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Chapter

11

The Development of Virtual Learning Communities

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Successful online instructors realize that building a sense of ‘community’ in the online classroom is necessary for successful learning outcomes... The development of community becomes a parallel stream to the content being explored’ in online courses.”

Woods and Ebersole, 2003

An intimate community of learners: Strange as it may sound, one instructor after another notes the surprisingly close relationships that they have developed with their online students. They say that it is common for participants in online courses to develop a strong sense of community that enhances the learning process.”

Kassop, 2003

Becoming a learning community can be thought of as both a means and a goal for online classes; not all classes are able to achieve full development of this potential. This chapter explores research and theory concerned with social support for learning and the development of virtual learning communities in

online educational environments. This is an important topic both because of the continuing emphasis on social learning in general, and because of historical questions concerning the ability of online learning environments to support affective communication and the development of social relationships. In addition, research on online learning has consistently identified asynchronous course discussion as one of its more unique and promising features. This has led to considerable investigation into the phenomenon; in particular, into social interaction among discussion participants and its relationship to the development of learning communities.

The chapter opens with a review of the major theoretical constructs in this area including social theories of learning, what has come to be known as “social presence” research, and the notion of virtual learning communities. The remainder of the chapter focuses on what we know and what we need to know; in particular, operationalizing the concept of learning communities, investigating the relationship between teaching presence and the development of a sense of community, and exploring the potential technological affordances of online environments for supporting the social construction of knowledge.

SOCIAL LEARNING THEORIES

That learning is in some fundamental sense social is generally accepted by most contemporary educational researchers and theorists (Bransford, Brown, Cocking;

1999). Social learning theory therefore must be addressed in any discussion of learning online. Social learning theories maintain that learning is fundamentally social in nature; that it always involves interactions among people on some level, whether these be direct or mediated, or perhaps even remembered. Such theories are not new. Indeed, Plato maintained that the invention of writing was a bad thing because it usurped essential social interactions between teachers and learners. John Dewey (1963) argued strongly for a social view of learning, as did Lev Vygotsky (1962), whose rediscovered theories underly much of the current increasing emphasis on the social dimensions of learning in virtually all areas of educational research. Many learning theories that are distinctively social have been advanced. Although there is great variety in these, three common themes can be identified: cognition is situated in particular social contexts, knowing is distributed across groups, and learning takes place in communities.

Situated Learning. Situated learning (Brown, Collins & Duguid, 1989; Lave & Wenger; 1990; McLellan, 1996) refers to the belief that all learning is situated in the particular physical and social contexts in which it takes place. Situative approaches contend that the activities in which knowledge is developed and deployed are neither separable from nor ancillary to learning and cognition, that neither are they neutral, but rather that the physical and social situations of learning are an integral part of what is learned. They thus recommend pedagogical approaches that embed learning in meaningful activities that make deliberate use

of their social and physical contexts. They contrast such authentic learning with the decontextualized presentation and manipulation of concepts common in traditional classrooms; indeed they argue that the reason students so often fail to learn is precisely because traditional classroom activities are so far removed from actual practice (Bruner, 1986; Collins, Brown & Newman, 1989; Cognition and Technology Group at Vanderbilt, 1990). In particular, they point out, traditional classwork is rarely social.

Distributed Cognition. Whereas situated learning focuses on learning activities and contexts, distributed learning focuses on learning interactions and cognitive tools. Theories of distributed cognition contend that knowing is distributed across the individual, others, and artifacts. Distributed cognition theorists argue that our understandings develop not in isolation but rather through our interactions with other people and the cognitive tools that support such interactions, and that knowing, therefore, resides in these interactions and not only in the individual. Strong theories of distributed cognition insist that all cognition is distributed (Cole, 1991); weak theories maintain that cognition is shared across individuals, others, and cognitive tools in differing combinations at different times (Perkins, 1993; Salomon, 1993). Regardless of how conceptualized, distributed cognition suggests distributed learning; that is, if knowing is distributed across individuals, others, and tools, then so must be learning. Distributed cognition thus

views learning as situated in these interactions and accordingly champions pedagogies that support them.

Learning Communities. The notion of learning communities is rooted in the observation that knowledge and learning are a natural part of the life of communities that share values, beliefs, languages, and ways of doing things (Bransford, Brown, Cocking; 1999). Knowledge, in this view, is inseparable from practice and practice is inseparable from the communities in which it occurs. Etienne Wenger (1997), for example, speaks of learning communities in terms of "communities of practice." He bases his ideas on extensive study of various workplaces as well as classroom communities. He believes authentic communities of practice are characterized by mutual engagement, joint enterprise, shared repertoire, and negotiated meaning, that authentic learning environments share such characteristics, and that all learning environments should work to develop them. An important part of Wenger's notion of communities of practice is the idea that all learning is situated in practice and that all practice is essentially social in nature.

Whereas Wenger focuses on the general concept of practice, of which he views knowledge construction a part, Marlene Scardamalia and Carl Bereiter (1996) are particularly concerned with knowledge construction in k-12 classrooms. They thus apply the notion of community directly to classroom learning and the development of what they call "knowledge building

communities” within them, taking as their model knowledge creation in scholarly communities. Scardamalia and Berierter have designed methodologies, most notably methodologies centered on the use of a computer-based resource called formerly CSILE (now called Knowledge Forum), for supporting the growth of similar learning communities in classrooms and schools. They report that their approaches are particularly supportive of higher order learning when compared with traditional approaches. As in distributed approaches, an important notion in the CSILE environment is that of shared tools and artifacts around which the co-construction of knowledge takes place.

In summary, social theories of learning, while variously focusing on cognition and learning as situated in activities, interactions, practice, and knowledge construction, commonly recognize all these as both essential to learning and fundamentally social in nature. What makes such recognition particularly troubling for online educators are questions concerning the capacity of online environments to support social activities and interactions, and/or the development of learning communities. These kinds of questions have typically been explored in what has come to be called “social presence” research.

IMMEDIACY AND SOCIAL PRESENCE

Research on social presence in online learning environments is directly related to research on immediacy in traditional classrooms. Indeed, there is a considerable

body of research on face-to-face teaching and learning that suggests that teacher immediacy behaviors can significantly affect student learning (Gorham, 1988, Christophel, 1990; Richmond, 1990; Rodriguez, Plax & Kearney, 1996).

“Immediacy” refers to behaviors that lessen the “psychological distance between communicators” (Weiner & Mehrabian, 1968). Immediacy behaviors can be verbal (ie., giving praise, soliciting viewpoints, humor, self-disclosure), or non-verbal (ie., physical proximity, touch, eye-contact, facial expressions, gestures).

Educational researchers have found that teachers’ verbal and non-verbal immediacy behaviors lead, directly or indirectly depending on the study, to greater learning. While early research on immediacy posited a direct relationship between teachers’ immediacy behaviors and both cognitive (Kelly & Gorham, 1988; Gorham, 1988) and affective learning (Kearney, Plax & Wendt-Wasco, 1985; Richmond, Gorham & McCrosky, 1987), more recent immediacy research holds that intervening variables mediate the relationship. In motivation models (Christophel, 1990; Richmond, 1990; Frymier, 1994), the intervening variable is hypothesized to be state motivation; teachers’ immediacy behaviors are conceptualized as increasing students’ motivation to learn, resulting in greater affective and cognitive learning. In Rodriguez, Plax and Kearney’s (1996) affective learning model, affective learning itself is seen as the intervening variable. Teacher immediacy behaviors are seen as increasing students' affective learning which in turn affects their cognitive learning.

Whatever the proposed model of the relationship between teacher immediacy and learning, a positive relationship between the two has been clearly documented in the research literature. This research has important implications for online learning. Work on Social Presence theory (Short, Williams & Christie, 1976), Media Richness theory (See Rice, 1992, and the preceding chapter on “media mixes”), and Picard’s (1997) more recent notion of affective channel capacity, argue that differing media have differing capacities to transmit the non-verbal and vocal cues that produce feelings of immediacy in face-to-face communications, and so have questioned the capacity of some media to promote learning. In part, what is at issue here is social learning theorists’ notion that learning is socially supported (e.g. Vygotsky’s concept of the zone of proximal development). These communications scholars argue that low bandwidth media have low social presence (Short, Williams & Christie, 1976), and so cannot convey the social support necessary to sustain learning. Researchers experienced with online teaching and learning, however, contest the view that ALN is lacking in richness or social presence. Participants in computer-mediated communications, they argue, create social presence through their communications. What is important, these researchers contend, is not media capabilities, but rather personal perceptions of presence (Gunawardena & Zittle, 1997; Richardson & Swan, 2001; Rourke, Anderson, Garrison & Archer, 2001). Of course, online discussions are quite different from discussion in face-to-face

classrooms. In particular, the role of instructors often shifts from discussion leaders to discussion facilitators, and students commonly assume more responsibility (Ahern & El-Hindi, 2000; Poole, 2000; Coppola, Hiltz & Rotter, 2001). Research on immediacy in face-to-face classrooms has focused on teacher immediacy behaviors. Research on social presence in online environments, however, has accordingly concerned itself with the immediacy behaviors of all discussion participants.

Gunawardena and Zittle (1997), for example, developed a survey to explore student perceptions of social presence in computer-mediated course discussions. In two separate studies, they found that students rated course discussions as highly interactive and social. The researchers concluded that course participants created social presence by projecting their identities through the use of affective textual devices (see Swan, 2003) to build a discourse community among themselves. Richardson and Swan's (2003) research, using a survey adapted from Gunawardena & Zittle, replicated and extended these findings. They found that students' overall perception of social presence was a predictor of their perceived learning in seventeen different online courses. Picciano (2002) reports similar findings.

Indeed, several investigators note that online education is particularly well constructed to support social learning because of the unique nature of asynchronous course discussions (Wells, 1992; Chickering & Ehrmann, 1999). To

begin with, all students have a voice and no student can dominate the conversation. The asynchronous nature of the discussion makes it impossible for even an instructor to control. Whereas discussion in traditional classrooms is, for the most part, transacted through and mediated by the instructor, online discussion evolves among participants. Accordingly, many researchers have found that students perceive online discussion as more equitable and more democratic than traditional classroom discourse (Harasim, 1990; Levin, Kim & Riel, 1990). In addition, because it is asynchronous, online discussion affords participants the opportunity to reflect on their classmates' contributions while creating their own, and on their own writing before posting it. This tends to create a certain mindfulness and a culture of reflection in online courses (Hiltz, 1994; Poole, 2000; Hawkes & Romiszowski, 2001).

However, as Eastmond (1995) reminds us, computer-mediated communication is not inherently interactive, but depends on the frequency, timeliness, and nature of the messages posted. Ruberg, Moore and Taylor (1996) found that computer-mediated communication encouraged experimentation, sharing of ideas, increased and more distributed participation, and collaborative thinking, but also found that for online discussion to be successful, it required a social environment that encouraged peer interaction facilitated by instructor structuring and support. Hawisher and Pemberton (1997) relate the success of the online courses they reviewed to the amount of discussion required in them.

Picciano (1998) likewise found that students' perceived learning from online courses was related to the amount of discussion actually taking place in them. Similarly, Swan, Shea, Fredericksen, Pickett, Pelz & Maher's (2000) study of 268 online courses found that students who rated their level of interaction with classmates as high also reported significantly higher levels of learning. In addition, this study discovered a strong correlation between students' perceptions of their interactions with peers and the actual frequency of interactions, the required frequency of student participation, and the average length of discussion responses.

To account for such findings, Danchak, Walther, and Swan (2001) argue for an equilibrium model of the development of social presence in mediated environments. Equilibrium, in this sense, refers to an expected level of interaction in communications (Argyle & Cook, 1976). When communicative equilibrium is disrupted, research shows that communication participants work to restore it. In this case, when fewer affective communication channels are available to transmit immediacy via conventional vocal and non-verbal cues, participants in mediated communications increase their verbal immediacy behaviors to the extent needed to preserve a sense of presence. Indeed, content analyses of online discourse supports such an equilibrium model (Rourke, Anderson, Garrison & Archer, 2001; Swan, Polhemus, Shih & Rogers, 2001; Swan, 2001).

To further explore the function of verbal immediacy behaviors in the development of social presence in online discussions, Rourke, Anderson, Garrison and Archer (2001) distinguished among three kinds of immediacy responses. These are: affective responses (personal expressions of emotion, feelings, beliefs, and values), cohesive responses (behaviors that build and sustain a sense of group commitment), and interactive responses (behaviors that provide evidence that the other is attending). They tested these categories in a pilot content analysis of online discussion and found them quite reliable. Their pilot analysis also found significant differences between courses in what the researchers termed “social presence density.”

Swan, Polhemus, Shih and Rogers (2001) used the categories devised by Rourke, et. al. to develop similar protocols for the content analysis of online discussion, and applied these to the analysis of discussions in a graduate education course (Swan, 2001). The analyses revealed that, although the use of affective indicators mirrored the general flow of the course discussions across time, cohesive indicators declined in frequency as the course progressed, while the use of interactive indicators increased. These findings suggest that different kinds of immediacy indicators perform different functions in the development and maintenance of social presence and that the importance of these functions varies across time and context.

Most studies of social presence in online discourse are premised on the assumption that social presence enhances learning. Such premise, of course, derives from research on immediacy in face-to-face classrooms. As we have seen, however, online discussion is significantly different from traditional classroom discussion. In addition, immediacy research in traditional classrooms has focused exclusively on teacher behaviors, whereas the social presence research in online courses examines the behaviors of all discussion participants. Thus a relationship between social presence and learning through online discussion needs to be empirically identified and described.

An important and interesting step in this direction was undertaken by Picciano (2002) who related student perceptions of social presence to actual and perceived interactions and learning in an online, graduate course in education. Picciano analyzed the relationships between student perceptions of social presence, learning, and interactions in the course, students' actual interactions in the course discussions, and their scores on a multiple choice exam and on a written assignment. He found that perceptions of social presence were correlated with perceptions of learning and interaction, and that perceived learning and perceived interactions were also correlated, but that perceived social presence was correlated with neither actual interactions nor actual performance. He did find, however, that, when students were grouped by their perceptions of social presence, those experiencing the highest levels of social presence scored

significantly higher than other students on the written assignment. There were no such differences in exam scores. The findings at least hint at a relationship between social presence and learning online, but also suggest that such relationship is considerably more complex than the relationship between immediacy and learning found in traditional classrooms. The study should be replicated for different types of courses, with a large enough number of students to provide more adequate statistical power for testing the relationships Picciano explored.

VIRTUAL LEARNING COMMUNITIES

The notion of virtual learning communities grows out of the research on social presence and Wenger's (1997) studies of communities of practice. The research on social presence tells us that students perceive themselves as interacting socially in online courses and that they relate such perceptions to learning. These findings suggest that online courses might well be understood and investigated as communities of practice; indeed, most such courses can be shown to exhibit mutual engagement, joint enterprise, a shared repertoire, and negotiated meanings. Studies of online communities, moreover, have shown that members have a strong commitment to their communities (Rheingold, 1993), that they recognize boundary conditions relating to such membership (Marvin, 1995), and that they socially construct behavioral rules concerning the same (Bruckman,

1998). Wegerif (1998) specifically likened success in online courses to induction into a community of practice. He found that the individual success or failure of students enrolled in an online course at the Open University depended on their ability to cross a threshold “from feeling like outsiders to feeling like insiders” in that community.

Many researchers, in fact, assume a link between social presence or social interaction and the development of learning communities (Rheingold, 1993; Poole, 2000; Russell & Daugherty, 2001; Swan, 2001; Caverly & MacDonald, 2002; Walther & Boyd, 2002); that is they use evidence of social interaction and support to demonstrate the development of community. Walther and Boyd (2002), for example, demonstrated that the five forms of social support identified in the communications literature -- informational support, emotional support, esteem support, tangible aid, and social network support -- can be found in virtual communities, but that the nature of that support is substantially altered by changes in the communication process engendered by the mediation of online environments.

Other researchers directly explore the development of virtual communities and identify conditions or factors supporting that process. Coppola, Hiltz and Rotter (2002), for example, found that the development of successful online collaborative teams was related to their ability to develop “swift trust” in the initial weeks of a course on information systems. Geoffrey Liu (1999) similarly

argued that “virtual settlement” was a necessary condition for the development of virtual community. Norris, Bronack and Heaton (2000) identified several factors contributing to the development of learning communities in online education courses utilizing the University of Virginia’s CONNECT website to support online discussion. First, they maintain, the intended consequences of the discussion must be made explicit and agreed upon. Second, online discourse must be convenient, familiar, accessible, meaningful, and focused. Third, sufficient regard must be given to environmental, social, and motivational factors that sustain online discussion and move it forward.

Ruth Brown (2001) studied the processes through which community was formed in graduate courses in educational administration through repeated interviews with a theoretical sampling of students from three online courses. Participants' descriptions of learning community focused on mutuality -- mutual interests, experiences, goals, or values, and joint responsibility for learning. Interestingly, five of the 21 study participants reported feeling no sense of community in the online classes, and four were ambiguous on the question. Explanations for this lack of response were found to include: a participant did not even think about community or defined community in a way that could not include online learning, a participant did not prioritize the class at a level that would allow the development of community or was for some reason “out of synch” with it, a participant did not want to be part of the community.

Among the participants who did experience a sense of community, Brown identified three levels or stages in the development of feelings of belonging to a class community. The first level involved making online acquaintances, usually through discovered similarities. The second level, community conferment, reportedly resulted from engagement in a long threaded discussion, after which, participating students felt a kinship with each other. The third level of community, camaraderie, was only achieved after long-term and intense association with others through personal communication. Camaraderie was generally only found among students who had been through multiple classes together. Brown also delineated preconditions necessary to the development of community. These begin with students' online behaviors being modified by the instructor and/or veteran students, proceed through their becoming comfortable with using the communication technologies, asynchronous communication itself, the course pedagogy and content, and the scheduling demands of online learning. After these conditions are met, other preconditions to developing community are negotiated including finding similarities with other students about which to communicate, engaging in that communication, and discovering personal and/or academic needs to become part of the community before the beginning stages of community development are reached. Brown (2001) argues that her findings suggest ways in which the development of community can be supported by online course developers and facilitators. Such argument is echoed in the work of Alfred

Rovai (2002) who developed a Sense of Classroom Community Index (SCCI) to measure students' sense of community in both traditional and online classes. Comparing the two, Rovai found much greater variability among online classes. This finding suggests that, while a sense of community in some sense grows naturally out of the common experience of being in face-to-face classes, it must be consciously supported in online environments.

WHAT WE KNOW / WHAT WE NEED TO KNOW

To recap, we know that learning is in some fundamental sense social (Bransford, et al., 1999). Many of us also believe that thinking, and so learning, takes place in communities (Scardamalia & Bereiter, 1996; Wenger, 1997), is situated in particular social and physical contexts (Brown, et al., 1989; Wenger, 1990), and is distributed across individuals, tools, and artifacts (Salomon, 1993). We don't know whether and how these ideas, developed from research on face-to-face teaching and learning, translate to virtual environments. For example, what are the "physical" contexts of virtual learning? Is it the online documents that form web-based courses or is it the differing physical spaces in which individual students work on them? How do these contexts, both very different from traditional classroom contexts, affect learning, both singly and perhaps in concert? Very little research has explored these contexts, and what there is, for the most

part, centers on technology and interface issues (Hillman, Willis & Gunawardena, 1994).

Another area clearly deserving investigation is the notion of distributed cognition. Many online courses are in an important sense jointly created by their participants – instructors and students – through online discussions, collaborative projects, and shared products. The digital record created by these activities might yield important insights concerning knowledge creation and distributed learning online (and perhaps distributed cognition in general), but it is difficult to know how to approach it. For example, one aspect of online learning that seems quite different from face-to-face learning involves class discussions. If we want to explore the creation of knowledge through online discussions, do we examine the discussion transcript simply as a text or do we consider its evolution over time? Online discussion does not evolve linearly through time as does classroom discussion but rather seems to grow like crystals from multiple conceptual seeds in many dimensions at once. Thus examining the straight text does not necessarily capture the evolution of ideas. In addition, if we examine the whole discussion as text, what should be the unit of analysis – individual messages, discussion threads, idea units? Each provides unique insights but is also difficult to compare with the others. What should we look for in the discussion, whatever the units we choose to analyze? What might be evidence of distributed learning or knowledge creation? If we examine the evolution of a discussion over time,

how might we conceptualize time – absolutely, in hours, days or weeks, or relatively, by the growth of discussion threads or particular themes? The latter approach might be particularly useful for exploring the ways in which knowledge creation and learning are distributed across discussion participants. Of course, transcript analysis cannot tell us what those participants read and internalize (Sutton, 2001), but we can look to see how particular ideas and/or uses of language might be introduced, adopted and transformed by discussion participants over time. These notions deserve further investigation.

We know quite a bit about the development of social relationships among participants in online courses through course discussions in particular. We know that discussion participants, in the absence of vocal and non-verbal affective cues, utilize verbal immediacy indicators to lessen the psychological distance between them (Rourke, et al., 2001; Swan, 2001), and that as a result, students often perceive online discussion as highly interactive and social (Walther, 1994; Gunawardena & Zittle, 1997). We know that students who experience a greater “social presence” from their classmates believe they learn more in online classes (Picciano, 1998; Swan, et.al., 2000; Richardson & Swan, 2003). What is less clear is the relationship between perceived social presence and actual learning online (Picciano, 2002). There are indications of a link between social presence and certain kinds of learning, namely conceptual learning and the taking of multiple perspectives (Parker & Gemino, 2001; Picciano, 2002), but these are

tentative and clearly need further investigation. In particular (and unlike the face-to-face immediacy research), general analyses tend to show no significant differences in learning relative to social presence; it is only when different kinds of learning and/or different groupings of course participants have been considered that these relationships appear, suggesting potential negative correlations as well. Indeed, there is some suggestion that online discussion in particular is less supportive of convergent thinking and the development of particular skills (Twigg, 2000; Parker & Gemino, 2001). In addition, the conditions and mechanisms surrounding such relationships are essentially unknown and should be explored. Anecdotal reports suggest that social supports for learning online are more or less important to different students in different content area courses at differing times. Who, for example, benefits from online discussion and how do they benefit? Who doesn't and why don't they? When does discussion support learning? When might it hinder learning? When is it irrelevant? Whether and how social interaction might (or might not) affect learning online is clearly an important area for future research.

“Virtual Learning Community.” Many researches report that online learning takes place in and is supported by online learning communities (Goldman-Segall, 1992; Swan, 2001; Coppola, et al., 2002; Walther & Boyd, 2002). We know that success in online programs can be linked to induction into learning communities (Wegerif, 1998) and some researchers have developed

descriptive and/or prescriptive overviews of online community development (Norris, et al., 2000; Brown, 2001; Walther & Boyd, 2002). An important issue that needs to be addressed, however, is development of a common, working definition of “virtual learning community.” Indeed, virtual learning communities have been variously defined by differing authors, and variations on the term, such as “virtual classrooms” (Hiltz, 1994), “computer-supported knowledge-building communities” (Scardamalia & Berieiter, 1996), or “communities of inquiry” (Rourke, Anderson, Garrison & Archer, 2001) confuse the issue even further. Definitions, for example, range from Bruckman and Jenson’s (2002) “a group of people interacting with one another in some fashion” (p. 22) through Cuthbert, Clark and Linn’s (2002) “supporting networks of personal relationships that enable the exchange of resources and the development of a common framework for analysis of these resources” (p. 212) to Levin and Cervantes’ (2002) notion of virtual learning communities as systems which, like biological organisms, are “born, undergo growth, reach a level of mature functioning, and then undergo decline and cease to function” (p. 269). Burrows and Nettleton (2002) see the development of virtual learning communities as a symptom of “reflexive modernization.” Each of these various conceptualizations suggest very different measures for identifying and studying virtual learning communities.

Most conceptualizations, however, seem to center on one of two foci relating to the more general work on learning communities. Some researchers

focus on learning, more specifically, on Scardemalia and Bereiter's (1996) notion of learning as knowledge building. Beverly Hunter (2002), for example, asserts that a defining characteristic of a virtual community is that "a person or institution must be a contributor to the evolving knowledge base of the group"... "that there is a mutual knowledge-building process taking place" (p. 96). Hoadley & Pea (2002) concur. Such definitions are operationalized in terms of evidence of knowledge building and support for knowledge building processes. Other researchers focus on communities and on the social relationships that support them (Wenger, 1997). Caroline Haythornthwaite (2002), for example, contends that the best way to understand virtual learning communities is to focus on the underlying social networks developing in those communities. Her conceptualization mirrors that of CMC pioneer Herbert Rheingold who wrote (1993) "*virtual communities* are social aggregations that emerge from the Net when enough people carry on... discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace." (p. 5). Haythornthwaite (2002) also suggests studying virtual learning communities by mapping the "social support" and "task support" relationships within them. Much of the survey research on social presence (Gunawardena & Zittle, 1997; Swan, 2001) also falls into this category.

Separating "learning" from "community," however, doesn't tell us much about what is really important in the notion of "virtual learning communities,"

namely, the relationship between the two. The most promising definitional approaches, therefore, may be those that combine concepts of learning and community. Nolan and Weiss (2002), for example, locate virtual learning communities at “the intersection of the social organization of an environment and the activities expected and conducted by participants in a particular setting” (p. 294). Likewise, Renninger and Shumar (2002) see virtual learning communities as lodged in the particular interactions of participants in those communities. Garrison, Anderson & Archer’s (2000) Community of Inquiry model (Figure 11-1) views virtual learning communities as developing out of the interactions of three sorts of “presence” – “cognitive presence” is related to knowledge building through inquiry; “social presence,” as previously described, involves the development of relationships between community members; and “teaching presence,” a third element these researchers identify as critical, links the two through the design and facilitation of learning activities (Anderson, Rourke, Garrison & Archer, 2001). These researchers have developed protocols for analyzing online discourse to assess all three types of presence. They have not, however, linked any of these in their research nor have they related them to the development of a sense of community.

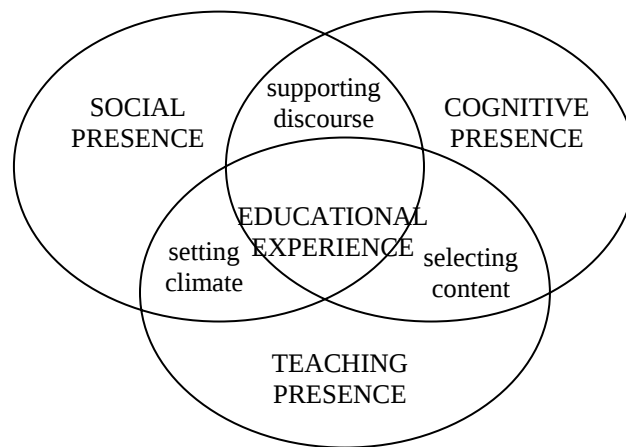


Figure 11-1 Community of Inquiry Model

An overall measure of learning community, the Sense of Classroom Community Index (SCCI) has been developed by Alfred Rovai (2002) to explore the development of learning communities in both traditional and online environments. Rovai identified four essential elements in such communities – spirit (the recognition of community membership), trust, interaction, and learning. The SCCI measures students’ sense of each of these elements, such that comparisons between learning communities can be made both in terms of overall sense of community and/or on each of the subscales. Using the SCCI, he compared classroom communities among adult learners enrolled in a mix of fourteen traditional and asynchronous online undergraduate and graduate courses at two urban universities. While Rovai found no differences in overall sense of community between the two media formats, he found greater variability in overall SCCI scores among the online courses. Indeed, the five (of seven) online courses

with the highest SCCI scores had significantly higher sense of community ratings than did the seven traditional courses. Similar dropping of low scoring traditional classes did not result in significant differences between these and the entire group of online classes. Rovai suggests that this indicates that the development of community in online courses is more sensitive to course design and pedagogical factors than its development is in traditional environments. In this vein, he also found a moderate positive correlation between classroom community ratings and interactivity (as measured by the number of discussion postings) in the online courses and a corresponding emphasis on spirit in face-to-face classes. Such findings support both the social presence literature and Anderson, et al.'s (2001) contentions concerning the importance of teaching presence. They also point to important areas for further investigation.

“Teaching Presence.” As previously noted, there seems to be a significant link between instructor activity and the development of virtual learning communities in online courses (Rovai, 2002). There is some research that seems to support such a view. Shea, et al. (2001), for example, found significant differences in perceived learning between students reporting differing levels of interaction with their instructors. Students who reported high levels of interaction with their instructors also reported higher levels of learning from them. Jiang and Ting (2000) similarly found a strong correlation between student perceptions of learning and their perceived interactions with instructors as did Swan, et al.

(2000). Richardson and Swan (2003) reported a significant correlation between student satisfaction with their instructors and their perceived learning online. There is, moreover, some indication that students' perceptions are accurate, at least concerning instructor activity. Jiang and Ting (2000) found that both perceived learning and perceived interaction with instructors were linked to the actual average numbers of responses per student that instructors made. Swan, et al. (2000) also found a correlation between students' perceived interaction with their instructors and the actual frequency of instructor participation in online course discussions, and Picciano (1998) reported that instructors' actual activity in online education courses was related to students' perceived learning from them. These findings indicate the importance to students of interactions with their instructors and allude to the importance of instructors in the development of a sense of virtual community. However, connections between specific instructor activities and/or between student interactions with their instructors and the development of community have yet to be documented. What sorts of instructor behaviors support the development of learning communities and how do these relate to learning itself? It is possible, for example, that too much instructor participation stifles online discourse? Also of interest are the ways in which instructors facilitate the development of social presence among students in online course discussions and how these relate to learning. All are promising areas for further investigation.

Research focusing on the roles instructors play in online discussions and their relationship to community, knowledge creation, and learning is clearly needed. Also of interest are other sorts of interactions between online instructors and students such as instructor feedback on assignments, journaling between instructors and students, and instructors' presence in online lectures. In this vein, several researchers have attempted to categorize the roles online instructors perform to reflect the ways in which they project their presence. Berge (1995), for example, maintained that moderators of online discussions must fulfill four major functions – managerial, social, pedagogical and technical. Paulson (1995) reduced these to three – organizational, social, and intellectual – perhaps in recognition of the fact that technical obstacles to online learning are, for whatever reason, disappearing. Rossman (1995) provided empirical support for similar categories through the analysis of over three thousand student course evaluations. He found that student comments and complaints concerning their online instructors clustered into three major categories – teacher responsibility, facilitating discussions, and course requirements.

Anderson, et al. (2001) have termed instructors' ability to project themselves in online courses "teaching presence," which they define as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile outcomes." They conceive of teaching presence as composed of three categories of activities

roughly analogous to those defined by Berge, Paulson and Rossman – instructional design and organization, facilitating discourse, and direct instruction – and have created protocols to measure teaching presence in terms of these categories through the content analysis of thematic units in online discussions. The protocols have been tested in the analysis of the complete transcripts of two online courses and proved both reasonably reliable and useful in identifying differences in both the quantity and quality of the teaching presence projected by differing online instructors. How these differences might relate to community have not yet been hypothesized, let alone investigated, but, as previously noted, these protocols and their cognitive and social presence counterparts (Garrison, et al., 2000; Rourke, et. al., 2001) might provide a starting point for such investigations.

Shea, Fredericksen, Pickett and Pelz (2002) developed a survey instrument, the Teaching Presence Survey, based on the categories developed by Anderson, et al. (2001) that they piloted with students enrolled in SUNY Learning Network summer courses. Preliminary results from their study indicated that more than three quarters of the students responding to the survey (15%) agreed with statements describing the three categories of teaching presence in terms of indicators of these proposed by Anderson, et al. Moreover, Shea, et al. found correlations between student satisfaction with and perceived learning from the courses and all five indicators of instructional design and organization, the six

facilitating discourse indicators and the five direct instruction indicators. It is interesting to note in this regard that in the facilitating discourse and direct instruction categories, the Teaching Presence Survey included indicators relating to both instructor activity and student behaviors, to acknowledge the new and important roles students are beginning to play in these categories in online learning environments. While correlations with satisfaction and perceived learning were found for all indicators for both instructors and course participants, the correlations were a good deal stronger for instructor indicators than they were for the same indicators applied to course participants. Although the low response rate for the study makes it difficult to generalize the findings, they provide support for Anderson, et al.'s notion of teaching presence and intriguing indications of the critical role instructors may play in developing social presence and a sense of community in online courses. That role clearly deserves further investigation.

In this vein, Coppola, Hiltz, and Rotter (2001) investigated the changing roles of instructors online through semi-structured interviews with twenty faculty members who had prepared and delivered at least one online course at the New Jersey Institute of Technology. They assert that, in the any environment, teachers have three roles – cognitive, affective, and managerial. They found that the instructors they interviewed believed that in online environments their cognitive role shifted to one of deeper complexity, their affective role required finding new

tools to express emotion, and their managerial role necessitated greater attention to detail, more structure, and additional student monitoring. Anderson, et al. (2001) report similar shifts in responsibilities. Both studies also report that instructors spend considerably more time on online courses than they do on traditional ones, thus research designed to explore the effect of particular instructor activities on the development of social learning communities might be particularly useful. Many instructors, for example, report being especially active in course discussions at the beginning of a course but then gradually fading their participation as the course progresses. Others make students responsible for different strands of online discussion and/or other course activities. Are these strategies useful? What is their effect on the development of virtual learning communities? Indeed, Anderson, et al. (2001) conceived of teaching presence not as belonging exclusively to online instructors, but rather as being distributed across instructors and students. While Shea, et al.'s (2002) research suggests that instructors' activities in this regard have more effect on the development of community than students', it nonetheless suggests that student activities are also linked to that development. Investigations into the effect on social learning of particular instructor and student activities and/or specific combinations of the two could be especially helpful.

Technological Affordances. All media are selective. Each medium of communication emphasizes, amplifies, and enhances particular kinds of

experience. Each medium privileges certain ways of knowing. At the very same time, each medium of communication also inhibits, restricts, and diminishes other kinds of experience, and so marginalizes other ways of knowing. All media both afford and constrain learning in their own particular ways (Gibson, 1966). Thus, Gavriel Salomon (1981) asserts all media have unique attributes that matter or that can be made to matter in teaching and learning. One promising area of investigation into virtual learning communities, then, might center on an exploration of the unique affordances asynchronous online environments hold for social learning.

Carol Twigg (2000) contends that the biggest obstacle to innovation in online learning is thinking things can or should be done in traditional ways. Trying to make online education "as good" as traditional education, she argues, often encourages us to make it the same as traditional education. Trying to make online education "the same" as traditional education, most likely will lead to less than optimal learning, when, in fact, online education has the potential to support significant paradigm changes in teaching and learning. Twigg focuses on the potential of online environments to support individualized instruction. Others conversely focus on the potential of online environments to support social learning.

Randy Garrison (2002), for example, argues for the unique ability of asynchronous online discussion to support both reflection and collaboration, and

relates these to Dewey's notion of the inquiry cycle and the higher order learning that can result from it. He writes, "asynchronous online learning is more than a means to access information. It has the potential to significantly enhance the intellectual quality of learning environments and outcomes." There is some research support for his position (Garrison, et. al., 2000; Parker & Gemino, 2001; Picciano, 2002).

Robbie McClintock (1999) writes, "Digital technologies are for education as iron and steel girders, reinforced concrete, plate glass, elevators, central heating and air conditioning were for architecture. Digital technologies set in abeyance significant, long-lasting limits on educational activity." First, he argues, the contents of the world's cultures are being converted to digital form and made available to any person at any place and any time. Digital technologies thus have the potential to replace an educational paradigm based on scarcity and isolation with one based on abundance. Secondly, digital multimedia enlarge the repertoire of resources available to serve inquiry, thought, and the creation of knowledge, and so, potentially, education. Thirdly, powerful digital tools have the potential to make the practical mastery of diverse basic skills – calculation, computation, spelling, drafting, remembering, comparing, selecting, visualizing, testing hypotheses – once considered an outcome of education, a given at its outset. With digital information technologies, McClintock maintains, what is pedagogically possible changes; digital technologies could change our instructionist, factory

model of education into a constructivist model focused on the creation of knowledge. He contends that how this can be accomplished is through the creation of virtual learning communities that “engage a diversity of people with challenging learning activities, providing each with appropriate resources and useful intellectual tools.”

As Twigg (2000) and McClintock (1999) argue, capitalizing on the technological affordances of online environments has the potential to significantly change education as we know it. At the very least, it seems the most promising path to explore if all we seek is to increase the efficacy of online learning. Twigg's focus on individualized instruction, while certainly supported by considerable research on computer-assisted instruction (Kulik, Kulik & Bangert-Drowns, 1985; Swan, Guerrero, Mitrani & Schoener, 1990) as well as her own work, seems in some sense tied to the old paradigm. The potential of online environments to support the social construction of knowledge, on the other hand, while perhaps yet to be fully realized, suggests real paradigm change and clearly deserves serious investigation.

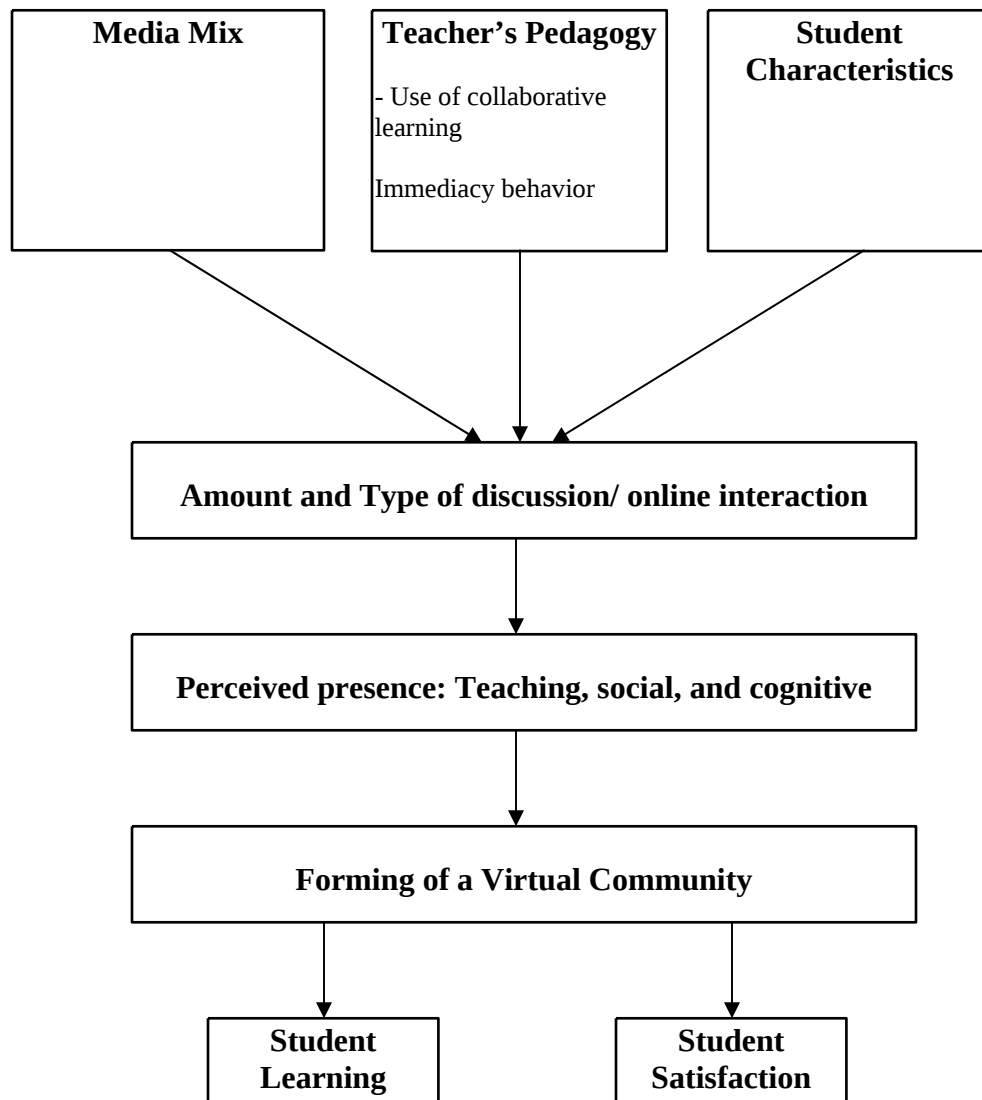
SUMMARY: REFINING THE THEORETICAL MODEL

Figure 11-2 Emergence of a learning community.

The initial online interaction focused on learning processes in terms of individual vs. collaborative learning activities, the amount and type of online (discussion) activities, and perceived media sufficiency. The research theories and results reviewed in the previous three chapters suggest the extent of emergence of a learning community is dependent on such processes, and that in turn, the emergence of a virtual learning community improves student satisfaction and learning in ALN's. The revised portion of the model is shown in Figure 11-2.

FOR DISCUSSION

1. What definition of a “virtual learning community” do you agree with?
How would you measure the extent to which an online class forms a community?
2. Do you believe that the formation of a learning community is essential to the effectiveness of ALN, or that at least some students might learn as well as isolated individuals interacting just with online resources such as tutorials? What evidence supports your point of view?
3. What one or two things is it most important for an instructor to do, to encourage the development of a learning community?
4. How could you design a study to test the model shown in Figure 11-2?

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