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Learning Style, Culture and Delivery Mode in Online Distance Education*

Mark Speece
University of Alaska Southeast, Juneau, USA

Adaptation to customer needs is a key component of competitiveness in any service industry. In online HE (higher education), which is increasingly worldwide, this adaptation must include consideration of learning styles. Most research shows that learning style has little impact on learning outcomes in online education. Nevertheless, students with different learning styles prefer different learning formats, so the issue is critical for competitiveness. Students preferring particular learning styles are unlikely to choose modes which do not fit their styles well and are likely to prefer learning modes that fit their learning styles. Thus, adapting online courses to learning style is important for competitiveness. We discuss how cultural dimensions can be related to preferred learning styles and argue that multi-mode distance classes are likely to attract the widest market. Generally, broad appeal in the market of adult-learners requires asynchronous modes for the main platform, but synchronous technologies can be embedded within basically asynchronous formats to increase appeal to some learning styles.

Keywords: culture, delivery mode, learning style, online courses

Introduction

A recent report on worldwide technology developments in HE (higher education) cites the rapid growth of online education as one of four key trends which are changing the face of HE throughout the world. The report notes that, “People expect to be able to work, learn and study, whenever and wherever they want” (Johnson, Smith, Willis, Levine, & Haywood, 2011, p. 3). At the same time, HE is becoming increasingly globalized and programs throughout the world aim to bring in students from diverse cultural backgrounds. “Excellence and diversity” have often become key recruitment goals (Frølich & Stensaker, 2010).

However, these two goals are not necessarily compatible without careful course and program development. Learning styles may differ substantially across cultures.

International exchange programs, the provision of training and teaching activities in countries with different cultural backgrounds and the worldwide recruiting of students lead to culturally diverse student cohorts in which individuals may differ significantly with regard to their preferred learning styles, rendering pedagogical approaches geared toward single learning styles ineffective (Holtbrügge & Mohr, 2010, p. 633).

The intersection of these two trends, towards online DE (distance education) and globalization, is particularly problematic. Coherent, market-oriented strategy to integrate online education into the broader globalization agenda must include making online education fit the learning styles of targeted students. This is

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Mark Speece, Ph.D., associate professor, School of Management, University of Alaska Southeast.

difficult enough in the West, where strong demand for online education first developed. Frequently, online teaching has not made much adaptation at all to the new online environment. According to Hannon and D'Netto (2007), "It appears that educational institutions are expanding online course delivery with very few changes to their traditional methods of course design".

Hannon and D'Netto (2007) reported that both local and international students in their study showed similar mediocre satisfaction with course pedagogy in online courses. Chau (2010) even talked about online HE as a commodity, with little differentiation. Yoo (2010) believed that such standardization is characteristic of the growth phase of the product life cycle for internet services:

> As the market transitioned into the growth phase, firms began to target the mass market and to compete to attract new customers who are not yet being served. Price and quality took on greater importance. In order to keep production processes simple and make the product easy for customers to understand, firms typically offered a single product designed to appeal to the broadest possible audience. (p. 25)

Of course, eventually many suppliers have entered the market and customers have gained sufficient experience to become more discriminating.

According to Yoo (2010),

> As the market enters the maturity phase, revenue growth no longer depends on attracting customers who are not yet in the market. Instead, firms focus on finding ways to deliver greater value to customers who are already in the market. (p. 25)

Lovelock and Wirtz (2007, p. 47) said that, "In highly competitive service markets, customers increasingly expect service providers to anticipate their needs and deliver on them".

Under these conditions, learning style preferences become much more critical. This is not mainly an issue about how well students learn. Most research shows that learning style has little impact on learning outcomes in online education (Santo, 2006). But, students will shift toward choosing online DE based on preferences for various sorts of learning modes. Of course, such preferences are not the reason that students undertake HE, but given broad choice, preferences for learning mode can become one of the main determinants in choice.

> Determinant attributes (i.e., those that actually determine buyers' choices among competing alternatives) are often some way down the list of service characteristics that are important to purchasers, but they are the attributes on which customers see significant differences among competing alternatives. (Lovelock & Wirtz, 2007, p. 189; parentheses in original)

Thus, online DE today seems to be largely an undifferentiated commodity. At the moment, many students choose it primarily for convenience, as reported, for example, in Brown (2011). Market conditions seem likely to shift in the near future, because there is plenty of supply, customers are increasingly experienced and sophisticated and some suppliers will understand the need to adapt more carefully to the specific needs of their customers. For classroom courses, with which students have long experience, Brown (2011) found that "for those taking classes on campus, the reasons for the selection were based more on the learning style" (p. 465). Brown (2011) recommended that, "courses should be developed to accommodate the different learning styles, just as the instructor would do for an on-campus class" (p. 466).

This paper examines the relationship between culture and learning style, showing, in particular, that high context cultures require much greater immediacy and audio-visual interaction than low context cultures. Thus,

learners in high context cultures would generally find synchronous modes more attractive than do low context cultures and purely asynchronous modes less attractive. Integrating synchronous audio-visual modes into asynchronous class site would also be especially beneficial to high-context learners. However, purely synchronous modes would reduce access for working adults. Online offerings built around an asynchronous mode, but with extensive synchronous and audio-visual capabilities that can be used voluntarily, especially by groups, should maximize attractiveness in both high and low context cultures.

Learning Style Schema

Much online DE is oriented toward individualistic and low-context cultures, mainly because that is where online education developed first. Often, online DE is built around asynchronous discussion board. However, different learning styles may prefer other modes of interaction and different cultures may be more oriented toward particular learning styles. This is not mainly an issue of how much students learn. Most research shows that learning style has little impact on learning outcomes in online education, regardless of how learning style is measured.

Santo's (2006) recent review of learning style research shows that the concept of "learning style" is somewhat vague. There is a wide variety of terms, little agreement on the exact conceptual content of the terms and little agreement on exactly what concepts constitute learning style. This results, of course, in many learning style instruments. Usually, they tend to rely on self-assessment and research (when done) often shows that actual student behavior in learning does not correlate very well with student self-assessment of preferred "learning style". Nevertheless, "learning style" is a useful concept; however, it is exactly conceptualized, because students clearly do have different ways of learning.

Following an old schema which continues to be used, Santo (2006) categorized "learning style" into three layers, thus, providing some coherence to the wide range of models. The inner layer is about personality, "An underlying relatively stable dimension that controls learning behavior" (Santo, 2006, p. 74). The middle layer is about cognitive style and focuses on how learners process information. The outer layer is about the environment in which students prefer to learn, including the nature of interaction with the instructor or other students. Santo (2006) noted that the inner layer is probably most malleable.

Table 1

Learning Style: Outer Layer Scales

Learning environment and interaction preferences	Outer layer learning styles	Comments regarding cultural dimensions
Grasha-Riechmann student learning style scales	Participant—avoidant Independent—dependent Collaborative—competitive	All three dimensions incorporate aspects of how students interact with other students and the instructor. Descriptions of the 2nd and 3rd dimensions, in particular, suggest correspondence to Hofstede's uncertainty avoidance and individualism/collectivism, respectively.
Schellens and valcke learning styles	Auditory vs. Visual Applied vs. Conceptual Spatial vs. Non-spatial Social vs. Individual Creative vs. Pragmatic	Several dimensions suggest elements of Hall's high/low context, while social vs. individual reflects similar language to Hofstede's individualism/collectivism.
Western governors university scale	Prefer f2f, discussion, Ability to prioritize, Work independently Auditory, visual, tactile	Specific dimensions are not described, but the discussion suggests elements of Hall's high/low context as well as Hofstede's uncertainty avoidance and individualism/collectivism.

The descriptions of learning styles in all models and at all levels suggest elements of Hall's high/low context cultural characteristics (Hall, 1976), as well as Hofstede's (1991; 2009) schema, notably uncertainty avoidance and individualism/collectivism. Tables 1, 2 and 3 summarize the learning style models included in Santo's review, with added brief preliminary comments on culture.

Table 2

Learning Style: Middle Layer Scales

Cognitive preferences	Middle layer learning styles	Comments regarding cultural dimensions
Kolb learning style inventory	Convergers AC & AE Divergers CE & RO Assimilators AC & RO Accommodators CE & AE	Styles are constructed from four stages of the learning cycle: CE = concrete experience; RO = reflective observation; AC = abstract conceptualization; AE = active experimentation; Concepts seem related to Hall's high/low context.
4MAT	Watching/sensing—feeling Watching/thinking Doing/thinking Doing/sensing—feeling	Based on Kolb LSI, but adds perceptions and processing. Concepts seem related to Hall's high/low context.
Witkin's group embedded figures test	Field independent Field dependent	Field independence/dependence measures ability to distinguish key elements from the background, which seems related to Hall's high/low context. Field independent learners prefer developing their own structure for understanding, while field dependent prefer given structure and like social learning contexts. Related to Hofstede uncertainty avoidance and individualism/collectivism.

Table 3

Learning Style: Inner Layer Scales

Personality	inner layer learning styles	Comments regarding cultural dimensions
Keirsey TT (temperament type)	Sensation/perceiving Sensation/judging Intuition/thinking Intuition/feeling	Constructed from preferences: Introversion—extraversion Intuition—sensing Thinking—feeling Judging—perceiving The descriptions of learning styles suggest elements of Hall's high/low context as well as Hofstede's uncertainty avoidance and individualism/collectivism.
Soloman and Felder index of learning styles	Active—reflective Sensing—intuitive Visual—verbal Sequential—global	Different terminology, but seems to use concepts similar to Keirsey TT, and thus, suggests similar correspondence to Hall & Hofstede.
Honey and Mumford learning styles questionnaire	Activists Reflectors Theorists Pragmatists	Different terminology, but seems to use concepts similar to Keirsey TT, and thus, suggests similar correspondence to Hall and Hofstede.

Note. Source: Santo (2006) for learning styles, cultural dimensions from Hofstede (1991; 2009) and Hall (1976).

Santo's (2006) main interest in reviewing learning style models was to assess the evidence for the frequent claim that learning style affects the ability to do well in an online class (or, we might add, in any particular educational delivery mode). Her extensive review shows that learning style has almost no impact on online learning outcomes at any of the three levels. Santo (2006) said that,

> Results have been mixed on research regarding the relationship between learning styles and online learning ... a few

> studies say that learning styles make a difference in terms of predicting student success ... but most seem to say that it makes no difference at all. (pp. 85-86).

In fact, none of the studies she reviewed showed an impact on actual learning outcomes, but some showed that learning style had some other impact, as we note below. She concluded that, "It seems likely that learning preferences do exist. But, how much influence they actually have when it comes to learning versus other issues is unanswered. The learners' computer skills and level of motivation may be more influential" (p. 86).

Santo (2006) focused specifically on the impact of learning style in online courses, but her conclusion is consistent with decades of extensive research on DE more broadly, in which findings show "no significant difference" in learning outcomes by delivery mode (WCET (Western Cooperative for Educational Telecommunications), 2010). The malleability she suggested for her outer layer of interaction in the learning environment is probably the basis for such consistent results. Whatever their individual learning styles at the middle and inner layer, or individual preferences in the outer layer, students can adapt to different delivery and interaction modes and do well in them, when necessary.

However, in a competitive environment, it is not always necessary for students to adapt to what the supplier prefers to offer and they can choose the mode they like. Santo (2006) did cite research showing that learning styles relate to enjoyment of the course, satisfaction, or likelihood to take an online course. For example, in one study using the inner layer in her schema, reflective learners were more likely to enroll than active learners and global learners were less likely to complete the course than sequential learners. In another study at this inner level, global learners preferred student-content and student-student interactions relatively more than did sequential learners, but liked student-instructor interactions less.

A study that used a middle layer instrument in Santo's schema said that students in different learning style categories enjoyed (or did not enjoy) an online course with strongly different degrees, and had different levels of participation in online posting. Santo (2006) also noted a study using an outer layer instrument which showed course developers constructed a course around visual, applied, spatial, social and creative styles, although many students preferred non-spatial and conceptual styles.

These examples, from all three levels in Santo's schema, suggest that whatever the details of its conceptualization and measurement, learning style does have some impact on attitudes towards online classes. Thus, one could ask how culture might play a role in these attitudes. The ways students communicate and interact (with peers, instructors and content) are common across measurement of most of these learning styles. A substantial part of how cultures are distinguished concerns how people relate to and interact with each other. Cultural patterns are reflected in learning style and affect attitudes towards and preferences for specific modes of online education.

Culture

There are a number of schemas for categorizing culture, but many cross-cultural researchers note that researchers should focus on cultural elements appropriate to the specific problem and context (Chaisrakeo & Speece, 2004). Here, we follow Hofstede (1991; 2009) and Hall (1976). Hofstede (1991; 2009) originally applied his cultural dimensions to management, but his schema is widely used in many fields, including education. For example, Holtbrügge and Mohr (2010) used it in looking at learning styles, and Swierczek and Bechter (2010) used it to examine cultural features of e-learning. Hofstede's schema consisted of four dimensions originally: power distance, individualism-collectivism, masculine-feminine and uncertainty

avoidance, and long-term orientation was added later. His cultural dimensions are briefly summarized in Table 4.

Table 4

Hofstede's Five Cultural Dimensions

Dimensions	Characteristics
individualism vs. collectivism	Individualistic cultures emphasize the importance of individual identity, rights and needs rather than the group. They are "I" oriented, promoting self-efficiency and personal autonomy in a loose social framework. Collectivist cultures emphasize the group, group rights, and in-group harmony and collaborative spirit over individual wants and desires. They are "we" oriented, with relational interdependence in tight social networks.
Power distance	High: People accept that power is unequal and accept strong hierarchy based on inherent differences in status. They easily defer to other people who have higher status and more power in the hierarchy; Low: People strive for equalization of power and do not accept strong status differences even when power is unequal. They demand justification where power unequal. Hierarchy, to the extent it is accepted, comes from the position, not inherent status of the person in the position.
Uncertainty avoidance	High: People dislike uncertainty and ambiguity; prefer strong social conventions, formalized behavior and rules to make it clear how they should behave. Uncertainty avoidance cultures evade ambiguity in most situations and look for structure in their relationships; Low: People are able to accept uncertainty; practice and outcome may be more important than the formal rules and regulations, and flexibility and tolerance are important.
Masculinity—femininity (Hofstede has taken some criticism for this dimension's name)	Masculine: Competitive, achievement oriented, assertive, oriented toward material success; Feminine: Orientation toward relationships, modesty, care for weak and quality of life. Hofstede says that the dimension is defined mainly by men's role in society; women in most societies tend toward the feminine side of the dimension.
Long- or short- term orientation	Long-term orientation: Values include thrift and perseverance; Short-term orientation: Respect for tradition, fulfilling social obligations and protecting "face". This dimension was added long after Hofstede's main research, and some critics have pointed out it is not as coherent as the other ones.

Note. sources. Hofstede (1991; 2009).

Hall's schema categorizes into high- and low- context cultures, based on the extent to which communication is carried by words or is embedded in the context in which people use the words. Chaisrakeo and Speece (2004) summarized this schema in the context of negotiations, but the communications issues are just as relevant in looking at classroom discussion and group interaction online. High- and low- context cultures differ substantially in the amount of information that an individual would explicitly express for accurate communication to take place. In low-context cultures, meaning resides primarily in explicitly coded parts of the communication rather than in the surrounding context. Background information must be explicitly expressed because most of the message is carried by the words themselves. Individuals rely on formal communication which mainly focuses on verbal expression. The low-context communication style is more often characteristic of individualistic cultures (Chaisrakeo & Speece, 2004; Hofstede, 1991, 2009).

Much of the message in high-context cultures is carried in how the words relate to the implicit background. Communication depends heavily on contextual and social cues for meaning. Thus, non-verbal language, such as voice, posture, gesture, body language, facial expression and periods of silence, play an important role, as do non-verbal variables, such as status, values and associations. Clearly, some kind of relationship would provide a richer context in which better communication could take place and high-context cultures have a focus on relationship building, similarly to collectivist and/or feminine cultures in some cultural schema (Chaisrakeo &

Speece, 2004; Hofstede, 1991, 2009).

For example, the "sage on the stage" traditional style of teaching is likely to be more broadly accepted in high power distance cultures; uncertainty avoiding cultures are likely to prefer more structure to classes and learning tasks and collectivist cultures are more oriented towards various forms of group work and interpersonal interaction. Tu (2001) made such points for the case of Chinese university students in online classes and also noted elements of high-context communication style in examining participation in online class discussion.

Native students in North America generally learn in ways characterized by visual styles in some of the learning style categorizations (Pewewardy, 2002). They tie learning strongly into context, seeing things holistically rather than in analytical sequence. This sounds very much like Asian high-context culture, and in fact, Redpath and Nielsen (1997) explicitly argued that native culture is quite similar to Asian culture on Hofstede's cultural dimensions. Purely, cognitive-based approaches do not work as well among Australian and North American indigenous/native adult learners as do dialogic approaches including collaborative work and knowledge sharing (McLoughlin & Oliver, 2000). Among other things, learners need multiple channels of communication.

High context-cultures in Hall's schema are generally classified as collectivist in Hofstede's (1991; 2009). The extensive overlap seems to be good, because good communication in these cultures depends substantially on extensive shared knowledge and interpersonal relationships developed in group context facilitate discussion. For example, discussing application of constructivist teaching methods in Singapore, a mostly Chinese environment, Speece (2002), showed how important it is to use group activities to develop a sense of relationship among students, so that they generate real discussion in the classroom that, "Students were quite willing to voice opinions in small groups, which are perceived as more private, where issues of face and status are less important. Contributing may even be considered as a responsibility" (p. 113). Chow, Harrison, McKinnon and Wu (1999) showed that, "Collectivist and Confucian Taiwanese exhibit a stronger sense of responsibility than Westerners to share information within the group".

Communication in high-context cultures has difficulty in overcoming the lack of f2f (face-to-face) contact in DE modes which rely mainly on the written word. F2f provides contextual and social cues for meaning, as well as allows rich non-verbal language, such as voice, posture, gesture, body language, facial expression and periods of silence. This need for context and relationships in many cultures is a critical issue in online education, but often online education is particularly oriented toward individualistic and low-context cultures (Gobbo, Nieckoski, Rodman, & Sheppard, 2004). There may be little opportunity for social interaction, which reduces communication for students from collectivist and/or high-context cultures. "Online education appears to reflect the English speaking world's view of design" (Hannon & D'Netto, 2007, p. 419).

For example, Chinese students use more social context cues in communication, which may be difficult to deliver in computer mediated communication (Tu, 2001). Large-sample research of an Australian international online program shows that international students were significantly less positive about course organization and the technology. About half of the students felt that they did not have "good communication with students from other cultural backgrounds" (Hannon & D'Netto, 2007, p. 429). In an online graduate class with students from widely diverse cultures,

> High-context participants lamented the inability to meet with counterparts, to form social relationships, and to "get to

> know" the others in the course both as a learning and a social challenge. Not one of the low context participants mentioned this as giving either a positive or negative impact on their learning ability. Consistent with the objective data, this result highlights the cultural differences in learning patterns which are impacted by the shift from a face-to-face environment to a computer-mediated communication system. (Morse, 2003, p. 49)

Nevertheless, students from both high- and low- context cultures found the learning environment more effective than a f2f seminar, although for somewhat different reasons (Morse, 2003). This seems consistent with Santo's (2006) conclusion that learning style does not affect outcomes much. However, it does seem to affect satisfaction with the course and perceptions of how well students have been able to interact with classmates.

Online Technologies

Careful instructional design should be able to at least partially overcome cultural differences. McLoughlin and Oliver (2000, p. 58), who believed that "culture pervades learning", argued that online instructional design must incorporate material and methods appropriate to the cultures of students who will be learning in the courses. Design of the class Website can influence modes of communication, styles of learning and participation. Rogers, Graham and Mayes (2007) saw too much focus purely on content development, not enough on needs assessment, and a lack of evaluation in real-world application, especially in a cross-cultural context. However, they do not feel that this is inherent in instructional design, and suggest steps which can begin to bring knowledge of cultural differences into account in setting up online courses.

One important aspect is clearly the nature of activities in the class. Collaborative learning involves the use of teams "with peers seeing themselves as a source of authority and knowledge. Teams are self-managed and communicate their decisions to the instructor", without much direction or involvement by the instructor (Williams, Duray, & Reddy, 2006, p. 593), i.e., a form of constructivist learning. Such methods are likely to appeal to students from collectivist cultures, in particular. McLoughlin (2001) argued that collaborative approaches to online learning, recognizing the need for building a social network of distance learners, are more culturally responsive than some traditional distance education based on individual effort in isolation.

Online courses can develop a very strong sense of community, but one of the mechanisms sometimes noted is occasional f2f meetings (Conrad, 2005). Asynchronous discussion board interaction can give some feeling of immediacy (psychological "nearness"), as students use written forms to compensate for the lack of verbal immediacy available in f2f (Swan, 2002). Dennen (2005) argued that the nature of participation in asynchronous discussion depends heavily on instructor organization and presence. Dialog, i.e., real interaction, drops off when there is little instructor presence, although there may still be posts which are not part of any real interaction.

These discussions primarily focus on online teaching in low-context cultures, but we have already noted Morse's (2003) finding that high-context students felt substantially less social connection using mainly written interaction on discussion board. Swan (2004) pointed out that technology, while allowing extensive interaction, may channel the interaction into certain modes. The key issue, then, is how to best facilitate interaction, and the technology used for discussion is one important consideration. Hewling (2005) and Goodfellow and Hewling (2005) argued that the online participants in class (including instructor, students and tutors) can create their own "culture", which, when done successfully, can override national cultural differences in communication style. Their data from two courses of similar multicultural make-up show markedly different participation

patterns depending on how well this shared "culture" is fostered (Goodfellow & Hewling, 2005).

Various forms of blended education are sometimes proposed to get a range of communication modes, including f2f. Vaughan (2007) argued that blended learning, using the best of the classroom, but moving a substantial part of the class online to capture online advantages, maximizes learning. An advantage of blended learning is that the online portions of the class (if structured well) can engage students in much more interaction, collaboration and writing than normal in pure f2f. The f2f sessions help establish the relationships between and among teacher and students.

However, this is not really distance education, in which such classes are not offered entirely at a distance, and not practical for reaching place-bound or schedule-bound adult learners. Lewer, Gerlich, and Pearson (2006), for example, described four distinct segments of students who take online courses. Some of them may prefer and be able to access blended courses with f2f components, but at least one segment ("true distance learners" in their terminology) consists of adults who do not live near a university offering the programs they want and cannot quit their jobs and move to study.

On the other hand, some technologies can facilitate more interpersonal interaction at a distance. Synchronous modes, particularly those with audio-visual capabilities, may offer a way to gain more of the feel in f2f interaction. Some synchronous distance modes, in fact, are widely used in Asian cultures. Satellite and TV-based DE Networks seem to fit the traditional "group-based, teacher-dominated and centrally organized pedagogical culture" (Zhang, 2007, p. 302).

The synchronous satellite mode has some disadvantages for many low-context students. Mintu-Wimsatt and Lozada (2001) showed that while actual outcomes (in terms of grade) do not differ, students at remote sites feel that the instructor is less accessible and the presentation method is less helpful for mastering material, compared to students who attend class in the sending studio. However, high-context students may not see these "problems". Examining preferences for synchronous satellite tutorials, Beyth-Marom, Saporta and Caspi (2005) noted that many students do not participate in satellite tutorials, and among those who do, many do not actually interact with the tutor during class. Nevertheless, some did use the mode, and those who preferred the synchronous mode were significantly higher in their belief in the positive aspects of interactions (factor 3) and significantly lower on learning autonomy (factor 1) and the need to "possess" all the materials (factor 2) (Beyth-Marom et al., 2005, p. 259).

This, of course, is a version of different preferences for mode depending on learning style. The styles that seem to prefer synchronous satellite are more characteristic of high-context cultures. Synchronous satellite is not very popular with low-context students compared to asynchronous Web-based courses.

Synchronous capabilities on the class Website seem better oriented towards student-student interaction than the older synchronous technologies represented by satellite. Negash, Wilcox and Emerson (2007), for example, argued that synchronous internet classes can overcome problems that some see in asynchronous courses, such as feelings of isolation and feelings of being overwhelmed by the responsibility inherent in the high autonomy of an asynchronous course. They find no difference in satisfaction by students in a f2f class vs. a synchronous Web-based class.

Synchronous communication can be used "to explicitly support rapid formation of community at social level", although they warn that there is "little evidence of deep learning" (Schwier & Dykes, 2007, p. 168). This warning is irrelevant in a well constructed course, because the deep learning comes from other activities, while the role of synchronous communication is to foster community (which facilitates learning). The "use of

conferencing technologies to create knowledge building community" is one practice showing a "high degree of cultural inclusivity" (McLoughlin, 2001, p. 22).

Students who want synchronous interaction will come up with their own additional communications methods (including synchronous telephone), if the capabilities are not provided in the Website (Reisetter, LaPointe, & Korcuska, 2007). Thus, it is better to build synchronous audio-visual modes into the class site so that they can become a planned part of the class. Clearly, such modes allow for much more of the non-verbal content and context upon which communication in high-context cultures depends.

A final problem, however, is that required synchronous components are likely to limit the appeal. Beyth-Marom et al. (2005, p. 259) said that people differ in their preferences regarding learning/teaching styles. Some prefer autonomy and control of learning over synchronous interaction, others have opposite preferences.

The best solution seems to be a platform based on asynchronous forms, which maximizes access, with the ability to engage in synchronous interaction via multiple modes (written and audio-visual) for students who find it useful. Some do find it useful, particularly if they come from cultures where good communication requires some attention to context.

Conclusions

We have argued here that purely asynchronous online modes, with interaction based on written discussion board, is a format attractive mainly to students from low-context cultures. Such interaction lacks the context necessary for relationship establishment among high-context students, and therefore inhibits real communication. Some research shows that high-context students are more likely to feel dissatisfied with the lack of social relationships in purely asynchronous discussion board interaction. Careful course design and skillful instructor participation can somewhat reduce this problem. However, synchronous audio-visual technologies can provide much more intimate interaction, similar to f2f, for high-context students. When integrated into a class site based on asynchronous discussion board, multiple technologies offer interaction modes which appeal to students from either high- or low- context cultures.

This recommendation that multiple modes be made available to students is not new, but, as noted above, online DE does not yet seem to be very well adapted to multiple learning styles. A single technology or medium rarely meets all educational needs (Moore & Kearsey, 2005; Bates & Poole, 2003). Most specific technologies are strong at some particular task within particular learning styles, but poor when looked at from another learning style/cultural perspective. Many observers note that multiple modes foster the broadest acceptance by students with different learning styles. Bates and Poole (2003, p. 59) said that it is the combination of different media within a single technology (multimedia) that gives technology its strength in teaching and learning.

Thus, the use of multiple technologies to offer several interaction modes seems to overcome a problem that specific modes may be more attractive to students from particular cultures.

> The benefits of using both asynchronous and synchronous strategies have become evident as learners provide feedback about their learning experiences… Emerging technologies may accomplish the task of providing various types of asynchronous and synchronous interactions for different purposes, especially those tied to instructional strategies. (Beldarrain, 2006, pp. 147-148)

Design of the class Website can influence modes of communication, styles of learning and participation. So the nature of learning tasks, e.g., true student-student dialog and interaction, can be critical in collectivist

cultures, whereas students in individualistic cultures may not care. To attract students from a range of cultures, instructional design must accommodate preferences in learning style, which can be related to cultural dimensions. For broad access to multi-cultural markets, multiple technologies offer multiple interaction modes which would appeal to students from a range of cultures.

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