2007

CULTURAL EFFECTS ON DISTANCE LEARNING APPLICATIONS: A COMPARISON OF LONG TERM ORIENTED AND SHORT TERM ORIENTED CULTURES

Anastasia Gaspay
Sacramento State University, sac27502@saclink.csus.edu

Leonardo Legorreta
Sacramento State University, legorret@csus.edu

CULTURAL EFFECTS ON DISTANCE LEARNING APPLICATIONS:
A COMPARISON OF LONG TERM ORIENTED AND SHORT TERM ORIENTED CULTURES

Gaspay, Anastasia, Sacramento State University, College of Business Administration, C/O Dr. Legorreta, 6000 J Street, Sacramento, CA 95819-6088, USA, sac27502@saclink.csus.edu

Legorreta, Leonardo, Sacramento State University,College of Business Administration, 6000 J Street, Sacramento, CA 95819-6088, USA, legorret@csus.edu

Abstract

We focus on Global Software Development from the users' perspective and find that cultural differences impact IS success. With ever expanding globalization, applications are increasingly being accessed by culturally diverse groups. Many times this was not planned by the developers who designed the applications for an assumed homogeneous population Thus, software developers need to take into account the cultural differences of their potential users. This is especially true for Distance Learning (DL) applications in which geographical boundaries virtually disappear. This study focuses on DL applications to demonstrate that culture matters in software development. In this study we use rarely applied cultural dimension of long-term orientation (Hofstede & Bond, 1988; Hofstede, 2001) to investigate the impact culture has on DL success as measured by perceived interaction difficulty, satisfaction, and self-reported learning.

Designers of DL applications need to incorporate features that appeal to both short-term and long-term oriented cultures. Short-term oriented cultures value efficiency; therefore, they will tend to prefer tools that streamline the process such as email, automated quiz taking and grading, the ability to submit work online, and applications that load quickly. We expect Mediterranean countries will lean towards the short-term orientation side of the scale and, thus, will value these efficiencies. Long-term oriented cultures value effectiveness; therefore, they will tend to prefer tools that enrich the process such as discussion boards, chat rooms, and perhaps an "electronic student lounge" with the ability to exchange bios, stories, and pictures. We expect some Mediterranean countries will also appreciate these tools.

Keywords: distance learning, long-term orientation, short-term orientation, culture, Hofstede.

1   INTRODUCTION

With ever expanding globalization software applications are increasingly being accessed by culturally diverse groups. Increasingly, software developers need to take into account the cultural differences of their potential users. This is especially true for Distance Learning (DL) applications in which geographical boundaries virtually disappear. This study focuses on DL applications to illustrate the point that culture matters in software development.

In this study we use rarely applied cultural dimension of long-term orientation (Hofstede & Bond 1988; Hofstede 2001) to investigate the impact culture has on DL success. Short-term oriented cultures value efficiency and seek quick results; while long-term oriented cultures value effectiveness and are patient. This study shows that these differences impact DL success as measured by perceived interaction difficulty, satisfaction, and self-reported learning.

2   LITERATURE REVIEW

2.1   Distance Learning

The terms "distance education" and "distance learning" have been applied interchangeably by many different researchers to a great variety of programs, providers, audiences, and media (Sherry 1995). Its characteristics are the separation of teacher and learner in space and/or time, the volitional control of learning by the students rather than the distant instructor, and non-contiguous communication between student and teacher, mediated by print or some form of technology (Sherry 1995). Leidner and Jarvenpaa (1995) defined distance learning as a transmission of a course from one location to another. Some researchers argue that there is a distinct difference between *distance education* and *e-learning* in higher education settings (Guri-Rosenblit 2005). However, in this paper we used all these terms interchangeably. Thus, for the purpose of this literature review the term *distance learning* entails all technologies that separate the teacher and the students in time and/or space.

In addition to print, voicemail, and audiotape, which have been used for DL purposes for some time, newer technologies include electronic mail, bulletin boards, audio and videoconferencing, cable and broadcast television, and the Internet. Some of the DL media are synchronous and require student's participation at certain time, while others are asynchronous and allow students to arrange their learning to fit their schedule. This study focuses on asynchronous DL.

2.2   Effectiveness vs. Efficiency

The topic of effectiveness vs. efficiency has been the focus of many IS studies. For example, Mouzas (2006) finds that companies often fail to achieve differentiation and innovation in their surrounding networks through dealing with efficiency and neglecting effectiveness; Sitterly (2006) applied concepts of effectiveness and efficiency to the data integration technology; Cozijn, Maes, Schackman, and Ummelen (2007) conducted a usability experiment focusing on the efficiency and effectiveness rating of different intranet applications; Vemuri and Palvia (2006) investigated the area of an Enterprise Resource Planning (ERP) system's efficiency/effectiveness; and Zokaei and Hines (2007) explored the demarcation between supply chain effectiveness and supply chain efficiency.

Specifically, the concepts of efficiency and effectiveness are also being used in the area of technology-mediated learning (TML). For example, Kalyuga and Sweller (2005) suggested and tested a method of evaluating learners expertise aiming at improving efficiency of adaptive e-learning; Chou and Liu (2005) measured learning effectiveness in virtual learning environments; Hornik and Tupchiy (2006) investigated the impact of culture on the effectiveness of TML; and Webster and Hacklery (1997) examined teaching effectiveness in DL environment.

Overall, the analysis of the business and IS literature shows that a significant number of studies focus on improving efficiency. There are also several studies that emphasized effectiveness as the most important goal. Most studies, however, agree that successful businesses, processes, and practices

require a synergy between efficiency and effectiveness. Calling for more holistic investigations, Alavi and Leidner (2001) urged researchers to investigate how TML can be used to improve both the efficiency of delivery and the effectiveness of learning outcomes.

2.3 Indicators of DL Success

The most commonly used indicators of DL success include student grades (Chen, Wang & Ou 2003; Marshall et al. 2003), satisfaction (Arbaugh 2000; Chou & Liu 2005), learning climate (Chou et al. 2005), self-reported learning and skill development (Alavi 1994), interaction with students and with instructors (Phillips & Peters 1999; Arbaugh 2000), class participation (Arbaugh 2000), learner control (Piccoli et al., 2001), intentions to use DL in the future (Saade & Bahli 2005), improved technology self-efficacy and improved attitudes toward DL technology (Webster et al. 1997), among other possible factors. Most often it is preferable to use student grades, but often grades are not available. Due to such limitations, this research uses perceived interaction difficulty, satisfaction, and self-reported learning as the dependent variables.

The DL medium may impact interaction among students and between a student and instructor. Phillips et al. (1999) assert that students experiencing higher levels of interaction have more positive attitudes toward the learning process and techniques; however, as the number of miles between the student and the instructor increases in the DL format, the level of interaction and resulting motivation to attend lectures diminishes (Phillips et al. 1999). Arbaugh (2000) examined student interaction, participation, and learning in an asynchronous Internet-based DL environment versus physical classroom. According to Arbaugh (2000), although they are potentially more time-consuming to prepare, deliver, and administer, Internet-based courses may increase student involvement. In addition to changing student-to-student interactions, the DL environment also influences student-to-instructor interactions. For example, Coppola, Hiltz, and Rotter (2002) looked for changes that occurred in instructors' cognitive processing because the communication medium in the asynchronous DL environment changed from oral to written. This change relates to learning, information storage, thinking, reasoning, and analyzing, as learning becomes more obviously a two-way process using DL (Coppola et al. 2002). That is, professors reported learning from students (Coppola et al. 2002).

Satisfaction is one of the most commonly used indicators of success in DL studies. Many factors, such as flexibility of DL and learner control, tend to increase satisfaction, while difficulty in interaction tends to decrease satisfaction (Arbaugh 2000). Contrary, other researchers argue that learners may feel frustrated because they may not be able to receive effective and timely advice from instructors (Chou et al. 2005). According to Maki et al. (2000), the students in the traditional learning environment have higher levels of satisfaction with learning experience than in technology-mediated environment (Chou et al. 2005).

Finally, an empirical evaluation conducted by Alavi (1994) used measurements of self-reported learning, perceived skill development, learning interest, class evaluating, and group case evaluation to measure the impact of a group discussion support system on learning. In turn, the questionnaire items for the Alavi (1994) study were adapted from Hiltz (1998), who developed those questions to asses the relative effectiveness of an online course. The study indicated that overall students' affective reactions to the computer-mediated learning process were more positive than to the traditional learning process (Alavi 1994). In a later study which compared two collaborative distributed learning environments Alavi, Marakas, and Yoo (2002) again used perceived learning variable.

2.4 Cultural Theory of Geert Hofstede and its Critics

Hofstede (2001) defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others." The original framework of Hofstede (2001) identified the following four dimensions of culture: (1) PDI, "power distance," which is related to the different solutions that have emerged over time to the basic problem of human inequality; (2) UAI, "uncertainty avoidance," which is related to the level of stress in a given society is willing to tolerate in the face of an unknown future; (3) IDV, "individualism vs. collectivism," which is related to the integration of individuals into primary groups; and (4) MAS, "masculinity vs. femininity,"

which is related to the division of emotional roles between men and women. The fifth dimension of long-term orientation was added later (Hofstede et al. 1988).

Criticism of Hofstede's differentiation into national cultures is based on the apparent homogenizing effect of globalization (Hermeking 2005). As Hewling (2005) highlighted, an increase in cross-border movement of people around the world means that many individuals are operating within at least two nation-based frames of cultural reference. Response to this opinion can be found in the latest edition of *Cultures and Organizations* (2005). Based on the definition of culture as *mental programming* or *software of the mind*, Hofstede et al. (2005) argue that most of these programmed patterns of thinking are formed early in childhood, because the sources of one's mental programs lie within the social environment in which one grew up and collected life experiences. The core of culture, according to Hofstede et al. (2005), is formed by *values*, defined as tendencies to prefer certain states of affairs over others. The term *practices* for Hofstede et al. (2005) are merely the visible part of culture: the collection of symbols (such as words, gestures, pictures, or objects); heroes (such as persons, alive or dead, real or imaginary); and rituals (such as collective activities). Unlike values, practices are formed later in life and are much easier to change.

Critics of Hofstede's theory do not always differentiate between values and practices. Therefore, it could be argued that person's practices are easily changed through the homogenizing effect of globalization; however, values as defined by Hofstede change little. As Hofstede pointed out, if young Turks drink Coca-Cola, this does not necessarily affects their attitudes toward authority. Consequently, even if the person relocates to a different culture his or her values are likely to remain relatively stable, perhaps even over generations. This has important implications for research in the technology area. Hofstede et al. (2005) highlight, "There is no doubt that dazzling technological changes are taking place that affect all but the poorest or remotest of people. But people put these new technologies to familiar uses."

In addition, critics point out that even within any given culture, there is a myriad of minority subcultures which could be very distinct from the majority culture. To clarify why diversity within cultures (such as ethnic and religious minorities) does not negate the concept of *national* culture Hofstede et al. (2005) took a historical perspective and asserted that national and regional differences today still partly reflect the borders of former empires. They demonstrated that Latin cultures, for instance, hold common traits derived from the Roman Empire, and that Chinese cultures reflect the inheritance of the Chinese Empire. Further, within nations that existed for some time there are strong forces toward integration: (usually) one dominant national language, common mass media, a national educational system, etc. (Hofstede et al. 2005). Moreover, religious minorities are alleged to be a result of previously existing cultural differences, rather than the cause of these differences (Hofstede et al. 2005). The main reason for collecting data at the national level was because "one of the purposes of cross-cultural communication is to promote cooperation among nations" (Hofstede et al. 2005).

Another common critique of Hofstede's work is that it relied on interviews with IBM employees in the 1960's and 1970's, thus raising questions of applicability of his finding to national culture (Ess & Sudweeks, 2005). However, Hofstede and Hofstede (2005) argue that IBM employees were an excellent population to study cultural differences precisely because they were so similar in all other ways except their culture. Thus, subjects' similarities magnified their difference at the level of culture and allowed Hofstede to extract and statistically validate those differences.

2.5   Long-term vs. Short-term Orientation

We chose Hofstede's theory of culture among other competing models because as a value-based model it leads to insightful explanations. In particular, the long-term orientation (LTO) dimension highlights differences in values that may be important to software development. The findings of Bond (1988) suggested adding another dimension to Hofstede's framework which eventually became LTO (Hofstede et al. 1988). LTO is related to the choice of focus for people's ongoing efforts: the future or the present and stands for the fostering of virtues oriented toward future rewards – in particular

perseverance and thrift. Its opposite pole, short-term orientation, stands for fostering of virtues related to the past and present – in particular, respect for tradition, preservation of "face," and fulfilling social obligations (Hofstede 2001).

Currently very few studies use the LTO dimension. Among these, the LTO concept was applied to ethics studies (Shafer, Fukukawa & Lee 2007; Nevis, Bearden & Money 2007), and business (Newburry & Yakova 2006). Despite limitations of the existing literature, we found several studies that utilized LTO to conduct IS research. Among these, Dwyer, Mesak, and Hsu (2005) investigated the relationship between national culture and the cross-national diffusion of technological innovations across 13 European countries. Dwyer et al. (2005) linked all five cultural dimensions, including LTO, to cross-national product diffusion. Similarly, Van Everdingen and Waarts (2003) studied the effect of all five cultural dimensions on adoption of IT-based innovations (ERP) across ten European countries. A significant positive influence on ERP penetration was found in the case of the long-term orientation (Van Everdingen et al. 2003). The study of Gong, Li and Stump (2007) investigated the role and effect of national culture on Internet use and access across countries and whether this is moderated by socio-economic factors. The results showed that LTO bolsters Internet diffusion (Gong et al., 2007). Finally, Marcus and Gould (2000) analyzed websites of culturally-contrasting countries and found that website designs reflect LTO levels. Because of the paucity of the IS literature that utilizes LTO dimension and because of the values embedded in this construct, we chose to focus on the LTO.

3   HYPOTHESES FORMULATION

LTO and its opposite short-term orientation (STO) have not only distinct time horizons, they also have distinct purposes. STO groups value efficiency. Time being a premium they want quick results. This means that they will settle with "good enough" in favor of the ideal perfect solution that is long in arriving. Effectiveness is sacrificed for efficiency.

LTO groups, on the other hand, will sacrifice efficiency for effectiveness. They will endure hardships, including inefficiencies provided that these will yield long-term gains. They will hold on to the big picture, work towards solutions that provide the best fit, and are willing to wait for the solution to materialize.

These differences mean that LTO and STO groups will have different expectations from the DL environment. Asynchronous DL applications are perhaps better suited to the STO groups because these applications are usually focused on efficiencies of time and space. In the typical asynchronous DL application instructions, assignments, and deadlines are clearly posted; but the richness and perhaps effectiveness of the traditional face-to-face classroom are lacking. Students in the asynchronous DL environment do not see each other, much less their facial expressions and gestures, and have fewer opportunities for chance interactions between peers and with the instructor. STO groups do not mind these constraints focused as they are on the task. STO groups are efficiency oriented and come to these courses to fulfill very specific purposes. So they do not expect to interact with peers, unless it is required. They want to get the course done and move on. LTO groups, on the other hand, are less concerned with the efficiency and with getting whatever results in a hurry. They want enduring value from the experience and, in particular, will seek meaningful interactions with their peers and the instructor that will lead to a higher quality education beyond the explicitly stated purpose of the class. Accordingly, we expect LTO and STO groups to have different expectations regarding interactions with peers and instructor in a DL environment.

H1: In a DL environment a STO group of students will have lower perceived interaction difficulty than a LTO group of students.

STO groups will be satisfied with the course so long as it meets the explicitly stated purpose of the class. STO groups will find these courses very satisfying for many reasons. Asynchronous DL courses are typically very well organized. They are offered as alternatives to traditional courses which gives students choices. STO groups with short time horizons will appreciate these choices because it allows them to take overloads and summer loads. For STO groups the notion of quality is based more on efficiency than on effectiveness. Compared to LTO groups, STO groups will be more easily

satisfied with DL applications. LTO groups are willing to sacrifice more, expect more, and will be harder to please.

H2: In a DL environment a STO group of students will report higher satisfaction with the course than a LTO group of students.

LTO groups have longer time horizons and are more willing to invest time and effort to gain a quality education. For LTO groups the learning experience will not be defined by a single course. Rather they expect to gain their learning from an entire program of study. LTO groups will have more modest claims regarding their learning from any particular DL course. STO groups, however, will expect each course to deliver results and their expectations for the course will be limited to the explicitly stated course objectives. As a result, STO groups will be more willing to report higher levels of learning.

H3: In a DL environment a STO group of students will have higher self-reported learning than a LTO group of students.

4 METHODOLOGY

4.1 Research Design

We surveyed students from schools granting 2-year degrees, 4-year degrees, Master's degrees, and PhDs. Because the study involves human subjects, appropriate documentation was submitted to the Institutional Review Board (IRB) for Protection of Human Subject at the California State University, Sacramento (CSUS) and the approval was granted.

To collect the responses we approached faculty members teaching graduate, undergraduate, as well as non-credit DL courses in the US and asked them to distribute the survey link to their students. Study participants were students enrolled in a course listed as "distance learning", "distance education", "online", or "web" by participating regionally accredited institutions. All courses listed as "hybrid", "streaming video", "TV", etc., were not included in this study.

Interaction Difficulty was measured using items previously validated by Arbaugh (2000), namely: (1) Student-to-student interaction was more difficult than in other courses; and (2) Student-to-instructor interaction was more difficult than in other courses. To measure Satisfaction, we used the following items previously validated by Arbaugh (2000): (1) I was very satisfied with this course; and (2) I feel the quality of the course was largely unaffected by conducting it in distance learning mode. Finally, to measure Self-reported Learning, we used the following items previously validated by Alavi (1994): (1) I have increased understanding of basic concepts; and (2) I have learned factual material.

To determine the values for the independent variable (LTO) the participants were asked to identify their home country. They were not asked to identify their country of origin because we sought to identify the country to which they felt most akin. All surveyed courses were in the US, however those students that listed a non-US country as their home country were foreign students that identified culturally with their country of origin.

4.2 Data Collection

Data collection began on June 2, 2006 and was complete on August 20, 2006. A total of 164 faculty members agreed to let their students take the online survey. Because the survey was administered online, an effective response rate is not known. Partially completed questionnaires were accepted; however, we excluded questionnaires that did not clearly identify the respondent's home country. The total of 1617 usable questionnaires were collected within the specified time frame, with 176 participants (10.88%) identifying their home country being something other than the US. The data set included different geographical areas in the US and a variety of different college disciplines. Complete list of all participating faculty/schools is available from the authors upon request.

The data were tested for possible time bias. According to the Diffusion of Innovation Theory (Rogers, 1995), an innovation goes through a period of slow, gradual growth prior to experiencing a period of relatively rapid growth. Since DL is still a relatively new technology and appears to be going through the period of rapid growth, time could have influenced the independent variables, especially satisfaction levels. Another reason time may be a factor has to do with changes in context, for example, whether both traditional and DL courses were offered at one point in time and at another only the DL course was available. For these reasons among others, we felt it important to test for possible time bias.

The data collected during the study covered the period from June 2, 2006 to August 20, 2006. In order to ensure data integrity we applied confidence interval test to check for possible statistically significant changes. The results of the confidence interval analysis are presented in Table 1.

		Interaction Difficulty		Satisfaction		Self-Reported Learning	
		Q1	Q2	Q1	Q2	Q1	Q2
June 2 - July 13 (Part I) N = 170	Mean	2.951	3.337	1.793	2.333	1.772	1.644
	SD	1.155	1.096	0.818	1.040	0.750	0.615
July 14 - Aug 20 (Part II) N = 170	Mean	3.053	3.424	1.750	2.432	1.786	1.645
	SD	1.140	1.134	0.817	1.189	0.783	0.649
Confidence Interval	From	3.127	3.504	1.917	2.491	1.885	1.738
	To	2.776	3.171	1.669	2.175	1.658	1.551
Within Range?		Y	Y	Y	Y	Y	Y

Table 1: Confidence Intervals Analysis

The confidence interval analysis confirmed that the data from the beginning of the collection period and the end of the collection period are statistically similar. Therefore, the full data set covering the period from June 2, 2006 to August 20, 2006 was used for hypotheses testing.

In order to test the null hypothesis, we set the critical value for the t-test to 5% ($\alpha = 0.05$) and the hypothesized mean difference to 0. To generate samples for t-test, we divided all non-US responses into two groups: long-term oriented (LTO group) and short-term-oriented (STO group). The classification was made based on analysis provided by Hofstede et al. (2005). Hofstede et al. (2005) provided LTO indices for 39 countries and regions. In their latest analysis the top 6 positions (high LTO) are occupied by East Asian countries: China, Hong Kong, Taiwan, Japan, Vietnam, and South Korea; Singapore comes in the eleventh position, while the highest scoring non-Asian country is Brazil. All Asian countries, except for the Philippines and Pakistan belong in the high LTO range and most European countries occupy a middle range, according to Hofstede et al. (2005). Great Britain, Australia, New Zealand, the US, and Canada score on a short-term side (Hofstede et al. 2005).

Most countries, and in particular Mediterranean countries, have yet to receive an LTO score. Hofstede's latest work contains LTO values for only three Mediterranean countries, specifically: France (LTO=39), Italy (LTO=34), and Spain (LTO=19). According to Hofstede's analysis, Spain belongs among the short-term oriented cultures, while France and Italy belong in the middle range. Thus, in all likelihood Mediterranean countries do not belong to the long-term orientation group of cultures, which is primarily composed of Asians countries and countries that have a sizable Asian populations (e.g. Brazil). This is because the LTO dimension is based on Confucian values (Bond 1988). Thus, we expect the remaining Mediterranean countries to also belong to either a short-term orientation group or to the middle range group. The Mediterranean countries exhibit a large variety of cultural diversity. Hence, we also expect to see a great deal of variation in their LTO scores. Even though we lack data to make definitive conclusion regarding Mediterranean countries, we expect that findings of this study will apply.

Because the US is designated short-term oriented (LTO=29) and represents a large part of our data, we extracted only 45 records using a stratified random sampling from the US responses to complement

the STO group. STO group contains cultures with index value of 31 or below; and LTO group is composed of cultures which scored 56 or above. Table 2 shows the composition and the size of both samples and their corresponding index values.

STO Group			LTO Group		
Country	**Count**	**Index**	**Country**	**Count**	**Index**
Pakistan	5	0	Thailand	6	56
Nigeria	2	16	India	27	61
Philippines	10	19	Brazil	1	65
Canada	4	23	South Korea	5	75
UK	1	25	Vietnam	7	80
US	45	29	Japan	7	80
Portugal	1	30	Taiwan	2	87
Australia	1	31	Hong Kong	5	96
Germany	1	31	China	12	118
	N = 70			N = 72	

Table 2: Data Tabulation and Sampling

5 RESULTS AND DISCUSSION

Based on the results of the t-tests all hypotheses were supported. See Table 3.

	Hypothesis 1 LTO-STO vs. Perceived Interaction Difficulty		**Hypothesis 2** LTO-STO vs. Satisfaction		**Hypothesis 3** LTO-STO vs. Self-reported Learning	
	STO group	*LTO group*	*STO group*	*LTO group*	*STO group*	*LTO group*
Mean	3.100	2.736	2.029	2.347	1.746	2.021
Variance	0.780	0.887	0.572	0.645	0.313	0.394
Observations	70	72	70	72	69	70
Hypothesized Mean Diff.	0		0		0	
df	140		140		136	
t Stat	2.376		-2.435		-2.726	
P (T<=t) one-tail	0.009		0.008		0.004	
t Critical one-tail	1.656		1.656		1.656	

Table 3. Hypotheses Testing Results

The results supported Hypothesis 1; the STO group reported lower interaction difficulty in a DL environment than the LTO group. The results supported Hypothesis 2; the STO group reported higher satisfaction with the DL environment than did the LTO group. And the results supported Hypothesis 3; the STO group showed higher self-reported learning in a DL environment than the LTO group.

These findings are consistent with Hofstede's portrayal of short-term oriented cultures as those who like fast rewards, quick results, and efficiency. It appears that DL environment has efficiencies that appeal strongly to short-term oriented cultures. These findings are also consistent with the study of Marcus et al. (2000) who found that German (LTO=31) websites show typical Western corporate layouts emphasizing crisp, clean functional designs aimed at achieving goals quickly, while the Chinese (LTO=118) websites require more patience to achieve navigational and functional goals. Even when countries are relatively close to each other on the LTO scale, their cultural differences matter. For example, Gareis (2006) compared the US (LTO=29) and German (LTO=31) virtual student teams and found that while the US students ranked e-mail the most effective for professional communication, German students preferred discussion boards. Apparently, German students chose the higher interactivity and fun of a discussion board, to the efficiency of an email message.

6 CONCLUSION

This study shows that culture is an important factor in developing software. This is especially true when the users are from diverse backgrounds as often happens with DL applications. Designers of DL applications need to incorporate features that appeal to both short-term and long-term oriented cultures. Short-term oriented cultures value efficiency and seek quick results. Therefore short-term oriented cultures will tend to prefer tools that streamline the learning process such as email, automated quiz taking and grading, the ability to submit work online, and applications that load quickly and with little effort. We expect Mediterranean countries will lean towards the short-term orientation side of the scale and, thus, will value these efficiencies. Long-term oriented cultures value effectiveness and are patient. Therefore long-term oriented cultures will tend to prefer tools that enrich the learning process such as discussion boards, chat rooms, podcasts, and perhaps an "electronic student lounge" with the ability to exchange student bios, stories, and pictures. We expect some Mediterranean countries will also appreciate these tools. However, software applications that are accessed by a culturally diverse group of users, such as DL application, need to provide both the efficiencies valued by short-term oriented cultures and the effectiveness esteemed by long-term oriented cultures.

References

Alavi, M. (1994). Computer-mediated collaborative learning: An empirical evaluation. *MIS Quarterly,* 18 (2), 159-174.

Alavi, M. and Leidner, D.E. (2001) Technology mediated learning: A call for greater depth and breadth of research. *Information Systems Research*, 12 (1), 1-10.

Alavi, M., Marakas, G. and Yoo, Y. (2002). A Comparative study of distributed learning environments on learning outcomes, *Information Systems Research,* 13(4), 404-428.

Arbaugh, J.B (2000). Virtual Classroom Versus Physical Classroom: An Exploratory Study of Class Discussion Patterns and Student Learning in an Asynchronous Internet-Based MBA Course. *Journal of Management Education,* 24 (2), 213-233.

Bond, M.H. (1988). Finding universal dimensions of individual variation in multicultural studies of values: the Rokeach and Chinese value surveys. *Journal of Personality and Social Psychology,* 55 (6), 1009-1015.

Chen, G.D., Wang, C.Y. and Ou, K.L. (2003). Using Group Communication to Monitor Web-based Group Learning. *Journal of Computer Assisted Learning,* 19 (4), 401-415.

Chou, S.W. and Liu, C.H. (2005). Learning Effectiveness in Web-Based Technology-Mediated Virtual Learning Environment. *Proceedings: 38th Hawaii International Conference on System Sciences.*

Coppola, N.W., Hiltz, S.R. and Rotter, N. (2002). Becoming a Virtual Professor: Pedagogical Roles and ALN. *Journal of MIS,* 18 (4), 169-190.

Cozijn, R., Maes, A., Schackman, D., and Ummelen, N. (2007). Structuring Job Related Information on the Intranet: An Experimental Comparison of Task vs. an Organization-based Approach. *Journal of Technical Writing and Communication*, 37 (2), 203-216.

Dwyer, S., Mesak, H., and Hsu, M. (2005). An Exploratory Examination of the Influence of National Culture on Cross-national Product Diffusion. *Journal of International Marketing*, 13 (2), 1-27.

Ess, C. and Sudweeks, F. (2005). Culture and Computer-mediated Communication: toward new Understandings. *Journal of Computer Mediated Communication,* 11(1), article 9, available at: http://jcmc.indiana.edu/, last accessed on Dec. 1, 2006.

Gareis, E. (2006). Virtual Teams: A Comparison of Online Communication Channels. *The Journal of Language for International Business*, 17 (2), 6-21.

Gong, W., Li, Z.G., and Stump, R.L. (2007). Global Internet Use and Access: Cultural Considerations. *Asia Pacific Journal of Marketing and Logistics*, 19 (1), 57-74.

Guri-Rosenblit, S. (2005). 'Distance Education' and 'e-Learning': Not the Same Thing. *Higher Education*, 49 (4), 467-493**.**

Hermeking, M. (2005). Culture and Internet Consumption: Contributions from Cross-cultural Marketing and Advertising Research. *Journal of Computer-Mediated Communication,* 11 (1), article 10, available at: http://jcmc.indiana.edu/, last accessed on Dec. 1, 2006.

Hewling, A. (2005). Culture in the Online Class: Using Message Analysis to Look Beyond Nationality-based Frames of Reference. *Journal of Computer-Mediated Communication,* 11 (1), article 16, available at: http://jcmc.indiana.edu/, last accessed on Dec. 1, 2006.

Hiltz, S.R. (1998). Learning in a Virtual Classroom. *Vol. 1 of "A Virtual Classroom on EIES: Final Evaluation Report."* New Jersey Institute of Technology.

Hofstede, G. and Bond, M.H. (1988) The Confucius connection: From cultural roots to economic growth. *Organizational Dynamics,* 16 (4), 4-21.

Hofstede, G. (2001).*Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations* - 2nd Edition, Thousand Oaks, CA: Sage Publications.

Hofstede, G. and Hofstede, G.J. (2005). *Cultures and Organizations: Software of the Mind*. New York, NY: McGraw-Hill.

Hornik, S. and A. Tupchiy (2006). Culture's Impact on Technology Mediated Learning: The Role of Horizontal and Vertical Individualism and Collectivism, *Proceedings: 7th Annual Conference of the Southern Association for Information System*s, 264-269.

Kalyuga, S. and Sweller, J. (2005). Rapid Dynamic Assessment of Expertise to Improve the Efficiency of Adaptive E-learning. *Educational Technology Research & Development*, 53 (3), 89-93.

Leidner, D.E. and Jarvenpaa, S.L. (1995). The Use of Information Technology to Enhance Management School Education: A Theoretical View. *MIS Quarterly*, 19 (3), 265-291.

Maki, R.H., Maki, W.H., Patterson, M. and Whittaker, P.D. (2000). Evaluation of a Web-based Introductory Psychology Course: Learning and Satisfaction in On-line Versus Lecture Courses. *Behavior Research Methods, Instruments & Computers,* 32 (2), 230-239.

Marcus, A. and Gould, E.W. (2000). Cultural dimensions and global web user-interface design: What? So what? Now what? *Proceedings: 6th Conference on Human Factors and the Web in Austin*, *TX.*

Marshall, B., Zhang, Y., Chen, H., Lally, A., Shen, R, Fox E. and Cassel, L.N. (2003). Convergence of knowledge management & eLearning: the GetSmart experience.*Conference on digital libraries, TX*

Mouzas, S. (2006). Efficiency versus effectiveness in business networks. *Journal of Business Research*, 59 (10/11) 1124-1132.

Nevis, J.L., Bearden, W.O. and Money, B. (2007). Ethical Values and Long-term Orientation. *Journal of Business Ethics*, 71, 261-274.

Newburry, W. and Yakova, N. (2006). Standardization preferences: a function of national culture, work interdependence & local embeddedness. *Journal of International Business Studies*, 37, 44-60.

Phillips, M.R. and Peters, M.J. (1999). Targeting rural students with distance learning courses: A comparative study of determinant attributes and satisfaction levels. *Journal of Education for Business,* 74 (6), 351-356.

Piccoli, G., Ahmad, R. and Ives, B. (2001). Web-based virtual learning environments: a research framework and a preliminary assessment of effectiveness in basic IT skills training. *MIS Quarterly*, 25 (4), 401-426.

Rogers, E.M. (1995) *Diffusion of Innovations* - 4th Ed., New York, NY: The Free Press.

Saade, R.G. and Bahli, B. (2005). The Impact of Cognitive Absorption on Perceived Usefulness and Perceived Ease of Use in On-line Learning: An Extension of the Technology Acceptance Model**.** *Information and Management*, 42 (2), 317-327.

Shafer, W.E., Fukukawa, K. and Lee, G.M. (2007) Values and the Perceived Importance of Ethics and Social Responsibility: the US versus China. *Journal of Business Ethics*, 70, 265-284.

Sherry, L. (1995). Issues in Distance Learning. *International Journal of Educational Communications*, 1 (4), 337-365.

Sitterly, B. (2006). Data Integration Tools Improve Process Efficiency And Effectiveness. *Pipeline & Gas Journal*, 233 (1), 58-61.

Van Everdingen, Y.M. and Waarts, M. (2003). The Effect of National Culture on the Adoption of Innovations. *Marketing Letters*, 14(3), 2-30.

Vemuri, V.K. and Palvia, S.C. (2006) Improvement in Operational Efficiency Due to ERP Systems Implementation: Truth or Myth? *Information Resources Management Journal*, 19(2), 18-36.

Webster, J. and Hacklery, P. (1997). Teaching effectiveness in technology mediated distance learning. *Academy of Management Journal*, 40 (6), 1282-1309.

Zokaei, K. and Hines, P. (2007). Achieving consumer focus in supply chains. *International Journal of Physical Distribution & Logistics Management*. 37 (3), 223-247.