

IDENTIFYING “E-MMEDIACY” STRATEGIES FOR WEB-BASED INSTRUCTION A Delphi Study

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Despite the continued growth of Web-based courses, and the great promise of anytime, any place learning, it appears that Web-based instruction fails to produce the sense of “social connectedness” often highly valued in face-to-face instruction. The purpose of this study was to identify problems instructors face that impede social connectedness online and to identify expert-recommended strategies for addressing those problems. Using a modified Delphi technique, we surveyed the AECT membership to derive online social connectedness problems. Eleven experts recommended 95 strategies for 9 identified problem areas. Those strategies represent four broad recommendations for enhancing social connectedness online.

Johnson, Aragon, Shaik, and Palma-Rivas (2000) and others have argued that Web-based instruction is a major breakthrough in teaching and learning (see Hill, 1997; Webster & Hackley, 1997). Kahn (1997) agreed and argued that Web-based instruction facilitates the exchange of information and expertise, while making education more accessible and flexible. Web-based courses and degree programs open up opportunities for a wide and diverse population of learners to participate in educational programs in which social, physical, or geographical constraints previously may have been key limiting factors to furthering one's

education (McVay Lynch, 2002; Northrup, 2002; Oliver, 1999).

Unfortunately, it appears that the promise of Web-based instruction has yet to be realized. Attrition rates for Web-based courses are often 40-50% higher than traditional face-to-face classes (Moshinskie, 2001; Parker, 1994; Phipps & Merisotis, 1999). Students report missing the interpersonal interactions they more typically have with their instructors in face-to-face courses (Fulford & Zhang, 1993; Haefner, 2000). Similarly, instructors report feeling out of touch with their students (Willis & Dickinson, 1997). Zielinski (2000) con-

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The Quarterly Review of Distance Education, Volume 7(1), 2006, pp. 49–62
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ISSN 1528-3518
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tended that this “disconnectedness” is directly related to the lack of immediate feedback and social cues that are so prevalent among classroom-group members—both students and instructors—in face-to-face courses.

Thus, a key problem with Web-based instruction may be the extent to which it fails to produce the sense of “social connectedness” often highly valued as a part of teaching and learning in face-to-face instruction (Jasma & Koper, 1999; Murphy, 1993).

It seems, however, that many college and university faculty may begin teaching online with little understanding of why social connectedness is important to learning, how the technology impedes learners’ feelings of social connectedness, or what can be done to enhance social connectedness in online learning environments (McCallie & McKinzie, 1999; Young, 2001).

WHY SOCIAL CONNECTEDNESS IS IMPORTANT TO LEARNING

Proponents of social learning theory argue that successful learning takes place in an environment where individuals can construct ideas, culture, histories, and meaning as the result of ongoing social interactions and collaborative functioning (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991). Within that social structure, learners gain a sense of belonging through interpersonal interactions and collaborative meaning-making. Moreover, it is this group structure that supplies the conduit for successful interaction and communication necessary for learning. According to Forsyth (1999), social structure develops naturally, beginning with initial assessments of group members’ *status*, development over time of group *norms*, and eventual differentiation of the *roles* members will assume within a group. Each of these is discussed below.

Status Assessments

When students meet face-to-face in a classroom, they immediately begin to determine theirs and others’ status or position within the

group’s social hierarchy (Rezabeck & Cochenour, 1995). Students may ask themselves: “Who’s here?”, “What do they have?”, “What do I have?”, “How does that compare?”, and “Where do I fit in?” Once established, this hierarchy helps students form a knowable pattern of interactions that can reduce stress and confusion while learning (Hsu & Bruce, 1998; Johnson & Johnson, 1994).

Norms Development

While status assessment establishes the *hierarchy* for interaction among group members, group members ascertain *acceptable* interaction behaviors through norm development. Norms are constraints on behavior that develop naturally out of continued and frequent interaction among group members (Bonner, 1959). They may be implicit and reinforced simply by a strong glance, or explicit and expressly written with strong sanctions against any member who challenges the norms (Horne, 2001). These expected behaviors enable group members to predict the course of interaction, potentially reducing stress and misunderstandings between group members (Kagan, 1992).

Role Differentiation

Roles are behaviors expected of persons holding particular positions within a group (Shaw, 1981). As groups continue regular interactions, members are assigned particular roles within the group, such as leader, follower, and information seeker (Benne & Sheats, 1948; Levine & Moreland, 1995). This role differentiation facilitates efficient group functioning by aiding in the communication and negotiation of goals (Ridgeway & Balkwell, 1997; Shelly, Troyer, Munroe, & Burger, 1999).

Johnson and Johnson (1994) argued that, when group social structure develops successfully, a class of students functions more effectively in meeting its learning goal. Apparently, group social structure affords students a know-

able "context" for interactions among peers that may decrease certain social stresses and facilitate the peer-to-peer interactions necessary for learning. According to Taifel (1981), however, a group's ability to stimulate individual performance on tasks depends to some extent on the *physical* presence of others. What, then, changes when learners attempt to develop group structure in an online environment instead?

HOW THE TECHNOLOGY IMPEDES ONLINE LEARNERS' FEELINGS OF SOCIAL CONNECTEDNESS

Online learning environments might be thought of as instructional communication systems in which the instructor typically is the source who chooses, encodes, and sends the message; the class group members are the receivers who attend to, decode, and store the message; and the technology is the channel over which the message is sent (Berlo, 1960; Bishop, 2000). According to the basic model first proposed by Shannon and Weaver (1949), problems in communication occur when things get added to the signal that were not originally intended by the source. Whether this spurious information or *noise* originates in the channel, the receiver, or in the message itself, it can threaten successful conveyance of the message.

In traditional face-to-face learning environments, one strategy for overcoming the noise that creates instructional communication problems would be to add *redundancies* to instructional messages through additional cues conveyed over natural sensory channels (such as adding empathetic vocal inflections and/or reassuring visual reinforcements to clarify verbal information that might otherwise be misunderstood as overly critical or sarcastic; Bishop & Cates, 2001). Immediately after receiving nonverbal feedback from the student indicating there was a communication problem—such as a puzzled look or a furrowed brow—the instructor might supply even more redun-

dancy by repeating, elaborating on, or otherwise clarifying the initial instructional message (Gorham & Zakahi, 1990; Wiener, 1948).

However, the strategies used when class members are physically present may not be possible in an online learning environment where many "normal" sensory communication channels are typically unavailable. Instead, online learners communicate at much greater distances through unfamiliar channels that introduce new and unexpected sorts of communication noise—from technical glitches (Fisher, 2001) to the ambiguities of textual communication (Cates & Slagter van Tryon, 2002). In addition, these channels can obstruct senders' and receivers' usual methods for remediating communication problems that arise while the group's social structure is being established. This, in turn, impedes learners' feelings of social connectedness with the group (Kagan, 1992) which, as discussed above, appears to have implications for learning.

Given the importance of group social structure development for learning and the barriers to instructional communication posed by the technology, instructors may need to re-examine the way they design their online learning environments with an eye toward facilitating status assessments, norms development, and role differentiation. This likely entails incorporating strategies to replace traditional instructional communication redundancies that enhance feelings of social connectedness and are missing from the online learning environment.

WHAT CAN BE DONE TO ENHANCE SOCIAL CONNECTEDNESS IN ONLINE LEARNING ENVIRONMENTS

How might an instructor design the learning environment to overcome technological barriers to social connectedness? Research examining strategies for creating social connectedness

in the classroom dates back to the late 1960s when Mehrabian (1969) defined immediacy strategies as the verbal and nonverbal interpersonal communication behaviors people use to reduce the perception of physical distance between them. Since that time, researchers have found that instructional immediacy—an instructor's use of engaging eye contact, gestures, smiles, humor, personal experiences, praise, and personal recognition—may be linked to students' positive feelings about courses and instructors, motivation to learn, achievement, and perception of control (see Christensen & Menzel, 1998; Christophel, 1990; Frymier, 1994; Wilson & Taylor, 2001). Immediacy strategies may be even more important in e-learning environments where students and instructors are separated by time and space (Freitas, Meyers, & Avtgis, 1998). Studies by Hackman and Walker (1990, 1995) and Guererro and Miller (1998), for example, indicate that in televised and videotaped distance courses, immediacy behaviors may positively influence learning and increase students' overall satisfaction.

For this study, feelings of social connectedness with fellow online class participants (classmates, instructor, and teaching assistant) through technology-mediated experiences that simulate episodic perception of immediacy will be termed *e-mmediacy*. While it appears that e-mmediacy may play an important role in e-learning, few strategies for incorporating e-mmediacy in online learning environments presently exist. Many books available to assist online instructors focus primarily on the technological aspects of course building and maintenance, but not on the social connectedness problems instructors are likely to encounter or the technological barriers they will face when attempting to maintain social connectedness in online learning (see, for example, Hart, 2002; Ko & Rossen, 2000). Others discuss the importance of social interaction in online learning, but do not contain specific e-mmediacy strategies for facilitating these interactions (see McHenry & Bozik, 1995; Rovai & Lucking, 2003).

We are left with two key unanswered questions:

- What problems do participants in online courses encounter that impede feelings of e-mmediacy?
- Which strategies are most effective for facilitating e-mmediacy in Web-based instruction?

PURPOSE

In order to begin exploring the answers to these questions, therefore, the purpose of this study was (1) to identify the problems that instructors report they face when attempting to maintain social connectedness in online courses, and (2) to identify a set of e-mmediacy strategies that experienced online instructors recommend to address these identified problems and improve e-mmediacy.

METHODOLOGY

The Delphi technique was chosen for this study as it is a particularly good method for deriving consensus among a group of experts on a particular topic where information sought is subjective and where participants are separated by physical distance (Borg & Gall, 1983; Linstone & Truoff, 1975). This section describes the Delphi method and how it was employed in this study.

Research Design

According to Linger and Tressolini (2001), a Delphi study begins by carefully developing an initial, open-ended question to be answered by a panel of chosen experts on the topic. The researcher then compiles the experts' responses and develops a second-round questionnaire in which the experts rate and rank the first-round responses. In the third and any subsequent rounds, panel members receive feedback about the previous round and are asked to

rank their responses again. This process is repeated until consensus—general statistical agreement among the data—is achieved.

Often, Delphi procedures are slightly modified in some way in order to accommodate the needs of the situation (see Murray & Hammons, 1995). This study might be characterized as a "modified Delphi" in that it consisted of an initial, informational questionnaire in addition to its three Delphi survey rounds, as will be discussed below. For ease of communication and time efficiency, all surveys were designed and delivered online using Survey-Monkey™ (<http://www.surveymonkey.com>). Each survey was preceded by an e-mail to the potential participants that contained a link to the Web-based form.

Procedure

Particular areas of concern when conducting a Delphi study include developing the initial question(s) and selecting the expert panel. The initial question(s) in a Delphi study must be carefully written in order to direct responses toward the desired outcome, yet not be so directive as to bias experts' responses (Linstone & Turoff, 1975). Similarly, choosing a qualified expert panel in a Delphi study requires carefully matching the expertise of the individual with the topic under study (Delberg, van de Ven, & Gustafson, 1975). Mismatches lead to outlier responses that decrease the Delphi study's validity and threaten consensus building. How we addressed these areas of concern in this study is discussed below.

Developing the Initial Questions

Typically, researchers carefully craft initial Delphi survey questions themselves (see Brill, Bishop, & Walker, 2003; Gibbs, Graves, & Bernas, 2000; Kreber, 2002). However, rather than impose our own views of the e-mmediacy problems in online learning, we decided to ask the active membership of the Association for Educational Communications and Technology (AECT) to respond to the following open-

ended question: *What problems have you encountered in teaching online courses that have left either you or your students feeling less connected to one another?* (see <http://www.lehigh.edu/~inetsp/emmediacy/> for Appendix A).

The AECT membership consists of professors and practitioners of educational technology from fields such as psychology, education, social psychology, corporate training, and the military. Members meet annually to present their research and discuss their practice with colleagues and leadership members.

Using a constant comparative method (Merriam, 2001), we analyzed the 496 paragraphs of data collected from 167 responses to this informational questionnaire, hand-coding them for recurring themes. In addition, we administered a word frequency count to look for clusters of words relevant to the topic that would help to identify any themes that had been missed. We then utilized NVivo (Nu*dist, 1999-2001) qualitative data analysis software to assist in a more detailed and specific coding and categorizing of the data. From these analyses, several categories or common "themes" of e-mmediacy problems emerged. In addition, it appeared that the themes might be further systematized in terms of the development of group social structure within the online instructional communication system.

Table 1 depicts the framework we used for thinking about the data during our subsequent analyses. In this graphical representation of the problem categories, the phases in the development of group social structure are presented down the left side vertically and the components of the instructional communication system are presented across the top horizontally. Reading from left to right, participants in online courses who seek to communicate and begin to develop social structure in the new environment may encounter such problems as depicted at the intersections of these two theories. The nine problem categories contained within the cells of this framework represent the things that an instructor might fail to incorporate into the online course design. The content

TABLE 1
Framework for Thinking About Social Connectedness in Online Learning

<i>Group Structure Theory</i>	<i>Communication Theory</i>		
	<i>Instructor (Source)</i>	<i>Tech (Channel)</i>	<i>Learners (Receivers)</i>
Initial status assessment	1. Recognize differences in online pedagogies and incorporate strategies that facilitate learners' efforts to initially assess their position within the class group.	2. Capitalize on what technology can do and overcome what technology cannot do in order to facilitate learners' efforts to initially assess their position within the class group.	3. Manage learners' technical literacy and/or access level in order to facilitate the communication necessary to initially assess their position within the class group.
Norm development	4. Recognize differences in online pedagogies and incorporate strategies that accommodate frequent interaction necessary for norm development.	5. Capitalize on what technology can do and overcome what technology cannot do in order to accommodate frequent interaction necessary for norm development.	6. Manage the frequency of learners' interaction necessary for norm development.
Role differentiation	7. Recognize differences in online pedagogies and incorporate strategies that accommodate participants getting to know one another sufficiently to realize their role within the group.	8. Capitalize on what technology can do and overcome what technology cannot do in order to accommodate participants getting to know one another sufficiently to realize their role within the group.	9. Manage issues of online student collegiality so they can realize their role within the group.

of these cells then became the initial questions used in Round 1, each pertaining to relevant social connectedness problems that the larger group of practitioners had reported they face in online learning environments (see <http://www.lehigh.edu/~inntp/emmediacy/> for Appendix B).

Selecting the Expert Panel

Many Delphi studies identify experts as those with experience in "publishing," "conference presentation," "practice," and/or who have been "nominated by peers" as experts in the particular field under study (see Long, 1991; Raskin, 1994; Ritchie & Earnest, 1999). For this study, we reasoned that individuals with expertise in e-mmediacy might not necessarily be the most published but, rather, would have experience teaching online courses as well as have an innovative spirit and a certain level of willingness to take risks in his or her

approach to problem solving. So, in addition to the open-ended question, the questionnaire we sent to the AECT membership included several "informational" items about the respondents (see <http://www.lehigh.edu/~inntp/emmediacy/> for Appendix A). These additional questions might be characterized as (a) *online teaching experience* items (such as "What semester/year did you first teach an online course?" "What is your academic affiliation/rank?" "How many courses have you taught online?"); (b) *technology innovation questions* (such as "Do you own a DVD burner?" "Do you own a PDA?" and "Do you own a digital camera?" (see Rogers, 1995); and (c) *comfort with risk-taking* questions (such as "How do you characterize yourself as a risk taker?").

Using NVivo, we filtered the data from these responses to identify individuals with the most online teaching experience, strong tendencies toward being early adopters of techno-

logical innovation, and highest levels of risk-taking. From our analysis of these data, we identified 17 potential participants who exhibited these qualities. Of this group, 11 (64.7%) agreed to participate as the "panel" of experts for the duration of the Delphi study when asked via email.

Round 1

All 11 experts returned the Round 1 survey. We analyzed the data collected from Round 1 utilizing the constant comparative method (Merriam, 2001) and, after eliminating redundancy, we identified 170 expert-reported strategies for incorporating e-mmediacy into online courses. Before preparing Round 2, however, we requested the assistance of another colleague to validate the Round 1 data analysis. In addition to helping us clarify some wording, he suggested four additional strategies based on panel responses. This produced a total of 174 unique, expert-recommended strategies distributed across the nine problem categories.

Round 2

In Round 2, we asked the experts to use a 5-point Likert scale to rate the 174 strategies for their effectiveness in addressing the identified problems (1 = *not effective at all*, 2 = *somewhat effective*, 3 = *moderately effective*, 4 = *effective*, 5 = *very effective*; see <http://www.lehigh.edu/~inetsp/emmediacy/> for Appendix C). In order to eliminate potential respondent bias based on presentation order, strategies were listed randomly within each problem category. In addition, participants were encouraged to offer additions, explanations, and/or elaborations at the end of each category by responding to a fill-in item. All 11 experts participated in Round 2, and none supplied any new strategies or deletions via their fill-in responses.

We determined that the Round 2 data should yield both the top-rated strategies for effectiveness within each problem category and a preliminarily ranked list of those top

strategies. To obtain these outcomes, we applied a "response amplitude" type calculation (Marken, 1981) in which the top two levels of the Likert scale ratings were countered by the two lower levels by scaling the ratings from -2 to 2. In order to determine the rank order of *least* to *most effective* strategy per category, point values for each of these levels were calculated by multiplying the scale values by the ratings frequency. In essence, if six experts rated a strategy very high, while five other experts rated that same strategy very low, both ratings were calculated in tandem to counter each other for a more useful representation of the intensity of that strategy's rating and the expert panel's level of consensus (see example Strategy #1 in Table 2).

After determining the top 10 rated strategies in each category (including ties in some cases), 95 strategies remained and were placed in their respective rank order to be presented to the experts in Round 3 (see <http://www.lehigh.edu/~inetsp/emmediacy/> for Appendix D).

Round 3

In Round 3, we instructed the panel to confirm the rankings reported in Round 2 or make any changes they deemed necessary. As before, all 11 experts participated, recommending only minor ranking changes in two of the nine categories: elevate the third-ranked strategy in categories one and nine to second. The experts did not suggest that any strategies be removed or added when given the opportunity to supply additional feedback via e-mail. We concluded that these minor changes demonstrated strong consensus among the experts and that no subsequent rounds were necessary.

FINDINGS

In this way, the experts identified and ranked the effectiveness of 95 e-mmediacy strategies across the nine problem categories. As we further examined the strategies, more broad

TABLE 2
Hypothetical Frequency Distribution of 11 Respondents ($n = 11$)

Strategy #	Likert Value					Sum	Rank
	Not Effective at All	Somewhat Effective	Moderately Effective	Effective	Very Effective		
	-2	-1	0	1	2		
1	5	0	0	0	6	$(0*1) + (6*2) -$ $(5*2) + (0*1) = 2$	2
2	0	0	11	0	0	$(0*1) + (0*2) -$ $(0*2) + (0*1) = 0$	3
3	0	11	0	0	0	$(0*1) + (0*2) -$ $(0*2) + (11*1) = -11$	4
4	0	0	0	10	1	$(10*1) + (1*2) -$ $(0*2) + (0*1) = 12$	1

themes began to emerge. We again utilized the constant comparative method (Merriam, 2001) and a coding scheme emergent from the data itself to align the data with the themes. We noticed that the nine categories might be further collapsed to eliminate redundancy. Through this process we discovered that the strategies could be categorized into four themes that represent overarching, expert-recommended approaches to the design and implementation of online courses. While the strategies within the four themes are representative of the top 10 identified strategies per category, the themes and their resulting recommendations are presented below in order of largest to smallest number of recommended strategies overall. The following paragraphs describe these broad recommendations and their corresponding expert-suggested e-mmediacy strategies in more detail (see <http://www.lehigh.edu/~inetsp/emmediacy/> for Appendix E, which provides a complete list of expert-identified strategies and how they were categorized).

1. *Stimulate frequent and consistent interactions throughout the course (or "Interact, interact, interact").* With more than half (61 of 95, or 64.2%) of the expert-identified e-mmediacy strategies for maintaining social connectedness focused on interaction, the largest category of expert-recommended suggestions was to plan for, model, and implement high-

quality participant interactions in online courses. The e-mmediacy strategies in this category suggest the instructor model certain desired learner behaviors while interacting online, such as, "Demonstrate clear friendly and reflective communication," "Encourage/demonstrate warm rhetoric with personal comments," and "Admit to being human and being overwhelmed occasionally." The experts also suggested strategies to prepare students for interacting in the online environment such as, "Ask students to make a commitment to instructors and classmates that they will participate in the course," "Ask students to report on the personal implications of topics covered in the assigned readings." Finally, e-mmediacy strategies were also suggested for general maintenance of frequent interactions throughout the course. For example, "Use email [and] synchronous and asynchronous communication tools to keep in more frequent contact with students," "Send emails and update announcements regularly," and "Respond to all student emails within 24 hours." These findings appear to support the literature that maintains the key to increasing learner satisfaction with online learning is interaction (see Dooley, Kelsey, & Lindner 2002; Tu & Corry, 2002).

2. *Incorporate assignments and activities that dictate pace and encourage participation (or "Be pesky").* Of the 95 e-mmediacy strategies, 19 (20.0%) could be said to address learn-

ing styles, pace, and grading in online learning environments. In this category, strategies include, "Assign interim due dates for long-term projects," "Use assessment rubrics for timeliness and completeness," "Require students to complete course modules or sections before they may move on," "Assign frequent due dates for assignments," and "Design learning experiences that demonstrate immediate and specific usefulness to students." These strategies appear to support Visser, Plomp, Amirault, and Kupier's (2002) argument that maintaining pace with frequent interactions and more regular reminders about student assignments are key factors in successful online learning environments.

3. *Supply comprehensive support for all technologies used in the course (or "Be the safety net under your students' technology high wire").* Of the 95 strategies, 11 (11.6%) could be classified as instructional design strategies for assessing and accommodating students' levels of technological literacy and access. For example, the experts recommend such strategies as, "Post specific information about the course's technology demands and minimum hardware requirements," "Design for lowest common denominator in terms of technology (for example do not incorporate video streaming if the student's technology cannot support it)," "Ensure 'file compatibility' by establishing a common file type to be used throughout the course," "Supply a special email address where students can report technology questions/problems (as opposed to content questions/problems)." These e-mmediacy strategies support McVay Lynch's (2002) contention that the design of an online course should include technology support systems for students as well as offer guidance on the type of delivery tools students will utilize throughout the course.

4. *Investigate and experience online learning environments prior to teaching online (or "Walk a mile in your students' shoes").* With only 4 (4.2%) of the 95 e-mmediacy strategies, this category is the smallest group of strategies. The e-mmediacy strategies supporting

this category were, "Take an online course prior to teaching an online course," "Pilot e-learning courses to see how they work," "Review literature on Web-based teaching and learning," and "Collect feedback from students in Web-based courses." Thus, while this was not the largest set of strategies, it does appear the experts agree to some extent with Borthwick, Cassity, and Zilla (2002) that actually experiencing online learning oneself will help instructors better understand this entirely new instructional communication mode and the e-mmediacy problems it poses for online course participants.

DISCUSSION

The purpose of this study was first to identify the reported problems instructors face in maintaining social connectedness in online learning and subsequently to identify expert-recommended e-mmediacy strategies to address those problems. From our analyses of the data, it was possible to build a framework for thinking about these problems and their potential solutions by mapping communication theory onto group structure theory (Table 1). This framework then served as a useful guide for examining the additional data collected in this study and organizing the resulting e-mmediacy strategies. In addition, the integration of group social structure and communication theories may offer new ways of explaining the problems encountered in online courses and how to avoid them.

For example, when explained in terms of the development of group social structure, it is not surprising that the majority of the e-mmediacy strategies for addressing the problems identified in this study were strategies for maintaining social interactions among participants in online courses. In online learning environments, where "normal" communication channels are hampered by the technologies' limitations and instructional communications are relegated mostly to text, it may be necessary to increase the quantity and

quality of those interactions in order for a group social structure to develop. In other words, given the online communication channels available, the online instructor must supply enough of the type of interaction opportunities necessary to supply students the information they need to assess status, develop norms, and differentiate roles.

Similarly, group social structure and communication theories may help us understand why it is necessary to be “pesky” with online learners. According to the combined theories, when limitations of the technology-mediated instructional communication channels prevent normal development of the classroom group’s social structure and students consequently remain largely isolated from one another, they are unlikely to be able to assess status or gauge their relative position within the group. Unlike their face-to-face counterparts, online students cannot easily check around the room to see how many others have their assignments well underway or judge for themselves how to keep pace with their coursework by comparing themselves with their peers. Without the means to assess status within the online class group, coursework becomes easier to “put off,” as one expert in this study suggested. As a result, it becomes necessary for online course instructors to incorporate course elements that dictate pace.

Further, group structure and communication theories help to explain why supplying comprehensive technical support to online learners is important. When technology-mediated communication introduces unfamiliar channels and impedes the normal development of a class’s group structure, student stress levels are likely to rise—even if everything works perfectly well and students encounter no technical glitches. When students do encounter technical difficulties that prevent them from “attending” synchronous sessions (where the instructor is, undoubtedly, supplying the rest of the class THE answer) or from accessing asynchronous materials (that surely contain everything that will be on the next exam), students’ stress can rise to panic levels. Unlike

their face-to-face counterparts, who will seek help and assurance from the peers who have assumed the “support role” within their group structure, anxious online students are more likely to have difficulty knowing where to turn. This may explain why the experts recommended that the online instructor be prepared to fill the “support role.”

Finally, viewing e-mmediacy problems in terms of group structure and communication theories helps one keep in mind that it is vitally important for the instructor to actively interpret the direct and indirect feedback the class supplies and adjust the learning environment accordingly. Having once experienced classroom learning as a student him- or herself, most face-to-face course instructors easily monitor student feedback (both verbal and non-verbal cues) and adroitly make necessary adjustments in their teaching. In contrast, instructors who have never experienced online learning may have more trouble “reading between the lines” of students’ e-mail messages or synchronous audio exchanges in order to spot trouble and remediate. The first these instructors often know of any problems is through a student drop form or subsequent course evaluation. Taking even just a few weeks to experience what it is like to be a student in an online course and to watch a colleague’s strategies for dealing with any problems that occur might better prepare instructors for what it is like to be “out there,” wondering if your instructor knows you and/or if all the hard work you just submitted electronically has been received.

LIMITATIONS OF THE STUDY

This study was limited to some degree by the nature of the Delphi and qualitative methodologies. Like all Delphi studies, for example, our findings are somewhat limited by the fact that we selected our experts from among a very specific population (AECT). There are other professionals teaching online in a variety of fields whose perceptions and suggestions

might broaden the findings reported here. Further, while every attempt was made to maintain empathetic neutrality during our analyses (see Patton, 2002), researcher bias must also be noted as a potential limitation of this research and the findings should be interpreted accordingly.

The findings from this study may also be limited to some degree by the nature of Round 3. As one expert noted in a separate e-mail, the benefit of ranking the strategies under each of the nine problem categories in that round might have been too arbitrary to be particularly useful. This is why we have supplied broad categories of recommendations in our "Findings" section rather than a "Top 3 List."

Last, this initial study explored only the instructors' views of e-mmediacy problems encountered and potential strategies for overcoming them. This examination did not include the views of students or any other participants in the online learning environment (such as teaching assistants). Different problems and supporting e-mmediacy strategies might have been suggested if other participant groups had been polled. We plan future research in which we will examine more closely the perceptions student participants have of their social experiences and their level of satisfaction with the online learning environment.

CONCLUSION

While there is still more research to be done, the expert-recommended e-mmediacy strategies reported here suggest ways to build back into the online environment the redundancies necessary to guide instructional communications so that a class's group structure can develop as naturally as it does when a class meets face to face. It appears that effective integration of e-mmediacy strategies in online learning may supply a knowable "context" and thus a certain "familiarity" that students (and instructors) are accustomed to having in face-to-face courses. For learners, eliminating

stresses and ambiguities in communications may free up cognitive resources that might be utilized elsewhere in accomplishing learning tasks.

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