SYSTEMIC MULTICULTURAL MODEL FOR ONLINE EDUCATION
Tracing Connections Among Learner Inputs, Instructional Processes, and Outcomes

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The article outlines a comprehensive model for online education comprised of personal characteristics of learners and instructors, instructional and institutional variables, and learning outcome factors. The model was developed using a multicultural and socioconstructivism perspective and then tested through applying the findings from a questionnaire with 64 multiple-choice questions and three open-ended questions sent to learners enrolled in online courses, and their instructors, at 3 universities in 3 different countries (United States, Spain, and China). The results suggest that the students from these different cultural contexts perceive online learning differently, but all satisfactorily. The cultural group of students who gave high results for the input variables (learner factors) also gave high results on process variables (institutional factors) and output variables (learning outcomes). The pattern of scoring differences between universities suggests cultural preferences regarding instruction and achievement. This finding suggests a need to discuss the different approaches of students and instructors from distinct cultures. As online learning courses are hypothesized to be influenced by students' cultural differences, we search to offer more insight on these differences in relation to the systemic model.

INTRODUCTION

The development of a systemic model for global online learning responds to the need to have an inclusive and interrelated view of online education that reveals the potential differences between cultures. The difficulty of creating a diverse set of factors and variables that stress both process and results in online learning is obvious because such studies are rarely found in the literature (Wiesenberg & Stracy, 2005). Some studies focus on factors that lead to effective online learning experiences (Reeves & Reeves, 1997; Tallent-Runnels et al., 2006), while others focus on the relations between critical factors (Benbunan-

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Fich, Hiltz, & Harasim, 2005; Garrison, 2007; Selim, 2007). However, the majority of the research is centered on the relationships among two or three variables through the cognitive theoretical perspective, integrating progressively socioconstructivist concepts (Campos, 2004).

When the focus of these models is considered, three major categories can be distinguished: (a) studies that relate to the satisfaction of the online learner (Bolliger, 2004); (b) studies that investigate the quality in online learning presenting models mainly for evaluation purposes (Ehlers, 2004; Fresen, 2007; Zhao, 2003); and (c) studies that analyze the type of presence of the participants in the online environment (teaching, cognitive, and social; Bangert, 2008; Shea & Bidjerano, 2009). Smaller but still worth noting is the presence of studies describing how technology enhances online learning by managing and analyzing groups of techno-pedagogical variables (intelligent tutors, theme-based learning, etc.; Annetta, Klesath, & Holmes, 2008; Blignaut & Nagel, 2009).

All of the aforementioned research has the same global objective, which can be summarized as the success or the improvement of online education programs and institutions. However, there is a current lack of focus on the teaching and learning process itself, understood as a progressive and cooperative partnership between instructors and learners. Even though there is an emerging collection of initiatives with this focus (Redmond & Lock, 2006; Tallent-Runnels et al., 2006), "the development, acceptance, and verification of theoretical frameworks unique to the online learning environment still is relatively lacking" (Garrison & Arbaugh, 2007, p. 157).

The research we present here aims to provide results on the topics of learner satisfaction, knowledge acquisition, and ability to transfer by revealing learner perspectives in the international online university context. The perspectives of 921 online learners from different countries concerning what instructional and institutional mediation they received and how they value it is important for both the current learning programs and for future online design. This study discusses the results from the perspectives of three different countries (United States, Spain, and China) representing three different types of cultures.

The model was developed with input, process, and output variables. Input variables are related to those aspects mainly contributed by the student, and are related to process of learning (e.g., motivation for online enrolment, self-efficacy, computer competence level). Process variables include the aspects contributed by the university institution (e.g., e-learning platform, didactic materials, instruction design). Finally, output variables are not seen as numbers or grades but instead as qualitative gains at the end of the process (knowledge acquisition, learner satisfaction, and ability to transfer).

SYSTEMIC MODEL

In this section both the theoretical framework and background knowledge for the factors and categories included in the model are briefly highlighted. This list of 16 factors divided into three variables that are grounded in existing literature, prior research, and successful teaching experiences. All of the factors are interrelated.

Learner Factors

According to the socioconstructivist perspective, it is believed that learners come to the online classes with a "backpack" full of personal experiences and exclusive prior knowledge. This background makes each learning experience unique. These individual learner characteristics play a role in overall learning experience. Hiltz and Shea (2005) studied the profile of online learners and found that their individual objective and psychological characteristics related to the likelihood of success in online courses (as defined by high learner satisfaction and good grades). The first group of

characteristics in our model includes prior knowledge, gender, age, and other demographic information. The psychological characteristics include self-efficacy, motivation, and personal expectations.

Since Bandura (1977) introduced the concept of self-efficacy, which is the self-belief that one can persevere despite challenges, several important studies have been developed related to online education. Hardre (2003) suggests that people with a high sense of self-efficacy "consider the demands of the task, visualize successful strategies, and respond to challenges in positive effortful ways" (p. 64). Experience and ability with computers are also been related to self-efficacy (Fletcher, 2005; Lee & Witta, 2001; Lim, 2001). If students demonstrate low self-efficacy, there may be motivational problems in the accomplishment of the tasks (Margolis & McCabe, 2006), although its correlation with student performance is nowadays controversial (Puzziferro, 2008). Motivation and expectations can be understood literally as the motor and the director respectively; they are what drive and optimize the potential of learning and performance in educational settings (Hardre, 2003), especially intrinsic motivation (Shroff & Vogel, 2009).

Institutional Factors

Institutional factors include what the university and instructors bring to the learning experience. The institutional factors in this study include: learner support, social presence, instruction, learning platform, instructor interaction, learner interaction, learning content, and course design.

Learner Support

Learner satisfaction has been shown to be positively correlated with quality of learning outcomes and is influenced by the support received by the student during the learning process (McLoughlin & Marshall, 2000; Palmer & Holt, 2009). Furthermore, in an online environment, students often look to the instructor for support in areas that might be taken care of by another person in a face-to-face environment (Moore & Kearsley, 2002). The online instructor must be resourceful in guiding students through the learning process, as well as in leading them to other people who can provide support, such as the university technical support team, with the aim to positively influence the student's online learning experience. LaPointe (2006) even suggests that online teachers should strive to design courses that facilitate in transformational learning opportunities, through reflective discourse and social interaction.

Social Presence

Social presence is the degree to which an online participant feels that the person(s) on the other end of the computer are real and care about them (C. N. Gunawardena & Zittle, 1997). Shin (2003) suggests that the student-institution relationship is even more important for students attending virtual universities versus those enrolled in a single distance education course at a brick and mortar university. Moreover, recent studies connect social presence with level of understanding and cognitive presence (Bangert, 2008; Shea & Bidjerano, 2009).

Learning Platform

Even with the continuous updates in the field of distance education, there are best practices in regards to designing the online learning platform. Nielsen (2000) provides a list of guidelines of navigation standards for online course design software. Lynch and Horton (2001) provide fundamental best practices for instructional designers that work in adaptive e-learning platforms, including guidance on graphics, navigation and page layout. Miller (2005) challenges e-learning designers to consider the learners with diverse backgrounds, experiences and learning styles. Few studies attempt to discern the role of the interface in

learning outcomes (Finlay Desment, & Evans, 2004), especially given the tremendous developments in open source and social networking (Violino, 2009).

Instruction

Modest attention has being paid to researching online teaching satisfaction in the instruction process (Dziuban, Shea, & Arbaugh, 2005). With online learning, instructors do not always know how learners react to material. Given that teaching is conducted through a technological interface, the instructor must adapt his or her teaching style. Moore and Kearsley (2002) recommend that teachers be empathetic and provide motivational support. Online instructors must also be patient while guiding students as they learn to manipulate this alternative learning environment. Moreover, there are some factors related with instruction that enhance or hinder overall teaching and learning satisfaction and perceived effectiveness online, such as knowledge of the field and actualization (Oomen-Early & Murphy, 2009). Aubteen Darabi, Sikorski, and Harvey (2006) recently validated 20 competencies for distance teaching, based on a review of distance education literature from the past 10 years and found that the most frequently performed tasks are also some of the most important, including maintaining course accuracy, assessing learners' attainment of course objectives, and demonstrating expertise in the course material.

Instructor Interaction

Whereas instruction describes the method of teaching and presenting content, instructor interaction responds to the instructor's role in an online environment, in which interaction is a central component. Moore and Kearsley (2002) describe instructor interaction "as essential by most learners and as highly desirable by most educators" (p. 140). Upon interacting with the content, the instructor must structure the course and activities so that learners are stimulated to interact with the instructor. Learner support and encouragement enhances the learner's level of comfort of interacting with the instructor. The level of interaction will depend on the tools available in the course. For example, if synchronous tools are not available, students and instructors will experience lag time between posting a question and receiving a response, which may increase the transactional distance felt in the classroom (Moore & Kearsley, 2002; Steinman, 2007).

Learner Interaction

Upon establishing comfort in interacting online, learners begin discourse with other learners, whether on an individual or group basis (Moore & Kearsley, 2002). This interaction assists learners in the meaning-making process of knowledge acquisition and instruction. Levine (2006) recommends that the instructor establish ways to "unobtrusively encourage the learners to share their experience, knowledge, and willingness to help each other" (p. 21). If this happens, learner-learner interaction may turn out to be a strong component in learning and instruction in the online course. On the other hand, Bray, Aoki, and Dlugosh (2008) found that learner-learner interaction was not always preferred by learners.

Learning Content

The instructor is responsible for posting content that matches with course objectives. Content should be relevant, yet enticing enough to learners that they retrieve it from the repository, read it, interpret it, and then discuss it with other learners. Levine (2006) goes so far as to say that the content should "empower" (p. 22) students to express their interests and interpretations. Content must also be accessible to all learners regardless of their connection capabilities.

Course Design

Moore and Kearsley (2005) describe course design as a five-stage process in which the designers analyze the content and the learners enroll in the course. Subsequently, learning objectives, activities, modules, and course layout are planned. During the development stage, designers and instructors create the materials for the online course. Once the learners arrive, the implementation phase begins and learners engage in learning activities based on the decisions made earlier in the design phase. Finally, after the course has ended, the online course must be evaluated. Recently, Garrison and Cleveland-Innes (2005) found that course design, amongst other elements, significantly impacted the extent to which learners engage in course content in a deep and meaningful manner. LeBaron, Pulkkinen, and Scollin (2000) outlined the challenges of designing courses for international online programs.

Outcome Factors

We have defined three learner outcomes for the online learning experience. It is a tiered list, in that the first outcome is learner satisfaction, defined as overall enjoyment of the learning experience despite not learning the material. Knowledge acquisition takes it a step further in which the learners can recall information learned in the course. The final tier is ability to transfer, defined as the expectation that learners will apply the knowledge gained in the course to future situations.

Learner Satisfaction

Through developing an interaction analysis model, C. N. Gunawardena and Zittle (1997) concluded that social presence is a strong predictor of learner satisfaction in online settings. Lee and Witta (2001) reported that self-efficacy was a predictor for learner satisfaction in an online course. LaPointe and Gunawardena (2004) found that students who interacted frequently were more likely to be satisfied with the course. Some recent findings suggest the importance of learner characteristics like educational level, online learning readiness and locus of control (Yukselturk, 2009).

Knowledge Acquisition

Mayer (2002) listed two important educational goals connected to knowledge acquisition; the first of which was retention (the second was transfer and is discussed below). Retention is similar to our concept of knowledge acquisition in that there is a requirement for learners to remember newly acquired knowledge. The two associated cognitive processes, as defined by the author, are recognizing and recalling. These two processes may be measured by performance on tests and quizzes, as well as ability to recall information from long-term memory. Moreover, knowledge acquisition is also connected with instructional design, teaching strategies, and competences enhanced (Sendag & Odabasi, 2009).

Ability to Transfer

Mayer (2002) included transfer as the second of the two most important educational goals. Transfer takes knowledge acquisition a step further, requiring students to make sense of the new information enough to apply it to different contexts. Mayer (2002) explained that this leads to a greater sense of meaningful learning, whereas students collaborate in the construction of knowledge to solve a problem and make sense of future experiences. Recent studies about the influence of online or multimedia design reference the importance of multimedia elements for retention and learning transfer (Austin, 2009). Furthermore, online transferability (Burke & Hutchins, 2007) is a central area begging for additional research.

METHODOLOGY

Objectives

The objectives of this study were to:

1. Test a systemic model applicable to the online learning process at universities located in three different countries with students representing different cultures, and
2. Describe the factors that emerged as being culturally different from the student perspective.

Procedures

The research design used both quantitative and qualitative methods. Two secure online questionnaires with structured and open-ended questions were administered to students and instructors in three different countries (United States, Spain, and China). The online questionnaires and accompanying consent forms were originally written in English and then translated to the official language(s) of the university by an individual chosen by the researcher representing the university. The questionnaires were then built using Opinio and hosted on the secure University of New Mexico Health Sciences application server. The first questionnaire, consisting of questions on learner demographics, motivation, self-efficacy, and prior knowledge, was sent to learners and instructors toward the beginning of the course. The second questionnaire had questions on learner support, social presence, instruction, learning platform, and interaction, and was sent toward the end of the course.

Universities

The University of New Mexico (UNM) is the largest university in New Mexico, located in Albuquerque with around 26,000 students in attendance each year. It serves as a significant knowledge resource for the state. Being close to the Mexican border, UNM boasts a diverse student population, with 30% of the student population being Hispanic and 5% being American Indian. Distance education has been offered for decades, due to the vast size of the state, and online education continues to grow each semester. All online courses are taught using WebCT Vista. UNM hosted this study.

The Universitat Oberta de Catalunya (UOC) is a fully online university located in Barcelona (Spain) with around 53,000 students. The mission of the university is to facilitate access and life-long learning to adult learners through asynchronous communication tools. The university's methodology is based in formative evaluation built in a unique and specific platform that includes teaching, research, and management issues. The university's principal aim is to ensure that each student satisfies his or her learning needs, gaining maximum benefit from his or her own efforts.

The University of Peking (PKU) is a comprehensive and national key university. It is the first national university in modern Chinese history. PKU has over 30,000 students in 31 colleges and 14 departments, offering 101 undergraduate programs, 224 postgraduate programs, and 202 doctoral programs. The university values research, as well as training students in specialized fields. PKU aims to become an international center for teaching and research in diverse areas of learning including pure and applied sciences, social sciences, humanities, sciences of management, and education.

ANALYSIS AND RESULTS

Data were analyzed through calculating means and standard deviations, and then running an ANOVA. Although the number of responses was different at each university, the central limit theory states that any sample size over 50 can be considered normal. Thus we ran an ANOVA with unequal group sizes. A one-way between-subjects ANOVA was conducted to compare the perceptions of learner and institutional factors on the learning outcomes. Because we have found a statistically significant result in this example, we needed to compute a post hoc test. We selected the Games-Howell post hoc test. This test is used with variances are unequal and also takes into account unequal group sizes (Keppel & Wickens, 2004).

The material below describes the results from testing the model at three universities located in different countries with students representing different cultures. Furthermore, we describe the factors that emerged as being culturally different and explore trends that suggest cultural patterns. Means and standard deviations were calculated for all items. Significant factors are described below (see Table 1 for significance and general results).

Learner Factors

Learner factors included general self-efficacy, online self-efficacy, motivation, prior knowledge, and course expectations. Significant differences are observed in three of the five learner factors: self-efficacy, motivation, and prior knowledge. In general terms, UOC and UNM students and the PKU and UNM students differed on all three factors, whereas UOC and PKU students differed in motivation and prior knowledge.

The results are consistent in the sense that UNM students tended to agree more with the statements than their UOC and PKU peers. PKU students believed that they had the prior knowledge they needed to succeed in the course, whereas the UOC students reported being motivated to learn in the course. Both

TABLE 1
Results by Factors and Universities

	UOC Data (N = 687)		*UNM Data (N = 57)*		*PKU Data (N = 177)*		*Significance*
Learner Factors	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Level*
General self-efficacy	3.011	.457	3.251	.567	3.030	.672	0.003
Self-efficacy online	3.241	.497	3.333	.604	3.227	.626	0.408
Motivation	3.275	.635	3.456	.656	2.966	.955	0.000
Prior knowledge	2.737	.512	3.058	.512	2.809	.714	0.000
Course expectation	2.788	.565	3.017	.640	2.817	.868	0.034
Institutional Factors	*UOC Data (N = 380)*		*UNM Data (N = 42)*		*PKU Data (N = 87)*		
Learner support	3.214	.619	3.581	.586	3.000	1.000	0.002
Social presence	3.051	.745	3.545	.618	3.160	.876	0.000
Instruction	3.094	.732	3.590	.693	2.916	1.078	0.000
Learning platform	3.056	.658	3.322	.715	3.006	.871	0.016
Instructor interaction	3.049	.775	3.193	.963	2.926	1.763	0.300
Learner interaction	3.152	.656	3.376	.720	3.148	.859	0.018
Learning content	3.086	.0692	3.591	.257	3.021	.964	0.000
Course design	3.089	0.144	3.519	.706	3.017	.952	0.002
Outcome Factors	*UOC Data (N = 380)*		*UNM Data (N = 42)*		*PKU Data (N = 87)*		
Learner satisfaction	3.227	.668	3.464	.466	2.803	1.103	0.000
Knowledge acquisition	3.112	.677	3.419	.700	2.924	1.029	0.006
Ability to transfer	3.002	.697	3.436	.721	2.972	1.082	0.001

Note: *Scoring: 1 = *strongly disagree*; 2 = *disagree*; 3 *agree*; 4 = *strongly agree*.

PKU and UOC students had similar self-reports in terms of general self-efficacy, online self-efficacy, and course expectations. UNM students perceived that they had the prior knowledge they needed to succeed in the course and were confident in their capability to learn online. The PKU and UOC students were not as confident as the UNM students, but they did not score less than 2.8 in any variable.

General Self-Efficacy

The difference in this factor derived from difference between the UOC and UNM learners regarding time management (p = .005). There was also a difference between the UNM and PKU students (p = .005) regarding their confidence to deal effectively with unexpected events in the course. Students' self-perception about perseveration in the accomplishment of the goals remained satisfactory and stable between groups.

Motivation. The difference in motivation derived from the differences between UOC and PKU learners and UNM and PKU learners on the subject of relevancy of the course to their goals (p = .001 and p = .000 respectively). There is also a difference between UOC and UNM learners in relation to PKU students regarding their motivation for the course. UNM students reported being more motivated, followed by UOC students (p = .000 and p = .005 respectively).

Prior Knowledge

The difference in this factor derives from the feeling of having some weaknesses in the course content. The difference between UOC and PKU students was p = .002, with the PKU students having the higher averages. There was also a difference in the students' perceptions of the level of background knowledge they had to succeed in the course. The UNM learners reported feeling more prepared to learn the course content than the learners from other countries.

Institutional Factors

There were significant differences among learners from the three countries in terms of perceptions on learner support, social presence, instruction, and learning content, whereas learners in all three countries reported similar perspectives for factors like instruction, learning platform, and course design. Most of the differences in these factors were constant and were concentrated between the UOC and the UNM students and the UNM and PKU students. UNM students tended to agree with the statements more frequently than learners at the other two universities. Furthermore, the UOC students tended to agree more than the PKU students, but no significant differences between UOC and PKU data were found. In fact, the students at both UOC and PKU tended to have similar averages in almost all areas. The students at UOC agreed more with the learner support and learner interaction statements than the students at PKU. In contrast, the students at PKU agreed more with the instruction and teaching interaction statements than the learners at UOC.

Learner Support

Students reported different perceptions on the level of access to tools and resources necessary to learn in the course, such as the library, textbooks, etc. (between UNM and UOC students, p = .000 and between UNM and PKU students, p = .000). On the other hand, all students from UNM, UOC and PKU agreed that they had enough learner support and agreed that they had access to technical assistance when they had a problem (p = .000). Learners from UNM, UOC and PKU also agreed that they had adequate training on how to use the online platform for teaching and learning.

Social Presence

The greatest differences between universities were found in students' responses to the social presence items. The different percep-

tions between students at different universities were recorded in their responses to students' perception about the instructors' concerns for student needs, as demonstrated by the difference between UNM and PKU (p = .003) and the level of encouragement the instructor provides to participate in the course (only differences between UNM and UOC; p = .001). UOC students agreed less than UNM students in relation to the statement about feeling part of a community of learners.

Instruction

UNM learners agreed that their instructors encouraged a variety of perspectives more than the UOC learners (p = .000). Similarly, there was a statistically significant difference between UNM and UOC (p = .000) and between UNM and PKU learners' perceptions of their teacher's knowledge of his or her field (p = .000). The students' perceptions of their instructor's use of effective teaching strategies remained similar and had a satisfactory average for UNM, UOC and PKU (see Table 1).

Learning Content

UNM and UOC students had different perceptions on the extent to which content was presented at an appropriate level (p = .001).UNM and UOC students also expressed differences in the opinion about the relevancy of course objectives (p = .003). Because of the nature of the question, we are not able to determine if students who did not agree with the statement believe the content was delivered above or below their capabilities. UOC and UNM learners also had statistically significant differences in terms of how much they agreed with the statement on how stimulating the content of the course was for them (p = 003). PKU students tended to align themselves more with UOC students than with UNM students.

Outcome Factors

The model has three outcome factors. Overall, differences were only apparent in one of the factors—knowledge acquisition. Learners responded differently on three of the ten items from the other two factors: two under the learner satisfaction construct and one under the ability to transfer construct. The items that had significant differences between universities are: recommendation of the course to other students, course relevancy to the students' needs, and about the opportunities to apply the course material.

Following the same pattern from the other factors, there were not drastic differences between the universities. However, UNM learners tended to agree with the statements more than did students from UOC and PKU. Furthermore, UOC learners tended to agree more than students from PKU (except in regards to the questions about problem-solving skills acquisition and the opportunity to apply knowledge).

Learner Satisfaction

The greatest difference between UNM, UOC and PKU in results was reported in students' recommendation of the course to other students (p = .000), showing differences between UOC and PKU learners (p = .000) and UNM and PKU learners (p = .000). Additionally, the statement on the course being relevant to the students' needs showed significant differences between UNM and PKU students (p = .000). There were similarities between students at all three universities in regards to their opinions concerning motivation to do well in the course, usefulness of the learning experience, and the level of learning from the online experience.

Knowledge Acquisition

Learners from the three different countries disagreed the most on the items under knowledge acquisition. A significant difference between countries was found for all items under this factor. The greatest differences were recorded for two items. There was a significant difference between UNM and PKU students (p = .001) on the first item that addressed making correct decisions and solving problems with

the knowledge the students gained in this course. There was also a significant difference in students' perceptions of to what extent they could explain the material covered in this course to others. The learners at the three universities responded similarly to the remaining questions about doing well in the class, seeing the gain in knowledge from the beginning of the class, and solving problems based on information learned in the class.

Ability to Transfer

The only item for this category in which there was a statistically significant difference for UNM and UOC students was regarding opportunities of apply the course material to other situations ($p = .001$). Other variables, such as the way to use materials in new situations including personal or professional life, the ability to apply learning, and the perceived capability to broadly explore a new problem in the field studied, remained similar for the three universities.

LIMITATIONS

This study has clear limitations. As with any large-scale study, significant differences should be approached with caution. Furthermore, testing multiple variables can yield spurious significant differences. Despite these limitations, this study presents perceptions of knowledge acquisition, learner satisfaction, and learning transfer from learners in three different countries with three distinct cultures. Additional research and analysis is planned for these data, which will continue to strengthen and validate initial claims.

DISCUSSION AND CONCLUSIONS

Considering the expected differences in scoring attributed to cultural differences regarding assessment and survey tendencies, the statistically significant differences found between the 921 students at the three universities are remarkable. The general pattern was that students from UNM tended to agree with statements more than the students at the other two universities. Furthermore, students from UOC tended to agree slightly more than students from PKU. However, this was not the case for every item.

Two general conclusions can be drawn from these results. First, it is beneficial to offer a pretest at the beginning of the online course to test the general base level of scoring in a specific community or cultural group and to assess the characteristics of the learners in the online classroom. Second, the differences in results are consistent in that cultural groups followed certain tendencies.

Findings from this study echo findings from Zhu, Valcke, and Schellens' study, (2009) in that students from different cultural contexts perceived online learning differently. Thus, specific cultural adaptations in online learning design should be considered when a course or program is to be implemented cross-culturally. Advances in Internet technologies and applications make distance learning more accessible to a more global audience. The increasing ease of access to online programs encourages students to demand more culturally sensitive learning experiences that allow for a more holistic development of the individual (Visser, 2007).

In general, there was an alignment between the ways in which students responded to the three different factors of the model. Students from different universities were relatively consistent in their scores. Additionally, the scores from students at each university maintained at a constant distance from the other universities. For example, the cultural group of students who agreed with the statements under the input variables (learner factors) also agreed with the statements for the process variables (institutional factors) and the output variables (learning outcomes). This regularity of responses across factors permits us, preliminarily, to talk about different approaches of groups from distinct cultural contexts. As online learning

courses are hypothesized to be influenced by students' cultural differences (Kim & Bonk, 2002; Tapanes, Smith, & White, 2009; Wang, 2001), we offer more insight about where these differences exist in relation to a three-tiered model.

Our findings echo Hardré (2003) in that a high sense of self-efficacy is related to a positive and effortful disposition in online courses and a correspondent general sense of attainment (drawn from outcomes factors). Furthermore, in terms of online self-efficacy, students have the ability to learn more easily from online environments using online tools or discussions. Similar to other studies about the benefits of online learning (Artino, 2007), the students in the three cultural contexts agreed with the statements about the relevancy of the course goals to their needs and the possibility of transferring them to different contexts.

Surprisingly, workload was not perceived as a problem in any of the groups. Students at all universities consistently disagreed with the statements on course expectations, asking if the expectations were fair and an accurate depiction of the course. Workload is one of the biggest areas of concern for online students and faculty (Dunlap, 2005), yet students are more likely to accept it if they are provided with accurate course expectations during enrollment.

UNM practices a student-oriented approach in its online courses, more so than what is practiced at UOC and PKU. PKU, on the other hand, exhibits a more teacher-oriented approach. This approach matches the design and style of traditional teaching that we frequently see in countries where there is a large number of students enrolled in online classes and the teacher is at the center of all learning activities. With this approach, instruction is often created in response to online materials instead of learning interaction and achievement of competencies (Cubukcu, 2008).

Interaction, including learner-instructor and learner-learner interaction, is also one of the relevant factors that perceived differently by university students at the three locations. UNM online courses tended to have fewer students in the classes and a significant range of online tools to use in the online interaction, including synchronous communication. These tools improved the level of transactional distance as perceived by the learners (Steinman, 2007).

Even though significant differences are found in the students' responses, and they are consistent between countries, there are similarities between learners at the three universities. For example, students who tended to disagree with statements about course satisfaction also disagreed that the course met their needs as learners. However, these same learners tended to respond that they would recommend the course to others; this trend was especially common with students from PKU. So, although they did not agree with many of the statements, they still found value in the course. This may indicate that the survey was not culturally relevant to students in China, or it may indicate that students feel the responsibility to recommend a course despite not being satisfied with it.

Although the pattern that emerged remains invariable and the instructional tendency of universities has already been noted, surprisingly, there is not much difference between learner perspectives from the three universities in terms of the outcome factors. The most remarkable finding is the students' propensity in agreeing less with the statements about learner and institutional factors, but that could be due the characteristics of the questions. PKU students scored visibly lower in the three outcome factors (satisfaction, knowledge acquisition, and ability of transfer), which may be a result of both differences in cultural self-assessment or an inferior sense of achievement.

While the purpose of the entire study was to search for success indicators in online learning, we needed to first detect global cultural patterns and existing differences, and to understand comprehensive complementarities. In doing so we can run other analyses to build a more complete explanation of the model used

in this study. Additional analyses using data collected during this research endeavor will allow further investigation of these success indicators in online learning.

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