the interpretations of the results.

It is relevant to note that, even when the DBR definitions involve instructional design stages such as analysis, design, development, implementation, and evaluation, the difference between DBR and the ADDIE process strives in the questions instructional design and DBR try to answer. Instructional design does not discover generalizable principles as DBR does. The intent of instructional design is to produce context-specific

solutions answering the question "how". The intent of DBR is to produce generalizable principles and theory in an attempt to answer the question "why" (Richey, et al., 2003).

DBR Characteristics. Reeves, Herrington, and Oliver (2005) urged researchers to consider the DBR approach as a more fruitful approach to instructional design and technology. DBR studies consist of a progressive refinement approach: generate a first version of the online module, evaluate formatively, and revise based on formative evaluation results and experiences until instruction works out the way it is intended or until predefined goals are met. Although some researchers may see the results of DBR as simple common sense for anyone with experience in educational settings (Dede, 2004), conscious decisions in the design process are necessary for the selection of strategies to be effective. In the context of online learning design and development, common sense decisions are biased by the instructional designer's own culturally-induced worldview, which may lead to problems in cross-cultural learning environments (Dunn & Marinetti, 2007).

One of the objectives of DBR studies is to create knowledge that practitioners consider usable, having a practical ends goal (van den Akker, 1999) that may provide ideas, suggestions, and directions for optimizing the quality of the intervention to be developed. This goal is achieved through giving DBR a developmental twist, focusing the research problem on a particular aspect of the design rather than focusing on particular variables or media. The other objective of DBR research is directed to scientific goals such as the generation, articulation, and testing of new design principles (van den Akker, 1999).

Another important characteristic of DBR studies is that they are conducted in authentic settings, thus, increasing the credibility of the results as well as the dilemmas encountered during research. In DBR studies, participants such as designers, developers, evaluators, instructors, and learners may be involved in model use and validation. The investigator reflects on the research and design decisions by judging the desirability, implications, and consequences, in addition to understanding new problems or potential issues the decisions may create (Richey, et al., 2003). Such decisions may include changes in research methodologies and procedures during the iterative research process.

Types of DBR. Type I DBR emphasis, also known as formative research, is to study a specific product or program design, development, or evaluation project. The research results are expected to give context-specific solutions where implications for similar situations may be discussed. Typical products of Type I research are lessons learned from the research, design, and development processes. Common research methodologies are interviews, questionnaires, observations, and logbooks (Richey, et al., 2003).

Type II DBR emphasis is on the study of the design, development, and/or evaluation processes, tools, or as in the case of the present study, models. The products of Type II studies may be new design, development, and evaluation procedures or models, as well as conditions that facilitate their use. The goal is to produce knowledge in the form of new or enhanced design/ development models and principles. The conclusions may be generalized at the model level, as opposed to a product or program level. However, generalizations must be made with caution since, as said by Cronbach

(1975), “when we give proper weight to local conditions, any generalization is a working hypothesis, not a conclusion” (p. 125).

Common research methodologies may include summative evaluation, classical experimental designs, quasi-experiments, needs assessment using qualitative approaches, as well as descriptive and structured survey methods. These methods may not tackle the entire design and development process in a comprehensive way, but usually concentrate on the detail of one or a few of the processes, as in the case of the CAP model that integrates into the needs analysis.

Expectations of a DBR Proposal. DBR studies are exploratory and sometimes speculative. Like developmental research, DBR begins with the basic assumption that existing practices are inadequate or can be improved (Edelson, 2006). Because DBR studies are explorative, developmental, and iterative, a definition of the precise steps for the study might be difficult to present at first. As said by Phillips (2006), “Design researchers, being good scientists whose focus is healthily much wider than mere hypothesis testing, cannot be precise about what they are going to do at the start of their work” (pp.96-97).

However, even though it might not be possible to define the exact research and development steps at the start, Phillips (2006) and Edelson (2006) provided some guidelines about what to include in a DBR proposal for funding or approval. DBR proposals should provide indication of the study’s anticipated contributions or purpose, present the body of research, and the researcher’s individual skills to support or warrant the claims. In addition, DBR proposals must promise to yield results that may help solve an important need or problem, be grounded in prior research or sound theory, have a plan

for systematic documentation, incorporate formative feedback into the iterative design and development plan, and allow for a process of generalization.

Summary

The instructional technology field is concerned with the implications of globalization and diversity for instructional design (Richey, et. al, 2003). One foundational principle of online education is that it can be designed to provide educational opportunities responsive to the needs of different students, including the multicultural online students (Wang & Reeves, 2007). However, guidelines should be provided to practitioners to help them successfully integrate culturally relevant factors in the online course design and development.

An e-learning course is a cultural artifact, being influenced by the culture of the instructor or instructional designer that develops it. The CAP model was developed to help practitioners test their assumptions and challenge their accustomed cultural values (Edmundson, 2007). As established by Edmundson, learning styles are affected by culture and thus should be considered in the instructional design and development process of an online course. The main idea behind Edmundson's CAP model is to apply the necessary educationally relevant cultural adaptations, while avoiding unnecessary and costly adaptations.

A Level 3 course, like the one considered in the present study, is more closely related to a constructivist-cognitive paradigm where the content includes some soft skills, complex knowledge, or presentation skills. The media used to deliver the content was in the range of threaded discussions, online chats, or other online communication and

presentation tools. From the CAP model, it was expected that the course module selected for the study would need modularization strategies for its adaptation, which means creating different modules or presentation modes to provide a variety of opportunities for learning the same course material using different strategies and tools.

In instructional design and development, many models are available for the development of instruction using technology. The ADDIE instructional design model was applied in alignment with the CAP model research framework adhering to a DBR research methodology to apply the appropriate cultural adaptations to the online module.

Wang and Hannafin (2005) defined DBR as a "systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories" (p. 6). Type II DBR studies emphasize the study of the design, development and/or evaluation processes, tools, or, as in the case of the proposed study, models. The products of Type II studies may be new or improved design, development, and evaluation procedures or models, and conditions that facilitate their use. The goal is to produce knowledge in the form of new or enhanced design or development models and principles, like in the case of the present study, the CAP model application to an online Level 3 module.

Chapter 3: Methods

In the present study, the CAP model was applied following the instructional design ADDIE model to a Level 3 online module within a Design-Based Research methodology. The research methodology provided the researcher with data from numerous sources. In this chapter, a definition of the research design followed can be found, along with population and sample descriptions. As part of the Stage 1, or preparation for the study, the online course selection criteria are detailed along with the instrumentation, validation, data collection, and data analyses procedures. The relevant variables are discussed in conjunction with the specific research questions they help answer. DBR validity and reliability issues are also discussed and the research timeline is explained.

Purpose

The purpose of the study was to assess the feasibility of applying the CAP model to culturally-adapt a Level 3 online module. This study was conducted with the intent to produce a module where all online students, including the culturally diverse, report positive attitudes towards the online module, high levels of motivation, and achieve equitable learning outcomes. In this way, it was expected that all learners be presented with culturally relevant alternatives within the course module to enrich their online learning experience. In addition, an interest of the researcher was to extract from the adaptation process relevant design principles that may prove useful for practitioners.

Research Questions

The research questions that guided the inquiry are restated for the reader's convenience:

1. What are the effects on the instructional design process of applying a systematic approach to the assessment, adaptation, and validation of a Level 3 online module in a higher education environment using the Cultural Adaptation Process Model to guide the development of a culturally-adapted and accessible e-learning module?
2. To what extent does the use of the Cultural Adaptation Process Model help to provide a culturally diverse range of learners the opportunity to achieve equitable perceived learning outcomes, satisfaction with the online course, and levels of motivation?

Research Design

The non-experimental developmental study made use of qualitative and quantitative data collection techniques within a Type II Design-Based Research approach. The basic goal was to produce knowledge in the form of an enhanced design/development model. In the present study, the Type II DBR emphasis was on the study of the design, development, and evaluation processes using the CAP model to culturally-adapt a Level 3 online module.

The study included a design component and a research component that integrated with each other. From an engineering perspective, the design component is inherently explorative and speculative (Edelson, 2006). The design is based on the assumption that current practices are inadequate or that such practices can, at least, be improved in real

settings. The research component studied the processes taken during the design and development of instruction. Therefore, the research component includes systematic documentation of decisions made, outcomes, use of formative feedback throughout the design process to improve instruction, and allows for possible generalizations to similar settings based on a particular product, or as in the case of the present study, a model.

Variables

The present DBR study, being executed in a natural setting, did not attempt to manipulate or hold variables constant. However, some variables were important to quantify and others were relevant to better understand the instructional design process and the participants' (students and instructor) points of view regarding the design and implementation of the CAP model to the selected Level 3 module.

Variables relevant to answer the first research question. Quantitative variables such as nationality, cultural values or dimensions, critical and assistive cross-cultural dimensions, course structural component, and cultural dimensions of the course influenced and guided the selection and application of the CAP model adaptations. In addition, qualitative variables such as the instructor's engagement in the process of culturally adapting the module, perception of the process and its importance, satisfaction with the product, and motivation were also relevant to answer the first research question of the study.

Nationality was an important variable within the context of this study. Participants indicated their nationality on a questionnaire (Appendix A-3). In addition, Hofstede's (2001) *cultural dimensions*, which have been identified to influence educational settings,

appeared on the questionnaire with items that were developed by Hofstede to identify how participants classified themselves. Hofstede's cultural dimensions that are relevant to educational settings are collectivism vs. individualism, uncertainty avoidance vs. uncertainty acceptance, power-distance, and femininity vs. masculinity.

The students' answers were grouped together according to the national level critical and assistive cross-cultural dimensions relevant to CAP model application to better select the appropriate cultural adaptations for the audience. The nationality of the researcher and instructor were also reported along with their national level critical and assistive cross-cultural dimensions.

The *critical cross-cultural dimensions* of e-learning appear to be closely related to the cultural dimensions found by Hofstede at the national level. Research indicates that a user's cultural profile will dictate what the participants are likely to prefer with respect to these dimensions (Edmundson, 2007). The critical cross-cultural dimensions are: cooperative learning from unsupported to integral, origin of motivation from extrinsic to intrinsic, learner control from non-existent to unrestricted, teacher role from didactic to facilitative, and value of errors from errorless training to learning from experience.

The *assistive cross-cultural dimensions* of e-learning are related to the potential preferences of the participants. Assessing the participants' preferences before modifying or developing any e-learning course is important because these preferences are known to change based on variables other than cultural dimensions at the national level (Edmundson, 2007). Assistive cross-cultural dimensions are: user activity from mathemagenic to generative, experiential value from abstract to concrete, and accommodation of individual differences from non-existent to multifaceted. Critical and

assistive cross-cultural dimensions were obtained using a quantitative questionnaire (Appendix A-3) where the participants selected from the nine cross-cultural dimensions of education identified by Edmundson on the CAP model.

The *structural component* was measured using Sandoe's (2005) structural component tool (Appendix A-1). Available online courses were evaluated to see if the course was well designed before the application of the CAP model to select an optimal course for the study. The course needed to be otherwise well designed to avoid extraneous influences in the results due to possible deficiencies in the design of the course previous to the application of the CAP model. Recall that the purpose of the CAP model is not to make the online course or module a well designed course, but to suggest relevant cultural adaptations to make the online course suitable for multicultural audiences.

The course module was analyzed using the CAP model to obtain the *cultural dimensions of the course*. These were obtained through a methodological analysis, following the CAP model, of the content type and examples, the pedagogical paradigm(s), and the media used to present the online module.

The *instructor's engagement* in the instructional design process of the cultural adaptation of the module, *perception of the process* and its *importance*, *satisfaction* with the product, and *motivation* to assist in the process were also relevant variables for the study. Qualitative data for these variables helped the researcher to understand better the practitioners' position regarding the application of the CAP model. Data were gathered through formative evaluations with informal and formal structured interviews and

conversations (by phone, e-mail, or E-*lluminate Live!*) throughout the analysis, design, development, and implementation phases of the instructional design process.

Variables relevant to answer the second research question. Quantitative measures were used to obtain data for the students' perceived learning outcomes, final scores, satisfaction, and motivation with the application of the CAP model to the online instruction. A post-module questionnaire (Appendix A-5) contained items to measure the students' perceived learning outcomes, satisfaction as demonstrated by positive attitudes towards the course, and levels of motivation in relation to the course's cultural adaptations. The students' final scores were retrieved from the learning management system at the end of the online module. In addition, qualitative structured interviews with a small randomly selected sample of culturally diverse online students enrolled in the course provided relevant information to better understand the students' view of the usefulness and appropriateness of the cultural adaptations made to the module based on the CAP model and further recommendations (summative).

Population and Sample

The sampling of courses assessed for structure was purposeful, which may limit the generalizability of results. The population of the study was comprised of the online students enrolled in online Level 3 (soft skills within a constructivist-cognitive approach) courses offered by USA universities. Although the sample and the research methodology does not allow for generalizations to the population, modest generalizations in terms of the model applied and similarity of settings may be made with the appropriate precautions.

In the present study, the researcher applied the CAP model research framework to a current online course module at a large South-Eastern research university in the USA. The university has a culturally diverse student population, which is a very important condition for the study. In addition, the university offers many online courses, including undergraduate, masters, and doctoral level courses, as well as degree programs, including baccalaureate, professional certificates, masters, and doctorates.

The sample was comprised of the online students enrolled in the selected Level 3 online course who were willing to participate, as well as the instructor and instructional designer involved in the development of the online course. In the course selected, the instructor was the instructional designer (ID-1) of the course. The researcher acted as the second instructional designer (ID-2), responsible for designing and implementing the cultural adaptations. It is important to note that the researcher was part of the design and development team for the application of the CAP model. Instructors were approached for permission to evaluate their courses to select an optimal course for the study based on the course selection criteria. Available online courses within the College of Education were evaluated on the basis of the following criteria to select a single, optimal course for the study:

1. The course must be at least 90% online to avoid extraneous influence of face-to-face interactions.
    a. The selected course was a graduate level course offered 100% online, with two E-*lluminate Live!* synchronous sessions.
2. Module or course implementation must meet the classification of at least as a Level 3 course in Edmundson's scale.

a. The content of the selected course included teaching and learning of soft skills and complex knowledge within a constructivist-cognitivist pedagogical paradigm.

    1. Candidate Level 3 courses or modules for the study were in the content areas of Instructional Technology, Multicultural Education, or other areas that allow for online open-ended discussion forums, presentation skills, and/or complex knowledge where the cultural values of the students were expected to be influential. The online course selected was the graduate level course Distance Learning/Research in Distance Learning.

3. The course must enroll at least 10 students with a highly multicultural makeup.

    a. An enrollment of 22 students was achieved. However, one important consideration is student enrollment in the course and their cultural makeup.

        1. Although it is common to find online courses with at least 30% from nationalities other than the USA, that was not achieved in this particular offering of the course where students who identified themselves as coming from other cultures only reached 14.3% of the sample. However, 41.2% of the students reported to be influenced by their parents' nationality, which was also considered a factor for the applicability of the CAP model to the setting. After the CAP model analysis, important adaptations were identified

based on educationally relevant cultural preferences gathered from the needs analysis data.

4. The online course or module must be otherwise well designed.
    a. The structural component of online courses was measured using the Sandoe's Structure Component Evaluation Tool (Appendix A-1) (Sandoe, 2005). A structurally sound e-course must score at least 51%. The course selected for the study scored 87.8%; therefore, it was considered well designed and suitable for the study.
5. The course selected was the one that balanced a high SCET score, higher enrollment, and the interest of the instructor(s) to be part of the study as practitioner and subject matter expert.
    a. Various instructors were approached to analyze their online courses. However, the course selected had the highest enrollment, highest SCET score, and the expressed commitment of the instructor to cultural diversity issues in education. The instructor's interest to participate in the study reflected that the instructor understands or has insight to the importance of the issue and is attracted to exploring practical ways of culturally adapting online courses. Moreover, the selected course included a section dedicated to the discussion of culture in online learning.
    b. The researcher did not take the course selected for the study at the university where the study was completed. In addition, it is important to report that the researcher did not know the instructor of the course

before the study started. The only interactions with the instructor were held during the progress of the study through phone and e-mail.

The instructor of the selected course agreed to participate in the study. The researcher collaborated with the instructor within the university to apply the CAP model to the instructional design of the module. The researcher then proceeded with the study, selecting an instructional module within that optimal course. From the course selected for the study, a single online module was implemented as a culturally adapted module, based upon the CAP model.

It is important to note that the researcher was part of the design and development team for the application of the CAP model. The researcher, in compliance with the DBR methodology, filled out a questionnaire that would identify her cultural values. This identification was expected to help in the interpretation of the results and to isolate factors that might have been influenced by the researcher's cultural background. Offering relevant information from the researcher may provide control for the influence of the investigator's cultural background to the study. Recall that DBR studies challenge the assumption that the research is contaminated by the influence of the researcher (Wang & Hannafin, 2005). To avoid contaminating the results of the study, the influence of the researcher's cultural background is presented clearly to the reader. In addition, being part of the design and development team as well as researcher, the investigator shifted from a dominant creative designer perspective in the early stages of the study to a critical researcher perspective in the later stages of the study (Plomp, 2007).

Data Collection Procedures

Savenye and Robinson (2003) said that data gathering methods can be combined in a study to enable researchers to enhance development in the field by yielding answers and understanding. In the case of the present study, data was collected in a natural online setting without intentional manipulation.

Quantitative data were collected online using the University Academic Computing Survey tool. Pre and post-questionnaires were uploaded and the URLs were sent to the instructor to post them in the course for the students to participate. The instructor was able to see the questions, but only the researcher saw the answers. The students entered into the online questionnaires (pre and post) their unique identification number. This helped the researcher to compare answers to the pre and post-questionnaires from the same student while avoiding knowing the name of the student. Because the instructor could not see the students' entries, the researcher sent a list with the numbers of the students who participated for the instructor to assign extra credit for their participation. In this way, the students' were assured that the instructor did not know their answers and they would be awarded full points for participation. In addition, the e-learners were guaranteed that the researcher will not and cannot track back the responses to any particular student.

The online questionnaires answered by the instructor(s) and instructional designer(s) were not anonymous to the researcher. However, confidentiality was achieved reporting the data as the instructor's data in the report of the study. Recall that the instructor was the instructional designer (ID-1) of the course and that the researcher was also an instructional designer (ID-2) for the purpose of designing and applying the

cultural adaptations to the module. The researcher's questionnaires are not confidential and are presented in detail in the report for the readers' scrutiny.

Interviews with the instructor and students were conducted and recorded online through E-*lluminate* V-Room. The students' identity on the qualitative interviews was held confidential, reporting data as student 1 and student 2. The same procedure was used to report data from the instructor interviews to ensure confidentiality.

IRB approval was sought to ensure that the appropriate university procedures for human research in education were followed. The participants were able to see the institutional approval for the study if requested. The researcher completed the Foundations in Human Research Protections institutional course.

Instruments, Measures and Expert Validation

DBR studies are characterized by a variety of data collection instruments, including quantitative, qualitative, and descriptive approaches. Thus, DBR studies are considered a methodology that produces extensive amounts of data. This production requires many tools to analyze the data in order to extract the most of it to inform the design, development, and improvement of the applied model for the purpose of increasing knowledge and informing practice.

SCET. The Structural Component Evaluation Tool was developed by Sandoe (2005) to assess the structure of an online course. Recall that the online module selected for the study should have been part of an otherwise well designed online course. Thus, the study's focus was on culturally-adapting a module from a course that was well

designed in order to yield results that were not contaminated by flaws in the instructional design of the course before the CAP model was applied.

SCET is an instrument containing 8 categories and 8 sub-categories made up of 47 descriptors. The main areas included in the instrument to determine course structure are given by the content organization, delivery organization, and course interactions organization. The raters using SCET rated each item according to the degree to which the elements were present in the online course: 0 for not evident, 1 for minimally evident, 2 for moderately evident, and 3 for fully evident. An online course with a SCET score of 51% and above can be considered structurally sound (Sandoe, 2005).

Psychometric qualities of the SCET tool include convergent and discriminant validation as well as internal and inter-rater reliability measures. Sandoe calculated Cronbach's alpha for each category of the SCET by comparing each of the three raters' categorical mean and for the overall internal consistency of the SCET by comparing the total scores. The total scores were computed by adding up the mean of each category. The smallest alpha was .85 for any category and the overall alpha was .98 (Sandoe, 2005). The instrument can be found in Appendix A-1. Two experts rated the course selected for the study and their scores were averaged. One expert rated the course module giving it 138 out of 156 possible points. The second expert rated the course 136/156. From these two ratings, it can be seen that agreement was found between raters. The average score was 137, giving the selected course a high score of 87.8%. The Distance Learning/Research in Distance Learning course was considered well designed and suitable for the study.

Questionnaires. Pre and post questionnaires provided quantitative information regarding the participants' cultural values or dimensions, perceived learning, satisfaction, and motivation. Data from the questionnaires allowed for identification of the educationally relevant cultural characteristics of the participants and allowed for useful comparisons of cross-cultural preferences in online learning environments.

In the case of the questionnaires administered to the students, the researcher was interested in comparing each participant's answers to the cultural values questionnaire offered before the student started the online module and the questionnaire answers after the student completes the online module. This comparison helped the researcher to find more significant interpretations of each student's preferences based on cultural values and to identify if some cultural adaptation occurred during participation in the online module. Recall that one of the purposes of the CAP model is to recognize the value in the multicultural practice and inclusive pedagogies, helping all students to culturally merge instead of capitalizing on their differences. All questionnaires were administered using the university Academic Computing online survey tool, considering the course is offered online.

Pre-module Questionnaire: Cultural Values and E-course Preferences. The pre-module questionnaire helped the researcher investigate the educationally relevant cultural characteristics of the targeted students. The questionnaire provided data to differentiate the characteristics of the targeted learners from the general population.

Gunawardena, Wilson, and Nolla (2003) noted that the solution to the problem requires using methods to understand how people define themselves, including the consideration of multiple perspectives, flexibility, variety, and going beyond simplistic

stereotyping. An online pre-module questionnaire was administered to the learners, instructor, and the researcher to understand how they defined themselves and to obtain their educationally relevant cultural values.

The instruments (instructor/researcher Appendix A-2 and students' questionnaires Appendix A-3) contain questions from Hofstede's Value Survey (Hofstede, 2008) about cultural values related to power distance, individualism-collectivism, masculinity, and uncertainty avoidance dimensions. These dimensions have direct implications on teaching and learning (Hofstede, 2008).

Hofstede Value Survey Module (2008) is a widely used validated questionnaire containing 34-items developed for comparing culturally influenced values of similar respondents from two or more countries, or sometimes regions within countries. Hofstede's survey allows scores to be computed in seven dimensions of national culture, on the basis of four questions per dimension for a total of twenty-eight items (Hofstede, 2008).

However, only four of the seven dimensions were identified by Hofstede as influential in educational settings, i.e. power distance (PDI), masculinity (MAS), individualism-collectivism (IDV), and uncertainty avoidance (UAI). Only questions for these four dimensions were included in the pre-questionnaire for the present study, for a total of sixteen questions taken from the original questionnaire. All of the questions related to those cultural dimensions are graded on the 5-point Likert-type scale (1 = of utmost importance to 5 = of very little or no importance, always to never, very good to very poor, or strongly agree to strongly disagree). Additional open-ended questions asked for demographic information such as the respondent's present nationality and

nationality at birth. Test reliability was calculated by Hofstede (2008) and reported using Cronbach's alphas for the four dimensions across 40 countries (39 for UAI, 33 for PDI because of missing data). The values, based on standardized items, were .84 for power distance, .77 for individualism-collectivism, .76 for masculinity, and .72 for uncertainty avoidance (Hofstede, 2008).

Additional questions, developed by Edmundson (2004), were added to the instrument. The questions are based on the nine cross-cultural dimensions of education identified on the CAP model. Edmundson made use of Henderson's MCM to develop questions that are expected to help determine the preferences of online students regarding the cross-cultural dimensions applied to educational settings. The cross-cultural dimensions were identified by Edmundson as: pedagogical paradigm (3 items), experiential value (2 items), teacher role (2 items), value of errors (2 items), origin of motivation (2 items), accommodation of individual differences (2 items), learner control (2 items), user activity (1 item), and cooperative learning (2 items). Edmundson's (2004) instrument presents the participant with two possible responses, from one extreme of the continuum to the other, for each item to indicate their preference for a characteristic or feature of the e-course. Although validity and reliability were confirmed with each set of questions representing one facet of a given cross-cultural dimension, the mean responses for the questions in each set indicated that the participants perceived them as different aspects of the dimension (Edmundson, 2004). Additional questions, such as age and level of experience with e-learning, were tested for reliability and validity in a pilot study. The combination of questions from the two research-based instruments was expected to

help identify the educationally relevant cultural characteristics of the participants and interpret in a more comprehensive way the results from the post-module questionnaire.

Post-module Questionnaire: Preferences, Perceived Learning, Motivation and Satisfaction. Questions from Edmundson (2004) that were part of the pre-questionnaire were presented to the students again following completion of the online module. The first part of the post-questionnaire was a repetition of the culturally-related learning preferences items included in the pre-questionnaire. This repetition was expected to help the researcher notice if the learners' culturally-based perceptions and preferences in online learning changed after being exposed to the online module. Details about these items can be found in the previous section.

Questions taken from the SUNY Learning Network Satisfaction Survey (Richardson & Swan, 2003) were part of the post-questionnaire, along with additional questions from Edmundson's instrument that are only relevant after the students complete the online module. From Edmundson's questionnaire, two questions refer to the students' perceived learning. These questions were validated in a pilot test. An additional question was designed to determine which features of the online module learners used and found effective (Edmundson, 2004). Recall that what a person finds an effective teaching and learning strategy has been found to be related to their cultural values.

Only the questions related to perceived learning and satisfaction were taken from the SUNY Learning Network Satisfaction Survey. The survey originally consists of 16 Likert-type items designed to assess the students' perceived learning and satisfaction with the course and instructor. These items use a six point response scale (1=strongly agree to

6=strongly disagree) prompting students to indicate the degree to which they agree with each statement. The survey also presents open-ended questions that were used as a guide to develop questions for the present study. The SUNY questionnaire was developed based on previous studies and research in the area of social presence in online learning. The authors did not report validity or reliability data.

Additional questions to answer the motivational part of the second research question were added to the instrument. These questions were intended to measure the motivational construct with respect to the cultural adaptations and their impact on the e-learners' retention to complete the online module.

The post-module questionnaire Preferences, Perceived Learning, Motivation, and Satisfaction can be found in Appendix A-5. Items from Edmundson's (2004) study are identified by an E and items from the SUNY Learning Network Satisfaction Survey are identified by SUNY to ease identification.

Expert Validation of pre and post-questionnaires

Before their release, the instructor/researcher pre-questionnaire, students' pre-questionnaire and the students' post-questionnaire were evaluated by two experts in the areas of instructional technology and multicultural education. Experts were instructional designers and faculty teaching instructional technology from multicultural backgrounds. Expert 1 nationality is Chinese while Expert 2 nationality is Trinidadian. Both experts completed their graduate degrees and work as instructional technology professors at American Universities. The group of experts represented at least two different cultures to

control cultural bias in the evaluation of the instruments, thus following Hofstede's recommendation regarding instrument development for multicultural studies.

Analysis of the experts' recommended improvements included evaluation and contrast of the changes proposed with the theory supporting the creation of the items. Details on the validation of the pre and post-questionnaires can be found in Appendix A-13 and A-14 for the pre-questionnaires and Appendix A-16 for the post-questionnaire. For the most part, the experts agreed with the classifications based on prior research (50% agreement or more). However, in the first round of validations, the pedagogical paradigm construct achieved 0% agreement between experts and prior classification. Therefore, a second round of validation was needed for these items and was sent to both experts to review again. Only Expert 1 replied to the second validation round by agreeing to the pedagogical paradigm classification after further definition of the construct. The experts did not suggest changes in terms of readability of the items and relevance. One of the experts suggested that in some cases a construct might help measure more than one construct. Each recommendation was analyzed and contrasted with the theory supporting each item. In some cases, the expert was able to see that an item could also help inform more than one construct. This information was taken into consideration when interpreting the results of the questionnaires.

Based on the responses to the question asking for the students' nationality in the pre-questionnaire, a question asking for the students' parents' nationality was added to the post-questionnaire to help interpret how that influence has impacted the application of the model and the findings of appropriate cultural adaptations. In addition, a question regarding the cultural adaptations applied was added to the questionnaire to help identify

how the students perceived the adaptations (i.e. “Select all that apply considering the cultural adaptations presented in the module: The audio presentation provided a ‘taught by an expert in the field’ experience, Posting my written assignment in the discussion forum provided me the opportunity to learn from my mistakes while helping me to improve it, The course module presented several learning activities, Having the opportunity to apply my existing skills and cultural values to the written assignment was important for me.”). Because these questions were developed after the validation procedures took place, no validation or reliability data can be reported on the items. However, Hoadley (2004) explained that to achieve systemic validity in a DBR study, the research methods needed for the study can be modified during the research stages as long as the results and the inferences we draw help to answer the original research questions.

Culturally Sensitive Online Instruction Rubric

The rubric (Appendix A-4) was developed by the researcher for the present study. The purpose of the Culturally Sensitive Online Instruction Rubric was to evaluate an online module before and after the application of the CAP model. If the CAP model was successfully applied, the online module would include at least some degree of the general principles compiled by Wang and Reeves (2007) in their extensive review of the literature from studies in the area of multicultural online learning.

The evaluators of the online module determined a score for each of the four sections of the rubric: pedagogy, content, technology, and communications. The evaluators were selected from current, advanced doctoral students from the Instructional Technology and Measurement/Evaluation programs. Each section presents the principles

that should be evident when evaluating the online module. The possible scores for each of the sections are: 3 for a module design that include all the principles, 2 for a module design that includes half or more of the principles but not all, 1 for a module design that includes less than half of the principles, and a 0 for a module that lacks all the principles. A section for additional comments by the evaluators was provided in the rubric.

Review data from the evaluation, from both before and after the cultural adaptations, were entered into a spreadsheet program where all scores assigned to each section reflected whether agreement was achieved for the revision of each particular category: pedagogy, content, technology, and communications. Any section that received a score below 2 (either 1 or 0) by the evaluators was deemed to need improvements before considered acceptable. A score of 2 or 3 was judged appropriate, meaning that the module design includes at least half or more than half of the principles for each category. An 80% agreement or more on each category was considered acceptable.

The researcher sought expert validations for the rubric before its use. Appendix A-15 presents the details of the expert validation. The experts, 3 from USA and 1 from PR-USA, helped to validate the rubric. Changes were made to the original classification and wording thereof according to their comments regarding confusion about what classification a principle fell into. For example, one principle that said, “Use simple sentence structures and clarify the level of English required” was divided into two principles in order to make evaluation with the rubric easier and avoid confusions.

Practitioners' Interviews

Formal and informal interviews and conversations with the instructor of the course participating in the study were conducted by phone, e-mail, and E-*lluminate Live!* This data collection provided qualitative information regarding the application of the CAP model to the online module from the point of view of the instructor. Interviews were expected to provide information regarding the instructor's engagement, perceptions, satisfaction, and motivation with the design and implementation processes, as well as with the final product. All interviews were conducted and recorded using online tools, considering that the course is offered online.

The summative semi-structured interview protocol can be found in Appendix A-6. It was estimated that the interview would take up to 15 minutes to complete. Examples of questions included in the interview are: "How did you perceived the CAP model application and adaptations?" and "How motivated are you to apply the CAP model to culturally adapt other online modules and courses in the future?"

Expert revision was sought to review the interview protocol for the instructor's structured interview. Details of the instructor's interview protocol validation can be found in Appendix A-17. In general, the experts agreed with the original classification for each question (the lowest agreement 67%). In the cases where the lowest rate of agreement was found, the expert suggested that the question addressed a construct that was not of interest to the present study. The total number of experts that helped to validate the interview protocol was 3 (1 from USA, 1 from Mexico and 1 from China). Unstructured interviews were expected to be part of the conversations between the researcher and the practitioner along the process of the CAP model application to the

online module. Therefore, validation for informal conversations was not considered necessary. The researcher included entries on the weekly journal that were part of the informal interviews to avoid losing information.

Student Interviews

Online structured interviews with a small *(N=2)*, randomly selected sample of culturally-diverse students enrolled in the course also provided relevant information regarding the usefulness and appropriateness of the cultural adaptations made to the module based on the CAP model and further recommendations (summative). All interviews were conducted and recorded using online tools, considering that the course is offered online.

The summative semi-structured student interview protocol can be found in Appendix A-7. It was estimated that the interview would take up to 15 minutes to complete. Examples of questions included in the interview are: "In general, what do you think of the cultural adaptations applied to the online module in comparison with the previous modules presented in the same course?" and "How satisfied are you with the culturally adapted module?"

Expert revision was sought to review the interview protocol for the students' semi-structured interview. Details of the students' interview protocol validation can be found in Appendix A-18. In general, the experts agreed with the original classification for each question (lowest agreement being 67%). In the cases where the lowest rate of agreement was found, the expert suggested that the question addressed a construct (Expert opinion) that was not of interest to the present study. One of the questions was

directed to the levels of motivation construct. However, one of the experts suggested that the question was more related to the satisfaction construct. In this case, the researcher continued to believe, based on the majority of votes, that the construct being measured was levels of motivation. However, considering that suggestion, careful analysis of responses may also help to inform satisfaction with the course since it is believed that the two constructs influence each other. The total number of experts that helped to validate the interview protocol was 3 (1 from USA, 1 from Mexico and 1 from China).

Weekly Journal

A weekly journal where the researcher annotated observations, problems encountered, developments, an estimate of time invested per stage, data from informal interviews with the practitioner, and results obtained by week helped to report all stages of the DBR process without losing track of valuable information. The journal also provided an audit trail for expert evaluation of decisions made during the development and analysis stages of the research study. The template used to fill out the information weekly is presented in Appendix A-10.

Additional evaluation instruments

Reeves and Hedberg (2003) developed instruments for the formative evaluation of interactive learning systems. The Implementation Log (Appendix A-8) and the Evaluation Report (Appendix A-9) helped the researcher to formatively evaluate the steps of the application of the cultural adaptations to the module.

DBR Validity and Reliability

Hoadley (2004) suggested that DBR could be seen in some regards as a more rigorous approach to research when compared to other approaches. He stated that DBR is "strong at helping connect interventions to outcomes through mechanisms and can lead to better alignment between theory, treatments, and measurements than experimental research in complex realistic settings" (p. 204). Such alignment leads to considerations of research validity and robustness. Based on Hoadley's definitions, possible validity and reliability issues follows:

- Construct validity- Hofstede recommends that a multicultural team must work together when developing an instrument that will be used to measure cultural constructs in order to create questionnaires that are nearly free of cultural bias. Detailed expert revisions of all the instruments in the study were sought to help ensure the measurements accurately reflected the constructs that the researcher expected to measure. The experts that helped validate the instruments used to collect data for the present study represented at least two different cultural backgrounds.
- Treatment validity- The online module was carefully aligned with Edmundson's CAP model in addition to Wang and Reeves (2007) recommendations based on literature and previous studies. After the researcher analyzed the course module with the CAP model, the analysis was sent to the instructor for validation. The instructor commented on the possible adaptations, helping to decide which adaptations were going to be implemented within the module. In addition, after the module was culturally adapted, the instructor filled out the Evaluation Report

to help validate if the module presented the appropriate adaptations based on the CAP model analysis output.

- Consequential validity- The researcher's interpretations and understandings of the results were contrasted to other possible expert interpretations to identify biases and improve applicability of the results to future practice and implementations.
- Systemic validity- Hoadley (2004) identified systemic validity as the type of validity that DBR is really trying to achieve. As he said, true systemic validity helps us inform our theories, which in turn inform our practices. To achieve systemic validity, the appropriate research methods needed for the study may be modified during the research stages as long as the results and the inferences we draw help to answer the original research question. Changes to the students' post-module questionnaire were made to aid the interpretation of the CAP model and the application of cultural adaptations. These changes comprised of adding two questions: one regarding the students' parents' nationality and the second regarding the students' reactions to the cultural adaptations, both added to gain insight to the perceptions of the learners in relation to the applied adaptations.
- Robustness- The researcher was thoroughly attentive to details and causes of social phenomena, allowing the detection of barriers to producing an effective instructional environment and applying timely interventions.

Data Analysis and Interpretations

Data analysis integrated quantitative and qualitative techniques, as well as rigorous descriptions of the process of applying the cultural model to the online module. A description of the different analyses that were used to answer each specific research question follows.

First research question. To help keep track of the relevant information of the application of the CAP model, descriptive statistics, such as frequency counts and percentages, were considered most appropriate for the data collected from pre-questionnaires, e.g., nationalities, cultural dimensions, and critical and assistive cross-cultural dimensions of the participants. Regarding the structural component of the course, SCET yielded a percentage for each online course evaluated, being a tool in which a structurally sound course will have a score of at least a 51% score. In the selected course for the study, the cultural dimensions of the course were qualitatively described in the CAP model methodological analysis.

The researcher recorded the process of applying cultural adaptations to the module in a weekly journal. This practice supported self-reflection, annotation of observations, explanation of problems encountered, and developments. Using data reduction techniques, such as looking for patterns and relationships, in a recursive process helped to produce the observations from the data compiled in the journal. In addition, this practice provided an audit trail for expert review and evaluation of the decisions made throughout the design and development stages of the study.

Interview data and data entered in the weekly journal from communications with the practitioner were analyzed qualitatively, looking for patterns, themes, and

interrelationships. After the data were analyzed, the practitioner was asked to help review the presentation of the data and interpretations, in order to increase credibility and identify biases (member checking). Peer review was sought to check the validity of the interpretations. The peer was a recent graduate from the Instructional Technology doctorate program. The reports of qualitative data include direct quotations and frequency tables of themes, reported in order to provide the most relevant information for the reader.

The online course was evaluated using the Culturally Sensitive Online Instruction Rubric, which provided a score for each category including pedagogy, content, technology, and communications. These scores were interpreted using the principles provided by Wang and Reeves (2007). A score of 2 or more for each category indicated that some of the principles of these different areas were applied successfully to the online module.

Second research question. The post-module questionnaire contained items to measure the students' perceived learning outcomes, satisfaction, and levels of motivation in relation to the course's cultural adaptations. The students' final scores on the module were collected from the learning management system to help evaluate the product after the cultural adaptations were applied. Descriptive statistics, such as frequencies and percentages grouped by national categories, were applied to provide the information obtained from the related questions.

The researcher was also interested in looking for possible cultural adaptations that may have stemmed from the students' exposure to the online module. Questions from the pre-module questionnaire relating to the critical and assistive cross-cultural

dimensions as well as learning preferences were also included in the post-module questionnaire. This repetition was expected to help the researcher notice if the learners' culturally-based perceptions and preferences in online learning had changed after exposure to the online module. For this purpose, the Wilcoxon signed rank test was considered the appropriate method to search for statistical differences between the responses of participants in the pre and post questionnaire.

Interview data from a small, randomly selected sample ($N=2$) of students was analyzed qualitatively, looking for patterns, themes, and interrelationships. Although member checking is the best method for validating interpretations, this approach was not possible since the researcher did not have access to the students after the online module ended. Peer review was sought to check the validity of the interpretations. The peer was a recent graduate from the Instructional Technology doctoral program. The report on qualitative data included direct quotations and frequency tables of themes, to help present the most relevant information to the reader.

Pilot Study

In the case of the present study, a pilot study was conducted that was comprised of the ADDIE cycle and the CAP model research framework steps 1-4. The pilot study stage took 8 weeks to complete and consisted of the Research Procedures Steps 4-12. The course module selected was the Module 5 Distance Education Delivery Methods. Since the pilot study was such a large and crucial part of the research study, and since most of the study data were collected during the pilot study stage, details of the pilot study are provided along with the results of each stage in the next chapter.

Timeline

The timeline for the study was planned with the advice of the researcher's major professor and in accordance to the CAP model research framework. Separate sections are assigned for each semester of the project according to the plan. For the first semester of the project, the preparation for the study, the course selection and the instrument validations took place. The second semester of the project included the needs analysis, the application of the CAP model to the online module, the pilot test, final study, and the data collection and analyses stages. Since the criteria for the adaptations were met, the third and fourth semesters of the project were dedicated to writing the results and conclusions in addition to the dissertation defense.

Summary

In this chapter, the research design was presented along with the population and sample descriptions. Stage 1, or the preparation for the study, was described in detail as is expected from the DBR nature of the study, along with the instrumentation, validation, data collection, and data analyses procedures. The variables were discussed in relation to the research questions they help answer. Validity and reliability issues of DBR studies were also discussed within the context of the present study.

Chapter 4: Results

Data were collected via pre and post-module questionnaires, an evaluation rubric, formal and informal interviews, the postings on the online discussion forums, and the researcher's weekly journal. The pilot study was comprised of the first CAP cycle within the ADDIE instructional design process and is described fully in this chapter. The reason for including the pilot study data and procedures description in this chapter is that most of the data from the adaptation process was collected during this stage. In addition, details not only of the pilot study but also of the final study are an expected output of the present Design-Based Research. The final study description and results are also included in this chapter along with analysis of the cultural adaptations of the module, the differences noticed by representative learners after the course module was culturally adapted, the presentation of the e-learning adapted module to the targeted learners, and summative evaluations that include the post-module questionnaires and students' and instructor's interviews.

First, the research procedures are detailed in an outline and summarized on a Research Diagram (Figure 6) for the readers' convenience. Then, a list of instruments grouped by stage and respective participants are provided in Table 1. From that point forward, procedures, descriptions, and data are grouped by stages, i.e. pilot and final study stages, to keep information concise and avoid repetitions. Each stage description includes details of the participants' demographics. A final CAP methodological analysis

table is also provided along with a summary of the measured impact after the module was presented to the targeted learners. Other expected outputs of the present DBR study, such as an estimate of the hours invested for each stage, are also included in this chapter. Answers to the research questions are presented at the conclusion of the chapter.

Research Procedures

Below is an outline of the steps followed to conduct the study. The pilot study and the final study took place in the fall of 2010. The preparation for the study, which was described fully in the previous chapter, lasted 8 weeks. The pilot study took 8 weeks while the final study took 7 weeks. For a graphical representation of the research procedures, please refer to Figure 6.

Stage 1- Preparation for the study

Step 1- Optimal course search, evaluations, and selection

- Level 3 100% online course
- Course selected, Distance Learning/Research in Distance Learning, was the one that balanced a high SCET score, higher enrollment, and the interest of the instructor to be part of the study as practitioner.

Step 2- Select optimal module, Distance Education Delivery methods, within the course selected

Step 3- Instruments Validation

- Culturally Sensitive Online Instruction Rubric
- Pre-module Questionnaire: Cultural Values and E-course Preferences, Instructor and PI

- Students' Pre-module Questionnaire: Cultural Values and E-course Preferences
- Post-module Questionnaire: Preferences, Perceived Learning, Motivation, and Satisfaction
- Interview Protocol for Instructor
- Interview protocol for Students

Stage 2- Pilot study

ADDIE Analysis Stage:

Step 4- Instructor and Researcher's critical and assistive cultural values identification

Step 5- Informal conversations with instructor

Step 6- Experts pre-evaluation of the course module with Culturally Sensitive Online Instruction Evaluation Rubric and determination of course's critical and assistive cross-cultural values

Step 7- CAP Model Application (Steps 1-3)

- Research at a high level the educational characteristics of the targeted culture
    - PI identified through the use of the Pre-module Questionnaire the online students' critical and assistive cultural values and e-course preferences
- Answer needs analysis questions from Wang and Reeves (2007) in order to design culturally sensitive online courses (see p. 36)
- Apply the CAP model to compare the characteristics of the targeted learners with the characteristics of the e-learning module. Identify potential adaptations.
    - PI determines course module's critical and assistive cross-cultural values, media, and pedagogical paradigm

- Compare course's critical and assistive cross-cultural values with students and instructor's cross-cultural values
- Determine cultural adaptations
- Send CAP model analysis to instructor with descriptions of possible adaptations to receive a formative evaluation about the need for adaptations in each case.

ADDIE Design Stage:

Step 8- Plan cultural adaptations

ADDIE Development Stage:

Step 9- Develop cultural adaptations

Step 10- Instructor formative evaluation report

ADDIE Implementation Stage:

Step 11- Implement cultural adaptations

- Implementation Log
- CAP model final part of Step 3- Apply potential adaptations.

ADDIE Evaluation:

Step 12- Formative evaluation of adaptations by representative learners

- CAP model Step 4- pilot test of the resulting module with a sample of representative learners.
  - Present the proposed culturally-adapted e-learning module to representative learners
  - Post-module evaluation of the course with Rubric and course module cultural values after adaptations

- Make changes to the adaptations if needed (second cycle of CAP and ADDIE)

Stage 3- Final study

Step 13- Analysis of representative learners' identification of course module cultural values after adaptations to see whether the cultural values of the online module changed after the adaptations.

Step 14- CAP model Step 5- Present the proposed e-learning module to the group of targeted learners.

- Make module available to online students
- Follow online forum discussions
- Follow written assignment discussions

Summative evaluations:

Step 15- CAP model Step 6 and 7- Measure pre-selected outcomes

- Obtain Online Students' Preferences, Perceived Learning, Motivation, and Satisfaction with the adapted module
- Wilcoxon signed rank test to search for differences between pre and post-module responses to critical and assistive cultural values
- Obtain final scores

Step 16- Conduct interview with instructor

Step 17- CAP model Step 7- Gather feedback from learners

- Conduct interview with randomly selected online students

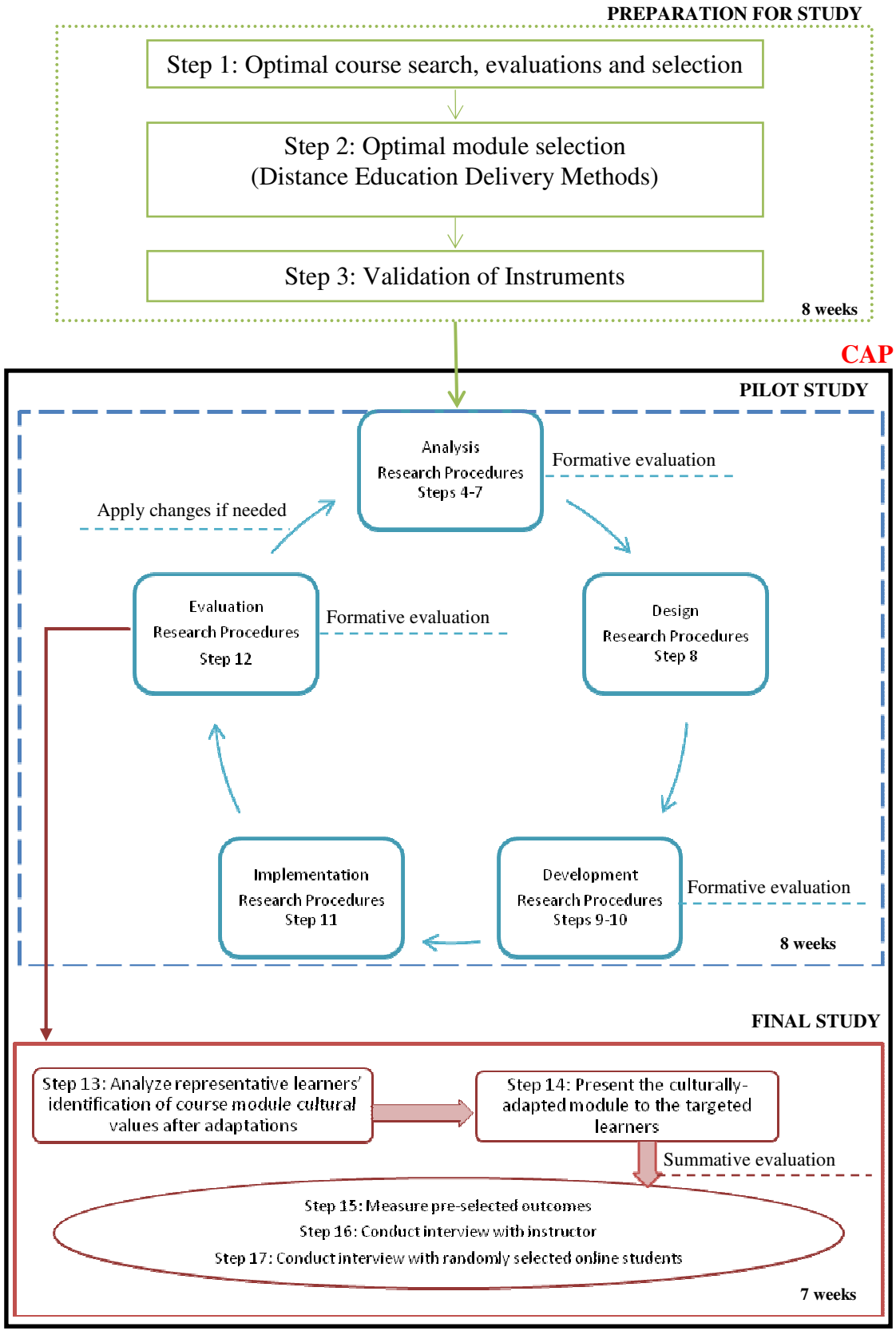


Figure 6. *Research Diagram*

For a summary of the instruments, steps they are related to, and participants please refer to Table 1.

Table 1

List of Instruments, Research steps and Respective Participants

Stage	Instrument Name	Steps of the study	Participants
Stage 1- Preparation for the study- Find optimal course	Structural Component Tool	Step 1	ID expert and PI
Stage 2- Pilot Study- Analysis	Pre-module Questionnaire: Cultural Values and E-course Preferences Instructor, ID and researcher	Step 4	Instructor and PI
Stage 2- Pilot Study- Analysis	Culturally Sensitive Online Instruction Rubric Instrument	Step 6	ID Experts and PI
Stage 2- Pilot Study- Evaluation		Step 12	Representative Learners
Stage 2- Pilot Study- Analysis	Critical and assistive cross-cultural values	Step 6	ID Experts and PI
Stage 2- Pilot Study- Evaluation		Step 12	Representative Learners
Stage 2- Pilot Study- Analysis	Needs analysis questions from Wang and Reeves (2007)	Step 7	PI
Stage 2- Pilot Study- Analysis	Pre-module Questionnaire: Cultural Values and E-course Preferences	Step 7	Online Students
Stage 2- Pilot Study- Implementation	Implementation Log	Step 11	PI
Stage 2- Pilot Study- Formative Evaluation	Evaluation Report	Step 10	Instructor

Stage 3- Final Study	Post-module Questionnaire: Preferences, Perceived Learning, Motivation and Satisfaction	Step 15	Online Students
Stage 3- Final Study	Interview protocol for Instructor	Step 16	Instructor
Stage 3- Final Study	Interview protocol for Students	Step 17	Online Students
Stages 1-3	Weekly Journal Status report		PI
Stages 1-3 Formative/ Summative Evaluation	Evaluation Matrix		PI

Description of the Pilot Study Stage

A pilot study was conducted that comprised the ADDIE cycle and the CAP model research framework steps 1-4. The pilot study stage took 8 weeks to complete and consisted of the Research Procedures 4-12.

Demographics. Demographics were gathered from the instructor and the researcher. The instructor is a male, between 18-29 years old, who lives and works in the USA, with about 5 years of online teaching experience (undergraduate and graduate), American, and born to Chinese and German parents. The PI is female, between 30-39 years old, born and raised in Puerto Rico, born to Cuban parents, and lives and works in the USA.

Table 2

Demographics for instructor and research (N=2)

Question	Categories	Percent in category
Are you:	1=male	50%
	0=female	50%
Your age is:	4=60 years old or older	0%
	3=between 50 and 59 years old	0%
	2=between 40 and 49 years old	0%
	1=between 30 and 39 years old	50%
	0=between 18 and 29 years old	50%
I live and work primarily in:	USA	100%
Nationality	USA-P.R.- parents from Cuba	50%
	USA- parents from Germany and China	50%

Twenty two students participated in the pre-module questionnaire. Their answers helped the researcher target the potential cultural adaptations necessary to improve the course module. The majority of the students were taking the course at the master level (81.8%), 13.6% at the graduate certificate level, while only one student reported taking the course at the doctoral level (Research in Distance Learning). The online students were highly educated English speakers. Many students reported to be experts in online learning (45.5%) while only a small number (9.1%) considered themselves as novices to online learning.

According to their responses, all of the students were born and have worked primarily in the USA. However, 14.3% of the students reportedly came from other cultures, such as Puerto Rican, German, British, Italian, and Native American. From the answers to the cultural dimensions questions, it was concluded that, as a group, students taking the course came from an individualist, mid to large power distance, assertive (masculine), and uncertainty acceptance culture. In addition, differences between

critical/assistive cross-cultural dimensions of the students and the online course were identified.

Even though a small percentage of students identified themselves in the pre-questionnaire as coming from cultures different than the USA, the researcher decided to continue with the DBR study. The rationale for this decision was that the study was conducted in an authentic setting that was not being manipulated. If the researcher were to be able to find possible adaptations to apply to the course, even with a small sample of diverse students, then the CAP model would be applicable to a broader variety of settings. In addition, the differences encountered among their reported critical/assistive cross-cultural dimensions and the course module's dimensions were also indicative of a possibility that other cultural differences were present, although not reported in the pre-questionnaire. This possibility was confirmed by adding a question in the post-questionnaire to ask for the students' parents' nationality, from which the researcher concluded that 41.2% of the students were descendants of parents coming from nations other than the USA. Details of the students' demographics can be found in Table 3 below.

Table 3

Students' demographics for the pre-questionnaire (N=22)

Question	Categories	Frequency	Percent in Category
Level	Doctoral	1	4.5%
	Master	18	81.8%
	Graduate Certificate	3	13.6%
Experience with e-learning	Expert	10	45.5%
	Average	5	22.7%

	Beginner	5	22.7%
	Novice	2	9.1%
Are you	Male	5	22.7%
	Female	17	77.3%
Your age is	60 years old or older	1	4.5%
	between 50 and 59 years old	3	13.6%
	between 40 and 49 years old	5	22.7%
	between 30 and 39 years old	6	27.3%
	between 18 and 29 years old	7	31.8%
What is your nationality	USA	19	86.4%
	USA-PR	1	4.5%
	German-Italian American	1	4.5%
	German, British, and Native American	1	4.5%
Nationality at birth if different	USA	19	86.4%
	USA-PR	1	4.5%
	German-Italian American	1	4.5%
	German, British, and Native American	1	4.5%
I live and work primarily in:	USA	22	100.0%

Description of the pilot study

The pilot study was a crucial part of the study where an expansive amount of data were collected to culturally adapt the online module. Since the pilot study included all the ADDIE phases within the CAP model research framework, details are provided, as expected from its DBR nature. Details provide all the information necessary for practitioners and researchers to execute the application of the ADDIE and CAP models to other scenarios following a similar methodology. In addition, the information provided is expected to increase knowledge and awareness in the area of cultural issues in online learning and how to culturally adapt online courses and modules to multicultural online settings. To guide the reading of the pilot study description, please refer to Figure 7.

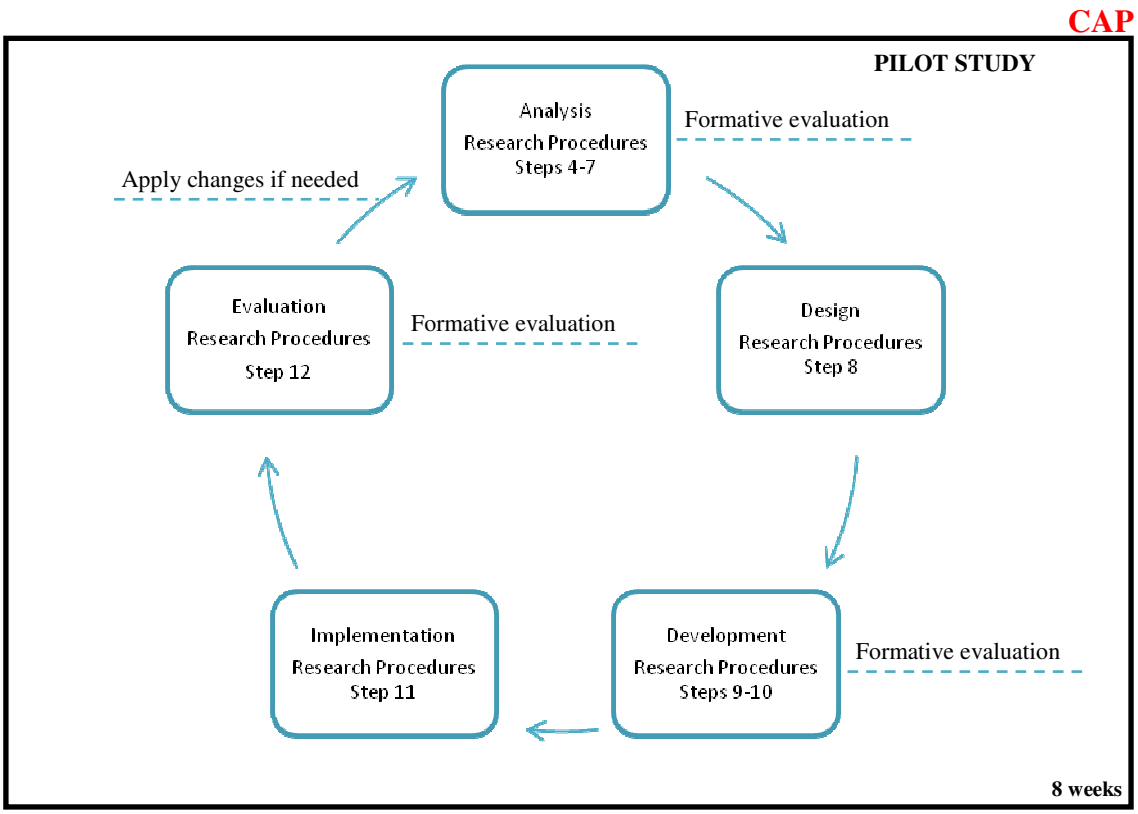


Figure 7. *Pilot Study Stages within the CAP model research framework*

Analysis Stage

Instructor and Researcher's critical and assistive cultural values identification. Before the beginning of the course offering, the instructor and the PI filled out the Instructor and Researcher's Pre-module Questionnaire: Cultural Values and E-course Preferences. The instructor, who, in the context of this study, is also referred to as practitioner or Instructional Designer-1, holds a doctorate in Instructional Technology and is a faculty member at a major research university in the State of Florida as well as an online instructor at the university where the study was completed. The instructor, after analyzing his answers to Hofstede's cultural values questions, and from his nationality, was considered to come from an individualist, mid-small power distance, assertive

(masculine), and uncertainty acceptance culture. The instructor is committed to addressing issues of cultural diversity in online learning environments; one example of this commitment was the inclusion of a discussion forum in one of the modules related directly to that theme.

The researcher, also referred in the context of the study as PI and Instructional Designer-2, is a doctoral candidate at the university where the study was conducted. Her first and second languages are Spanish and English respectively. The PI, after analyzing her answers to Hofstede's cultural values questions and from her nationality, was considered to come from an individualist, mid-large power distance, assertive (masculine), and uncertainty avoidance culture.

Informal conversations with instructor. Conversations with the instructor via e-mail and phone were held periodically throughout the preparation for the study, pilot study, and final study. Records of these conversations were added to the weekly journal. Initial conversations were related to details about the research, purpose, what was needed to evaluate the course and course modules, selection of the optimal course module for the study, pre-questionnaires, and pre-evaluations. During the pilot study, these communications turned into more specific requests such as: *"Hi…I think it is a good idea to create a copy of module 5 where I can implement the adaptations"* to which the instructor replied *"…I think you will have to work off the primary module"*. Informal communications with the practitioner were crucial for the completion and success of the DBR study.

Experts' pre-evaluation of the course module with Culturally Sensitive Online Instruction Evaluation Rubric and critical and assistive cross-cultural dimensions. The researcher and two other experts pre-evaluated the course module with the Culturally Sensitive Online Instruction Evaluation Rubric. The experts are advanced doctoral students from Instructional Technology (2) and Measurement (1). Expert 1 is from the USA, Expert 2 and 3 (PI) are from PR-USA. The researcher considered important the need to send the module to be pre-evaluated by independent experts to avoid bias in the pre-evaluation of the course module and to confirm her selections regarding scores and critical and assistive cross-cultural dimensions present in the course module. The Rubric pre-evaluation and the critical and assistive cross-cultural values identification took the researcher 1 and 3 hours respectively. The pre-evaluation instruments were sent to the experts and were returned completed 4 days after.

The Rubric pre-evaluation summary can be found in Table 4 below. Because the course module was part of a well designed online course, it was expected that it would attain high scores in all principles. The initial expectations of the course were, in fact, met.

Table 4

Rubric Pre-valuation summary (N=3)

Category	Scores			
	3	2	1	0
Pedagogy	0%	100%	0%	0%
Content	33%	67%	0%	0%
Technology	0%	100%	0%	0%
Communications	0%	100%	0%	0%

Legend:

3- Module design includes all the principles.

2- Module design includes half or more than half of the principles, but not all

1- Module design includes less than half of the principles.

0- Module lacks all the principles.

All evaluators agreed that the module design included half or more than half of the principles, but not all for each category. The researcher saw this agreement as a good result since the course module was a well designed course module to begin with. Only one expert gave a score of 3, module design includes all of the principles, for the Content category. Therefore, there was room for improvement since only one category was considered by only one expert to include all the principles. For that reason, even when the course module was considered to include the minimum principles to be considered a culturally sensitive online module, the researcher encountered an opportunity to improve

the scores to mostly 3's, module includes all principles, instead of 2's, module includes half or more than half of the principles but not all.

In addition, the experts provided comments that helped in the origination of ideas for the adaptations. The comments were summarized by Expert 3 (PI) in the comments column, which can be found in Appendix B-2. For instance, Expert 1 noticed that objective 2 and 3 lacked authentic learning activities, commenting that the activities consisted of the standard writing assignments. He suggested including directions to add a cultural value component to the assignment in objective 2, so that the students would have the opportunity to make it an authentic assessment related to their culture. In addition, Experts 1 and 2 suggested that the module lacked supplementary media and resources to complement the instruction in the technology category. For the communications category, they expressed that guidelines for communications were not present in the module. However, the comments by experts provided for the communications category were disregarded since guidelines for communications were available in the Discussion Rubric provided to the students at the beginning of the semester.

The critical and assistive cross-cultural dimensions were assessed by 3 experts as well as the researcher. Experts are advanced doctoral students in Instructional Technology (2) and Measurement and Statistics (2). Expert 1 is from the USA, Expert 2 is from Colombia, and Experts 3 and 4 (PI) are from USA-PR. Critical and assistive cross-cultural dimensions were sent to the experts along with the original module. After analyzing the module, the experts selected how they considered the module to be aligned with each dimension.

CAP Model Methodological Analysis and Application (Steps 1-3). In this section, details are provided regarding the CAP model application and the integration and comparison of the dimensions found in the course. First, the researcher identifies the critical and assistive cross-cultural values and e-course preferences of the students. Second, answers to the needs analysis questions proposed by Wand and Reeves (2007) are presented. Then, the CAP model application appears to compare the characteristics of the targeted learners with the characteristics of the e-learning module. Lastly, the possible cultural adaptations that were identified and sent to the instructor to obtain formative evaluation and comments that helped the researcher decide what adaptations were really necessary are presented.

Based on the students' pre-module questionnaire data, the researcher obtained the culturally relevant educational characteristics of the online students. The pre-module questionnaire data were obtained at the beginning of the course semester. For the CAP methodological analysis, it was of crucial importance to group the students' critical and assistive cross-cultural dimensions. Adaptations were considered for all categories that reached 30% or above in the case that those differed from the course critical and assistive cross-cultural values. Based on the gathered information from the course module, the students, and the instructor, Wand and Reeves' (2007) questions were answered as part of the needs analysis. The questions and answers are presented below.

- From where the course is originating? *USA- Florida*
- Who designed the course? *Instructor- from individualist, mid-small power distance, assertive (masculine), and uncertainty acceptance culture.*

- Who are the students that are taking the course? *Mostly American- from individualist, mid-large power distance, assertive (masculine), and uncertainty acceptance culture.*
- Who is the instructor teaching the course? *American, son of German and Chinese- from individualist, mid-small power distance, assertive (masculine), and uncertainty acceptance culture.*
- What is the nature of the content and to what degree is the content subject to different interpretations*? The content includes some soft-skills: complex knowledge, application problems, and online discussions.*
- What is the nature of the pedagogy used in the design of the course? *More closely related to a constructivist-cognitive paradigm.*
- To what degree does the pedagogical design accommodate cultural differences? *There seem to be needs that must be addressed with cultural adaptations based on rubric evaluations and pre-module questionnaire answers.*

The previously described analyses led the researcher to think it possible to find necessary cultural adaptations to culturally-adapt the selected online module, and the CAP model was applied. Many possible adaptations were found after the first methodological CAP model analysis (see Figure 8). However, after receiving a formative evaluation from the instructor regarding the identified possible adaptations, three adaptations were considered necessary. In the cases that no adaptation was deemed necessary, the adaptation is identified as none. Recall that the CAP model purpose is to help identify necessary adaptations. The needs were assessed by the differences between

the course and the students' critical and assistive cross-cultural values, comments from experts, and the instructor's feedback.

From the first CAP model methodological analysis, detailed in Figure 8 below, note that some adaptations are identified as none. If at least 30% of the students' culturally relevant preferences were different than the cultural critical and assistive values of the course module, then an adaptation was considered as possibly necessary. This percentage was sufficient to consider a need for at least a small group of students that were still in minority within the larger group. In such cases, feedback from the instructor helped to identify which adaptations were going to be addressed and which were not going to be considered relevant from the practitioners' standpoint. Recall that the study is done within a DBR methodology where the practitioners' point of view is acknowledged and considered a crucial part in the evaluation and success of the process. The CAP model methodological analysis was sent to the instructor with possible adaptations and, after receiving his feedback, three adaptations were considered necessary and appropriate.

Course module: Distance Education Delivery Methods *(N=22)*		
PILOT STUDY		
Module characteristics	Learner characteristics	Potential adaptations
Step 1: Evaluate content type and examples		
American English	English speakers, graduate IT students (graduate certificate *(3)*, master *(18)* or doctorate *(1)*)	**Adaptation:** None. The students are highly educated English speakers. The level of English is appropriate for the audience. Expert 2 from Rubric: "The level of English a little bit advanced for people who English is not the first language."
Soft-skills including, but not limited to (in discussion forum): Active online "listening", maintain meaningful discussion and debate, defuse arguments, emphatic communication, self-awareness, and establish rapport. ***Complex knowledge***: Application/writing assignment where the student selects a distance learning technology and describes an educational context in which the application is recommended.	Course evaluation: • Level 3 online course-module. • SCET score 88% > 51%. Well designed online instructional module. -Expert 1: 138/156 -Expert 2: 136/156 -Average: 137/156	None. **Adaptation [A]:** Include in the writing assignment instructions providing the alternative for the student's to apply their cultural values/beliefs in the assignment. See Expert comment below.

Note: The module includes a section of the group project. Because the group project is divided in parts that begun since earlier in the course, this section will not be taken into consideration for the analysis and module adaptations.		Expert 1 from Rubric: "Lacks in objective 2 (written assignment) authentic learning activities and tasks where the learners can apply their existing skills and cultural values."
Step 2: Identify pedagogical paradigm, include instructional methods, activities, and so forth		
Constructivist/Cognitive Online forum discussions, application of complex knowledge writing assignment. • Course provides a well-defined logical path to learn what the students need to learn. • The course module presents objectives, pre-determined learning goals. • Students' learning is assessed with questions that are based on the stated goals and objectives of the course/Written assignment present an opportunity for application.	• Level 3 online course-module. 22.7% prefer to explore different paths to learn what they need to learn. 22.7% prefer to learn as they go, depending on their own learning goals. *68.2% prefer to be tested by applying what they have learned from the course to different situations.*	**Adaptation:** None. **Adaptation:** None. The written assignment provides the opportunity to apply what students have learned to a practical setting.
Step 3: Identify media		
Threaded discussions, e-mail	• Level 3 online course-module.	None.
Step 4: Identify national level cultural dimensions of the learners and critical cross-cultural dimensions of the course module **(values >= 30% will indicate the need for adaptations)**		
• Cooperative learning: integral (work with a group on activities or projects-online forum/ collaboration with classmates-online forum). Learning from instructor and classmates. • Includes a writing activity where the students work individually.	*77.3% students prefer to learn directly from the instructor* *90.9% students prefer to work on activities or projects by themselves rather than in groups.*	**Adaptation [B]:** Modularize- create learning object to supplement. -Develop an introductory lecture (audio presentation) explaining what the instructor is presenting in the module and a summary/ overview of the key points of the assignments. Instructor: "This is an interesting note. Since the course is facilitated online, there is more learning from the student-to-content exploration than from the instructor in this course. Of course, the instructor selected the materials, so there is a relationship there I suppose." **Adaptation:** None. The students have the opportunity to work individually on the written assignment. See instructor's comment below. Instructor: "There is a group project that all will have to complete."
• Origin of motivation: Intrinsic/Extrinsic (Elective e-learning course/The students are told what they need to learn. However, the written assignment provides the opportunity to decide the application and what distance learning technology to study in depth to apply in the assignment.)	9.1% students reported to take e-learning courses when required to. *36.4% students reported to prefer e-learning courses in which they decide what they need to learn.*	**Adaptation:** None. Students have the option in the written assignment to select the distance learning technology they want to focus on to apply in a setting.

• Learner control: Non-existent to unrestricted (deadline or timed activities/ the course features that will help the student learn the material are chosen by the instructor or course designer with some application options provided to the students)	*50% reported to prefer when they can control the pace of learning.* *31.8% reported to prefer when the course features that will help them learn the material are chosen by them.*	**Adaptation:** None. Students can pace their learning in this course to a certain limit, where the deadlines apply. See instructor's comments below. Instructor: They do have some control, but ultimately, they must complete the activities in the prescribed format and within the time limit. **Adaptation:** None. The written assignment allows some liberty to choose from a variety of distance learning technologies to write about in an application. In addition, the online forum allows the students to select the question they want to answer.
• Teacher role: Didactic/facilitative (path of learning determined by the instructor/ students are guided by an instructor who shows them how to learn what they need to learn)	*31.8% prefer a path of learning determined by them.* *45.5% reported to prefer to be taught by an expert in the field on what they need to learn rather than guided by an instructor who shows them how to learn what they need to learn.*	**Adaptation:** None. The path is established by the instructor and ultimately, there needs to be some control over what and how the students learn from the course. **Adaptation: See adaptation [B].** The audio presentation should provide a "taught by an expert in the field" experience. Instructor: "This course is more of a guided exploration of distance learning."
• Value of errors: learning from experience (learning from errors and instructor/the course designer is satisfied if the students learn from their mistakes)	18.2% reported to learn until they make no errors on the test. *50% reported to think that the instructor is satisfied if they take a test without mistakes rather than learning from their mistakes.*	**Adaptation [C]:** -The students will post (half-way into the module) their written assignment in a new discussion forum for others to see and critique. As part of the written assignment, all students will be asked to review a peer's posted work and provide meaningful constructive and literature-based critique that will help a peer to make further improvements to the assignment before official submission, while allowing students to learn from their mistakes since the postings are open to all students to review, with instructor's supervision. Instructor: "I prefer that they learn from their mistakes. You tend to learn more that way I think."
Step 5: Identify national level cultural dimensions of the learners and assistive cross-cultural dimensions of the course module		
• User activity: Mostly mathemagenic (The content of the course is presented to the student, repeated to the student in various ways).	*45.5% reported that they prefer to create their own uses for the information within the course.*	**Adaptation:** None. See instructor's comments below. Instructor: "Students have this option within the course."

<table>
<tr><td>• Experiential value: Mostly concrete (Activities such as the discussion forum and the application written assignment relate to work or personal life of the students (concrete)/ students learn by performing the activities requested by the instructor.)</td><td>31.8% reported that they learn best from any kind of examples as long as they make sense, rather than from examples that are related to the students personal or work life.

81.8% reported to tell they have learned because they can apply what they have learned to their actual activities rather than performing the activities requested by the instructor.</td><td>Adaptation: None. Any kind of examples includes personal or work examples. Being inclusive, an adaptation is not considered necessary.

Adaptation: None. See instructor's comments below.
Instructor: "Transfer of learning is the ultimate goal in this course. Hopefully, they can apply what they have learned to new scenarios."</td></tr>
<tr><td>• Accommodation of individual differences: Multifaceted (The course uses several learning activities throughout the course/ the instructor or course designer uses a few instructional methods or activities).</td><td>22.7% reported to prefer few learning activities throughout the course.

77.3% reported to prefer when the instructor uses several learning activities throughout the course.</td><td>Adaptation: see adaptation [B] and [C].</td></tr>
<tr><td colspan="3">Step 6:</td></tr>
<tr><td>Modularization</td><td></td><td></td></tr>
<tr><td colspan="3">From expert comments from Culturally Sensitive Online Instruction Evaluation Rubric pre-evaluation (N=3)</td></tr>
<tr><td colspan="3">• Lacks in objective 2 authentic learning activities and tasks where the learners can apply their existing skills and cultural values. Include in the directions the application of cultural values or beliefs to the written assignment.

• Lacks the variety of combinations of supplementary media and resources for learners to expand their knowledge.

o Addressed with Adaptation B (audio presentation) and with Adaptation C (additional discussion forum for the written assignment).

o Adaptation B is expected to help expand knowledge, being a technology used to clarify and summarize the instructional material presented in the module. It is intended to help present the module content in a general form, so the students feel more guided by the instructor and know what to expect when they go to the reading, writing, and discussion assignments.

o Adaptation C provides the forum to receive and provide constructive feedback that is expected to help learners expand their knowledge in two ways. Providing feedback for a peer's assignment will need to be a reflective activity. Receiving feedback will provide the students additional tools to improve their written assignment before official submission at the end of the module. It will also provide an opportunity to present and receive ideas from diverse points of view in terms of cultural values. Based on the differences encountered in the data collected from the pre-module questionnaires, those culturally-influenced preferences are present in the sample even when the majority of the students are American.

• Lacks clear guidelines for online communication to avoid confusions and encourage students to keep participating.

o The guidelines for communications in electronic formats are provided in the Discussion Rubric.</td></tr>
</table>

Figure 8. *CAP Model Methodological Analysis*

The adaptations are identified as Adaptations A, B, and C. Adaptation A was mainly derived from an expert's comment, and includes instructions for the writing assignment to provide an alternative allowing students to apply their cultural values/beliefs to the assignment. Adaptation B was more related to what was expected to culturally adapt a Level 3 course, i.e. to modularize. In the case of Adaptation B, the PI planned to develop a learning object as supplementary material. The learning object was planned as an introductory lecture (audio presentation) to explain what the instructor presents in the module and a summary/overview of the key points of what information the instructor considered most important for the students to take from it after completion. For Adaptation C, the PI planned to require the students to post (halfway into the module) their written assignment in a new discussion forum for others to see and critique. As part of the written assignment, all students would review a peer's posted work and provide meaningful, constructive, and literature-based critique that was expected to help a peer to make further improvements to the assignment before official submission, while allowing students to learn from their mistakes, since the postings were open to all students to review, with the instructor's supervision. An important note is that some adaptations were considered relevant to more than one need. Therefore, those changes are presented as potential adaptations to multiple identified needs.

Design Stage

Referring to the analysis phase, the PI, as instructional designer, planned the instruction. Because the course was otherwise well designed, the content and instructional objectives were kept the same. The design stage addressed issues such as

designing and planning the educationally relevant cultural adaptations and the improvements that were identified in the analysis. The design phase of the ADDIE process took approximately 3 weeks total, taking into account the time spent planning the best approach to addressing the cultural adaptations identified as needed.

Adaptation A was planned to include in the writing assignment an alternative for students to apply their existing cultural values and beliefs to the assignment. This change was derived from the comment of an expert in the Rubric pre-evaluation. Expert 1 stated that the course objectives, *To understand the variety of tools for Distance Education delivery (asynchronous and synchronous)* and *To be able to make technology use decisions for distance education courses based on teaching strategies and learning objectives*, were lacking authentic learning activities. He stated that, in particular, the Writing Assignment (Activity 2) was a standard writing assignment that, from a cultural values standpoint, did not provide directions to incorporate the students' cultural values. Even though this comment was not derived from the CAP methodological analysis, it was considered an important comment to address with the cultural adaptations. Activity 2 required complex knowledge application, where the students chose a distance learning technology and described an educational context in which the application was recommended.

The PI as ID-2 planned to incorporate into Activity 2 directions to apply the students' cultural values to the written assignment. The PI as ID-2 considered that although some students, particularly the culturally-diverse, might consider this direction important, some other students may not. Therefore, Adaptation A was designed to be

optional. The students were to apply their existing cultural values and beliefs to the written assignment only if they chose to.

Adaptation B was planned to address needs related to the critical cross-cultural dimension of cooperative learning and teacher role and to the assistive cross-cultural dimension of accommodation of individual differences. Adaptation B was derived from the students' preference to learn directly from the instructor (77.3%), to be taught by an expert in the field (45.5%), and the use of several learning activities throughout the course (77.3%). Adaptation B was planned to be a cultural adaptation with the purpose of providing an alternative to the educationally and culturally relevant preferences of the students.

A Level 3 course is expected to need modularization as part of the cultural adaptation process based on the CAP model. In effect, a learning object or module was designed to supplement. The PI as ID-2 considered that an introductory lecture (audio presentation) explaining what the instructor presented in the module, and a summary of the key points of the assignments, was the best way to provide the students with a "thought by an expert" and "learn directly from the instructor" experience. The introductory presentation was considered to provide an additional learning activity for the module.

As part of the design considerations, the PI as ID-2 noted that an introductory lecture of the same type planned for this module was presented as part of the first module of the course. An introductory lecture was used before by the instructor to introduce the course to the students with an audio visual presentation rendered as a Flash swf file. Based on this previous experience of the students, the PI as ID-2 assumed that the

necessary plug-ins were already installed on the students' computers to allow access to a swf file. Therefore, Adaptation B was planned and conceptualized as a PowerPoint 2007 presentation, ran and narrated using Camtasia Studio 5, and rendered as a Flash 10.0 swf file. In addition, the presentation was planned to have a similar layout, format, and color scheme to maintain the structure of the course learning objects presentation. An example of the storyboards can be found below in Figure 9.

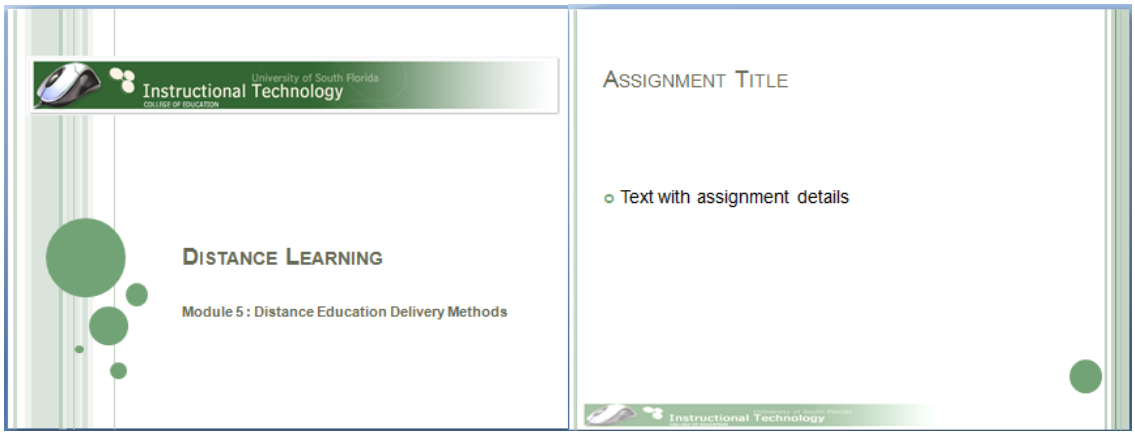


Figure 9. *Storyboards*

Adaptation C was planned to address a need related to the critical cross-cultural dimension of value of errors and the assistive cross-cultural dimension of accommodation of individual differences. Adaptation C was derived from the students' belief that the instructor was satisfied if they took a test without making mistakes rather than learning from their mistakes (50%) and their preference for several learning activities throughout the course (77.3%). Adaptation C was designed to introduce a forum to receive and provide constructive feedback, expected to help learners expand their knowledge in two ways. Providing feedback for a peer's assignment was expected to be a reflective activity. Receiving feedback was expected to provide the students with additional tools

to improve their written assignment before the official submission deadline at the end of the module 5 deadline. It was also likely to be an opportunity to provide and receive ideas from the perspective of diverse cultural values. Based on the differences encountered in the data collected from the pre-questionnaires, culturally-influenced preferences were present in the sample, making this perspective an important consideration. In addition, the activity of providing and receiving feedback for the written assignment was considered to help fulfill the need of the students who reported to prefer the use of several learning activities throughout the course (77.3%).

Development Stage

Development took approximately one week. During the development stage the researcher as ID-2 integrated the cultural adaptations designed in the previous step into a prototype appropriate for the target audience and in accordance to the course module 5 styles and presentation. In addition, formative feedback was requested from the instructor.

Adaptation A and C, relating to the written assignment, were written down and proofread. The researcher as ID-2 took considerable time ensuring that the instructions were clear since it was not the intention of the researcher to increase confusion, but to make the online module culturally relevant to the audience. Adaptation A, or the optional part of the written assignment, included instructions on how to integrate into the assignment the student's culturally relevant values and an example on how to do this. The instructions read:

"Adaptation (Optional): Integrate yours and your audience's cultural values into the assignment. Include in your description of the educational context an explanation of the students' cultural background and how the technology you selected is expected to have an impact. Describe how you will apply the technology into culturally-responsive teaching, helping to build on the cultural knowledge that your students bring with them to the course or training. Example of a setting: An American Company will provide training to non-American employees overseas through the company website. You will probably need to think about what their culture usually consider being appropriate colors, animations, organization of the web page, do they prefer your role to be didactic or facilitative and how the technology allows for that, how the technology allows for collaboration and do they prefer to collaborate or work by themselves …"

Adaptation C was also related to the written assignment and it included instructions to post the written assignment into a discussion forum to provide and receive feedback before official submission. The instructions read:

"Half-way into the module (by 10/31/2010), post your written assignment in the discussion board assigned to this section. All students will need to review a peer's work and provide meaningful constructive literature-based feedback. This is expected to help you improve your assignment based on the critique(s) you receive before officially submitting your assignment by the module's due date (11/07/2010), while allowing you to learn from others comments to your and other students' assignments."

Adaptation B, or the learning object, was developed for module 5 with PowerPoint 2007, using a similar design to the introductory lecture developed by the instructor (ID-1) for module 0 of the course. This consistency was thought to help integrate implementations better with the continuity of the online course design. In addition, the instructor presented the lecture using a swf format. Therefore, it was assumed that a Flash player was already installed on the students' computers, making this media format the best option to develop the audio presentation. The narrated presentation explained what the instructor presented in the online module and gave an overview of the key points of the module assignments.

The adaptations were sent to the instructor along with the Instructor Formative Evaluation Report for his formative evaluation (Appendix A-9). The PI received his reply with the filled document within the same day. This immediacy is just one example of the importance of finding an excellent collaborator to contribute to the success of a DBR study. He reported to generally like the additions of peer feedback to the written assignment and the introductory video. From a DBR perspective, the instructor, as practitioner and ID-1 in the context of the study, considered that a couple of changes to the prototype sent were in order. The first change was numbering. He found that the discussion related to Adaptation C should be numbered as *2.1* since it is directly related to the writing assignment 2, Decision Making for Distance Learning Delivery, and this label would help students understand the association between the two parts of the assignment. The second change he proposed was to include instructions to view the Flash file, so the students would not ignore the link and continue to the next step without

looking at it. Both changes were considered appropriate and left in place in the new version of the adaptations to be implemented into course module 5.

Implementation Stage

The shortest ADDIE step was the implementation and testing stage, which took only six hours. This step included the CAP model's final part of Step 3 of the model research framework: apply potential adaptations. A print version of the final implemented adaptations can be found in Appendix B-4. Finalization of this step consisted of uploading the adaptations' text and swf file into module 5. Care was taken to check for consistency of fonts, links, and content functionality. The link to the video presentation, the link to the online forum, and the uniformity of fonts were tested in Internet Explorer 8 and Mozilla Firefox 3.6.3. Details of the implementation can be found in the Implementation Log (Appendix B-3).

Evaluation Stage

The evaluation stage took approximately two and a half weeks to complete. This stage was comprised of the formative evaluation of the adaptations by representative learners (CAP model research framework step 4). The culturally-adapted module resultant from the first CAP model application cycle was presented to three advanced Instructional Technology and one Measurement/Evaluation doctoral students for evaluation using the rubric derived from Wang and Reeves and the course module cultural dimensions. Representative learners 1 and 4 are from the USA, representative learner 2 is from PR-USA, and representative learner 3 is from Jamaica. An 80%

agreement was sought between the evaluators on each category: pedagogy, content, technology, and communications. Each category given a score of at least 2 was considered acceptable, meaning that the design includes half or more than half of the principles, but not all. The first round of evaluations did reflect that each category was given the expected minimum score with at least 80% percentage of agreement. The representative learners were also sent a table to identify the critical and assistive cross-cultural dimensions of the course in order to search for differences between the non-adapted and the culturally adapted module. These differences are discussed in research Step 13 in the final study discussion section since it is not related to the post-evaluation with the rubric.

The post-evaluation instruments were sent to the representative learners and were returned completed two and a half weeks after. Recall that most of the experts in the pre-evaluation gave a score of 2 (module includes half or more than half of the principles but not all). On the pre-evaluation, only one expert gave a score of 3, module design includes all of the principles, for only the Content category. Although this was good, and reached the expectations of an otherwise well designed module, the researcher considered that these scores could be improved upon with the adaptations. Even when the course module was considered to include the minimum principles to be culturally sensitive, the researcher encountered an opportunity to raise the scores to mostly 3's, module includes all principles, instead of 2's, module includes half or more than half of the principles but not all.

For the post-evaluation, more than the expected 80% agreement among representative learners was achieved, with all giving scores of 2 and above. Even more,

in the case of the post-evaluation, the scores were mostly concentrated in the module design includes *all* the principles to be a culturally sensitive course (score of 3). For the Pedagogy category, 100% of representative learners gave a score of 2 or above, with 75% consensus on a score of 2.5 or more. For the Content category, all gave a score of 3. For the Technology and the Communications categories, 75% assigned the module a score of 3, while 25% gave a score of 2. The Rubric post-evaluation summary can be found in Table 5 below. Appendix B-6 presents the comments provided by each of the 4 the representative learners for all categories. These scores show significant improvement in how the representative learners conceived the course module as culturally sensitive, including most or all of the principles for each category.

Table 5

Rubric post-evaluation summary (N=4)

Category	Scores				
	3	2.5	2	1	0
Pedagogy	50%	25%	25%	0%	0%
Content	100%	0%	0%	0%	0%
Technology	75%	0%	25%	0%	0%
Communications	75%	0%	25%	0%	0%
Legend of scores:	3- Module design includes all the principles. 2- Module design includes half or more than half of the principles, but not all 1- Module design includes less than half of the principles. 0- Module lacks all the principles.				

A summary of the estimated time invested on each of the phases of the ADDIE can be found in Table 6 along with the general tasks associated with each stage. The time

is estimated in weeks, days, or hours, depending on how long it took to complete. Some tasks were completed concurrently, giving a total invested time of approximately 8 weeks for the pilot study.

Table 6

Estimate of hours invested in the pilot study (total time 8 weeks)

ADDIE Stage	Task	Time (weeks)	Time (days)	Time (hours)
Analysis	Gather data from students' pre-questionnaires	1		
	Pre-questionnaire data analysis			8
	Rubric assessment of course (by researcher)			1
	Rubric assessment of course (by experts)		4	
	Analysis comparing the course cultural dimensions with the students' cultural dimensions			7
	Identification of areas in need of adaptations based on the CAP model (found 3 adaptations in total) following the CAP model methodological analysis	1		
	Answer needs analysis questions from Wang and Reeves (2007) after all data has been analyzed			2
	Send CAP model analysis and receive formative feedback		1	

	from instructor about the identified adaptations			
Design	Plan cultural adaptations	3		
Development	Develop cultural adaptations	1		
	Instructor formative evaluation report		1	
Implementation	Implement cultural adaptations Adaptation A Adaptation B Adaptation C Total			 1 2 1 4
	Testing adaptations (links, accessibility…)			2
Evaluation	Formative evaluation of adaptations by representative learners	2.5		

A graphical representation of the distribution of time invested in the pilot study (complete ADDIE cycle) can be found in Figure 10.

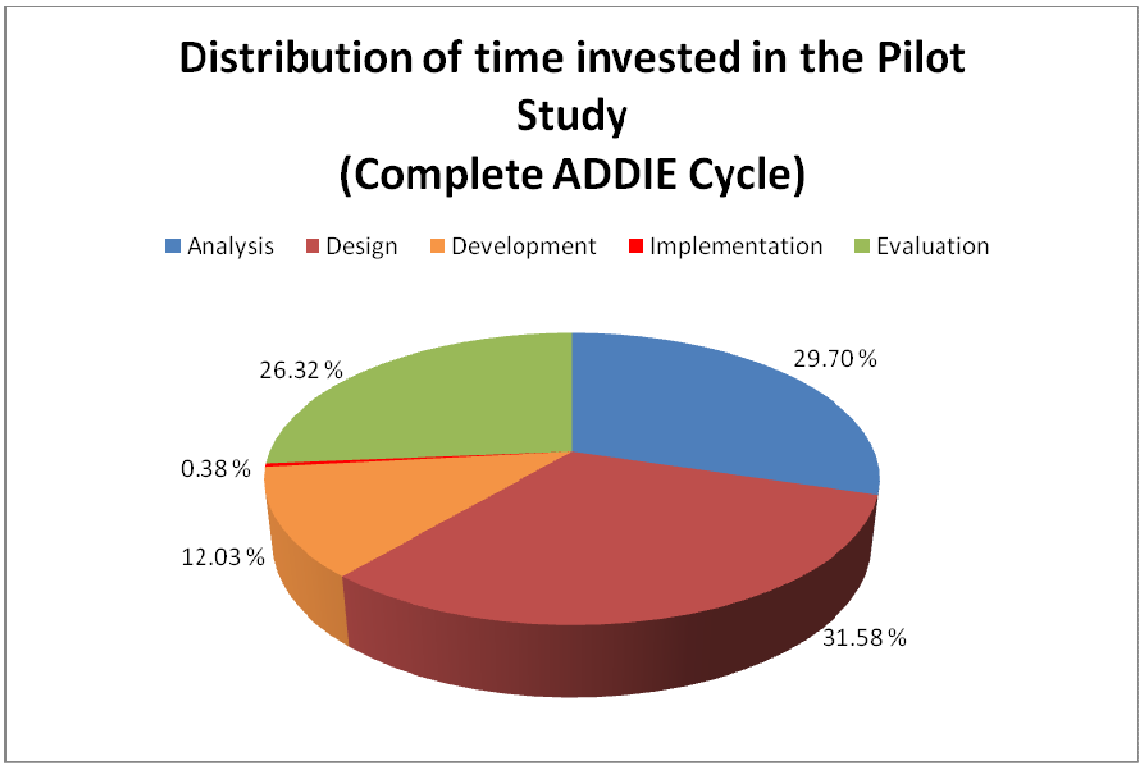


Figure 10. *Distribution of time invested in pilot study (complete ADDIE cycle)*

Based on the evaluation, there was no need to repeat the CAP and ADDIE cycles since the course module was culturally sensitive and the representative learners found improvement after the adaptations were in place. Therefore, from a DBR perspective and following the CAP model Research Framework adapted for the study, the pilot study was completed and the course module was successfully adapted, and therefore ready to be presented to the group of targeted learners. The targeted learners were the students enrolled in the online course selected for the study. From this point forward, the final study started, consisting of Steps 13-17 of the previously stated Research Procedures.

Description of the Final Study Stage

The final study lasted approximately 7 weeks. This stage consisted of the analysis of the cultural adaptations applied to the online module, the presentation of the module to the group of targeted learners (CAP model Step 5), and the summative evaluations. Summative evaluations consisted of the measurement of pre-selected outcomes such as students preferences, perceived learning, motivation, and satisfaction, the search for differences between the pre and post adapted module responses to the critical and assistive cross-cultural dimensions questions, the final scores, and interviews with the instructor as well as a randomly selected small sample (*N=2*) of diverse online students. Refer to Figure 11 for a graphical guide of the steps followed for the final study.

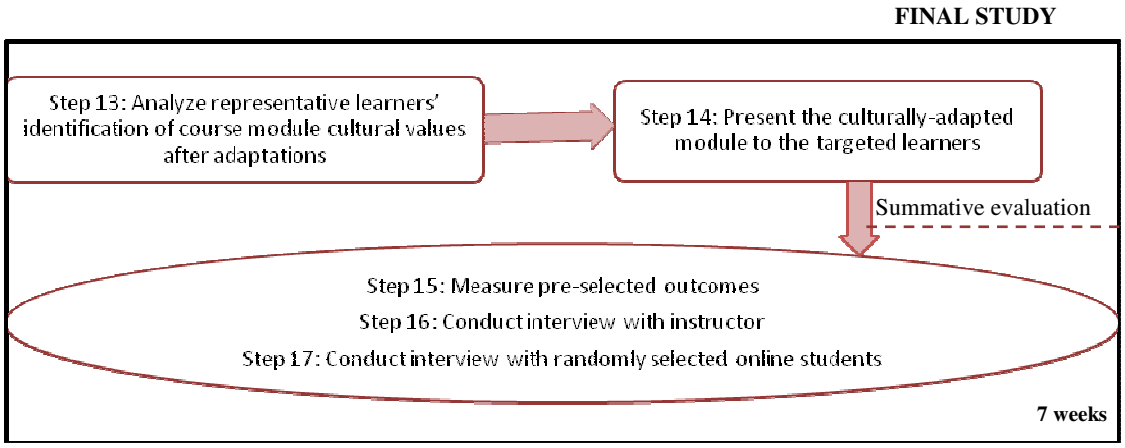


Figure 11. *Final study steps*

Demographics. By the time the adapted module was presented, 17 of the targeted students were enrolled in the course. In the post-module questionnaire, a question to ask about their parents' nationality gave additional insight to the researcher, revealing alternative possible explanations for the differences encountered in the cultural

values reported in the pre-module questionnaire. Their answers to this question can be found in Table 7 below. From the 17 students who answered the post-questionnaire, 41.2% of the students reported that their parents came from nationalities other than the USA (i.e. Cuban, German, Italian, Irish, Canadian, British). 22 students and 17 students answered the pre and post-module questionnaires, respectively. 16 students answered both, making possible the search for differences and possible cultural adaptations resultant from being exposed to the culturally adapted module.

Table 7

Parents nationality of final study participants (N=17)

Question	Categories	Values	Percent in Category
Your parents nationality at birth:	USA	10	58.8%
	USA-PR	1	5.9%
	Canadian American	1	5.9%
	Italian	1	5.9%
	German Italian	1	5.9%
	Italian Irish	1	5.9%
	Cuban	1	5.9%
	British	1	5.9%

Analysis of the cultural adaptations of the module. After the cultural adaptations were in place, the adapted online module was sent to four representative learners. Three advanced Instructional Technology and one Measurement/ Evaluation doctoral students helped to analyze the cultural values of the module after the adaptations were in place. Representative learners 1 and 4 are from the USA, representative learner 2 is from PR-USA, and representative learner 3 is from Jamaica. After the data from

representative learners was collected, the researcher made a comparison between the cultural values found in the pre-evaluation and the cultural values found in the post-evaluation. This comparison was executed to see if the cultural adaptations made a difference in the cultural values of the online module before it was presented to the targeted learners.

Presentation of the proposed e-learning module to the targeted learners. Although 22 online learners answered the pre-questionnaire, only 17 were still enrolled in the course by the time the course module 5, Distance Education Delivery Methods, was made available. The course module opened officially on October 24, 2010 and closed on November 7, 2010, which was the due date for all the deliverables. However, the course module was made available to students by October 15, 2010. The instructor posted a welcome message to the module, including a section explaining the adaptations, written by the PI.

> "*Dear Class,*
>
> …
>
> *Some areas in module 5 are identified as Adaptations. Those are the cultural adaptations made as a result of the analysis of the data you provided as part of the research study that is taking place during the course. They are identified to define what was added to the module as it pertains to the cultural adaptations. That way they will be easier to spot so later you can think about them while you answer the post-questionnaire at the end of the module …*"

The researcher followed the online discussions and was able to extract salient points from the extensive discussion transcripts, which are detailed in the next section.

Online discussion forums. Students' participation on the discussion forum was monitored, and their answers to the posted questions were analyzed qualitatively, searching for codes, themes, and relationships. The researcher followed the *Challenges, Culture and Communications* and the *Written Assignment* discussion forums. These online forums provided insight to the enrolled students' perception of culture in online learning and gave the researcher the opportunity to compile the alternatives they offered to work with possible problems. In addition, the discussions provided a way to assess the effectiveness of Adaptation C, looking at the feedback provided by the students to the written assignments of their peers. The questions posted for their discussion were:

> *"Questions: If we design learner-centered learning environments, how do we build on the conceptual and cultural knowledge that learner brings with them? How does culture influence perception, cognition, communications, and the teaching learning process in an online course? How do we as instructors engage in culturally responsive online teaching?*
>
> *Gunawardena, Lani. Organizational Learning and Instructional Technology , U. of New Mexico"*

For the most important points of the discussion refer to Table 8.

Table 8

Salient points found in online discussion forum (N=17)

Theme	Frequency
Proposed solutions	150
Crucial/Imperative to be culturally competent in OL /Examples where it is a problem	32
ID/Instructor awareness of own culture	5
Language Issues	3
No problem	1
Stereotypes	1

Only one student commented that the issue should not be considered a problem. All other students commented on the importance of the problem and proposed solutions. The majority considered that the most important thing that the instructor can do to solve the problem is assess the students' cultural needs either before or during the course. A graph of the proposed solutions frequencies can be found in Figure 12.

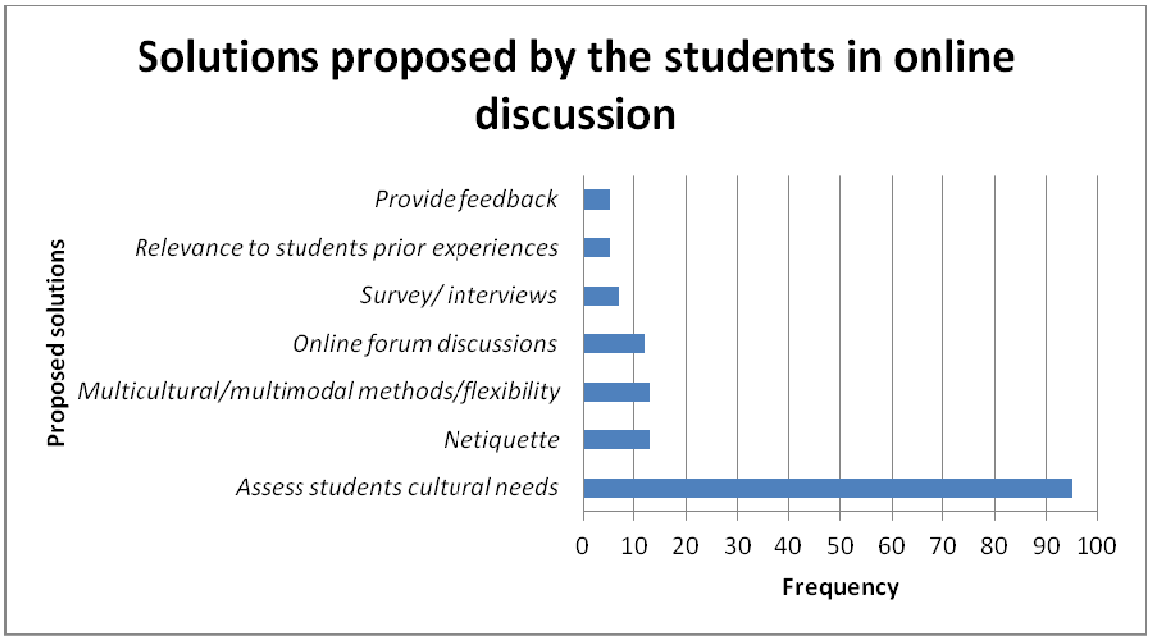


Figure 12. *Proposed solutions by students during the online discussion*

The online discussion for the written assignment was also followed. All but one student received feedback on their work. The one student that did not received feedback posted the assignment after the deadline. Two students took advantage of the optional part of the assignment, which was to integrate the cultural aspects of their audience to the assignment. The two students that did take into consideration their audience cultural values when describing the audience for the assignment were Puerto Rican and American. Another learner posted as feedback for a peer's work to: "think about adding some additional demographic details or the connection between varying backgrounds and different skill levels". After the targeted learners completed the module, the summative evaluations of the cultural adaptations started.

Summative evaluations. The summative evaluations included steps 6 and 7 of the CAP model research framework. Step 6 consisted of measuring pre-selected outcomes. In the case of the present study, pre-selected outcomes were the online students' perceived learning, final scores, satisfaction, and motivation. In step 7, the PI gathered feedback from the learners with respect to perceived learning outcomes, satisfaction, and motivation (quantitative and qualitative). In addition, being a DBR study, the perceptions of the practitioner were of particular relevance; therefore, a summative interview with the instructor was also conducted.

Online Students' Preferences, Perceived Learning, Motivation and Satisfaction. Pre-selected outcomes, such as the online students' perceived learning, final scores, satisfaction, and motivation, were collected through a post-module questionnaire posted online as a link at the end of the module. The questionnaire consisted of quantitative and qualitative questions to search for more details on how the students perceived the

adaptations applied to the module. The post-module questionnaire can be found in Appendix A-5.

The researcher was also interested in searching for differences in the students' reported cultural dimensions before and after the cultural adaptations were applied. To search for significant differences, the Wilcoxon Signed Rank test was applied to the paired data from all the students who answered both the pre and post-module questionnaires.

Wilcoxon Signed Rank Test. From the students enrolled in the selected course, 16 answered both questionnaires, making it possible to search for significant differences across their reported critical and assistive cross-cultural values. A Wilcoxon Signed Rank test was executed to search for differences between the paired data from the pre and post-module questionnaires. From the 16 students who answered both questionnaires, 18% reported to come from nationalities other than the USA. Details are presented in Table 9.

Table 9

Nationality of final study participants for comparison of cross-cultural values between pre and post questionnaires (N=16)

Question	Categories	Values	Percent in Category
Your nationality at birth:	USA	13	81%
	USA-PR	1	6%
	German Italian American	1	6%
	German, English, and Native American	1	6%

In addition, the final scores were collected to help provide more information to assess the effectiveness of cultural adaptations to the module. Semi-structured interviews were also conducted to look deeper into the diverse students' perceptions of the culturally-adapted online module.

Students' interviews. A semi-structured interview was conducted with a small (*N=2*) randomly selected sample of culturally diverse students enrolled in the course that completed the module. The interviews were conducted and recorded online through E-lluminate *Live!* Feedback from the students and the instructor, gathered through questionnaires and interviews, provided information regarding the appropriateness of cultural adaptations to the course and the application of the model.

The PI created a list of the numerical labels of the students that identified themselves as coming from cultures different than the USA (either them or influenced by their parents culture). The PI sent the 7 numbers to the instructor to identify the name of the students. The instructor sent the names to the PI in random order to avoid the possibility of linking the students to their numbers and keep confidential the students' answers. From the 7 names received in different order, as requested, the PI entered the numbers 1-7 in a random number generator. The random numbers generated were 6 and 7, corresponding to the 6^{th} and 7^{th} students on the list. Both students were contacted and accorded a convenient time for the individual interviews. Both interviews were completed within two weeks. The final part of the summative evaluations consisted of the instructor interview, which is detailed next.

Instructor's Interview. The instructor participated in a short summative semi-structured interview. The interview was also completed and recorded online through E-

lluminate *Live!* In the interview, the instructor rated his experiences as an online instructor as extremely positive. The factors influencing his experiences as online instructor were *"the quality of instruction, the students that I have in my courses and also the delivery formats that I use… I just feel it is a quality environment and it's been a very positive experience for me"*.

At this point the final study was completed. A summary of the findings of the study within the application of the CAP model and the measurement of impact, which is the final CAP methodological analysis, are presented in Figure 13. The first three columns relate to the pilot study stage. The final column relates to the final study stage, including the measurement of impact of the adaptations.

Course module: Distance Education Delivery Methods			
PILOT STUDY			**FINAL STUDY**
From pre-questionnaire data *(N=22)* and pre-evaluations (by 3 experts, researcher and instructor), and post-evaluations (by 4 representative learners)			From targeted learners post-questionnaire data *(N= 17)*
Module characteristics	**Learner characteristics**	**Potential adaptations**	**Measure Impact**
Step 1: Evaluate content type and examples			
American English	English speakers, graduate IT students (graduate certificate *(N_1=3)*, master *(N_2=18)* or doctorate *(N_3=1)*)	**Adaptation:** None. The students are highly educated English speakers. The level of English is appropriate for the audience. Expert 2 from Rubric: "The level of English a little bit advanced for people who English is not the first language."	
Soft-skills including, but not limited to (in discussion forum): Active online "listening", maintain meaningful discussion and debate, defuse arguments, emphatic communication, self-awareness, and establish rapport. ***Complex knowledge***: Application/writing assignment where the student selects a distance learning technology and describes an educational context in which the application is recommended. **Note:** The module includes a section of the group project. Because the group	Course evaluation: • Level 3 online course-module. • SCET score 88% > 51%. Well designed online instructional module. -Expert 1: 138/156 -Expert 2: 136/156 -Average: 137/156	None. **Adaptation [A]:** Include in the writing assignment instructions providing the alternative for the students to apply their cultural values/beliefs in the assignment. See Expert comment below. Expert 1 from Rubric: "Lacks in objective 2 (written assignment) authentic learning activities and tasks where the learners can apply their existing skills and cultural values."	41.2% of the targeted learners reported that having the opportunity to apply their existing skills and cultural values to the written assignment was important for them.

project is divided in parts that begun since earlier in the course, this section will not be taken into consideration for the analysis and module adaptations.			
Step 2: Identify pedagogical paradigm, include instructional methods, activities, and so forth			
Constructivist/Cognitive Online forum discussions, application of complex knowledge writing assignment. • Course provides a well-defined logical path to learn what the students need to learn. • The course module presents objectives, pre-determined learning goals. • Students' learning is assessed with questions that are based on the stated goals and objectives of the course/Written assignment present an opportunity for application.	• Level 3 online course-module. 22.7% prefer to explore different paths to learn what they need to learn. 22.7% prefer to learn as they go, depending on their own learning goals. *68.2% prefer to be tested by applying what they have learned from the course to different situations.*	**Adaptation:** None. *Adaptations seem to affect this indirectly- representative learners agreed that the course provided a well-defined logical path but also provided the opportunity to explore different paths to learn.* **Adaptation:** None. The written assignment provides the opportunity to apply what students have learned to a practical setting. *Adaptations seem to affect this indirectly- representative learners agreed that the course module changed to allow the students to be tested by applying what they have learned from the course to different situations.*	
Step 3: Identify media			
Threaded discussions, e-mail	• Level 3 online course-module.	None.	
Step 4: Identify national level cultural dimensions of the learners and critical cross-cultural dimensions of the course module **(values >= 30% will indicate the need for adaptations)**			
• Cooperative learning: integral (work with a group on activities or projects-online forum/ collaboration with classmates-online forum). Learning from instructor and classmates. • Includes a writing activity where the students work individually.	*77.3% students prefer to learn directly from the instructor* *90.9% students prefer to work on activities or projects by themselves rather than in groups.*	**Adaptation [B]:** Modularize- create learning object to supplement. -Develop an introductory lecture (audio presentation) explaining what the instructor is presenting in the module and a summary/ overview of the key points of the assignments. Instructor: "This is an interesting note. Since the course is facilitated online, there is more learning from the student-to-content exploration than from the instructor in this course. Of course, the instructor selected the materials, so there is a relationship there I suppose." **Adaptation:** None. The students have the opportunity to work individually on the written assignment. See instructor's comment below. Instructor: "There is a group	11.8% of the targeted learners reported that the audio presentation provided a "taught by an expert in the field" experience.

		project that all will have to complete."	
• Origin of motivation: Intrinsic/Extrinsic (Elective e-learning course/The students are told what they need to learn. However, the written assignment provides the opportunity to decide the application and what distance learning technology to study in depth to apply in the assignment.)	9.1% students reported to take e-learning courses when required to. *36.4% students reported to prefer e-learning courses in which they decide what they need to learn.*	**Adaptation:** None. Students have the option in the written assignment to select the distance learning technology they want to focus on to apply in a setting. *Adaptations seem to affect this indirectly- representative learners agreed that in the course module the students are told what they need to learn but they also had the opportunity to ultimately decide what they needed to learn and focus in the written assignment.*	
• Learner control: Non-existent to unrestricted (deadline or timed activities/ the course features that will help the student learn the material are chosen by the instructor or course designer with some application options provided to the students)	*50% reported to prefer when they can control the pace of learning.*	**Adaptation:** None. Students can pace their learning in this course to a certain limit, where the deadlines apply. See instructor's comments below. Instructor: They do have some control, but ultimately, they must complete the activities in the prescribed format and within the time limit.	
	31.8% reported to prefer when the course features that will help them learn the material are chosen by them.	**Adaptation:** None. The written assignment allows some liberty to choose from a variety of distance learning technologies to write about in an application. In addition, the online forum allows the students to select the question they want to answer.	
• Teacher role: Didactic/facilitative (path of learning determined by the instructor/ students are guided by an instructor who shows them how to learn what they need to learn)	*31.8% prefer a path of learning determined by them.*	**Adaptation:** None. The path is established by the instructor and ultimately, there needs to be some control over what and how the students learn from the course. *Adaptations seem to affect this indirectly- representative learners agreed that the course module allowed the student to determine a path for learning.*	
	45.5% reported to prefer to be taught by an expert in the field on what they need to learn rather than guided by an instructor who shows them how to learn	**Adaptation: See adaptation [B].** The audio presentation should provide a "taught by an expert in the field" experience. Instructor: "This course is more of a guided exploration of distance learning."	11.8% of the targeted learners reported that the audio presentation provided a "taught by an expert in the field" experience.

	what they need to learn.		
• Value of errors: learning from experience (learning from errors and instructor/the course designer is satisfied if the students learn from their mistakes)	18.2% reported to learn until they make no errors on the test. *50% reported to think that the instructor is satisfied if they take a test without mistakes rather than learning from their mistakes.*	**Adaptation [C]:** -The students will post (half-way into the module) their written assignment in a new discussion forum for others to see and critique. As part of the written assignment, all students will be asked to review a peer's posted work and provide meaningful, constructive, and literature-based critique that will help a peer to make further improvements to the assignment before official submission, while allowing students to learn from their mistakes since the postings are open to all students to review, with instructor's supervision. Instructor: "I prefer that they learn from their mistakes. You tend to learn more that way I think." *Representative learners agreed that the course module gave the impression that the instructor is satisfied if the students learn from their mistakes.*	64.7% of the targeted learners reported that posting their written assignment in the discussion forum provided them the opportunity to learn from their mistakes while helping to improve the assignment.
Step 5: Identify national level cultural dimensions of the learners and assistive cross-cultural dimensions of the course module			
• User activity: Mostly mathemagenic (The content of the course is presented to the student, repeated to the student in various ways).	*45.5% reported that they prefer to create their own uses for the information within the course.*	**Adaptation:** None. See instructor's comments below. Instructor: "Students have this option within the course." *Adaptations seem to affect this indirectly- representative learners agreed that the course module now also allows the students to create their own uses for the information within the course module.*	

• Experiential value: Mostly concrete (Activities such as the discussion forum and the application written assignment relate to work or personal life of the students (concrete)/ students learn by performing the activities requested by the instructor.)	*31.8% reported that they learn best from any kind of examples as long as they make sense, rather than from examples that are related to the students personal or work life.* *81.8% reported to tell they have learned because they can apply what they have learned to their actual activities rather than performing the activities requested by the instructor.*	**Adaptation:** None. Any kind of examples includes personal or work examples. Being inclusive, an adaptation is not considered necessary. **Adaptation:** None. See instructor's comments below. Instructor: "Transfer of learning is the ultimate goal in this course. Hopefully, they can apply what they have learned to new scenarios." *Adaptations seem to affect this indirectly- representative learners agreed that the course module now also allows the students to tell they have learned because they can apply to their actual activities.*	
• Accommodation of individual differences: Multifaceted (The course uses several learning activities throughout the course/ the instructor or course designer uses a few instructional methods or activities.)	22.7% reported to prefer few learning activities throughout the course. *77.3% reported to prefer when the instructor uses several learning activities throughout the course.*	**Adaptation: see adaptation [B] and [C].** *Representative learners agreed that the course module uses several instructional methods and learning activities instead of a few to teach the course content.*	64.7% of the targeted learners reported that the course module presented several learning activities.

Figure 13. *Direct and indirect impact measurement of the effects of the cultural adaptations over the module critical and assistive cross-cultural dimensions*

An expected output of this DBR study is a detailed description of the time invested per stages. This description was presented elsewhere in this chapter for the pilot study. The final study's distribution of time invested is detailed next.

Time invested in final study. The total time invested in the final study was 7 weeks. Some activities were completed concurrently. Details of the time invested in weeks, days and hours are provided in Table 10 below.

Table 10

Estimate of hours invested in the final study (total time 7 weeks)

Research Procedures Step	Task	Time (weeks)	Time (days)	Time (hours)
Cultural adaptations analysis	Analyze representative learners' identification of course module cultural values after adaptations	1		
Present proposed e-learning module to targeted learners	Make module available to online students			1
	Follow online forum discussions	2		
	Follow written assignment discussions	2		
Summative evaluations- Measure pre-selected outcomes	Obtain online students' preferences, perceived learning, motivation and satisfaction with the adapted module	2		
	Analyze online students' preferences, perceived learning, motivation and satisfaction with the adapted module			6
	Wilcoxon signed rank test to search for differences between pre and post responses to critical and assistive cultural			3

	values			
	Obtain final scores			1
Practitioner interview	Conduct interview with instructor			1
Gather feedback from learners	Send diverse students' numbers to instructor and wait for names to contact (7 students total)		3	
	Randomly select 2 diverse online students			1
	Conduct interview with randomly selected diverse online students			2

The majority of the time (53%) was spent in the presentation of the proposed e-learning module to the targeted learners as it included many activities, e.g. make the module available and follow discussions. The summative evaluations took 27.4% of the time, making it the second most time consuming activity for the final study stage. The third activity that took considerable time was the analysis of the cultural adaptations (13.3%). All of this information is particularly important to practitioners who look into the model to culturally adapt online courses or modules, to plan their own time accordingly by taking into consideration what activities are more time consuming than others. Figure 14 provides a graphical representation of the time invested in the activities completed in the final study stage.

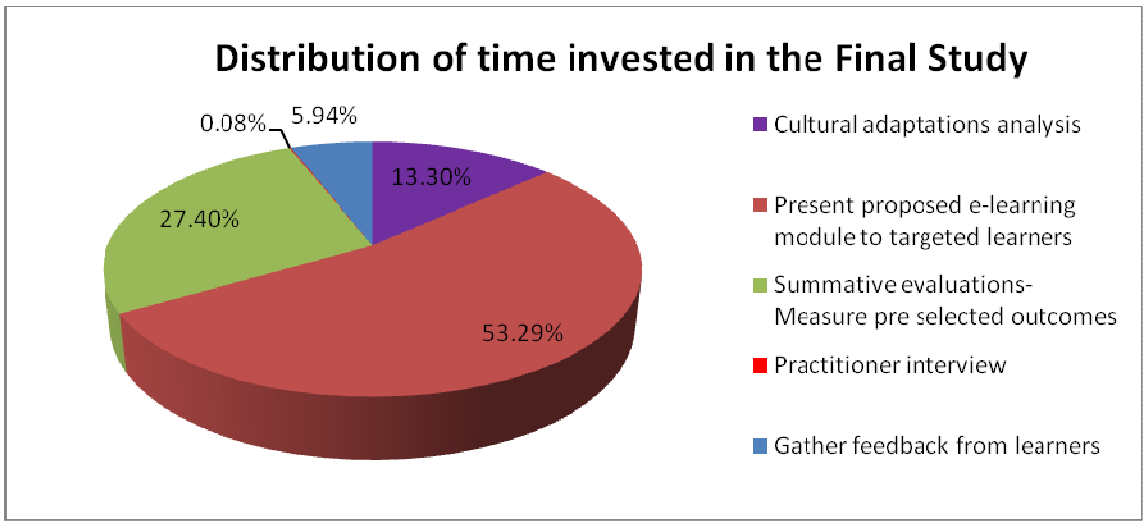


Figure 14. *Distribution of time invested in final study*

Answers to the research questions are provided next, after the presentation of the expected outputs of the research study from a traditional point of view and from the DBR perspective. The previously presented data and explanations are expected to give the reader a clearer understanding of the study as a whole and help understand the answers to the research questions that guided the study.

Research Question 1

What are the effects on the instructional design process of applying a systematic approach to the assessment, adaptation, and validation of a Level 3 online module in a higher education environment using the Cultural Adaptation Process Model to guide the development of a culturally-adapted and accessible e-learning module?

A systematic approach was followed for the cultural adaptation of a Level 3 online module in a higher education environment, based on the application of the CAP model

within the ADDIE instructional design model, following a DBR methodology. To answer the first research question, the SCET score of the course should be restated. The course selected for the study was well designed to begin with, obtaining an 88% score on its evaluation, which helped to avoid misinterpretations of the improvements based on the cultural adaptations applied. Recall that an online course that obtains a score greater than 51% can be considered to be well designed. This margin supports the assumption that the course module within the course selected was well designed before the cultural adaptations were in place, and that changes found, either positive or negative, may be related to the adaptations applied.

Because of their importance, the nationality, cultural values, and critical assistive cross-cultural dimensions should be restated. The instructor is American, son to German and Chinese parents. His cultural values are individualist, mid-small power distance, assertive (masculine), and uncertainty acceptance culture. The researcher was born in Puerto Rico-USA, daughter to Cuban parents. The PI, after analyzing her answers to Hofstede's cultural values questions, and from her nationality, was considered to come from an individualist, mid-large power distance, assertive, and uncertainty avoidance culture. The students' nationalities were 86.4% from USA, 4.5% from Puerto Rico-USA, 4.5% German-Italian American, and 4.5% German, British, Native American. The parents' nationality for the final study participants (*N=17*) were 58.8% from the USA and 41.3% from other countries such as Puerto Rico-USA, Canada, Italy, Germany, Ireland, Cuba, and England. In general, their cultural values are individualist, mid to large power distance, assertive, and uncertainty acceptance.

In addition, it is important to look into the critical and assistive cross-cultural dimensions of the instructor, the PI, and students since it is crucial to the application of the model. Regarding the critical and assistive cross-cultural values, the practitioner and the researcher shared the same views in terms of learner control, origin of motivation, and user activity, along with some questions regarding pedagogical paradigm, accommodation of individual differences, and experiential value. A graphical representation summarizing the similar and differing responses to the cross-cultural dimensions can be found in Figure 15 below. As an example, both instructor and researcher prefer to choose the course features that will help the students to learn the material (learner control) instead of allowing the students to choose the course features that will help them learn the course content.

Differences in critical and assistive cross-cultural dimensions preferences reported between the instructor and the PI were found for teacher role, value of errors, and cooperative learning, along with some questions regarding pedagogical paradigm and experiential value. As an example, consider one question related to the teacher role, in which the instructor reported that he prefers to allow his students to follow a path of learning determined by them while the PI reported that she usually knows what her students need to learn and prefers to guide them through that process.

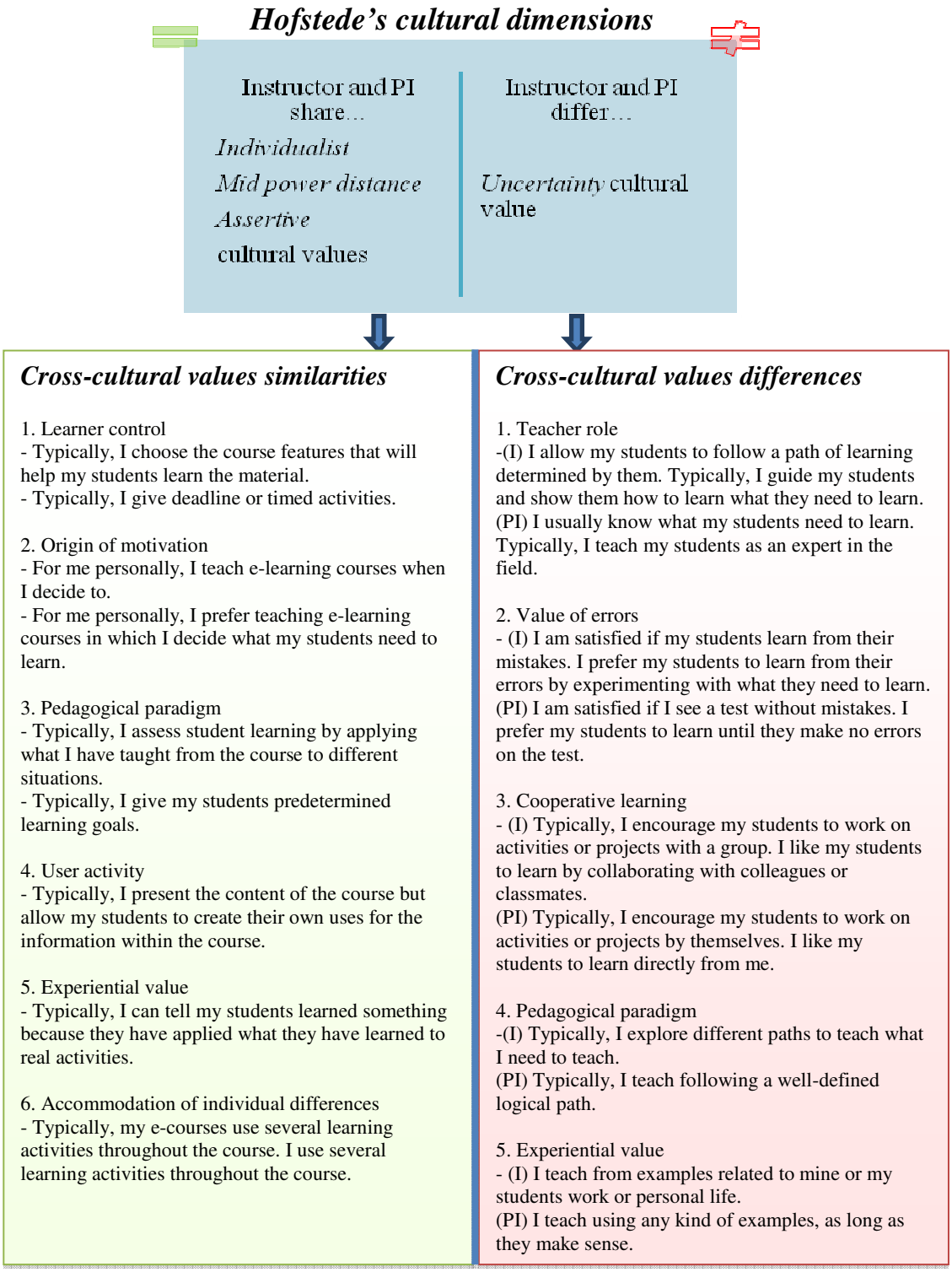


Figure 15. *Similarities and differences across critical and assistive cross-cultural dimensions responses from instructor (I) and researcher (PI)*

Based on the students' pre-questionnaire data, the researcher obtained the culturally relevant educational characteristics of the online students. The pre-questionnaire data were obtained at the beginning of the course semester. For the CAP methodological analysis, it was of crucial importance to group the students' critical and assistive cross-cultural dimensions. Adaptations were considered as possibly needed for all categories that reached 30% or above, in the case that those differed from the course's critical and assistive cross-cultural values. The students' critical and assistive cross-cultural values or dimensions are detailed in Table 11.

Table 11

Cross-cultural dimensions found for the online students in the pre-questionnaire (N=22)

Cross-cultural values	Question	Categories	Frequency	Percent in Category
Teacher role	I prefer to follow a path of learning determined by:	*0=the instructor or the course designer because that person usually knows what I need to learn.*	*15*	68.2%
		1=me because I usually know what I need to learn.	7	31.8%
	I prefer to be:	*0=taught by an expert in the field on what I need to learn.*	*12*	54.5%
		1=guided by an instructor who shows me how to learn what I need to learn.	10	45.5%
Learner control	Typically, I prefer when the course features that will help me learn the material are chosen by:	*0=the instructor or course designer.*	*15*	68.2%

		1=me.	7	31.8%
	I prefer when I:	*0=am given a deadline or timed activities.*	*11*	50.0%
		1=can control the pace of learning.	*11*	50.0%
Value of errors	Typically, I think that the instructor or the course designer is satisfied if I:	*0=take a test without making mistakes.*	*11*	4.5%
		1=learn from my mistake	*11*	4.5%
	I learn:	0=until I make no errors on the test.	4	18.2%
		1=from my errors by experimenting with that I have learned.	*18*	81.8%
Cooperative learning	I prefer to work on activities or projects:	*0=by myself.*	*20*	90.9%
		1=with a group.	2	9.1%
	I prefer when I am learning:	*0=directly from the instructor or course designer.*	*17*	77.3%
		1=by collaborating with my colleagues or classmates.	5	22.7%
Origin of motivation	For me personally, I take e-learning courses when:	0=I am required to.	2	9.1%
		1=I want to.	*20*	90.9%
	For me personally, I prefer e-learning courses in which I:	*0=am told what I need to learn.*	*14*	63.6%
		1=decide what I need to learn.	8	36.4%
Pedagogical paradigm	I prefer to:	*0=follow a well-defined, logical path to learn what I need to learn.*	*16*	72.7%
		1=explore different paths to learn what I need to learn.	6	27.3%

	I prefer to be tested:	0=with questions that are based on the stated goals and objectives of the course.	7	31.8%
		1=by applying what I have learned from the course to different situations.	*15*	68.2%
	Typically:	*0=I prefer to be given predetermined learning goals.*	*17*	77.3%
		1=I learn as I go, depending on my own learning goals.	5	22.7%
User activity	I prefer when the content of the course is presented to me, but:	0=it is repeated to me in various ways.	10	45.5%
		1=I create my own uses for the information within the course.	*12*	54.5%
Experiential value	Typically, I can tell I have learned something because I:	0=can perform the activities requested by the instructor or course designer.	4	18.2%
		1=I have applied what I have learned to my actual activities.	*18*	81.8%
	I tend to learn best from:	*0=any kind of examples, as long as they make sense.*	*15*	68.2%
		1=examples as long as they are related to my work or personal life.	7	31.8%
Accommodation of individual differences	I prefer a course that uses:	0=very few learning activities throughout the course.	5	22.7%
		1=several learning activities throughout the course.	*17*	77.3%
	I prefer when the instructor or course designer uses:	0=a few standard instructional methods or activities to teach me the course content.	5	22.7%

	1=several instructional methods or activities to teach me the course content.	*17*	77.3%

In addition, the identification of the cultural dimensions of the course was of crucial importance for the instructional design process in order to apply a systematic approach to the cultural adaptation of the Level 3 online module. Details about the pre-evaluation of the course's critical and assistive cross-cultural dimensions, along with the experts' comments, are presented in Table 12 below.

Table 12

Pre-evaluation of course critical and assistive cross-cultural dimensions (N=4)

Cultural values	Categories	Percentage	Comments
Pedagogical paradigm	I follow a well-defined, logical path to learn what I need to learn.	75%	
	I explore different paths to learn what I need to learn.	0%	
	No response	25%	
	I am tested with questions that are based on the stated goals and objectives of the course.	75%	
	I am tested by applying what I have learned from the course to different situations.	25%	
	No response	25%	
	I am given predetermined learning goals.	100%	
	I learn as I go, depending on my own	0%	

	learning goals.		
Experiential value	I learn from any kind, as long as they make sense.	25%	
	I learn from examples as long as they are related to my work or personal life.	50%	
	No response	25%	
	I can tell I have learned something because I can perform the activities requested by the instructor or course designer.	100%	
	I can tell I have learned something because I have applied what I have learned to my actual activities.	0%	
Teacher role	I follow a path of learning determined by the instructor or the course designer because that person usually knows what I need to learn.	75%	
	I follow a path of learning determined by me because I usually know what I need to learn.	0%	
	No response	25%	
	I am taught by an expert in the field on what I need to learn.	0%	
	I am guided by an instructor who shows me how to learn what I need to learn.	100%	
Value of errors	I learn until I make no errors on the test.	0%	There is really no indication of being allowed to resubmit work and learn from your mistakes.
	I learn from my errors by experimenting with	100%	

	that I have learned.		
	The instructor or the course designer is satisfied if I take a test without making mistakes.	25%	
	The instructor or the course designer is satisfied if I learn from my mistakes.	50%	
	No response	25%	
Origin of motivation	For me personally, I take e-learning courses when I am required to.	25%	
	For me personally, I take e-learning courses when I want to.	50%	
	No response	25%	
	For me personally, I prefer e-learning courses in which I am told what I need to learn.	75%	
	For me personally, I prefer e-learning courses in which I decide what I need to learn.	0%	
	No response	25%	
Accommodation of individual differences	The course uses very few learning activities throughout the course.	25%	It looks like there are four main activities. These allow for more individual work while incorporates more social activities. This looks like what many online course are beginning to do.
	The course uses several learning activities throughout the course.	75%	
	The instructor or course designer uses a few standard instructional methods or activities to teach me the course content.	75%	

	The instructor or course designer uses several instructional methods or activities to teach me the course content.	25%	
Learner control	I am given a deadline or timed activities.	75%	For the most part it looks like the learner has control of their pace.
	I can control the pace of learning.	25%	
	The course features that will help me learn the material are chosen by the instructor or course designer.	100%	
	The course features that will help me learn the material are chosen by me.	0%	
User activity	The content of the course is presented to me, but it is repeated to me in various ways.	75%	
	The content of the course is presented to me, but I create my own uses for the information within the course.	25%	
Cooperative learning	I work by myself on activities or projects.	25%	
	I work with a group on activities or projects.	75%	Although this is occurring I think the majority of work is done on an individual basis
	I am learning directly from the instructor or course designer.	50%	
	I am learning by collaborating with my colleagues or classmates.	50%	

For instance, all experts considered that the module gave pre-determined goals and that the students would be able to tell if they learned something by their ability to perform the activities requested by the instructor. In addition, the experts considered that the course module showed an instructor who guided the students to learn what they need to learn, and that the course features that will help the students learn the course material are chosen by the instructor. All of the critical and assistive cross-cultural values of the course were compared with those of the students to search for differences and opportunities for adaptations in a systematic way, following the CAP model. This process was completed during the pilot study analysis stage. Details of the CAP model methodological analysis with the feedback from the instructor for each cultural dimension, and feedback gathered from the experts' evaluation from the rubric, can be found in Figure 8 previously presented in this chapter.

After the application of the CAP model, changes were found in the post-evaluation when compared to the critical and assistive cross-cultural dimensions from the pre-evaluation. The researcher found that adaptations affected not only the expected cultural values (cooperative learning-critical, teacher role-critical, value of errors-critical, accommodation of individual differences-assistive), but other critical and assistive cross-cultural values as well. Changes between the classifications provided by the pre-evaluation and the post-evaluation helped to identify what other critical and assistive cross-cultural dimensions were affected indirectly from the implementation of the cultural adaptations. For instance, in the pre-evaluation, experts selected that the course allowed the student to be tested with questions that are based on the stated goals and objectives of the course. However, this view changed after the course module was

adapted, at which point the representative learners selected that the students are tested by applying what they have learned from the course to different situations. This shift was not planned as an adaptation at first, but the pedagogical paradigm was affected indirectly by the cultural adaptations. Such direct and indirect effects on the critical and assistive cultural values of the course gave origin to a question that was added to the post-questionnaire to see how the targeted learners perceived the adaptations as fulfilling the originally identified needs. Recall that to achieve systemic validity in a DBR study, the appropriate research methods needed for the study may be modified during the research stages as long as the results and the inferences drawn help to answer the original research question. The changes are detailed in Table 13 below.

Table 13

Category changes found in the post-evaluation when compared to the pre-evaluation of course critical and assistive cross-cultural dimensions (N=4)

Cultural values	Categories	Percentage	Comments
Pedagogical paradigm	*I follow a well-defined, logical path to learn what I need to learn.*	*50%*	
	I explore different paths to learn what I need to learn.	*50%*	
	I am tested with questions that are based on the stated goals and objectives of the course.	*25%*	
	I am tested by applying what I have learned from the course to different situations.	*75%*	
	I am given predetermined learning goals.	100%	

	I learn as I go, depending on my own learning goals.	0%	
Experiential value	I learn from any kind, as long as they make sense.	25%	
	I learn from examples as long as they are related to my work or personal life.	75%	
	I can tell I have learned something because I can perform the activities requested by the instructor or course designer.	*50%*	
	I can tell I have learned something because I have applied what I have learned to my actual activities.	*50%*	
Teacher role	*I follow a path of learning determined by the instructor or the course designer because that person usually knows what I need to learn.*	*50%*	
	I follow a path of learning determined by me because I usually know what I need to learn.	*50%*	
	I am taught by an expert in the field on what I need to learn.	0%	
	I am guided by an instructor who shows me how to learn what I need to learn.	100%	
Value of errors	I learn until I make no errors on the test.	0%	
	I learn from my errors by experimenting with that I have learned.	100%	By having students do more critiquing like you've set up in W5, this offers more opportunity to learn along the way.
	The instructor or the course designer is satisfied if I	0%	

	take a test without making mistakes.		
	The instructor or the course designer is satisfied if I learn from my mistakes.	100%	
Origin of motivation	For me personally, I take e-learning courses when I am required to.	0%	
	For me personally, I take e-learning courses when I want to.	75%	
	No response	25%	
	For me personally, I prefer e-learning courses in which I am told what I need to learn.	*50%*	
	For me personally, I prefer e-learning courses in which I decide what I need to learn.	*50%*	
Accommodation of individual differences	The course uses very few learning activities throughout the course.	0%	
	The course uses several learning activities throughout the course.	100%	The combination of reading assignments, writing assignments, and discussion based assignment seem to be the norm for online learning.
	The instructor or course designer uses a few standard instructional methods or activities to teach me the course content.	*25%*	
	The instructor or course designer uses several instructional methods or activities to teach me the course content.	*75%*	The combination of reading assignments, writing assignments, and discussion based assignment seem to be the norm for online learning.
Learner control	I am given a deadline or timed activities.	100%	Although there are deadlines, students usually have control

			over their pace on a weekly basis.
	I can control the pace of learning.	0%	
	The course features that will help me learn the material are chosen by the instructor or course designer.	100%	
	The course features that will help me learn the material are chosen by me.	0%	
User activity	*The content of the course is presented to me, but it is repeated to me in various ways.*	*50%*	
	The content of the course is presented to me, but I create my own uses for the information within the course.	*50%*	
Cooperative learning	I work by myself on activities or projects.	25%	I think the bulk of the work is individual, but there are opportunities to work with others throughout the course
	I work with a group on activities or projects.	75%	Although this is occurring I think the majority of work is done on an individual basis
	I am learning directly from the instructor or course designer.	*0%*	
	I am learning by collaborating with my colleagues or classmates.	*100%*	

Note. Changes found are presented in italic.

To guide the development of a culturally adapted and accessible online module, the researcher worked collaboratively with the instructor through the entire process. The instructor's engagement, perception of the process and its importance, satisfaction with

the final product, and motivation to apply the model to other course modules in the future are important to analyze the effects of applying the CAP model to culturally-adapt the online module. To gather this information, a summative online interview was conducted after students completed the online module.

The instructor considered the process to be *"a fairly rigorous process, I think that it was definitely helpful for the module that we have integrated those changes"*. In general, he felt engaged in the process and found it somewhat easy to apply or implement in practice. He reported to be somewhat satisfied with the online module as well as with the adaptation process. He felt motivated during the adaptations process; however, he reported to be *"not sure that I would particularly choose to use this format again to modify my course"*. More details of the salient points of the interview can be found in Table 14.

Table 14

Salient points of Instructor's interview (N=1)

Variable	Question	Response Score	Comments
Perception with the cultural adaptation process	In general, what do you think of the model we applied, the CAP model?	Rigorous process/Helpful	It seems to be a fairly rigorous process, I think that it was definitely helpful for the module that we have integrated those changes
	How useful/helpful do you think the CAP model was as a guide to analyze and determine appropriate cultural adaptations?	Somewhat useful/helpful	
	How did you	Somewhat easy to	

	perceived the process of the CAP model application and adaptations?	apply/implement in practice	
Instructor engagement	How engaged did you feel during the process of the application of the cultural adaptations?	Extremely engaged	Involved in the process and abreast of everything that I needed to be kept up with.
Satisfaction with the cultural adaptations	How satisfied are you with the culturally adapted online module?	Somewhat satisfied	
	How satisfied are you with the adaptation process?	Somewhat satisfied	The process that we went through was very easy and painless
Motivation with the cultural adaptation model	How motivated you felt during the adaptation process?	Somewhat motivated	
	How motivated are you to apply the CAP model to culturally adapt other online modules and courses in the future?	Neutral	I'm not sure that I would particularly choose to use this format again to modify my course
Additional comments	*It was definitely interesting*		

The previously presented data demonstrates the systematic approach taken in the present DBR study to culturally adapt the selected online module using the CAP model within the ADDIE instructional design model. This process included assessment of the course structure, the assessment of the course and participants' cultural values and critical cross-cultural dimensions, the adaptations applied, and validation using qualitative data from the instructor and quantitative evaluations from experts and representative learners. One of the effects was the discovery of changes, both expected and unexpected, in the

cross-cultural values of the course module after the adaptations. Another effect was the positive perceptions of the instructor regarding the adaptation process and its importance, classifying it as rigorous and somewhat useful, in addition to his satisfaction with the adapted online module. He also reported to be extremely engaged and somewhat motivated during the process. As a practitioner, another effect was that he reported no motivation to apply the same model to culturally adapt the course in the future.

Research Question 2

> *To what extent does the use of the Cultural Adaptation Process Model help to provide a culturally diverse range of learners the opportunity to achieve equitable perceived learning outcomes, satisfaction with the online course, and levels of motivation?*

After the application of the CAP model to the module, the students' perceived learning outcomes, satisfaction, motivation, and final scores were measured using quantitative and qualitative questions and instruments. In addition, the final scores and participation in the discussion forums were retrieved from the learning management system.

In relation to the satisfaction construct, looking at scores of somewhat agree, agree, and strongly agree, 70.6% of the students felt that online education is an excellent medium for social interaction, 82.4% felt comfortable conversing in the online course, 88.3% were comfortable introducing themselves in the course, 94.1% thought the instructor created a feeling of online community, 88.3% felt comfortable participating in discussions, 88.2% thought that the instructor facilitated discussions, 88.2% felt

comfortable interacting with others, and 94% felt that their point of view was acknowledged by other participants in the course module.

The perceived learning construct also yielded high percentages among the students' answers. Looking at the scores of somewhat agree, agree, and strongly agree, 94.2% of the learners reported that the level of learning that took place during the course module was of the highest quality and 94.1% reported that, overall, the module met their expectations. Taking the percentages for the categories all of it and most of it, 88.2% of the students reported that they learned what they expected to learn in the course module and 82.4% reported that they expect to apply the information and skills learned to their present or future jobs. From these percentages, the students, in general reported high satisfaction and high levels of perceived learning from the culturally-adapted online module. The students' answers related to the satisfaction and perceived learning constructs can be found in Table 15 below.

Table 15

Satisfaction and Perceived learning of online students after module completion (N=17)

Variable	Question	Categories	Frequency	Percentage in Category
Satisfaction	Online or web-based education is an excellent medium for social interaction.	5=strongly agree	2	11.8%
		4=agree	6	35.3%
		3=somewhat agree	4	23.5%
		2=somewhat disagree	2	11.8%
		1= disagree	2	11.8%
		0=strongly disagree	1	5.9%
	I felt comfortable conversing through this medium.	5=strongly agree	5	29.4%
		4=agree	7	41.2%
		3=somewhat agree	2	11.8%
		2=somewhat	2	11.8%

	disagree		
	1= disagree	0	0.0%
	0=strongly disagree	1	5.9%
I felt comfortable introducing myself in this course.	5=strongly agree	8	47.1%
	4=agree	7	41.2%
	3=somewhat agree	0	0.0%
	2=somewhat disagree	1	5.9%
	1= disagree	0	0.0%
	0=strongly disagree	1	5.9%
The instructor created a feeling of an online community.	5=strongly agree	6	35.3%
	4=agree	7	41.2%
	3=somewhat agree	3	17.6%
	2=somewhat disagree	1	5.9%
	1= disagree	0	0.0%
	0=strongly disagree	0	0.0%
I felt comfortable participating in the course module discussions.	5=strongly agree	7	41.2%
	4=agree	6	35.3%
	3=somewhat agree	2	11.8%
	2=somewhat disagree	1	5.9%
	1= disagree	0	0.0%
	0=strongly disagree	1	5.9%
The instructor facilitated discussions in the course module.	5=strongly agree	0	0.0%
	4=agree	11	64.7%
	3=somewhat agree	4	23.5%
	2=somewhat disagree	0	0.0%
	1= disagree	2	11.8%
	0=strongly disagree	0	0.0%
I felt comfortable interacting with other participants in the course module.	5=strongly agree	2	11.8%
	4=agree	10	58.8%
	3=somewhat agree	3	17.6%
	2=somewhat disagree	1	5.9%
	1= disagree	0	0.0%
	0=strongly disagree	1	5.9%
I felt that my point of view was acknowledged by other participants in	5=strongly agree	3	17.6%
	4=agree	10	58.8%
	3=somewhat agree	3	17.6%
	2=somewhat	0	0.0%

	the course module.	disagree		
		1= disagree	1	5.9%
		0=strongly disagree	0	0.0%
Perceived Learning	My level of learning that took place in this course module was of the highest quality.	5=strongly agree	2	11.8%
		4=agree	7	41.2%
		3=somewhat agree	7	41.2%
		2=somewhat disagree	0	0.0%
		1= disagree	1	5.9%
		0=strongly disagree	0	0.0%
	Overall this course module met my learning expectations.	5=strongly agree	3	17.6%
		4=agree	8	47.1%
		3=somewhat agree	5	29.4%
		2=somewhat disagree	0	0.0%
		1= disagree	1	5.9%
		0=strongly disagree	0	0.0%
	Based on the objectives of the course module, did you learn what you expected to learn?	3=all of it	4	23.5%
		2=most of it	11	64.7%
		1=very little	2	11.8%
		0=no	0	0.0%
	Do you think you will apply the information or skills learned from the module to your present or future job, or life?	3=all of it	2	11.8%
		2=most of it	12	70.6%
		1=very little	2	11.8%
		0=no	1	5.9%

Qualitative questions provided more in-depth information to search for understanding of the motivation and satisfaction constructs. In general, when asked how beneficial the cultural adaptations were, most of the students reported to feel neutral (10 comments) or positive (7 comments) about them. However, when asked if the cultural adaptations helped them feel motivated to complete the online module, only one student reported to feel motivated by the cultural adaptations to complete the module while the majority were no or neutral (16 comments) in regards to this question. In terms of satisfaction

with the adapted module, 20 comments were counted to be a positive experience and 2 as neutral, where the students identified the interaction of the discussion boards and the peer review of the written assignment as most beneficial to them. Details of the students' answers to these questions are given in Table 16.

Table 16

Salient points found in open ended qualitative questions from post-questionnaire (N=17)

Variable	Question	Salient points
Motivation	In relation to the cultural adaptations and multiple presentations of course module content, would you say it was beneficial to you or would you go through the course the same without the cultural adaptations?	1. Neutral (10) a. Same b. Not sure c. Not aware d. Neutral 2. Positive (7) a. Beneficial or helpful b. Like various methods of presentations c. Different presentations helped d. Benefit for someone else e. Diverse 3. Negative (2) a. Adaptations did not fit the module design b. Overwhelming
	Did the cultural adaptations help you feel motivated to complete the online module?	1. No (14) 2. Neutral (2) 3. Yes (1)
Satisfaction	How satisfied were you with this course module? For example, were your goals and/or expectations met?	Positive experience (20) 1. Satisfaction 2. Goals and expectations were met 3. Good experience 4. Gave me a better appreciation of the role culture plays in online education Neutral (2) 1. Did not have expectations going into the module

	2. Hardly any differences, same expectations Negative experience (2) 1. Confusing and more difficult 2. Slightly disappointed and not as robust as other modules
Which aspect of this course module was most beneficial to you and why?	Course module activities 1. Interaction- Discussion boards (6) 2. Peer review (4) 3. Group work (2) 4. Written assignment (2) 5. Reading assignment (1) 6. Online research (1) 7. Survey/Self-reflection(1)

In addition, the researcher looked for the students' previous confusing experiences and their perceptions of the cultural adaptations applied to the module. The students' previous confusing experiences with online learning is an important consideration for the research questions of the present DBR study, giving context to the students' answers to other questions as well. For instance, 35.3% of the learners reported to be confused by the language, i.e. slang, translations, humor, and how the words were used. In addition, group, research, and hands-on activities represented a large percentage, 41.2%, of the confusion experienced by the students. This can help explain why most students reported to prefer to work by themselves in the pre-questionnaire.

The researcher included a question to look deeper into the students' perceptions of the cultural adaptations applied to the module. Most of the students, 64.7%, reported that posting the written assignment in the discussion forum helped them, and that the course presented several learning activities. Even though only two students took advantage of the opportunity to apply their cultural values to the written assignment, a high percentage, 41.2%, reported that this was important for them. A lower percentage of students, 11.8%, reported to feel that the audio presentation provided a "taught by an expert in the field"

experience. Table 17 presents details of the learners' answers to these quantitative questions.

Table 17

Previous confusing experiences in online learning and perceptions of cultural adaptations (N=17)

Variable	Question	Categories	Frequency	Percentage in Category
Previous confusion experiences	From your experience with e-courses, which of these features or characteristics have ever confused you? (Please select all that apply.)	Language- translations, how the words were used, slang, humor, etc.	6	35.3%
		Activities- group activities, projects, research, hands-on practice, etc.	7	41.2%
		Related technologies- web browsers, list servers, etc.,	2	11.8%
		Design features- online chat, interactive exercises, simulations, etc.	3	17.6%
		Approach- the role of the teacher, using experts to teach, etc.	2	11.8%
		Images- web design, photos, icons, symbols, etc.	1	5.9%
		Format- chronological vs. branched lesson plans, types of tests used, etc.	2	11.8%
		Other: Navigation-	1	5.9%

		where things where located		
		None that I have noticed	3	17.6%
Cultural adaptations perceptions	Select all that apply considering the cultural adaptations presented in the module:	The audio presentation provided a "taught by an expert in the field" experience.	2	11.8%
		Posting my written assignment in the discussion forum provided me the opportunity to learn from my mistakes while helping me to improve it.	11	64.7%
		The course module presented several learning activities.	11	64.7%
		Having the opportunity to apply my existing skills and cultural values to the written assignment was important for me.	7	41.2%

The interviews with a randomly selected small (N=2) sample of culturally diverse students provided additional information regarding the satisfaction, perceived learning, and motivational constructs, along with recommendations to improve the application of the model in the future. The fact that the interview was semi-structured helped the PI to easily identify their answers. In addition, most of the questions asked the students for additional comments, which are provided in the comments column in Table 18 alongside the questions and the students' answers. The participants are identified as student 1 and student 2 to maintain their anonymity.

Table 18

Salient points of Culturally Diverse Students interviews (N=2)

Variable	Question	Response Score	Comments
Satisfaction	In general, what do you think of the cultural adaptations applied to the online module in comparison with the previous modules presented in the same course?	1. Neutral 2. Interesting	2. I like that a lot, that's very interesting
	How satisfied are you with the culturally adapted module?	1. Somewhat satisfied 2. Extremely satisfied	
	How would you compare the adapted module to the non-adapted modules from the same online course in terms of your satisfaction with the module?	1. Neutral 2. The adapted module was somewhat better	
Satisfaction/Level of motivation	How appropriate were the cultural adaptations applied when you consider your educationally relevant cultural needs?	1. Extremely appropriate 2. Somewhat appropriate	
Levels of Motivation	How would you compare the adapted module to the non-adapted modules from the same online course in terms of your motivation to complete the module?	1. Neutral 2. Neutral	1. I already was motivated to complete the module
Perceived Learning	How useful/helpful were the cultural adaptations applied to the course to your learning process?	1. Somewhat useful/helpful 2. Somewhat useful/helpful	2. I am not sure that I learned more from it, but…I found it very interesting

	How would you compare the adapted module to the non-adapted modules from the same online course in terms of your perceived learning?	1. The adapted module was somewhat better 2. Neutral	2. It is really kind of neutral for me, because I like both sides, with it an without
Recommendations for improvement	1. *Getting into culture more towards the beginning because that way as you are completing the modules, it could have that awareness throughout the entire course instead of all of the sudden getting information regarding culture towards the end of the course. I think it would be more appropriate towards the beginning and then sprinkle it throughout so that students can be aware of it as they are doing the lessons.* 2. *I think the cultural adaptation was actually pretty interesting because of where I live, which is very culturally diverse. So…the language can be a problem sometimes, as well someone may be more a different culturally than others, I think it is important to include it.*		

From Table 18, it can be seen that student 2 found the cultural adaptations applied to the module interesting. In addition, the students were either extremely or somewhat satisfied with the culturally adapted module, and student 2 found the culturally adapted module to be somewhat better than the previous modules. In regards to the appropriateness of the cultural adaptations relevant to their cultural needs, the students reported that the adaptations were either somewhat or extremely appropriate. The students were already motivated to complete the module, so the adaptations did not really help further their motivation to complete the online module. This can be seen from one of the student's comments: *"I already was motivated to complete the module"*. Both students reported that the adaptations were somewhat helpful to their learning process. However, student 2 reported that *"I am not sure that I learned more from it, but…I found it very interesting"*. Student 1 suggested that it might be more beneficial to start to

culturally adapt from the beginning of the course, while student 2 suggested that language is an important consideration when culturally adapting an online course.

A two-tailed Wilcoxon signed rank test was conducted to evaluate whether there were differences between the pre and post-module questionnaire answers of the students for each of the cultural dimensions. Raw data from the test can be found in Appendix B-7. The results indicated a significant difference for one of the questions related to the pedagogical paradigm, $z = -2.00$, $p < .05$. The question reads:

I prefer to be tested:

-with questions that are based on the stated goals and objectives of the course.

-by applying what I have learned from the course to different situations.

The mean of the ranks for pedagogical paradigm on the pre-questionnaire was 0.0, while the mean of the ranks in the post-questionnaire was 2.5. More details of the test can be found in Table 19.

Table 19

Wilcoxon signed rank test (N=16)

	N	Mean rank	Sum of ranks
Negative ranks	0 (pre < post)	.00	.00
Positive ranks	4 (pre > post)	2.50	10.00
Ties	12 (pre = post)		
Total	16		

Therefore, there is evidence to suggest that there was a change in the pedagogical paradigm preference of the students after being exposed to the cultural adaptations of the module. Before, there was a marked preference for being evaluated by applying what was learned to different situations (75%). After the module, that preference disappeared,

showing 50% of learners selecting preference to being assessed with questions based on the stated goals and objectives and 50% by application. Figure 16 provides a pictorial representation of the results obtained from the test.

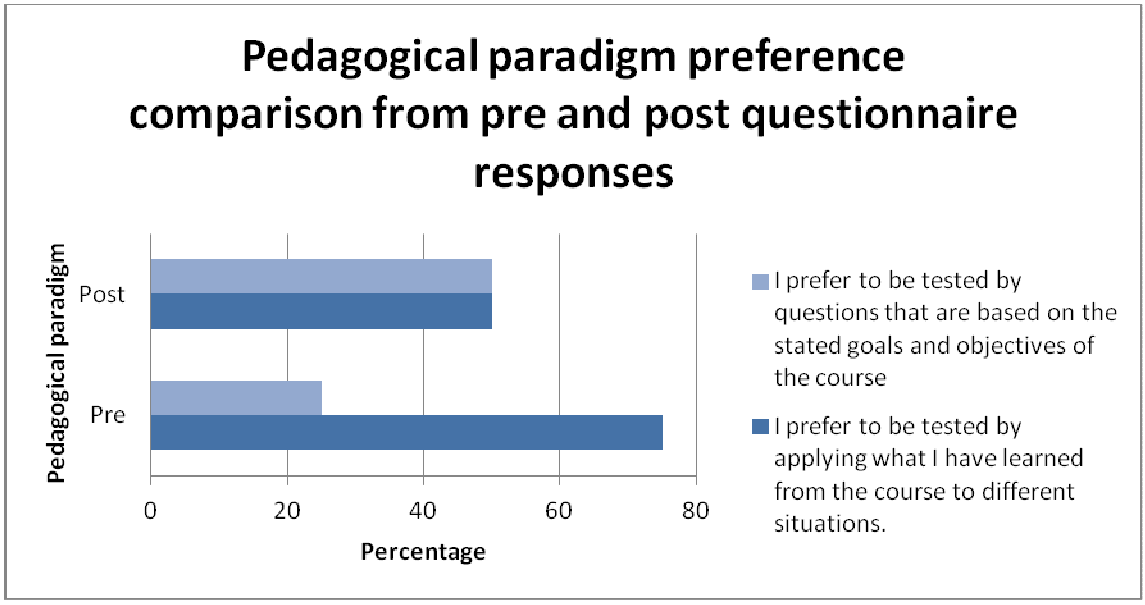


Figure 16. *Comparison of pedagogical paradigm preferences from pre and post questionnaire answers*

The students' final scores on the module were obtained from the learning management system. These scores provided more data to assess the appropriateness and usefulness of the cultural adaptations applied to the module. From Figure 17, an incremental increase can be seen in the average scores for the discussion assignments for the culturally adapted module (module 5) and after.

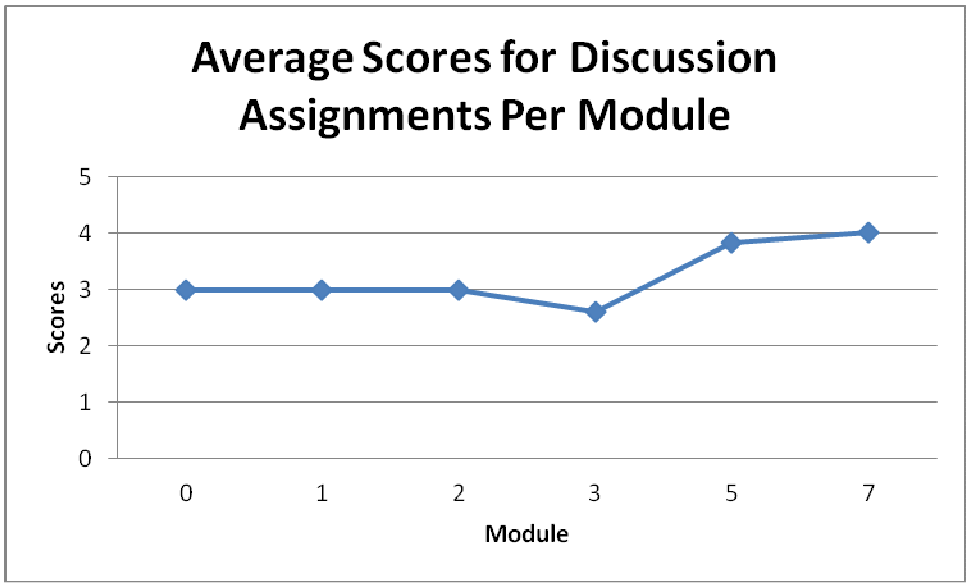


Figure 17. *Average scores for discussion assignments per module*

However, the written assignments average scores continued to be more or less the same for module 5 and after (Figure 18).

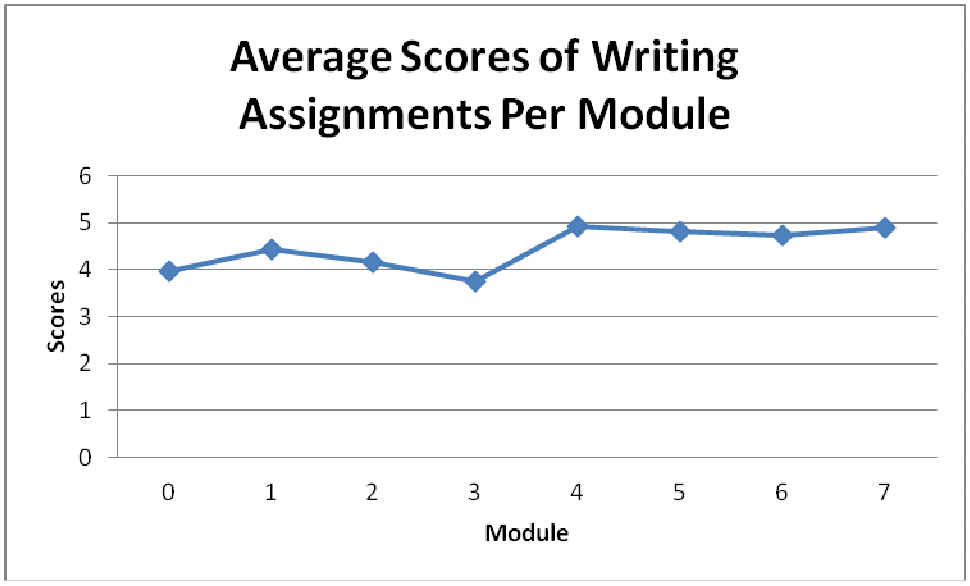


Figure 18. *Average scores of writing assignments per module*

From the data previously presented, it can be concluded that after the application of the CAP model to the online module, students reported high levels of satisfaction and perceived learning. In addition, most students reported that the adaptations were beneficial to them. However, only one student reported to feel motivated by the cultural adaptations to complete the module, while most reported to feel neutral or no difference in relation to their levels of motivation to complete the culturally adapted module.

The interviews provided more in-depth information in regards to the satisfaction, motivation, and perceived learning variables from two different diverse students' perspectives. The students reported satisfaction with the course, and that the adaptations were appropriate for their educationally relevant cultural needs. In addition, they reported that they were already motivated to complete the module with or without the cultural adaptations, and that the adaptations were somewhat useful for their learning. One of them found the adapted module to be somewhat better that the non-adapted modules. From the final scores, it can be seen an improvement in the average scores for the discussion assignments after the course module was culturally adapted.

The most beneficial aspect of the course module, as identified by the students, was the interaction on the discussion boards and the peer review of their written assignments. Students reported to be confused in online learning by language issues such as slang, translations, humor, and how words are used. Students were also confused by group, research, and hands-on activities. This reported confusion may explain why most students reported to prefer to work by themselves instead of doing group work in online learning.

One of the purposes of the CAP model is to recognize the value of multicultural practice and inclusive pedagogies, helping all students to culturally merge instead of capitalizing on their differences. In this case, a change in the answers from the pre and post questionnaires uncovered a possible cultural merge in relation to the pedagogical paradigm preference. Before the course module, there was a marked preference for being evaluated by applying what was learned to different situations. After the module, that preference disappeared, showing that 50% preferred to be assessed with questions based on the stated goals and objectives and 50% by application.

The students' perceptions of the cultural adaptations applied were positive, showing that a high percentage considered the changes useful or helpful, including the changes of posting the assignment in the discussion forum to receive and provide feedback and the other activities added to the course module. Only two students took advantage of the opportunity to apply their cultural values to the written assignment. However, a high percentage reported that this was an important consideration for them.

Summary

This chapter presented in detail the steps and procedures followed for the pilot and final study stages along with the data collected by stage. The final study description and results were included in this chapter along with the analysis of the cultural adaptations of the module, the differences noticed by representative learners after the course module was culturally adapted, the presentation of the e-learning adapted module to the targeted learners, and summative evaluations, including the post-questionnaires and students' and instructor's interviews. A final CAP methodological analysis table was

provided with a summary of the measured impact after the module was presented to the targeted learners. Other expected outputs of the present DBR study, such as an estimate of the hours invested for each stage, were also discussed in the chapter. Lastly, answers to the research questions were discussed along with the data collected for each question.

Chapter 5: Conclusions and Future Research

This chapter offers further discussion of the key findings of the present DBR study. In addition, overall conclusions derived from the results and further research recommendations for the application of the cultural adaptation process to other scenarios, including educational and/or corporate online Level 3 courses, are provided. Moreover, a discussion of the lessons learned, proposed guidelines, and recommendations for improving the CAP model are also included in this chapter, along with possible directions for further research in the cultural adaptation model testing area. The chapter begins with a restatement of the study's research questions.

Research questions

The following served as the research questions that guided the inquiry for the present study:

1. *What are the effects on the instructional design process of applying a systematic approach to the assessment, adaptation, and validation of a Level 3 online module in a higher education environment using the Cultural Adaptation Process Model to guide the development of a culturally-adapted and accessible e-learning module?*
2. *To what extent does the use of the Cultural Adaptation Process Model help to provide a culturally diverse range of learners the opportunity to achieve equitable*

perceived learning outcomes, satisfaction with the online course, and levels of motivation?

Key Findings and Overall Conclusions

The researcher found cultural adaptations needed for the online course even when the expected sample (30%) of culturally diverse learners was not achieved. However, 41.2% of the students reported to come from cultural backgrounds other than the USA. The rubric pre-evaluation further justified the application of the model to culturally adapt the online module to include all of the principles for each category. Adaptations were considered necessary if at least 30% of the students' culturally relevant preferences were different than the cultural critical and assistive cross-cultural dimensions of the course module and were considered appropriate by the instructor. Based on the CAP methodological analysis and the previously detailed considerations, three adaptations were considered necessary.

One aspect that may have had a strong impact on the results obtained in the study was that the students enrolled in the online course are highly educated English speakers. In addition, most of the students, 45.5%, considered themselves experts in online learning, making it harder to identify with precision if the results obtained were directly related to the cultural adaptations or if they may have been impacted by the previous experiences of the students. However, cultural issues in online learning were identified as a problem that needs to be addressed by all but one student in the online discussions. Moreover, the students proposed many solutions to the problem, including assessing the cultural needs of the students either before or after the course begins through the potential

use of surveys or interviews, providing plenty of feedback, creating activities that are relevant to the students prior cultural experiences, providing venues for discussions using online forums along with guidelines for netiquette during discussions, including multimodal methods, and increasing flexibility.

Regarding the first research question, the main effect derived from the systematic approach applied to the assessment, adaptation, and validation of the Level 3 online module using the CAP model was related to the changes found in the cross-cultural dimensions of the course module after the adaptations. While some changes were expected due to their relation to previously identified needs, some were not expected. For instance, even though no adaptations were considered necessary for the pedagogical paradigm, the representative learners agreed that the course continued to provide a well-defined logical path but also provided the opportunity to explore different paths to learn. It can be speculated that the opportunity to apply their cultural backgrounds to the written assignment gave the impression to representative learners that the changed course module provided more opportunities to explore different paths for learning. Perhaps the opportunity to provide and receive feedback on the written assignment contributed to this change as well. Another example of unexpected change is the cross-cultural dimension of user activity, where no adaptation was considered necessary based on the instructor's comments. For instance, before the adaptations, consensus was that the content of the course was presented to the students and repeated to the student in various ways. After the cultural adaptations, representative learners agreed that the course module also allowed the students to create their own uses for the information within the course module. This shift may likewise stem from the opportunity to incorporate the students'

cultural values into the written assignment and to provide and receive feedback on the assignment before submission.

Another effect found was the satisfaction and positive perceptions of the instructor in regards to the adaptation process and its importance, classifying the process as rigorous and somewhat useful. He reported to feel *"Involved in the process and abreast of everything that I needed to be kept up with"*. However, he reported to not be interested in applying the model to other modules of the same course or other courses. This lack of motivation might be related to the complexity associated with the model's application that does not make it really feasible to be applied by practitioners in a straightforward form, unless the practitioner carries a vast experience with the model and cultural studies in online learning. The researcher contacted the instructor two semesters after the research study ended, and the instructor reported that the audio presentation had been removed as an adaptation in the subsequent semesters, leaving the other two adaptations in place.

In relation to the second research question, it can be concluded that, after the application of the CAP model, the students reported high levels of satisfaction and perceived learning. Moreover, from the final scores, an improvement can be seen in the average scores for the discussion assignments after the course module was culturally adapted.

Most students reported that they benefited from the adaptations, however, only one student reported to feel motivated by the cultural adaptations to complete the module. The students reported to benefit most from the discussion boards and the peer review of the written assignment. Results from the two culturally diverse learners interviewed

showed that none felt more motivated to complete the module based on the cultural adaptations alone since they were already motivated to complete the module. This result gives more credibility to the finding from the questionnaire in regards to the motivation construct. However, one of the interviewed students reported that the culturally adapted module was somewhat better than the non-adapted modules. One student commented on the cultural adaptations: *"I like that a lot, that's very interesting"*. Both reported that they were satisfied with the course and that the adaptations applied were appropriate for their educationally relevant cultural needs.

In addition, at the beginning of the course the students reported to prefer evaluation by application of what was learned to different situations. A cultural adaptation seemed to take place in the students reported preferences after being exposed to the culturally adapted module. After the module, this preference disappeared, showing that 50% of the students preferred to be assessed with questions based on the stated goals and objectives, and 50% by application as before.

In general, the students' perceptions of the cultural adaptations were positive, considering them as useful and helpful. Even though only two students took advantage of the opportunity to apply their cultural values to the written assignment, a high percentage reported that this consideration was important to them. It can be speculated that just to be given the opportunity to do so in the assignment was important to a high percentage of the students, even when they decided not to take advantage of it. These figures may have to do with the pressure students face to complete the module in a timeframe, a constraint that limited the amount of students adding the optional cultural values section to the assignment.

An important output expected from the present research are the lessons learned derived from the research study. These lessons are presented next along with a detailed discussion.

Lessons Learned

Many lessons were through the process of applying the CAP model within a DBR methodology. The CAP model was found to be a very useful tool to culturally adapt the online course module selected for the present study. It is important to recognize that even though most of the students were American, the researcher was able to find necessary adaptations that fulfilled the aims of the present study and that also were considered appropriate by the practitioner. The application of the model is a very rigorous process, as was confirmed by the instructor's responses. However, the first, and perhaps the most important, lesson learned is that the CAP model is not an intuitive model to apply. Even though the PI is well informed in cultural issues of online learning and in cultural studies, and has completed a previous study in the area, the application of the model required many hours of analysis and interpretation of the steps. The model needs improvement in order to be truly applicable by practitioners who may or may not be informed by cultural studies in online learning.

In addition, for the model to be successfully applied, either the instructional designer applying the model should also be the instructor or must work with an instructor committed to cultural diversity in online learning that shows motivation to culturally adapt the online course. The teamwork implied is crucial for the success of the cultural adaptations to the courses. This teamwork may be generalized to Level 3 online courses

provided in corporate settings and other Level 3 online courses. Other course levels may require less teamwork; for example, Level 1 courses that, based on the model, may only require translation instead of more complex adaptations like the ones presented in this study.

Another lesson learned was in relation to the importance of applying the rubric developed for the present study based on Wang and Reeves (2007) principles. The analysis using the rubric gave origin to a necessary adaptation that the CAP model did not identify.

In addition, the need for feedback from practitioners is crucial to the success of applying the CAP model. In this case, the lack of motivation from the practitioner to further apply the same model to culturally adapt other course modules may be an indicative of the difficulty associated with the application by practitioners who are, in most cases, working against the clock. Therefore, it was found that the model should be tested for applicability with a group of practitioners applying the model to culturally adapt online courses in their practice. This test might help to improve the model by giving it a practical perspective. Some proposed guidelines that are expected to be useful to the application of the CAP model to culturally-adapt online courses are detailed next.

Proposed guidelines for the application of the CAP model

From the DBR study, following a methodological application of the CAP model, the researcher was able to develop some guidelines that may prove useful in the practice of adapting online courses to multicultural audiences. These guidelines include:

1. Assess the cultural diversity of the targeted learners and the instructor.

a. This might be done following the same procedure detailed in this study or might include additional questions that may be relevant for a particular application of the model. For instance, it might be important to evaluate the students' preference for the screen layout, colors, or animations, among other culturally related preferences. Other factors related to diversity, such as gender, religion, income level, etc., should also be considered.

2. Confirm the pre-evaluation of the critical and assistive cross-cultural values of the online course with independent experts to avoid bias in the identification of possible adaptations.
3. During the CAP model application process, it is recommended that the practitioner fills out in detail a table containing columns that include: the module and learner characteristics, identified potential adaptations, and a measure of the adaptations' impact. This methodological approach proved to be very useful for the researcher to compare the characteristics of the course module, the participants, the identified adaptations, and changes found throughout all the stages of the study.
4. It is important to keep record of the interactions with the instructor of the course to integrate such recommendations for the identified adaptations. In addition, it is crucial to keep track of all the changes and data collected, being very methodical in the data collection procedures and analyses, to find the appropriate adaptations for the module, and also to find the impact on such adaptations. For this tracking, the weekly journal proved to be a very powerful tool.

Some recommendations for the improvement of the CAP model were found as well and are detailed in the next section.

Recommendations for the Improvement of the CAP Model

To make the model more applicable for practitioners, it is recommended that the model provide guidelines for its use by a general population of practitioners, who may or may not be familiar with cultural studies in online learning. Perhaps a small manual of instructions could facilitate the application of the model for a wider range of practitioners.

In addition, it was found that the questions assessing the critical and assistive cross-cultural values for the current model only provide two possible responses, from one extreme of the continuum to the other, for each item to indicate the participants' preference for a characteristic or feature of the e-course. This feature can be improved by providing points in between the two extremes, since participants might not necessarily feel identified with either of the extremes, but rather fall into some point in the middle. This improvement in turn may help provide more information about the participants' standing in relation to their educationally relevant cultural preferences, possibly helping practitioners to more easily identify potential adaptations. For instance, instead of asking:

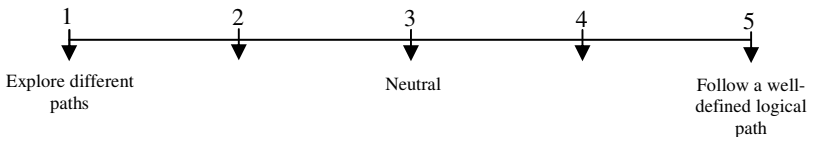
I prefer to:

-follow a well-defined, logical path to learn what I need to learn.

-explore different paths to learn what I need to learn.

The question could be presented in the following form, possibly leading to more detailed information that might help in the identification of adaptations:

To learn what I need to learn from the course module, I prefer to:



In addition, the improved model should be assessed first with a study consisting of only practitioners, working in academic and corporate areas, to put it to the test and search for their recommendations. This test may help to improve the model further, making it more feasible, intuitive, and therefore more attractive to those who will ultimately use it, instructors and instructional designers. After the model is improved based on the practitioners' recommendations, the model should be applied in various settings, both academic and corporate, to receive learners' feedback for its continued improvement. The new model should integrate the rubric developed for the present study, or some similar tool that may help to provide additional information that the model may not identify, helping to determine where the model may be lacking.

Reflections

First, it is important to reflect on the usefulness of the DBR approach to the present study. DBR provided the opportunity to obtain more information about the application of the model to the online course module. The detailed description of the phases, time invested, lessons learned, and proposed guidelines are some of the most

important benefits derived from the methodology applied. However, it was challenging to keep up with the extensive amounts of data collected. Extensive quantitative and qualitative data were collected throughout the entire process, and a systematic way to keep track of it had to be used. The researcher sometimes entered information in the weekly journal daily to help in this process. In addition, since many computer files were filled with raw and analyzed data, it was useful to add the paths and names given to each file into the weekly journal.

For the questionnaires, the University Academic Computing Survey tool was used, which proved to be an excellent tool to obtain data. The researcher received updates by e-mail for each new entry for the questionnaires. In addition, the PI used E-*lluminate Live!* to conduct the interviews; this program was a very useful tool for that purpose. E-*lluminate Live!* allowed the researcher to conduct the semi-structured interviews by displaying a presentation on the computer screen that helped to guide the interviews, while simultaneously having a two-way communication with the participants and recording the conversations.

Limitations

The present DBR study was conducted in a real-life online learning environment. The researcher made no attempt to hold variables constant, but rather worked to identify the variables and characteristics of the situation that may have affected the results of the study. One important consideration is the cultural diversity of the group of students that were enrolled on the course. The students did not comprise many different nationalities. However, even when the expected sample of culturally diverse students was not achieved, three adaptations were considered necessary after the application of the CAP

model. Still, it can be speculated that more substantial adaptations may have been identified with a more culturally diverse group of learners. In a future study, it is recommended to find a more culturally-diverse online course. One challenge is to identify the culture of the students enrolled on several courses before the classes begin in order to select the optimal course.

Another limitation of the study was the timeframe provided by just one module. It is possible that different results, especially in regards to the motivation construct, may have been found if the adaptations were applied to more modules within the same online course. In fact, one comment from the interviewed students pointed out that these cultural adaptations would have been more useful if they started out at the beginning of the course, and not midway through the course.

Future Research

Future research in the application of a cultural adaptation model should concentrate in two areas. First, there is a need to study the application of an improved cultural adaptation process model to other scenarios, including Level 1, 2, 3, and 4 courses in authentic institutional and corporate settings. Such new model should integrate the lessons and recommendations found during the application of the CAP model in the present study. A DBR methodology is recommended to conduct such studies because it can provide more information than a traditional methodology since, within the DBR approach, the procedures followed by the instructional designer must be detailed alongside the more traditional ways of obtaining and analyzing the data collected. In addition to expanding the study to different levels of courses, it would be useful to

expand the research timeframes, lasting for more than one module, possibly throughout the entire online course. Conducting a series of studies of this kind may help to increase our knowledge of cultural issues in online learning environments, and increase our knowledge of the instructional design practice of culturally-adapting online courses. These types of studies should also provide further recommendations for the model's improvement.

Second, efforts should concentrate on testing the same cultural adaptation process model applied in this study and on developing an improved model that integrates the recommendations included in this chapter. The model should be tested for applicability by a group of culturally diverse practitioners working in educational and corporate settings. This testing is expected to inform the real-world applicability of the model to culturally adapt online courses, therefore improving the model by giving it a practical perspective.

Another recommendation for further research is to study the level of teamwork required for the success of the model's application for different course levels. It is suspected that other course levels may require less teamwork. Take, for example, Level 1 courses, which, based on the model, may only require translation instead of the more complex adaptations presented in this study for a Level 3 course. However, teamwork is expected to be even more crucial for the adaptation of Level 4 courses. A study concentrating on the level of teamwork required to culturally-adapt courses from different levels may also help to improve the model and make it more applicable for a wider range of practitioners.

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Appendices

Appendix A: Instruments and Instrument Validations

Appendix A-1: Structural Component Tool

Course Title: _____

Rater: _____

Rate each item as to the degree which the elements are present in the online course.

0 – not evident

1 – minimally evident

2 – moderately evident

3 – fully evident

Descriptor	Rating
Content Organization	
Overall	
Media such as graphics, animations, diagrams, video, and audio that are utilized are relevant to the course.	
Objectives match the course exams.	
Glossary or additional references are provided.	
Each course unit/module contains clear objectives of the material to be presented.	

Course objectives are present.	
Course provides FAQ's or equivalent.	
Content/instruction contained in course is appropriate for the target audience.	
Syllabus	
Instructor grading policies are present.	
Participation requirements are provided.	
Contains information regarding course policies (i.e. late assignments, make-up policies, etc.)	
Technical support contact information is provided.	
Point value of all assignments is available.	
Information regarding student support services is available in the course.	
Faculty contact information is present.	
Instructor provides guidelines for all student communication.	
Course provides detailed directions on how to submit each assignment or activity.	
Information about any pre-requisites or entry-level skills	

needed is present.	
Instructor provides expectations regarding discussion posts or other class interactions (synchronous or asynchronous.)	
Guidelines were provided regarding all offline student communication (i.e. posting transcripts of offline meetings for a group.)	
Course description is present.	
Each course unit/module contains a clear overview of the material to be presented.	
Course Schedule	
Course contains due dates for assignments.	
Course contains assignments by week (or other time unit, including calendar dates.)	
All exam or assessment dates are provided.	
Suggested begin dates for each unit/module are provided.	
Contains a course calendar that includes important course dates.	
Delivery Organization	
Overall	

Course provides a layout screen (homepage) that is clear, clean, and well organized.	
Course provides on screen instructions that are simple, clear, and concise of how to begin.	
Student has the ability to bookmark areas of the course.	
Course provides clear exit/logoff paths.	
Consistency	
Course has a menu that remains constant as the student moves within the course.	
Course provides on screen navigation (i.e. breadcrumbs) to let the learner know where they are in the course.	
Each module/unit is accessed in the same manner throughout the course.	
Course has a menu that remains constant as the student moves within the course.	
Each course unit/module contains a single page that communicates all activities to be completed.	
Course unit/modules are presented consistently throughout the course.	

Flexibility	
All assignments including assigned reading is available for access.	
Ability to access archived discussions (i.e. synchronous chats or desktop conference meetings) are provided.	
Students can proceed at their own pace.	
The course contains flexible or adaptable learning routes.	
Students can review previous frames of information unlimited times.	
Student can pause or re-play any audio or video segment as desired.	
Previously viewed on screen instructions can be skipped.	
Learner has control over the rate of presentation of material.	
Course Interactions Organization	
Student to Student	
Student to student communication behaviors are clearly communicated.	
Student to student communication methods were clearly	

communicated.	
Student to Instructor	
Faculty provides information as to their timeliness of responses to email and student inquiries.	
Instructor is available for phone or F2F conferencing.	

Appendix A-2: Instructor and Researcher Pre-module Questionnaire: Cultural Values and E-course preferences

Are you:

a. instructor

b. researcher

You will be presented with pairs of statements about different features or characteristics of e-learning courses. **Please select one statement from each pair that best describes your preferences**.

1. Typically, I can tell my students learned something because they:

    a. can perform the activities requested by me.

    b. have applied what I have learned to real activities.

2. Typically, I:

    a. teach following a well-defined, logical path.

    b. explore different paths to teach what I need to teach.

3. I:

    a. usually know what my students need to learn.

    b. allow my students to follow a path of learning determined by them.

4. For me personally, I teach e-learning courses when I:

a. am required to.

b. when I decide to.

5. I encourage my students to work:

    a. by themselves on activities or projects.

    b. with a group on activities or projects.

6. Typically, I assess student learning:

    a. with questions that are based on the stated goals and objectives of the course.

    b. by them applying what I have taught from the course to different situations.

7. I teach:

    a. using any kind of examples, as long as they make sense.

    b. from examples related to mine or my students work or personal life.

8. I like my students to learn:

    a. directly from me.

    b. by collaborating with colleagues or classmates.

9. Typically, I:

    a. give my students predetermined learning goals.

b. teach as I go.

10. I prefer my students to learn:

a. until they make no errors on the test.

b. from their errors by experimenting with that they need to learn.

11. Typically, I:

a. teach to my students as an expert in the field.

b. guide my students and show them how to learn what they need to learn.

12. For me personally, I prefer teaching e-learning courses in which I:

a. decide what my students need to learn.

b. am told what to teach.

13. I am satisfied if:

a. I see a test without mistakes.

b. my students learn from their mistakes.

14. Typically, my e-courses use:

a. very few learning activities throughout the course.

b. several learning activities throughout the course.

15. I use:

a. a few standard instructional methods or activities to teach the course content.

b. several instructional methods or activities to teach the course content.

16. Typically, I:

a. give deadline or timed activities.

b. allow my students to control the pace of learning.

17. Typically, I:

a. choose the course features that will help my students learn the material.

b. allow my students to choose the course features that will help them learn the material.

18. Typically, I present the content of the course:

a. and repeat it to my students in various ways.

b. but I allow my students to create their own uses for the information within the course.

Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to ... (please circle one answer in each line across):

1 = of utmost importance

2 = very important

3 = of moderate importance

4 = of little importance

5 = of very little or no importance

1. have sufficient time for your personal or home life	1	2	3	4	5
2. have a boss (direct superior) you can respect	1	2	3	4	5
3. get recognition for good performance	1	2	3	4	5
4. have security of employment	1	2	3	4	5
5. have pleasant people to work with	1	2	3	4	5
6. do work that is interesting	1	2	3	4	5
7. be consulted by your boss in decisions involving your work	1	2	3	4	5
8. live in a desirable area	1	2	3	4	5
9. have a job respected by your family and friends	1	2	3	4	5
10. have chances for promotion	1	2	3	4	5

11. How often do you feel nervous or tense?

a. always

b. usually

b. sometimes

d. seldom

e. never

12. All in all, how would you describe your state of health these days?

a. very good

b. good

c. fair

d. poor

e. very poor

13.How often, in your experience, are students afraid to contradict their instructor?

a. never

b. seldom

c. sometimes

d. usually

e. always

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

1 = strongly agree

2 = agree

3 = undecided

4 = disagree

5 = strongly disagree

14. One can be a good instructor without having a precise answer to every question that a student may raise 1 2 3 4 5

15. An organization structure in which certain subordinates have two bosses should be avoided at all cost 1 2 3 4 5

16. A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be in the organization's best interest 1 2 3 4 5

17. Are you:

a. male

b. female

18. Age:

a. I am between 18 and 29 years old

b. I am between 30 and 39 years old

c. I am between 40 and 49 years old

d. I am between 50 and 59 years old

e. 60 years old or older

19. What is your nationality?

_____

20. What was your nationality at birth (if different)?

_____

Appendix A-3: Students Pre-module Questionnaire: Cultural Values and E-course Preferences

Student number: _____

Are you a:

a. doctoral student

b. master or graduate certificate student

1. I would rate my level of experience with e-learning as:

a. Novice (0-1 course)

b. Beginner (2-3 courses)

c. Average (4-6 courses)

d. Expert (more than 6 courses)

You will be presented with 18 pairs of statements about different features or characteristics of e-learning courses. **Please select one statement from each pair that best describes your preferences**.

1. Typically, I can tell I have learned something because I:

   a. can perform the activities requested by the instructor or course designer.

   b. I have applied what I have learned to my actual activities.

2. I prefer to follow a path of learning determined by:

a. the instructor or the course designer because that person usually knows what I need to learn.

b. me because I usually know what I need to learn.

3. Typically, I think that the instructor or the course designer is satisfied if I:

a. take a test without making mistakes.

b. learn from my mistakes.

4. I prefer to:

a. follow a well-defined, logical path to learn what I need to learn.

b. explore different paths to learn what I need to learn.

5. I tend to learn best from:

a. any kind of examples, as long as they make sense.

b. examples as long as they are related to my work or personal life.

6. I prefer to be tested:

a. with questions that are based on the stated goals and objectives of the course.

b. by applying what I have learned from the course to different situations.

7. I prefer to be:

    a. taught by an expert in the field on what I need to learn.

    b. guided by an instructor who shows me how to learn what I need to learn.

8. Typically:

    a. I prefer to be given predetermined learning goals.

    b. I learn as I go, depending on my own learning goals.

9. I prefer a course that uses:

    a. very few learning activities throughout the course.

    b. several learning activities throughout the course.

10. For me personally, I prefer e-learning courses in which I:

    a. am told what I need to learn.

    b. decide what I need to learn.

11. I prefer when the instructor or course designer uses:

    a. a few standard instructional methods or activities to teach me the course content.

    b. several instructional methods or activities to teach me the course content.

12. I learn:

    a. until I make no errors on the test.

    b. from my errors by experimenting with that I have learned.

13. I prefer to work:

    a. by myself on activities or projects.

    b. with a group on activities or projects.

14. I prefer when I am learning:

    a. directly from the instructor or course designer.

    b. by collaborating with my colleagues or classmates.

15. For me personally, I take e-learning courses when:

    a. I am required to.

    b. I want to.

16. I prefer when the content of the course is presented to me, but:

    a. it is repeated to me in various ways.

    b. I create my own uses for the information within the course.

17. Typically, I prefer when the course features that will help me learn the material are chosen by:

    a. the instructor or course designer.

b. me.

18. I prefer when I:

a. am given a deadline or timed activities.

b. can control the pace of learning.

Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to ... (please circle one answer in each line across):

1 = of utmost importance

2 = very important

3 = of moderate importance

4 = of little importance

5 = of very little or no importance

2. have sufficient time for your personal or home life 1 2 3 4 5

3. have a boss (direct superior)

you can respect 1 2 3 4 5

4. get recognition for good performance 1 2 3 4 5

5. have security of employment 1 2 3 4 5

6. have pleasant people to work with	1	2	3	4	5
7. do work that is interesting	1	2	3	4	5
8. be consulted by your boss in decisions involving your work	1	2	3	4	5
9. live in a desirable area	1	2	3	4	5
10. have a job respected by your family and friends	1	2	3	4	5
11. have chances for promotion	1	2	3	4	5

12. How often do you feel nervous or tense?

a. always

b. usually

b. sometimes

d. seldom

e. never

13. All in all, how would you describe your state of health these days?

a. very good

b. good

c. fair

d. poor

e. very poor

14. How often, in your experience, are students afraid to contradict their instructor?

a. never

b. seldom

c. sometimes

d. usually

e. always

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

1 = strongly agree

2 = agree

3 = undecided

4 = disagree

5 = strongly disagree

15. One can be a good instructor without having a precise answer to every question that a student may raise 1 2 3 4 5

16. An organization structure in which certain subordinates have two

bosses should be avoided at all cost 1 2 3 4 5

17. A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be

in the organization's best interest 1 2 3 4 5

18. Are you:

a. male

b. female

19. Your age is:

a. I am between 18 and 29 years old

b. I am between 30 and 39 years old

c. I am between 40 and 49 years old

d. I am between 50 and 59 years old

e. 60 years old or older

20. I live and work primarily in:

a. USA

b. Other: (Please specify)_____

21. What is your nationality?

_____

22. What was your nationality at birth (if different)?

_____

Appendix A-4: Culturally Sensitive Online Instruction Evaluation

Instrument- Rubric

Module title:_____ Reviewer:_____ Date:_____

Directions: Please evaluate the online module for the criteria listed. Select the number that most accurately indicates what the course reflects. Add comments if you wish to provide more details. Any area that receives a 2 or below will need to be considered for improvements before it is considered acceptable.

I. Pedagogy- Application of principles to enable effective learning and teaching in a multicultural online learning setting.

Principles: Adopt an epistemology supportive of multiple perspectives. Create flexible learning goals, tasks, and modes of assessment. Includes authentic learning activities and tasks where the learners can apply their existing skills and cultural values. Attempt to increase students' self-confidence and motivation early in the course.

3- Module design includes *all* the principles.

2- Module design includes *half or more than half* of the principles, but not all.

1- Module design includes *less than half* of the principles.

0- Module *lacks all* the principles.

Comments:

II. Content- Presentation of the course materials (i.e. syllabus, lectures…) is appropriate for multiple cultures.

Principles: Course content and other documents presentation use simple sentence structures. The curse materials present the level of English required.

3- Module design includes *all* the principles.

2- Module design includes *half or more than half* of the principles, but not all.

1- Module design includes *less than half* of the principles.

0- Module *lacks all* the principles.

Comments:

III. Technology- Technology environment and tools provide students and instructor access to online course content and experience.

Principles: Use standard technologies, minimizing technical demands. Provide a variety of combinations of supplementary **media and resources** for learners and instructors to expand their knowledge. Provide communication **tools** for social interaction such as online discussion forums. Make the course materials available for students to preview and review at all times.

3- Module design includes *all* the principles.

2- Module design includes *half or more than half* of the principles, but not all.

1- Module design includes *less than half* of the principles.

0- Module *lacks all* the principles.

Comments:

IV. Communications- Interaction with learners and the instructor.

Principles: Provides opportunities for social interaction such as in online discussion forums. Allow different communication configurations including anonymous or private messages. Provides clear guidelines for online communication to avoid confusions and encourage students to keep participating. Avoid slang, local humor and colloquialisms. The syllabus discusses explicitly the cultural values of the course.

3- Module design includes *all* the principles.

2- Module design includes *half or more than half* of the principles, but not all.

1- Module design includes *less than half* of the principles.

0- Module *lacks all* the principles.

Comments:

Appendix A-5: Posted Students Post-module Questionnaire: Preferences, Perceived Learning, Motivation and Satisfaction

Students Post-module Questionnaire: Cultural Values and E-course Preferences

Thank you for voluntary participation. All your answers are confidential. The researcher or the instructor cannot know who answered what, so please be assured on the confidentiality of your answers. Thank you!

Informed Consent: I am a doctoral candidate working on my dissertation research titled "Revision And Validation Of A Culturally-Adapted Online Instructional Module Using Edmundson's CAP Model: A DBR Study" at The University of South Florida. The questions included on the questionnaire are derived from prior research studies and does not necessarily reflect my personal views. Taking part on this questionnaire is totally voluntary. If you decide not to participate, it will not have any implications to you as a student enrolled in the course. If you decide to answer the questionnaire, the instructor will be notified using the number you entered, so you can receive points for participation. You can skip any question you would prefer not to answer. Filling out the questionnaire will take less than 15 minutes. There are no risks to you as an online student and your answers are strictly confidential. The instructor will only receive the numbers of the students who participated, not their answers. The researcher will only receive your answers but cannot link your answers to you since the names and assigned numbers are kept by the instructor, therefore, ensuring the confidentiality of your responses and your privacy. Access to the responses will be limited to the researcher and faculty committee.

Your responses will be pooled with others and reported together so no one can be identified. Since it is online, I will not know your identity. If you want to contact the principal investigator, please contact me at mtapanes@mail.usf.edu. If you have questions about your rights, general questions, complaints, or issues as a person taking part in this study, call the Division of Research Integrity and Compliance of The University of South Florida at (813) 974-9343. If you understand, wish to voluntarily participate and give your consent to participate in this study, please continue to provide your answers to the questions below.

Student number: _____

You will be presented with statements about different features or characteristics of e-learning courses. Please select one statement from each pair that best describes your preferences.

1. Typically, I can tell I have learned something because I:

    a. can perform the activities requested by the instructor or course designer.

    b. I have applied what I have learned to my actual activities.

2. I prefer to follow a path of learning determined by:

    a. the instructor or the course designer because that person usually knows what I need to learn.

    b. me because I usually know what I need to learn.

3. Typically, I think that the instructor or the course designer is satisfied if I:

    a. take a test without making mistakes.

    b. learn from my mistakes.

4. I prefer to:

    a. follow a well-defined, logical path to learn what I need to learn.

    b. explore different paths to learn what I need to learn.

5. I tend to learn best from:

    a. any kind of examples, as long as they make sense.

    b. examples as long as they are related to my work or personal life.

6. I prefer to be tested:

    a. with questions that are based on the stated goals and objectives of the course.

    b. by applying what I have learned from the course to different situations.

7. I prefer to be:

    a. taught by an expert in the field on what I need to learn.

    b. guided by an instructor who shows me how to learn what I need to learn.

8. Typically:

    a. I prefer to be given predetermined learning goals.

    b. I learn as I go, depending on my own learning goals.

9. I prefer a course that uses:

    a. very few learning activities throughout the course.

    b. several learning activities throughout the course.

10. For me personally, I prefer e-learning courses in which I:

    a. am told what I need to learn.

    b. decide what I need to learn.

11. I prefer when the instructor or course designer uses:

    a. a few standard instructional methods or activities to teach me the course content.

    b. several instructional methods or activities to teach me the course content.

12. I learn:

    a. until I make no errors on the test.

    b. from my errors by experimenting with that I have learned.

13. I prefer to work on activities or projects:

a. by myself.

b. with a group.

14. I prefer when I am learning:

a. directly from the instructor or course designer.

b. by collaborating with my colleagues or classmates.

15. For me personally, I take e-learning courses when:

a. I am required to.

b. I want to.

16. I prefer when the content of the course is presented to me, but:

a. it is repeated to me in various ways.

b. I create my own uses for the information within the course.

17. Typically, I prefer when the course features that will help me learn the material are chosen by:

a. the instructor or course designer.

b. me.

18. I prefer when I:

a. am given a deadline or timed activities.

b. can control the pace of learning.

Your responses to the following questions should reflect your online experience overall for this particular module.

19. Online or web-based education is an excellent medium for social interaction.

    a. strongly agree

    b. agree

    c. somewhat agree

    d. somewhat disagree

    e. disagree

    f. strongly disagree

20. I felt comfortable conversing through this medium.

    a. strongly agree

    b. agree

    c. somewhat agree

    d. somewhat disagree

    e. disagree

    f. strongly disagree

21. I felt comfortable introducing myself in this course.

    a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

22. The instructor created a feeling of an online community.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

23. I felt comfortable participating in the course module discussions.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

24. The instructor facilitated discussions in the course module.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

25. I felt comfortable interacting with other participants in the course module.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

26. I felt that my point of view was acknowledged by other participants in the course module.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

27. My level of learning that took place in this course module was of the highest quality.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

28. Overall this course module met my learning expectations.

a. strongly agree

b. agree

c. somewhat agree

d. somewhat disagree

e. disagree

f. strongly disagree

Please select the answer that best describe your experience with the online module:

29. Based on the objectives of the course module, did you learned what you expected to learn?

    a. No

    b. Very little

    c. Most of it

    d. All of it

30. Do you think you will apply the information or skills learned from the module to your present or future job, or life?

    a. No

    b. Very little

    c. Most of it

    d. All of it

31. From your experience with e-courses, which of these features or characteristics have ever confused you? (Please select all that apply.)

a. Language- translations, how the words were used, slang, humor, etc.

b. Design features- online chat, interactive exercises, simulations, etc.

c. Images- web design, photos, icons, symbols, etc.

d. Related technologies- web browsers, list servers, etc.

e. Format- chronological vs. branched lesson plans, types of tests used, etc.

f. Approach- the role of the teacher, using experts to teach, etc.

g. Activities- group activities, projects, research, hands-on practice, etc.

h. None that I have noticed

i. Other (please specify):

32. How satisfied were you with this course module? For example, were your goals and/or expectations met? Please explain.

33. Which aspect of this course module was most beneficial to you and why? (This can include different types of course activities, types of interactions, etc.)

34. In relation to student-to-student interaction, would you say the type and amount of student participation was adequate for this course module? Based on these observations, are there any recommendations you would make?

35. In relation the cultural adaptations and multiple presentations of course module content, would you say it was beneficial to you or you would go through the course the same without the cultural adaptations? Please comment.

36. Did the cultural adaptations help you feel motivated to complete the online module?

37. Select all that apply considering the cultural adaptations presented in the module:

    a. The audio presentation provided a “taught by an expert in the field” experience.

    b. Posting my written assignment in the discussion forum provided me the opportunity to learn from my mistakes while helping me to improve it.

    c. The course module presented several learning activities.

    d. Having the opportunity to apply my existing skills and cultural values to the written assignment was important for me

38. Your parents nationality at birth:

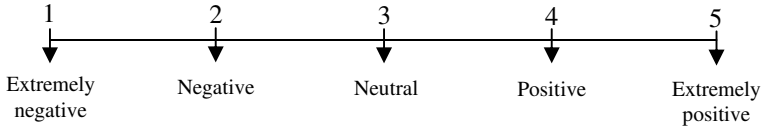
Appendix A-6: Interview Protocol for Instructor

Script: Welcome and thank you for your participation. My name is Marie A. Tapanes and I am a doctoral candidate at the Instructional Technology program. Thank you for your collaboration in my study and for your disposition to offer your course and help in the cultural adaptations applied to a module of it. This semi-structured interview will help me get a better idea of your perceptions of the process. I will like your permission to record this online interview, so I may accurately document the information you convey. All of your responses are confidential. Your participation in this online interview is completely voluntary. If at any time you wish to discontinue the use of the recorder or the interview itself, need to stop, take a break, or return to a previous question, please let me know. Do you have any questions or concerns before we begin?

1. How many years of experience you have with online instruction?

2. At what level? Graduate or undergraduate?

3. In general, how would you rate your experiences as an online instructor, being 1 extremely negative to 5 extremely positive?

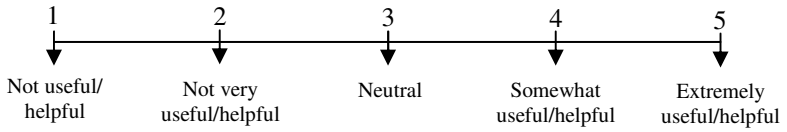


- Why? Which factors can you identify as influencing how you rate your experiences as an online instructor?

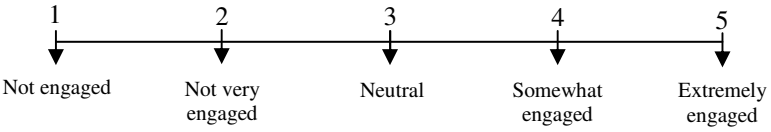
Script: We have been working together in the process of culturally adapting an online module of your course. The following questions will be directed towards the process we have been through while applying the cultural adaptations and the final product.

4. In general, what do you think of the CAP model?

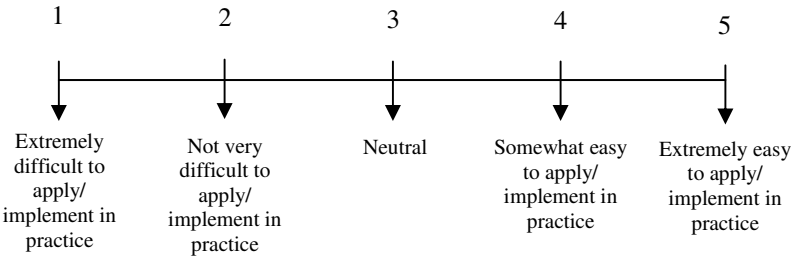
5. How useful/helpful do you think the CAP model was as a guide to analyze and determine appropriate cultural adaptations?



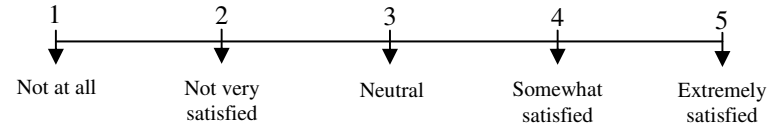
6. How engaged did you feel during the process of the application of the cultural adaptations?



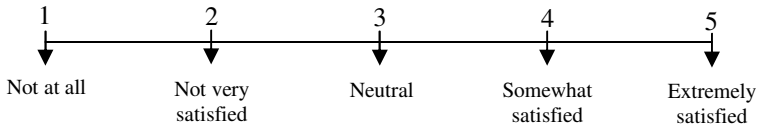
7. How did you perceived the process of the CAP model application and adaptations?



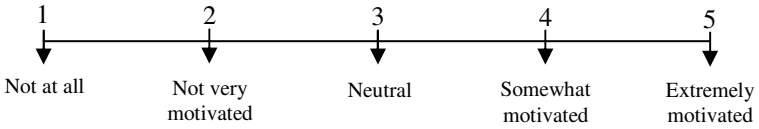
8. How satisfied are you with the culturally adapted online module?



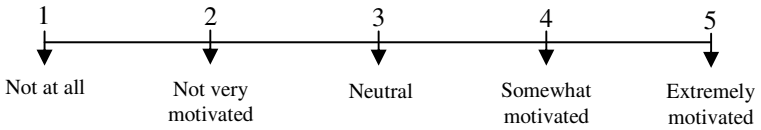
9. How satisfied are you with the adaptation process?



10. How motivated you felt during the adaptation process?



11. How motivated are you to apply the CAP model to culturally adapt other online modules and courses in the future?



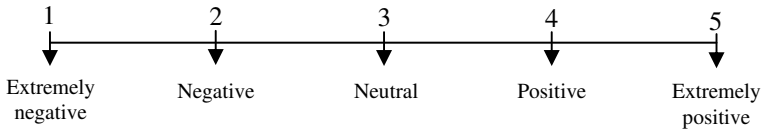
Appendix A-7: Interview Protocol for Online Students

Script: Welcome and thank you for your participation. My name is Marie A. Tapanes and I am a doctoral candidate at the Instructional Technology program. You participated as a diverse student taking a culturally-adapted online module titled **Course Module 5: Distance Education Delivery Methods** within the online course **Distance Learning**. This semi-structured interview will help me get a better idea of your perceptions of the application of the cultural adaptations. I will like your permission to record this online interview, so I may accurately document the information you convey. All of your responses are confidential. Your participation in this online interview is completely voluntary. If at any time you wish to discontinue the use of the recorder or the interview itself, need to stop, take a break, or return to a previous question, please let me know. Do you have any questions or concerns before we begin?

1. How many online courses have you taken?

2. At what level? Graduate or undergraduate?

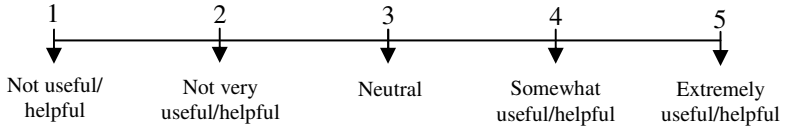
3. In general, how would you rate your experiences as an online student, being 1 extremely negative to 5 extremely positive?



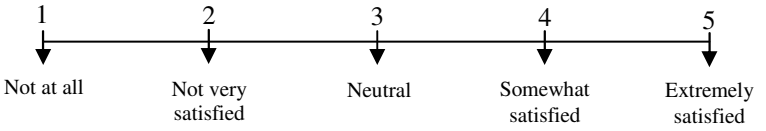
- Why? Which factors can you identify as influencing how you rated your experiences as an online student?

4. In general, what do you think of the cultural adaptations applied to the online module in comparison with the previous modules presented in the same course?

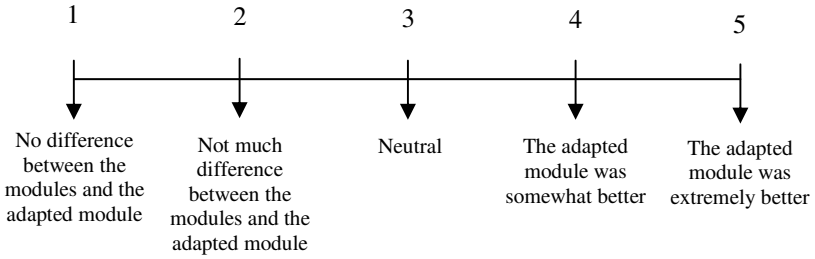
5. How useful/helpful were the cultural adaptations applied to the course to your learning process?



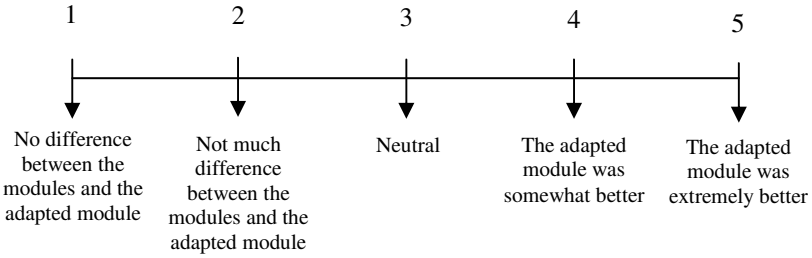
6. How satisfied are you with the culturally adapted module?



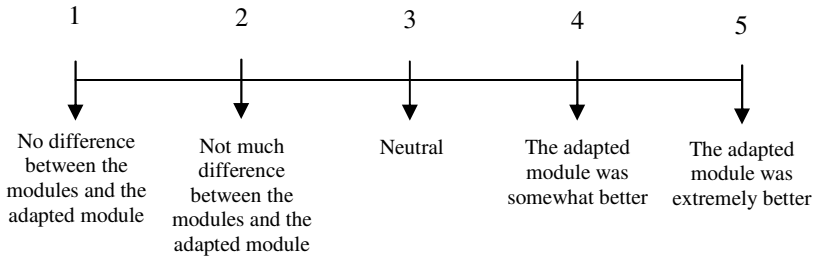
7. How would you compare the adapted module to the non-adapted modules from the same online course in terms of your perceived learning?



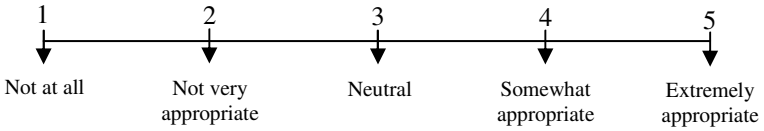
8. How would you compare the adapted module to the non-adapted modules from the same online course in terms of your satisfaction with the module?



9. How would you compare the adapted module to the non-adapted modules from the same online course in terms of your motivation to complete the module?



10. How appropriate were the cultural adaptations applied when you consider your educationally relevant cultural needs?



11. What is your nationality at birth?

12. What is your current nationality?

13. Would you provide any recommendation for the improvement of the online course in terms of providing equal opportunity for diverse online learners in terms of learning, satisfaction and motivation?

Appendix A-8: Implementation Log

Date: Click here to enter a date.

From: Marie A. Tapanes

Time	Recommended activities	Actual activities	Comments

Appendix A-9: Evaluation Report

Date: Click here to enter a date.

From: Instructor

Module Title: Click here to enter text.

Issues:

Click here to enter text.

Evidence:

Click here to enter text.

Recommendations:

Click here to enter text.

Appendix A-10: Weekly Journal Entries Template

Date: Click here to enter a date.

From: Marie A. Tapanes

Accomplishments or developments since last report:

Click here to enter text.

Pending items:

Click here to enter text.

Concerns or problems encountered and recommended actions:

Click here to enter text.

Observations:

Click here to enter text.

Estimate of hours invested in development: Choose an item.

Estimate of hours invested in testing: Choose an item.

Outcomes found:

Click here to enter text.

Appendix A-11: Sample E-mail for Course Structural Component Evaluation

To: Course instructor

From: Marie A. Tapanes

Re: Dissertation research study

I am a doctoral candidate in the College of Education, Instructional Technology Ph.D. program. My dissertation proposes to measure the structural component of online courses to help in the selection of an optimal online course for my study.

In order to measure the structural component of your online course, I will need access to the course at the teaching assistant level. No changes to the course will be made. After the structural component analysis is complete for the online courses to be evaluated, I will select an optimal course that balances a high structural component, a high enrollment with a highly multicultural makeup, and the interest of the instructor to be a part of the study.

After the study is complete, I will share the results with you. I will sincerely appreciate your help and support as I complete my dissertation research.

Cordially,

Marie A. Tapanes

Doctoral Candidate University of South Florida

Appendix A-12: Sample E-mail for Recruitment of Experts

To: Potential Expert

From: Marie A. Tapanes

Re: Expert in dissertation research study

I am a doctoral candidate in the College of Education, Instructional Technology Ph.D. program. My dissertation is based on the Cultural Adaptation Model to apply appropriate cultural adaptations to an online module based on a Design-Based Research approach.

I developed an instrument based on previously validated research-based instruments to measure cultural dimensions and culturally relevant educational preferences of the online students before the adaptations are applied. After the adaptations are applied, I am interested in the online students' motivation with the online module, in addition to their perceived learning and satisfaction with the online module.

To ensure inter-rater reliability of my instruments, I am in need of at least two experts from Instructional Technology or Multicultural Education with different cultural backgrounds to review my instruments and provide feedback as to its contents and organization. I have attached a copy of my proposal for your review.

After the study is complete, I will share the results with you. I will sincerely appreciate your help and support as I complete my dissertation research. Please let me know as soon as possible if you are interested in participating.

Appendix A-13: Instructor and Researcher Pre-module Questionnaire:

Cultural Values and E-course preferences Validation

Question	Edmundson's Instrument	Hofstede's Instrument	Developed for the present study	Classification based on prior research	Classification percent of agreement	Comments	Final classification based on votes and prior research
Instructor, ID or Researcher:			X			Not measuring any variable	
In choosing an ideal job, how important would it be to you to have sufficient time for your personal or home life.		X		Cultural values (individualism)	100%		
In choosing an ideal job, how important would it be to you to have a boss (direct superior) you can respect.		X		Cultural values (power distance)	100%		
In choosing an ideal job, how important would it be to you to get recognition for good performance.		X		Cultural values (modest or assertive)	100%		
In choosing an ideal job, how important would it be to you to have security of employment.		X		Cultural values (individualism)	100%	(E2) Would also measure "modest or assertive", I think in more aggressive/ masculine cultures, job security is an important issue	Cultural values (individualism) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to have pleasant people to work with.		X		Cultural values (modest or assertive)	100%		
In choosing an ideal job, how important would it be to you to do work that is		X		Cultural values (individualism)	100%		

interesting.							
In choosing an ideal job, how important would it be to you to be consulted by your boss in decisions involving your work.		X		Cultural values (power distance)	100%		
In choosing an ideal job, how important would it be to you to live in a desirable area.		X		Cultural values (modest or assertive)	50%	(E2) I would choose "individualism", I think importance in a "desirable area" is more closely related to an individual's perception.	Cultural values (modest or assertive) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to have a job respected by your family and friends.		X		Cultural values (individualism)	100%		
In choosing an ideal job, how important would it be to you to have chances for promotion.		X		Cultural values (modest or assertive)	100%		
How often do you feel nervous or tense?		X		Cultural values (uncertainty)	100%		
All in all, how would you describe your state of health these days?		X		Cultural values (uncertainty)	100%		
How often, in your experience, are students afraid to contradict their instructor?		X		Cultural values (power distance)	100%	(E2) Would add modest or assertive as well, In a more aggressive culture students are more vocal.	Cultural values (power distance) based on prior extensive studies and validation procedures by Hofstede.

One can be a good instructor without having a precise answer to every question that a student may raise.		X		Cultural values (uncertainty)	100%	(E2) Would also add "teacher role", The way educators are perceived varies among cultures.	Cultural values (uncertainty) based on prior extensive studies and validation procedures by Hofstede.
An organization structure in which certain subordinates have two bosses should be avoided at all cost.		X		Cultural values (power distance)	100%		
A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be in the organization's best interest.		X		Cultural values (uncertainty)	100%		
Are you: male or female		X		Demographic	100%		
Age:	X			Demographic	100%		
What is your nationality?		X		Nationality	100%		
What was your nationality at birth (if different)?		X		Nationality	100%		
I teach following a well-defined, logical path. OR I explore different paths to teach what I need to teach.	(Adapted from) X			Pedagogical paradigm	50%	(E2) I think "teacher role" and perhaps "accommodation of individual differences" may fit better.	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform user activity and accomodation of individual differences.
I assess with questions that are based on the stated goals and	(Adapted from)			Pedagogical paradigm	50%	(E2) I think "value of errors" and perhaps "experienti	Pedagogical paradigm, as defined by Edmundson in her

objectives of the course. OR I assess student learning by them applying what I have taught from the course to different situations.	 X					al learning" may fit better.	studies. However, careful analysis of responses may also help to inform experiential value.
I give my students predetermined learning goals. OR I teach as I go.	(Adapted from) X			Pedagogical paradigm	50%	(E2) I think "teacher role"and perhaps "learner control" may fit better.	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform teacher role.
I teach using any kind of examples, as long as they make sense. OR I teach from examples related to mine or my students work or personal life.	(Adapted from) X			Experiential Value (assistive cross cultural)	100%		
I can tell my students learned something because they can perform the activities requested by me. OR I can tell that my students learned something because they have applied what they have learned to real activities.	(Adapted from) X			Experiential Value (assistive cross cultural)	100%	(E2) Would also add "user activity",. What a student does with the knowledge gained is also part of user activity I think.	Experiential Value (assistive cross cultural), however, careful analysis of responses may also help to inform user activity.
I usually know what my students need to learn.	(Adapted from)			Teacher role (critical cross	50%	(E1) Learner control	Teacher role (critical cross cultural), as

OR I allow my students to follow a path of learning determined by them.	X			cultural)			defined by Edmundson in her studies.This question is directly related to the role of the instructor as to how the instructor allows for a pre-determined or learner-determined path for learning the course content.
I teach to my students as an expert in the field. OR I guide my students and show them how to learn what they need to learn.	(Adapted from) X			Teacher role (critical cross cultural)	100%		
I prefer my students to learn until they make no errors on the test. OR I prefer my students to learn from their errors by experimenting with that they need to learn.	(Adapted from) X			Value of errors (critical cross cultural)	100%		
I am satisfied if I see a test without mistakes. OR I am satisfied if my students learn from their mistakes.	(Adapted from) X			Value of errors (critical cross cultural)	100%		
For me personally, I teach e-learning courses when I am required to. OR For me personally, I teach e-learning	(Adapted from) X			Origin of motivation (critical cross cultural)	100%		

courses when I decide to.							
For me personally, I prefer teaching e-learning courses in which I decide what my students need to learn. OR For me personally, I prefer e-learning courses in which I am told what to teach.	(Adapted from) X			Origin of motivation (critical cross cultural)	100%	(E2) Would add individual differences (assistive cross cultural). I think it is also closely aligned with individual differences. "How" students like to learn is a cognition of their own learning style.	Origin of motivation (critical cross cultural). This question is directly related to what motivates the course content and presentation for the instructor. Does the instructor prefers when s/he can decide what to teach and how, or prefers when the institution decides what s/he will teach and how?
My e-course uses very few learning activities throughout the course. OR My e-course uses several learning activities throughout the course.	(Adapted from) X			Accommodation of individual differences (assistive cross cultural)	100%		
I use a few standard instructional methods or activities to teach the course content. OR I use several instructional methods or activities to teach the course content.	(Adapted from) X			Accommodation of individual differences (assistive cross cultural)	100%		
I give deadline or timed activities. OR	(Adapted from) X			Learner control (critical cross	100%		

I allow my students to control the pace of learning.				cultural)			
I choose the course features that will help my students learn the material. OR I allow my students to choose the course features that will help them learn the material.	(Adapted from) X			Learner control (critical cross cultural)	100%		
I present the content of the course and repeat it to my students in various ways. OR I present the content of the course, but I allow my students to create their own uses for the information within the course.	(Adapted from) X			User activity (assistive cross cultural)	100%	(E2) Would also include "Critical cross cultural dimensions" such as "learner control". It is also closely aligned with learner control to some degree.	User activity (assistive cross cultural), however, careful analysis of responses may also help to inform learner control.
I encourage my students to work by themselves on activities or projects. OR I encourage my students to work with a group on activities or projects.	(Adapted from) X			Cooperative learning (critical cross cultural)	50%	(E2) I would choose Assistive cross-cultural dimensions "accommodation of individual differences". I think this value is more aligned with accommodating individual learning preferences.	Cooperative learning (critical cross cultural). The question is directly related to preferences of cooperative or individual learning.
I like my students to learn directly from me. OR	(Adapted from) X			Cooperative learning (critical cross	100%		

I like my students to learn by collaborating with colleagues or classmates.				cultural)			

Appendix A-14: Students Pre-module Questionnaire: Cultural Values and E-course Preferences Validation

Question	Edmundson's Instrument	Hofstede's Instrument	Developed for the present study	Classification based on prior research	Classification percent of agreement	Experts' comments	Final classification based on votes and prior research
Student number			X				
I would rate my level of experience with e-learning as: a. Novice (0-1 course) b. Beginner (2-3 courses) c. Average (4-6 courses) d. Expert (more than 6 courses)	X						
In choosing an ideal job, how important would it be to you to have sufficient time for your personal or home life.		X		Cultural values (individualism)	100%		
In choosing an ideal job, how important would it be to you to have a boss (direct superior) you can respect.		X		Cultural values (power distance)	100%	(E2) Would also measure assertiveness	Cultural values (power distance) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to get recognition for good performance.		X		Cultural values (modest or assertive)	100%		

In choosing an ideal job, how important would it be to you to have security of employment.		X		Cultural values (individualism)	100%	(E2) Possibly also assistive cross-cultural experiential value	Cultural values (individualism) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to have pleasant people to work with.		X		Cultural values (modest or assertive)	50%	(E2) Collectivism vs.indicidulalism - I think there is disconnect here, I think the need to work with amiable people arises out of want to be "part of" something .	Cultural values (modest or assertive) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to do work that is interesting.		X		Cultural values (individualism)	100%		
In choosing an ideal job, how important would it be to you to be consulted by your boss in decisions involving your work.		X		Cultural values (power distance)	100%		
In choosing an ideal job, how important would it be to you to live in a desirable area.		X		Cultural values (modest or assertive)	100%		

In choosing an ideal job, how important would it be to you to have a job respected by your family and friends.		X		Cultural values (individualism)	100%	(E2) Would also measure assertiveness (culture of the family as well would make a difference).	Cultural values (individualism) based on prior extensive studies and validation procedures by Hofstede.
In choosing an ideal job, how important would it be to you to have chances for promotion.		X		Cultural values (modest or assertive)	100%	(E2) Would also measure power distance- Power distance plays a part in promotion and is someone is confident in their knowledge and close to the power – chances are – promotions are linked to this value	Cultural values (modest or assertive) based on prior extensive studies and validation procedures by Hofstede.
How often do you feel nervous or tense?		X		Cultural values (uncertainty)	100%		
All in all, how would you describe your state of health these days?		X		Cultural values (uncertainty)	100%		
How often, in your experience, are students afraid to contradict their instructor?		X		Cultural values (power distance)	100%		

One can be a good instructor without having a precise answer to every question that a student may raise.		X		Cultural values (uncertainty)	100%	(E2) Would also measure critical cross-cultural dimension- teacher role- Not sure but what about "teacher role"? In some cultures –teacher are thought to have all the answers for their subject matter.	Cultural values (uncertainty) based on prior extensive studies and validation procedures by Hofstede.
An organization structure in which certain subordinates have two bosses should be avoided at all cost.		X		Cultural values (power distance)	100%		
A company's or organization's rules should not be broken - not even when the employee thinks breaking the rule would be in the organization's best interest.		X		Cultural values (uncertainty)	100%		
Are you: male or female		X		Demographic	100%		
Age:	X			Demographic	100%		
I live and work primarily in:	X			Demographic	100%		
What is your nationality?		X		Nationality	100%		
What was your nationality at birth (if different)?		X		Nationality	100%		

I follow a well-defined, logical path to learn what I need to learn. OR I explore different paths to learn what I need to learn.	X			Pedagogical paradigm	50%	(E2) Accomodation of individual differences(assistive cross-culture)	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform user activity and accomodation of individual differences.
I am tested with questions that are based on the stated goals and objectives of the course. OR I am tested by applying what I have learned from the course to different situations.	X			Pedagogical paradigm	50%		Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform user activity.
I am given predetermined learning goals. OR I learn as I go, depending on my own learning goals.	X			Pedagogical paradigm	50%	(E2) Accomodation of individual differences(assistive cross-culture)	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform accomodation of individual differences.
I learn from any kind, as long as they make sense. OR	X			Experiential Value (assistive cross cultural)	50%	(E2) Accomodation of individual	Experiential Value (assistive cross cultural).

I learn from examples as long as they are related to my work or personal life.						differences (assistive cross-culture)	The question is directly related to learning from examples related to personal experience or from any kind of examples.
I can tell I have learned something because I can perform the activities requested by the instructor or course designer. OR I can tell I have learned something because I have applied what I have learned to my actual activities.	X			Experiential Value (assistive cross cultural)	100%		
I follow a path of learning determined by the instructor or the course designer because that person usually knows what I need to learn. OR	X			Teacher role (critical cross cultural)	50%	(E1) Learner control (critical corss-culture) (E2) Would also measure Learner control and origin of motivati	Teacher role (critical cross cultural) , however, careful analysis of responses may also help to inform learner control since the

I follow a path of learning determined by me because I usually know what I need to learn.						on (critical cross-culture)- How well one learns depend a lot on motivation and how much learner control is given (and hopefully given at the right moment).	second part of the question is related to learner control.
I am taught by an expert in the field on what I need to learn. OR I am guided by an instructor who shows me how to learn what I need to learn.	X			Teacher role (critical cross cultural)	100%		
I learn until I make no errors on the test. OR I learn from my errors by experimenting with that I have learned.	X			Value of errors (critical cross cultural)	100%		
The instructor or the course designer is satisfied if I take a test without making mistakes. OR	X			Value of errors (critical cross cultural)	100%	(E2) Would also measure teacher role (critical cross-culture)- What	Value of errors (critical cross cultural). This question is directly related to how errors

The instructor or the course designer is satisfied if I learn from my mistakes.						perceptions the learner has about the teacher or facilitator will be reflected in this question more so than any other critical cross cultural dimension.	are believed to be perceived by the instructor from the student's point of view.
For me personally, I take e-learning courses when I am required to. OR For me personally, I take e-learning courses when I want to.	X			Origin of motivation (critical cross cultural)	100%		
For me personally, I prefer e-learning courses in which I am told what I need to learn. OR For me personally, I prefer e-learning courses in which I decide what I need to learn.	X			Origin of motivation (critical cross cultural)	100%		
The course uses very few learning activities throughout the course. OR	X			Accommodation of individual differences (assistive cross cultural)	100%	(E2) Would also measure experiential value (assistiv	Accommodation of individual differences (assistive cross cultural).

The course uses several learning activities throughout the course.						e cross-culture)- If the target audience has a certain level of experience –the course is deigned to meet this expectation.	The question is related to course learning activities available to accommodate individual differences.
The instructor or course designer uses a few standard instructional methods or activities to teach me the course content. OR The instructor or course designer uses several instructional methods or activities to teach me the course content.	X			Accommodation of individual differences (assistive cross cultural)	100%		
I am given a deadline or timed activities. OR I can control the pace of learning.	X			Learner control (critical cross cultural)	100%		
The course features that will help me learn the material are chosen by the instructor or course designer. OR The course features that will help me learn the material are chosen by me.	X			Learner control (critical cross cultural)	100%		

The content of the course is presented to me, but it is repeated to me in various ways. OR The content of the course is presented to me, but I create my own uses for the information within the course.	X			User activity (assistive cross cultural)	100%		
I work by myself on activities or projects. OR I work with a group on activities or projects.	X			Cooperative learning (critical cross cultural)	100%	(E2) Would also measure accomodaion of individual differences (assistive cross-culture)- I think that the one's cultural value – e.g. when individualism is valued in your culture---the answer would be affected by that bias.	Cooperative learning (critical cross cultural). The question is directly related to preferences of cooperative or individual learning.
I am learning directly from the instructor or course designer. OR I am learning by collaborating with my colleagues or classmates.	X			Cooperative learning (critical cross cultural)	100%		

Appendix A-15: Culturally Sensitive Online Instruction Evaluation

Instrument- Rubric Validation

Culturally Sensitive Online Instruction Rubric validation (N = 4, 3 from USA, 1 from USA-PR)

Principle	Original classification	New classification	Agreement	Comments
Adopt an epistemology supportive of multiple perspectives.	Pedagogy	Pedagogy	100%	
Create flexible learning goals, tasks, and modes of assessment.	Pedagogy	Pedagogy	100%	
Design authentic learning activities and tasks where the learners can apply their existing skills and cultural values.	Pedagogy	Pedagogy	100%	
Attempt to increase students' self-confidence and motivation early in the course.	*Content*	*Pedagogy*	*75%*	Expert: "Might fall under technology as well. If student's tech ability is low it could cause a decrease in motivation." Rationale: Based on the experts' selection, the principle was

				assigned to the Pedagogy principle.
Discuss explicitly the cultural values of the course.	*Content*	*Communications*	*50%*	Expert: "This principle is broad and it seems that could be assigned to the pedagogy category as well, considering that not having clear the cultural values of the course could interfere with effective learning and teaching." Rationale: Based on the experts' selection, the principle was assigned to the Communications principle.
Provide clear guidelines for online communication to avoid confusions and encourage students to keep participating.	Communications	Communications	75%	Rationale: Based on the experts' selection, the principle continued to be included in the Communications principle.
Use simple sentence structures and clarify the level of English required.	Content	Content	100%	Expert: "Could be placed under communication too as grammar could have a[n] effect on the ability to understand and communicate." Rationale: Based on the experts' selection, the principle

				continued to be included in the Content principle. This principle is mainly related to the materials supplied to the student by the instructor at the beginning and during the course. In addition, the principle was divided into two sentences. This is because the "and" makes it look like all is just one principle when it is in fact two things that are being measured. The new version of the principles for the Content category read as: "Course content and other documents presentation use simple sentence structures. The curse materials present the level of English required."
Avoid slang, local humor and colloquialisms.	Communications	Communications	75%	Expert: "Could be placed under communication as well." Rationale: Based on the experts' selection, the principle continued to be included in the Communications principle.
Provide communication tools for social	Technology	Technology	75%	Expert: "There are two elements in this principle: technology and communication.

interaction such as online discussion forums.				Might fall under more than one category." Rationale: Based on the experts' selection, the principle continued to be included in the Technology principle. The font type for the word "tools" was changed to bold to emphasize what the principle is intended to measure.
Provide a wide variety of combinations of supplementary media and resources for learners and instructors to expand their knowledge.	Technology	Technology	50%	Rationale: The font type for the phrase "media and resources" was changed to bold to emphasize what the principle is intended to measure.
Minimize technical demands.	Technology	Technology	100%	
Allow different communication configurations including anonymous or private messages.	Communications	Communications	100%	
Make the course materials available for students to	*Content*	*Technology*	*50%*	Rationale: Based on the experts' selection, the principle was assigned to the Technology principle,

preview and review.		since the principle states that the course materials to be available, which is the key word here.

Appendix A-16: Students Post-module Questionnaire: Preferences, Perceived Learning, Motivation and Satisfaction Validation

Question	Edmundson's Instrument	SUNY Instrument	Developed for the present study	Classification based on prior research	Classification percent of agreement	Comments	Final classification based on votes and prior research
Student number			X			Not measuring any variable	
I follow a well-defined, logical path to learn what I need to learn. OR I explore different paths to learn what I need to learn.	X			Pedagogical paradigm	50%	(E2) Assistive Cross-cultural dimensions (accommodations of individual preferences) and learner control- I think these two classifications corresponds more closely with the questions	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform accomodation of individual differences.
I am tested with questions that are based on the stated goals and objectives of the course. OR I am tested by applying what I have learned from the course to different situations.	X			Pedagogical paradigm	50%	(E2) Assistive Cross-cultural dimensions (accommodations of individual preferences) and consider critical cross cultural (value of errors)- I think these two classifications corresponds more closely with the questions	Pedagogical paradigm, as defined by Edmundson in her studies. However, careful analysis of responses may also help to inform value of errors and accomodation of individual differences.
I am given predetermined learning goals.	X			Pedagogical paradigm	50%	(E2) Assistive Cross-cultural dimensions (accommod	Pedagogical paradigm, as defined by Edmundson in her

OR I learn as I go, depending on my own learning goals.						ations of individual preferences) and consider critical cross cultural (origin of motivation) - I think these two classificatio ns corresponds more closely with the questions	studies. However, careful analysis of responses may also help to inform accomodati on of individual differences and origin of motivation.
I learn from any kind, as long as they make sense. OR I learn from examples as long as they are related to my work or personal life.	X			Experiential Value (assistive cross cultural)	100%		
I can tell I have learned something because I can perform the activities requested by the instructor or course designer. OR I can tell I have learned something because I have applied what I have learned to my actual activities.	X			Experiential Value (assistive cross cultural)	100%		

I follow a path of learning determined by the instructor or the course designer because that person usually knows what I need to learn. OR I follow a path of learning determined by me because I usually know what I need to learn.	X			Teacher role (critical cross cultural)	50%	(E1) Learner control (critical cross cultural)- It focuses on the learner, not the teacher.	Teacher role (critical cross cultural) , however, careful analysis of responses may also help to inform learner control since the second part of the question is related to learner control.
I am taught by an expert in the field on what I need to learn. OR I am guided by an instructor who shows me how to learn what I need to learn.	X			Teacher role (critical cross cultural)	100%		
I learn until I make no errors on the test. OR I learn from my errors by experimenting with that I have learned.	X			Value of errors (critical cross cultural)	100%		

The instructor or the course designer is satisfied if I take a test without making mistakes. OR The instructor or the course designer is satisfied if I learn from my mistakes.	X			Value of errors (critical cross cultural)	100%		
For me personally, I take e-learning courses when I am required to. OR For me personally, I take e-learning courses when I want to.	X			Origin of motivation (critical cross cultural)	100%		
For me personally, I prefer e-learning courses in which I am told what I need to learn. OR For me personally, I prefer e-learning courses in which I decide what I need to learn.	X			Origin of motivation (critical cross cultural)	100%		
The course uses very few learning activities throughout the course.	X			Accommodation of individual differences (assistive cross cultural)	100%		

OR The course uses several learning activities throughout the course.							
The instructor or course designer uses a few standard instructional methods or activities to teach me the course content. OR The instructor or course designer uses several instructional methods or activities to teach me the course content.	X			Accommodation of individual differences (assistive cross cultural)	100%		
I am given a deadline or timed activities. OR I can control the pace of learning.	X			Learner control (critical cross cultural)	100%		
The course features that will help me learn the material are chosen by the instructor or course designer. OR	X			Learner control (critical cross cultural)	100%		

The course features that will help me learn the material are chosen by me.							
The content of the course is presented to me, but it is repeated to me in various ways. OR The content of the course is presented to me, but I create my own uses for the information within the course.	X			User activity (assistive cross cultural)	100%		
I work by myself on activities or projects. OR I work with a group on activities or projects.	X			Cooperative learning (critical cross cultural)	100%		
I am learning directly from the instructor or course designer. OR I am learning by collaborating with my colleagues or classmates.	X			Cooperative learning (critical cross cultural)	100%		

Online or web-based education is an excellent medium for social interaction.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level. (E2)- Agree but would add accommodation of individual differences	
I felt comfortable conversing through this medium.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level.	
I felt comfortable introducing myself in this course.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level.	

The instructor created a feeling of an online community.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level. (E2) Agree but would add teacher role- Satisfaction here also depends on the role of the instructor/teacher	
I felt comfortable participating in course discussions.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level.	

The instructor facilitated discussions in the course.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level. (E2) Agree but would add teacher role- Satisfaction here also depends on the role of the instructor/teacher	
I felt comfortable interacting with other participants in the course.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level.	
I felt that my point of view was acknowledged by other participants in the course.		X		Satisfaction	100%	(E1) These questions explore the students' perceptions of the online learning experience and their comfort level with the course. They are not necessarily related to satisfaction level.	

My level of learning that took place in this course was of the highest quality.		X		Perceived learning	100%		
Overall this course met my learning expectations.		X		Perceived learning	100%	(E2) Agree but would add Satisfaction - I think this is more closely related to satisfaction – if student learning goals are met – wouldn't they be satisfied?	
Based on the objectives of the course, did you learned what you expected to learn?	X			Perceived learning	100%		
Do you think you will apply the information or skills learned from the module to your present or future job, or life?	X			Perceived learning	100%		
How satisfied were you with this course? For example, were your goals and/or expectations met? Please explain.		X		Satisfaction	100%		

Which aspect of this course was most beneficial to you and why? (This can include different types of course activities, types of interactions, etc.)		X		Satisfaction	50%	(E1) Perceived outcomes- Benefits as outcomes of the course.	Satisfaction, however, careful analysis of responses may also help to inform Perceived outcomes.
In relation to student-to-student interaction, would you say the type and amount of student participation was adequate for this course? Based on these observations, are there any recommendations you would make?		X		Satisfaction	100%		
In relation the cultural adaptations and multiple presentations of course content, would you say it was beneficial to you or you would go through the course the same without the cultural adaptations? Please comment.			X	Motivation	50%	(E1) Perceived outcomes- It discusses the benefits as outcomes of the course.	Motivation, however, careful analysis of responses may also help to inform Perceived outcomes.

Did the cultural adaptations help you feel motivated to complete the online module?			X	Motivation	100%		

Appendix A-17: Interview Protocol for Instructor Validation

Interview protocol for Instructor and ID validation (N = 3, Expert1 from Mexico, Expert 2 from USA, Expert 3 from China)

Question	Original classification	New classification	Agreement	Comments
How many years of experience you have with online instruction?	Demographic	Demographic	100%	
At what level? Graduate or undergraduate?	Demographic	Demographic	100%	
In general, how would you rate your experiences as an online instructor, being 1 extremely negative to 5 extremely positive? Why? Which factors can you identify as influencing how you rate your experiences as an online instructor?	Demographic	Demographic	100%	
In general, what do you think of the CAP model?	Instructor's (ID) perception of the cultural adaptation process	Instructor's (ID) perception of the cultural adaptation process	67%	Expert 1: "Expert Opinion" Rationale: Instructor's (ID) perception of the cultural adaptation process. Expert opinion is not a variable measured in the study.

How useful/helpful do you think the CAP model was as a guide to analyze and determine appropriate cultural adaptations?	Instructor's (ID) perception of the cultural adaptation process	Instructor's (ID) perception of the cultural adaptation process	67%	Expert 1: "Expert Opinion" Rationale: Instructor's (ID) perception of the cultural adaptation process. Expert opinion is not a variable measured in the study.
How engaged did you feel during the process of the application of the cultural adaptations?	Instructor's (ID) engagement	Instructor's (ID) engagement	100%	
How did you perceived the process of the CAP model application and adaptations?	Instructor's (ID) perception of the cultural adaptation process	Instructor's (ID) perception of the cultural adaptation process	67%	Expert 1: "Expert Opinion" Rationale: Instructor's (ID) perception of the cultural adaptation process. Expert opinion is not a variable measured in the study.
How satisfied are you with the culturally adapted online module?	Instructor's (ID) satisfaction with the cultural adaptations	Instructor's (ID) satisfaction with the cultural adaptations	100%	
How satisfied are you with the adaptation process?	Instructor's (ID) satisfaction with the cultural adaptations	Instructor's (ID) satisfaction with the cultural adaptations	100%	
How motivated you felt during	Instructor's (ID) motivation with	Instructor's (ID) motivation with	100%	

the adaptation process?	the cultural adaptation model	the cultural adaptation model	
How motivated are you to apply the CAP model to culturally adapt other online modules and courses in the future?	Instructor's (ID) motivation with the cultural adaptation model	Instructor's (ID) motivation with the cultural adaptation model	100%

Appendix A-18: Interview Protocol for Online Students Validation

Interview protocol for Instructor and ID validation (N = 3, Expert1 from Mexico, Expert 2 from USA, Expert 3 from China)

Question	Original classification	New classification	Agreement	Comments
How many online courses have you taken?	Demographic	Demographic	100%	
At what level? Graduate or undergraduate?	Demographic	Demographic	100%	
In general, how would you rate your experiences as an online student, being 1 extremely negative to 5 extremely positive? Why? Which factors can you identify as influencing how you rated your experiences as an online student?	Demographic	Demographic	100%	
In general, what do you think of the cultural adaptations applied to the online module in comparison with the previous modules presented in the same course?	Satisfaction	Satisfaction	100%	Expert 3: "This question seems to be asking about general perception, but particularly about satisfaction." Rationale: Instructor's (ID) perception of the cultural adaptation

				process. Expert opinion is not a variable measured in the study.
How useful/helpful were the cultural adaptations applied to the course to your learning process?	Perceived learning outcomes	Perceived learning outcomes	100%	Expert 1: "Expert Opinion" Rationale: Instructor's (ID) perception of the cultural adaptation process. Expert opinion is not a variable measured in the study.
How satisfied are you with the culturally adapted module?	Satisfaction	Satisfaction	100%	
How would you compare the adapted module to the non-adapted modules from the same online course in terms of your perceived learning?	Perceived learning outcomes	Perceived learning outcomes	67%	Expert 1: "Expert Opinion" Rationale: Perceived learning outcomes. Expert opinion is not a variable measured in the study.
How would you compare the adapted module to the non-adapted modules from the same online course in terms of your satisfaction with the module?	Satisfaction	Satisfaction	100%	
How would you compare the	Levels of motivation	Levels of motivation	67%	Expert 1:

adapted module to the non-adapted modules from the same online course in terms of your motivation to complete the module?				"Satisfaction" Rationale: Levels of motivation, however, careful analysis of responses may also help to inform satisfaction since the two constructs influence each other.
How appropriate were the cultural adaptations applied when you consider your educationally relevant cultural needs?	Satisfaction, Levels of motivation	Satisfaction, Levels of motivation	100%	Expert 1: "Satisfaction"
What is your nationality at birth?	Demographic	Demographic	100%	
What is your current nationality?	Demographic	Demographic	100%	
Would you provide any recommendation for the improvement of the online course in terms of providing equal opportunity for diverse online learners in terms of learning, satisfaction and motivation?	Feedback	Feedback	100%	

Appendix B: Results

Appendix B-1: SCET Score Evaluation of the Course

Descriptor	Rating Expert 1	Rating Expert 2	Maximum Score
Content Organization	3	3	3
Overall			
Media such as graphics, animations, diagrams, video, and audio that are utilized are relevant to the course.	3	3	3
Objectives match the course exams.	3	3	3
Glossary or additional references are provided.	3	3	3
Each course unit/module contains clear objectives of the material to be presented.	3	3	3
Course objectives are present.	3	3	3
Course provides FAQ's or equivalent.	0	0	3
Content/instruction contained in course is appropriate for the target audience.	3	3	3
Syllabus			
Instructor grading policies are present.	3	3	3
Participation requirements are provided.	3	3	3
Contains information regarding course policies (i.e. late assignments, make-up policies, etc.)	3	3	3
Technical support contact information is provided.	3	3	3
Point value of all assignments is available.	3	3	3
Information regarding student support services is available in the course.	3	3	3
Faculty contact information is present.	3	3	3
Instructor provides guidelines for all student communication.	3	3	3
Course provides detailed directions on how to submit each assignment or activity.	3	3	3
Information about any pre-requisites or entry-level skills needed is present.	1	2	3
Instructor provides expectations regarding discussion posts or other class interactions (synchronous or asynchronous.)	3	3	3

Guidelines were provided regarding all offline student communication (i.e. posting transcripts of offline meetings for a group.)	3	3	3
Course description is present.	3	3	3
Each course unit/module contains a clear overview of the material to be presented.	3	3	3
Course Schedule	3	3	3
Course contains due dates for assignments.	3	3	3
Course contains assignments by week (or other time unit, including calendar dates.)	3	3	3
All exam or assessment dates are provided.	3	3	3
Suggested begin dates for each unit/module are provided.	3	3	3
Contains a course calendar that includes important course dates.	3	3	3
Delivery Organization	3	3	3
Overall			
Course provides a layout screen (homepage) that is clear, clean, and well organized.	3	3	3
Course provides on screen instructions that are simple, clear, and concise of how to begin.	3	3	3
Student has the ability to bookmark areas of the course.	1	0	3
Course provides clear exit/logoff paths.	3	3	3
Consistency			
Course has a menu that remains constant as the student moves within the course.	3	3	3
Course provides on screen navigation (i.e. breadcrumbs) to let the learner know where they are in the course.	1	3	3
Each module/unit is accessed in the same manner throughout the course.	3	3	3
Course has a menu that remains constant as the student moves within the course.	3	3	3
Each course unit/module contains a single page that communicates all activities to be completed.	3	3	3

Course unit/modules are presented consistently throughout the course.	3	3	3
Flexibility			
All assignments including assigned reading is available for access.	3	3	3
Ability to access archived discussions (i.e. synchronous chats or desktop conference meetings) are provided.	3	3	3
Students can proceed at their own pace.	3	2	3
The course contains flexible or adaptable learning routes.	0	0	3
Students can review previous frames of information unlimited times.	3	3	3
Student can pause or re-play any audio or video segment as desired.	0	0	3
Previously viewed on screen instructions can be skipped.	3	0	3
Learner has control over the rate of presentation of material.	3	3	3
Course Interactions Organization	3	3	3
Student to Student			
Student to student communication behaviors are clearly communicated.	3	3	3
Student to student communication methods were clearly communicated.	3	3	3
Student to Instructor			
Faculty provides information as to their timeliness of responses to email and student inquiries.	0	0	3
Instructor is available for phone or F2F conferencing.	3	3	3
Total	138	136	156
Average		137	
Percentage		87.8%	

Appendix B-2: Rubric Pre-evaluation Summary of comments from experts

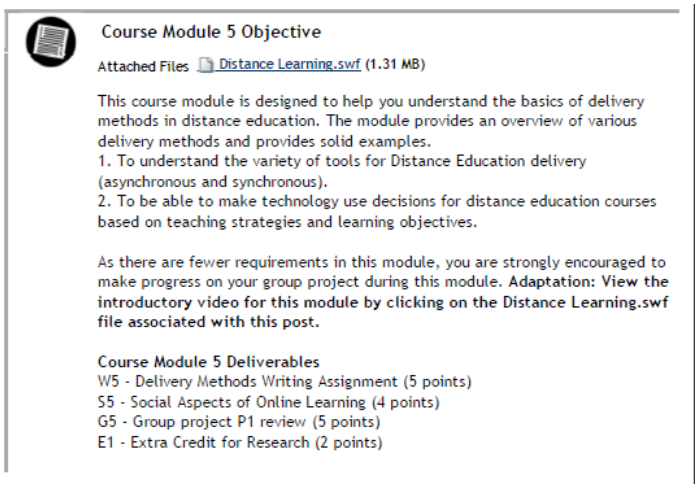
Principle	Expert 1	Expert 2	Expert 3
Pedagogy	In the area of Pedagogy I would rank the objectives with a "2." The one principle I feel that is lacking in objective 2 and 3 is the presence of authentic learning activities. The activities as they stand appear to be your standard "writing assignments." From a cultural values standpoint, objective 3 has a specific focus on this element, whereas objective 2 does not. In objective 2, a student has the flexibility to add a cultural value component to the assignment, but there is no prompt in the directions to include it, so it is something that a student would have to think of on their own.	My impression is that learning goals, tasks, and modes of assessment are already in place, therefore are not flexible.	Lacks in objective 2 authentic learning activities and tasks where the learners can apply their existing skills and cultural values. Include in the directions the application of cultural values or beliefs to the written assignment.
Content	In the area of Content I would rank the objectives with a "3." Overall, I feel the content was written in a way that college students could comprehend. In addition, the content was presented using structured paragraphs and utilized bullet points and numbering to help make the content more organized and concise.	I see the level of English a little bit advanced for people who English is not the first language.	All students are English speakers, based on the data collected.
Technology	In the area of Technology I would rank the objectives with a "2." Being familiar with Blackboard I know that this LMS offers various communication tools for social interaction. What I feel was lacking from objectives 2 and 3 were the supplementary media and resources for learners to expand their knowledge. I think the technology has the ability to incorporate supplementary materials, but actually providing them, is more dependent on the instructor.	I don't see a variety of combination of supplementary media and resources in this module.	Lacks the variety of combinations of supplementary media and resources for learners to expand their knowledge.
Communications	In the area of Communications I would rank the objectives with a "2." Although, objective 3 is specifically designed to encourage online social interaction, there are no guidelines within the directions to respond to your classmates' discussion postings. Because this is a reoccurring type of activity in the course, more detail instructions may be presented elsewhere. In addition, with the materials given to me to review, there was no indication of guidelines for online communication.	I do not see guidelines for online communication in the module.	The guidelines for communications in electronic formats are provided in the Discussion Rubric.

Appendix B-3: Implementation Log

Date: 9/26/2010
From: Marie A. Tapanes

Time	Recommended activities	Actual activities	Comments
After planning, 40 min	Adaptation A	Write the instructions for the optional part of the written assignment, which is to integrate the students' cultural values into the assignment.	This is an optional part of the assignment that should provide the adaptations for the students to apply their existing culturally-relevant skills and values into the assignment.
After planning, 2 hours	Adaptation B	Used Camtasia Studio 5 and Power Point 2007 to develop an audio presentation to describe the module to the students and provide a "taught by an expert" experience to the students.	The Camtasia movie was rendered as a Flash 10.0 swf file.
After planning, 20 min	Adaptation C	Write the instructions in the written assignment to post a draft of the assignment half way into the module to the discussion forum to receive feedback from peers before official submission.	This will allow students to learn from others and to generate an improved version of the written assignment before submission.

Appendix B-4: Adaptations



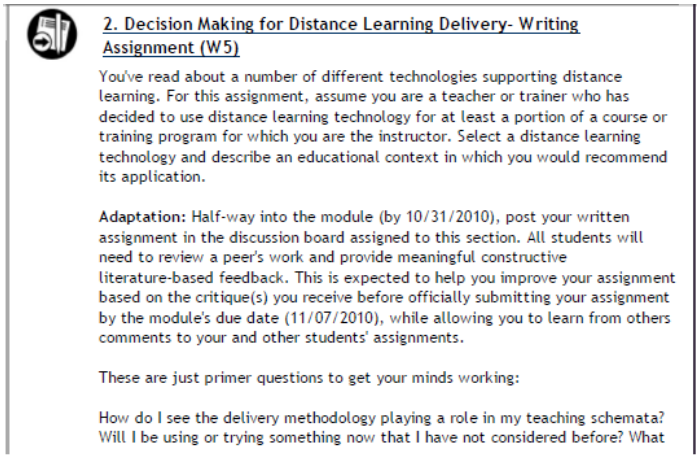
Course Module 5 Objective

Attached Files Distance Learning.swf (1.31 MB)

This course module is designed to help you understand the basics of delivery methods in distance education. The module provides an overview of various delivery methods and provides solid examples.
1. To understand the variety of tools for Distance Education delivery (asynchronous and synchronous).
2. To be able to make technology use decisions for distance education courses based on teaching strategies and learning objectives.

As there are fewer requirements in this module, you are strongly encouraged to make progress on your group project during this module. **Adaptation: View the introductory video for this module by clicking on the Distance Learning.swf file associated with this post.**

Course Module 5 Deliverables
W5 - Delivery Methods Writing Assignment (5 points)
S5 - Social Aspects of Online Learning (4 points)
G5 - Group project P1 review (5 points)
E1 - Extra Credit for Research (2 points)



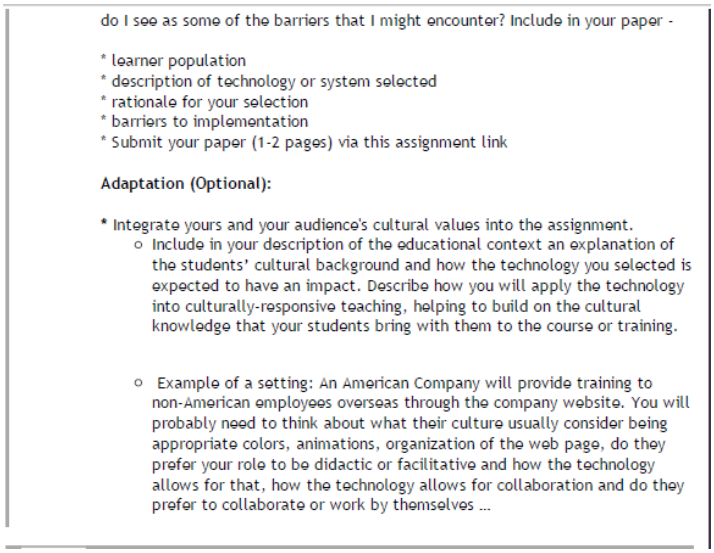
2. Decision Making for Distance Learning Delivery- Writing Assignment (W5)

You've read about a number of different technologies supporting distance learning. For this assignment, assume you are a teacher or trainer who has decided to use distance learning technology for at least a portion of a course or training program for which you are the instructor. Select a distance learning technology and describe an educational context in which you would recommend its application.

Adaptation: Half-way into the module (by 10/31/2010), post your written assignment in the discussion board assigned to this section. All students will need to review a peer's work and provide meaningful constructive literature-based feedback. This is expected to help you improve your assignment based on the critique(s) you receive before officially submitting your assignment by the module's due date (11/07/2010), while allowing you to learn from others comments to your and other students' assignments.

These are just primer questions to get your minds working:

How do I see the delivery methodology playing a role in my teaching schemata? Will I be using or trying something now that I have not considered before? What



do I see as some of the barriers that I might encounter? Include in your paper -

* learner population
* description of technology or system selected
* rationale for your selection
* barriers to implementation
* Submit your paper (1-2 pages) via this assignment link

Adaptation (Optional):

* Integrate yours and your audience's cultural values into the assignment.
  - Include in your description of the educational context an explanation of the students' cultural background and how the technology you selected is expected to have an impact. Describe how you will apply the technology into culturally-responsive teaching, helping to build on the cultural knowledge that your students bring with them to the course or training.
  - Example of a setting: An American Company will provide training to non-American employees overseas through the company website. You will probably need to think about what their culture usually consider being appropriate colors, animations, organization of the web page, do they prefer your role to be didactic or facilitative and how the technology allows for that, how the technology allows for collaboration and do they prefer to collaborate or work by themselves ...

2.1 Written assignment discussion forum

Post here, half-way into the module, your written assignment to receive and provide feedback from your peers.

3. Challenges, Culture and Communication (S5)

After reading this viewpoint on the theoretical challenges of distance education and the significance of culture and its impact on communication, discuss one of the questions Dr. Gunawardena asks at the end of her comments.

I believe that the theoretical challenges for distance education will center on issues related to learning and pedagogy in technology mediated online learning environments. One such issue is understanding and evaluating knowledge construction in online collaborative learning communities. Increasingly we are subscribing to a knowledge construction view of learning as opposed to an information acquisition view, as we design web-based distance learning environments. The knowledge construction perspective views computer networks not as a channel for information distribution, but primarily as a new medium for construction of meaning, providing new ways for students to learn through negotiation and collaboration with a group of peers. The challenge, however, is to develop theory to explain how new construction of knowledge occurs through the social negotiation in such a knowledge building community.

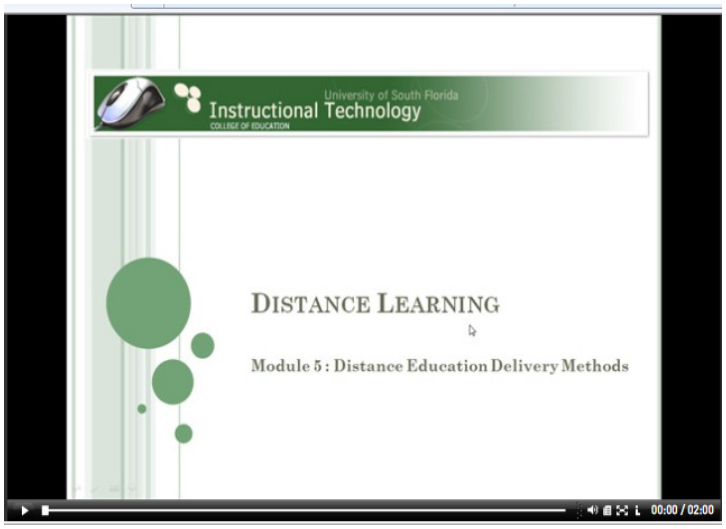
With the expansion and acceptance of the Internet and the World Wide Web across the globe for education and training, the significance of culture and its impact on communications, and the teaching and learning process at a distance will provide an impetus for further research and theory building.

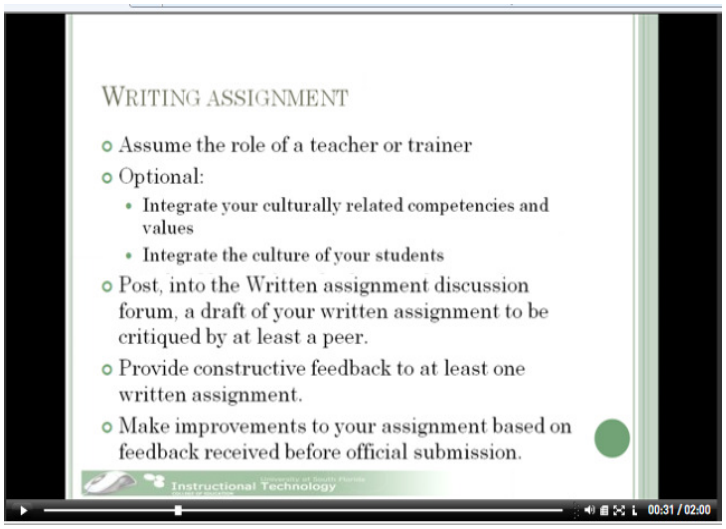
If we design learner-centered learning environments, how do we build on the conceptual and cultural knowledge that learner brings with them?

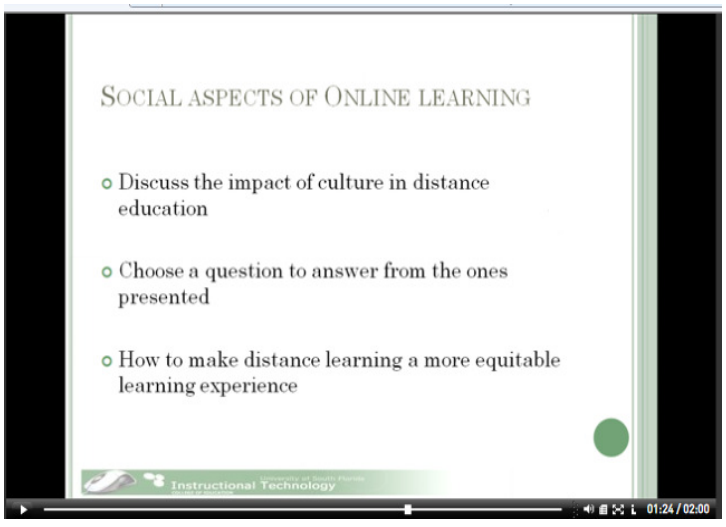
How does culture influence perception, cognition, communications, and the teaching learning process in a online course? How do we as instructors engage in culturally responsive online teaching?

These types of questions need to be addressed in research and in theoretical frameworks as we move toward making distance education a more equitable learning experience.

Gunawardena, Lani. Organizational Learning and Instructional Technology , U. of New Mexico


University of South Florida
Instructional Technology
COLLEGE OF EDUCATION
DISTANCE LEARNING
Module 5 : Distance Education Delivery Methods
00:00 / 02:00


WRITING ASSIGNMENT
Assume the role of a teacher or trainer
Optional:
Integrate your culturally related competencies and values
Integrate the culture of your students
Post, into the Written assignment discussion forum, a draft of your written assignment to be critiqued by at least a peer.
Provide constructive feedback to at least one written assignment.
Make improvements to your assignment based on feedback received before official submission.
Instructional Technology
00:31 / 02:00


SOCIAL ASPECTS OF ONLINE LEARNING
Discuss the impact of culture in distance education
Choose a question to answer from the ones presented
How to make distance learning a more equitable learning experience
Instructional Technology
01:24 / 02:00

Appendix B-5: Instructor's Evaluation Report

Date: 9/26/2010

From: Instructor

Module Title: Distance Education Delivery Methods

Issues:

I like the addition where students can provide each other feedback on their written assignments. I think this will improve the quality of the submissions. I also think the introductory video will help students understand the objectives of the module.

Evidence:

Recommendations:

I changed couple things in the module. First, I made it so the discussion was numbered as 2.1 to correspond to the writing assignment. I figured this would help them understand the association. I also included instructions to click on the video that you created. I want to make sure they view the video. Otherwise, it looks good to me.

Appendix B-6: Rubric Post-Evaluation Summary of comments

	Comments:			
	Representative Learner 1	Representative Learner 2	Representative Learner 3	Representative Learner 4
Pedagogy	I would give this principle a 2.5. I think the adaptation does a better job of incorporating a cultural component, but I wouldn't give it a 3 as I still feel that the learning activities are fairly common to what you would see in an online course (as opposed to being authentic).		I am not sure I see how the learning goals, tasks and modes of assessment are flexible. It seems that the module though well designed is not flexible in that respect.	
Content	I would give this principle a 3. I believe that the material is presented in a way that would be understood by the target audience.			
Technology	I would give this principal a 3. Having experience with the LMS that is used in this course I know that there are several tools to create social interaction. Furthermore, with the incorporation of the swf file at the beginning of the module this creates a resource for student who might be more auditory learners. This could make a positive impact on someone who's first languages was not English		Though the SWF file was provided to provide an overview, it did not use a variety of media and resources which would allow the learners to expand their knowledge. The media variety was used during the overview, rather than as part of the instructional content. As an evaluator we may have needed to see what was in the folder "Readings/Website Resources"	

Communications	I would give this principle a 3. Having the students submit their W5 half way through and provide feedback to other offers an opportunity for interaction. In addition the guideline "…provide meaningful constructive literature-based feedback" indicates the type of feedback students should focus on. Furthermore, the cultural option added to W5 provides guidance for cultural integration into the assignment. I also liked the example that is provided to give students an idea of how this might be done.	Reading the heading, Communication – Interaction with learner and instructor, I don't see where this modules states where the instructor would interact with the students. I see peer reviews, but I don't see any resources (e.g. Questions- discussion forum for students to ask the instructor questions) or statements that encourage interaction between learners and instructors.	I was a little hesitant on this one because of the language "including anonymous or private messages." In the end I assumed they could always email private messages so I went with 3.

Appendix B-7: Raw data from all Wilcoxon signed rank test (*N=16*) results

Typically, I can tell I have learned something because I:

can perform the activities requested by the instructor or course designer.

I have applied what I have learned to my actual activities.

	N	Mean rank	Sum of ranks
Negative ranks	2 (pre < post)	2.50	5.00
Positive ranks	2 (pre > post)	2.50	5.00
Ties	12 (pre = post)		
Total	16		
$z = 0.00$, $p > .05$			

I prefer to follow a path of learning determined by:

the instructor or the course designer because that person usually knows what I need to learn.

me because I usually know what I need to learn.

	N	Mean rank	Sum of ranks
Negative ranks	4 (pre < post)	3.50	14.00
Positive ranks	2 (pre > post)	3.50	7.00
Ties	10 (pre = post)		
Total	16		
z = -0.82, p > .05			

Typically, I think that the instructor or the course designer is satisfied if I:

take a test without making mistakes.

learn from my mistakes.

	N	Mean rank	Sum of ranks
Negative ranks	3 (pre < post)	2.50	7.50
Positive ranks	1 (pre > post)	2.50	2.50
Ties	11 (pre = post)		
Total	15		
$z = -1.00$, $p > .05$			

I prefer to:

follow a well-defined, logical path to learn what I need to learn.

explore different paths to learn what I need to learn.

	N	Mean rank	Sum of ranks
Negative ranks	2 (pre < post)	2.50	5.00
Positive ranks	2 (pre > post)	2.50	5.00
Ties	12 (pre = post)		
Total	16		
$z = 0.00$, $p > .05$			

I tend to learn best from:

any kind of examples, as long as they make sense.

examples as long as they are related to my work or personal life.

	N	Mean rank	Sum of ranks
Negative ranks	0 (pre < post)	0.00	0.00
Positive ranks	2 (pre > post)	1.50	3.00
Ties	14 (pre = post)		
Total	16		
$z = -1.41$, $p > .05$			

I prefer to be tested:

with questions that are based on the stated goals and objectives of the course.

by applying what I have learned from the course to different situations.

	N	Mean rank	Sum of ranks
Negative ranks	0 (pre < post)	.00	.00
Positive ranks	4 (pre > post)	2.50	10.00
Ties	12 (pre = post)		
Total	16		

I prefer to be:

taught by an expert in the field on what I need to learn.

guided by an instructor who shows me how to learn what I need to learn.

	N	Mean rank	Sum of ranks
Negative ranks	5 (pre < post)	4.50	22.50
Positive ranks	3 (pre > post)	4.50	13.50
Ties	8 (pre = post)		
Total	16		
z = -0.71, p > .05			

Typically:

I prefer to be given predetermined learning goals.

I learn as I go, depending on my own learning goals.

	N	Mean rank	Sum of ranks
Negative ranks	2 (pre < post)	3.00	6.00
Positive ranks	3 (pre > post)	3.00	9.00
Ties	11 (pre = post)		
Total	16		
z = -0.45, p > .05			

I prefer a course that uses:

very few learning activities throughout the course.

several learning activities throughout the course.

	N	Mean rank	Sum of ranks
Negative ranks	1 (pre < post)	1.50	1.50
Positive ranks	1 (pre > post)	1.50	1.50
Ties	14 (pre = post)		
Total	16		
z = 0.00, p > .05			

For me personally, I prefer e-learning courses in which I:

am told what I need to learn.

decide what I need to learn.

	N	Mean rank	Sum of ranks
Negative ranks	3 (pre < post)	3.00	9.00
Positive ranks	2 (pre > post)	3.00	6.00
Ties	11 (pre = post)		

Total	16
z = -0.45, p > .05	

I prefer when the instructor or course designer uses:

a few standard instructional methods or activities to teach me the course content.

several instructional methods or activities to teach me the course content.

	N	Mean rank	Sum of ranks
Negative ranks	2 (pre < post)	2.00	4.00
Positive ranks	1 (pre > post)	2.00	2.00
Ties	13 (pre = post)		
Total	16		
z = -0.58, p > .05			

I learn:

until I make no errors on the test.

from my errors by experimenting with that I have learned.

	N	Mean rank	Sum of ranks
Negative ranks	1 (pre < post)	1.50	1.50
Positive ranks	1 (pre > post)	1.50	1.50
Ties	14 (pre = post)		
Total	16		
z = 0.00, p > .05			

I prefer to work:

by myself on activities or projects.

with a group on activities or projects.

	N	Mean rank	Sum of ranks
Negative ranks	1 (pre < post)	2.00	2.00
Positive ranks	2 (pre > post)	2.00	4.00
Ties	13 (pre = post)		
Total	16		
z = -0.58, p > .05			

I prefer when I am learning:

directly from the instructor or course designer.

by collaborating with my colleagues or classmates.

	N	Mean rank	Sum of ranks
Negative ranks	3 (pre < post)	3.00	9.00
Positive ranks	2 (pre > post)	3.00	6.00
Ties	11 (pre = post)		
Total	16		
z = -0.45, p > .05			

For me personally, I take e-learning courses when:

I am required to.

I want to.

	N	Mean rank	Sum of ranks
Negative ranks	1 (pre < post)	1.50	1.50
Positive ranks	1 (pre > post)	1.50	1.50
Ties	14 (pre = post)		
Total	16		
z = 0.00, p > .05			

I prefer when the content of the course is presented to me, but:

it is repeated to me in various ways.

I create my own uses for the information within the course.

	N	Mean rank	Sum of ranks
Negative ranks	1 (pre < post)	3.00	3.00
Positive ranks	4 (pre > post)	3.00	12.00
Ties	11 (pre = post)		
Total	16		
z = -1.34, p > .05			

Typically, I prefer when the course features that will help me learn the material are chosen by:

the instructor or course designer.

me.

	N	Mean rank	Sum of ranks
Negative ranks	3 (pre < post)	2.50	7.50
Positive ranks	1 (pre > post)	2.50	2.50
Ties	12 (pre = post)		
Total	16		
z = -1.00, p > .05			

I prefer when I:

am given a deadline or timed activities.

can control the pace of learning.

	N	Mean rank	Sum of ranks
Negative ranks	4 (pre < post)	3.00	12.00
Positive ranks	1 (pre > post)	3.00	3.00
Ties	11 (pre = post)		
Total	16		
z = -1.34, p > .05			

About the Author

Marie A. Tapanes completed a B.S. in Computer Science at the University of Puerto Rico, a M.S. in Computer Technology in Education at Nova Southeastern University, and a Ph.D. in Curriculum and Instruction with a Specialization in Instructional Technology and a cognate in Educational Statistics at University of South Florida. She has previously worked as Manager of Information Systems, Network Support Specialist, and Information Systems Instructor at the university level.