

ONLINE COLLABORATION PRINCIPLES

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ABSTRACT

This paper uses the community of inquiry model to describe the principles of collaboration. The principles describe social and cognitive presence issues associated with the three functions of teaching presence—design, facilitation and direction. Guidelines are discussed for each of the principles.

KEYWORDS

Online Learning, Community of Inquiry, Social Presence, Cognitive Presence, Teaching Presence, Reflection, Discourse, Facilitation

I. INTRODUCTION

This paper focuses on principles of collaboration with regard to engaging students in an online learning environment. New possibilities of approaching the teaching and learning transaction open with the flexibility of utilizing and merging synchronous and asynchronous communication technologies. It should be understood that we do not capitalize on the potential of collaboration if we choose to continue with the limited educational practice of transmitting large quantities of information from the notes of the professor to be stored in the short term memory of students without the benefit of deep understanding and shared confirmation. Lecturing is at odds with the way students communicate and learn outside the classroom. Students are becoming increasingly uneasy sitting in lectures and too often see it as a necessary but unpleasant way to pass the course. The guidelines discussed here are based upon the assumption that the goal is to create a community of inquiry where students are fully engaged in collaboratively constructing meaningful and worthwhile knowledge. From both a theoretical and empirical perspective, there is little question as to the necessity and effectiveness of interaction and collaboration to achieve deep and meaningful learning outcomes [1, 2].

At the heart of a meaningful educational experience are two integrated processes: reflection and discourse. These are the two inseparable elements of inquiry in higher education. In an online learning experience the advantage is given to reflection in a way that is not possible in the fast and free flowing face-to-face environment. The face-to-face classroom experience requires verbal agility, spontaneity, and confidence to express oneself in a group setting. Reflection and even dialogue are greatly limited in most campus based classrooms due to student numbers and dated pedagogical methods. There is evidence to suggest that online learning may in fact have an advantage in supporting collaboration and creating a sense of community. An online learning environment reflects a “group-centered” interaction pattern versus an “authority-centered pattern” of a face-to-face environment [3]. Moreover, there is a tendency to build on the comments of others in the online environment (higher flow of communication), compared to the “turn-taking” face-to-face environment.

Collaboration is a key component of a community of inquiry. However, collaboration must include communication or discourse that is purposeful, threaded and reflective. Students must be stimulated and motivated to consider the essence of the material being presented and translate that into personal meaning

that can be shared and collaboratively confirmed. In a full educational experience this process is not left to chance. Educational experiences must incorporate the appropriate elements of design, facilitation and direction (i.e., teaching presence). In a community of inquiry, collaboration is shaped into critical and reflective discourse.

II. FRAMEWORK

The theoretical framework for this discussion is shaped by the community of inquiry model [4]. Community in the context of higher education is seen as essential for deep and meaningful learning. It is the context to stimulate and facilitate critical discourse and reflection—the foundation for constructing meaning and confirming understanding. A sense of community takes time and direction to form; however, when it does form, it is a powerful learning catalyst and support. A community of inquiry provides a sense of connection and support in the systematic and purposeful pursuit of a shared educational goal.

The community of inquiry model is offered as a means to study online teaching and learning in higher education. Creating and sustaining this community is framed by the three core elements of a community of inquiry: social presence, cognitive presence, and teaching presence. Social presence reflects the ability to connect with members of a community of learners on a personal level. Cognitive presence is the process of constructing meaning through collaborative inquiry. Finally, teaching presence is the crucial integrating force that structures and leads the educational process in a constructive, collaborative and sustained manner. However, it is at the intersection of these three elements that a community of inquiry is created and a collaborative constructivist learning experience is achieved.

Principles and guidelines are provided for each of the three categories of teaching presence (design, facilitation and direction) from a social and cognitive perspective [5]. Teaching presence is an essential unifying element in online learning due to its asynchronous and text-based form of communication.

III. PRINCIPLES AND GUIDELINES

Education is a learning experience structured to achieve intended outcomes in a systematic manner. There is also the expectation that the goals will be achieved in an expeditious manner. As such, it is the role of the educational leader to provide the teaching presence that will structure, support and shape a meaningful and worthwhile learning experience. That is, considerable thought and care must be devoted to the design, facilitation and direction of the learning experience. It is these categories that are used to frame the discussion of the educational environment and experience in an online learning context.

A. Design

Designing an online learning experience is a daunting challenge. When designing for an online learning experience, the dominant mode of collaboration is text-based (reading and writing) communication. Educational designers must adjust to the strengths and weaknesses of the medium. The ultimate goal is to create a community of inquiry where learners are fully engaged and responsible learners. The challenge is to create and sustain a sense of community. To design an online learning experience is to take special consideration of social and cognitive issues on the front-end—issues that go well beyond deciding what content will be covered.

1. Social Presence

The goal of establishing social presence is to create a climate of trust and belonging that will support

interaction and a questioning predisposition. Social presence is an essential precondition for establishing a sense of community and cognitive presence.

Principle: Establish a climate that will create a community of inquiry.

First, there is evidence to suggest that there is a link between design and establishing social presence [6, 7]. That is, courses that intentionally build a sense of community and collaborative activities will demonstrate increased social presence. It has been shown that establishing social presence is associated with the degree of interaction among students [7, 8]. This would suggest that situations must be designed where students have an opportunity to interact formally and informally with peers. In a face-to-face context, this will require not only ice-breaker activities but also opportunities to engage in small group discussions. The same holds in an online environment.

It would appear that establishing social presence has a clear advantage in a face-to-face environment [9, 10]; however, this trust can be created in an online context [10, 11]. Establishing social presence online does require special consideration. In terms of sustaining social presence, this can be accomplished in an efficient manner online. The reason is that in a purposeful educational environment, students' needs appear to shift from emotive communication to that of group cohesion, which encourages collaboration in an online environment [12]. When designing instruction one should be reminded that communication for social presence in an online context is less frequent and more deliberate and intentional compared to a face-to-face context where physical presence more naturally stimulates expressions of social presence. A face-to-face environment can have a dampening effect on critical discourse and create an environment of "pathological politeness" [13].

Guidelines associated with this principle would be to establish trust and opportunities to get to know other participants. The goal is to establish a comfort and willingness to collaboratively engage with the community. An example of an activity to establish a climate for collaboration would be to have each participant to introduce themselves and share something about their personal and professional interests and activities. In some situations it may be appropriate to share a digital picture. A special forum should be created for these postings. Furthermore, students could be assigned to small groups to discuss formal expectations of the course and identify concerns. Group spokespersons could then share this in the main discussion forum. An opportunity to clarify and negotiate formal expectations of the course would be provided. It is also important to create a "chat" room for informal communication and allow students an opportunity to become familiar with each other. Similarly, a static learner-profile area that contains brief student-authored biographical information that is available for easy and ongoing reference can be beneficial in aiding group cohesion in the absence of visual cues to "who is who" in the course. Finally, being open to online office hours will also contribute to community formation.

2. Cognitive Presence

While there is a link between social presence and a sense of community, there is also a link between community and learning [14, 15]. The design of academic activities has a significant impact on how students approach learning [8]. Similarly, Shea, Li, Swan and Pickett [15] found an association between design and a sense of community and learning and concluded that the "communication of time parameters, due dates, and deadlines contribute to learning community as do clear course goals, course topics, and instructions on how to effectively and appropriately participate in the courses."

In addition, building a community of learners is important to incorporate legitimate academic tasks and not just focus on personal and social issues. Community continues to build as we attend to the academic goals of the course. Cognitive presence is created as we inquire into the course content in a systematic and meaningful manner. Cognitive presence is defined by the process of inquiry that moves from problem definition to exploration of relevant content and ideas, integrating those ideas into a meaningful structure or solution, and then directly or vicariously testing the validity or usefulness of the outcome.

Principle: Establish critical reflection and discourse that will support systematic inquiry.

From a design perspective, the overriding issue is to consider the phases of inquiry and the selection of learning activities congruent with the particular phase at which students are expected to be operating. One of the challenges in collaborative learning is to ensure that students continue to progress through the phases. Activities should be designed that encourage students to move from awareness to knowledge construction and application where this is the intended goal.

In the early exploratory phase of inquiry, online learning may offer advantages in quality ideas. Rocco [10] demonstrated that brainstorming in an online context was superior to a face-to-face context when providing solutions. Researchers have found that online conferences produced more important, justified and linked ideas; that is, there was deeper critical thinking in online discussions [16, 17]. Similarly, Meyer [18] states that online “discussions were often more ‘thoughtful,’ more reasoned, and drew evidence from other sources ...” (p. 6). Finally, Hawkes & Romiszowski [19] found that online dialogue was less interactive than face-to-face but had significantly deeper explanations. It would seem that having the opportunity to reflect before contributing to the discourse adds a qualitative dimension.

The online environment also has a distinct advantage of providing a permanent record that students can use to reflect upon. The issue of reflective and permanent discourse is one to consider when designing for each of the phases of inquiry in an online context. Online learning also creates the need for learners to accept increased responsibility for their learning. In this regard, workload must be seriously considered. If collaboration and discourse are to be at the core of the inquiry process, then students must have the time to engage other students and reflect upon these deliberations. This is not possible if the workload is too heavy. Students will revert to survival mode to individually assimilate as much content as required to pass the exam. Excessive workload will negate inquiry as a deep and meaningful learning experience.

Guidelines associated with this principle would be to be clear about goals and expectations. It is also crucial to limit curriculum content such that a significant proportion of time would be devoted to discourse and reflection. This is particularly important to allow students to progress through the phases of inquiry and resolve problems. It is also crucial to create opportunities for small group discussion. In the early stage of a course it is important that an opportunity for substantive, curriculum focused, discourse is provided. A brainstorming exercise, or non-threatening questions such as “what do you think of ...” may be appropriate in the early part of the course. Regardless, activities should be problem based and question driven to engage the students in reflective discourse. In order to set the stage for team-based collaborative projects down the road, it is suggested that a small group discussion format be provided early to allow students to engage more actively and with less anxiety. As groups report back, it is important that the teacher respond and model respectful discourse, establish a friendly environment, and reinforce the posted guidelines for discourse (e.g., length of message). The more clearly the instructor helps students to understand expectations and value a culture of collaboration, the more likely it is to develop.

B. Facilitating Discourse

Discourse is the essence of a collaborative-constructive (i.e., inquiry) approach to teaching and learning in higher education [1]. To ensure that students are engaged and the discourse is rich and relevant, care must be taken to maintain a sense of belonging to a community of inquiry and that students are meaningfully engaged. The challenge is to sustain social presence while creating cognitive presence. This necessitates strong teaching presence in terms of knowing when and how to question and challenge students and someone (when?) to collaboratively guide discussion. Facilitating discourse requires the weaving of both social and cognitive presence [6]. Online learners express higher levels of satisfaction and report higher levels of learning when they discern such effective facilitation of discourse on the parts of their instructors [20, 21].

1. Social Presence

The goal is to enhance and sustain social presence that will provide the environment for collaborative and reflective discourse. Here it is important to recognize that social presence provides the foundation and climate to focus on intended learning goals. As social presence is established, it moves to the background as students engage and collaborate with their peers on matters associated with the curriculum. This is supported by evidence that continued high social presence is most significantly associated with group cohesion [6, 12]. Group cohesion may well be particularly important in sustaining community in an online environment.

Principle: Sustain community through expression of group cohesion.

Personal identity and projection within a community is enhanced with frequent interaction. At the same time, collaboration on a deeper and more meaningful level requires a qualitative shift in interaction and collaboration. This is a shift to the shared purpose of the learning experience. Here the challenge from a social presence perspective is to maintain and enhance group cohesion (i.e., collaboration and support).

From an online social presence perspective, it is important to recognize that, although the student is always in virtual contact with their community of learners, they are physically alone at the computer and the sense of independence is strong. This is why students online do not manifest the same degree of social presence as when they are in a face-to-face classroom setting [12, 22]. What the online experience can do is maintain and enhance a sense of group cohesion, collaboration and support.

From a facilitation perspective, it is important to recognize when to provide feedback as the group needs to be encouraged to assume responsibility to confirm understanding. The facilitator must also be cognizant of potential conflict or tension that may undermine the cohesion of the group. In addition to content expertise, the facilitator must have good facilitation skills if the community of inquiry is to be sustained. It is a difficult balance to question and challenge, while ensuring that individual students continue to feel they are contributing and are valued members of the community.

At this point we see a blending of social and cognitive presence. In practice they are inseparable elements in a collaborative-constructive approach to learning in higher education and care must be taken to ensure they are in balance. In essence, students must feel safe to challenge ideas. Finally, social presence can have a qualitative influence on collaboration. Swan & Shih (in press) state that students “who perceive high social presence in the online discussions also believe they learned more from it than did students perceiving low social presence”.

Collaborative activities provide the best means to build and maintain group cohesion. Group cohesion goes beyond polite dialogue. For this reason, the group or team should be the focus of the discourse. The teacher should be present but not the centre of the discourse. Activities must be provided where participants must engage and rely on each other to accomplish a relevant and important task or goal. Small group discussions moderated by students may provide opportunities for students to connect with each other and collaboratively negotiate process issues. As a teacher, consider modeling appropriate facilitation skills as they will be important as students engage in collaborative activities. It is recommended that after the teacher moderates a discussion early in the course – have a “class debrief” and design activities where students have an opportunity to moderate a discussion.

2. Cognitive Presence

Cognitive presence is the process of collaboratively constructing meaning and confirming understanding in a sustainable community of inquiry. Facilitation is essential to keep the discourse on track and inquiry evolves. Facilitation focuses and guides the progression of the discourse as well as providing timely input and information, and summarizing development.

Principle: Encourage and support the progression of inquiry through to resolution.

The importance of facilitating discussion for a successful and satisfying online learning experience has been well documented [2, 6, 8, 9, 15, 22]. In the online environment, “time is expanded” [18]. Online discussion is more accessible, more specific and detailed, more open to critical challenges and disagreement, and greater potential for integration and resolution. Greater emphasis is placed on the facilitator to thread discussion, sustain commitment, encourage conversational approach, provide relevant information links, and resolve issues.

As a collaborative community of inquiry moves to more challenging cognitive activities, facilitation becomes increasingly important to ensure that student contributions are acknowledged and constructive. It should be kept in mind that for many students, online discussion forums are a new form of communication. Students will need encouragement and guidance to engage in the discussion. Lurking or vicarious observation may be an issue. While participants can benefit from actively following the discussion, participation provides much more benefit from a critical thinking perspective. Actively sharing, testing and confirming ideas is a crucial phase of critical inquiry.

Teaching presence has been shown to be crucial in modeling critical inquiry and sustaining cognitive presence. Students must also feel they are contributing members of the community and gain a sense of accomplishment. It is important for the leader not to dominate the discussion. At the same time, students expect the teacher to be present. This is a difficult balancing act for the teacher as students need to assume some control or ownership of the discussion.

Guidelines associated with this principle are to provide stimulating questions, keep discussion focused, identify issues needing clarification, and be prepared to move discussion forward in a timely manner. A good activity here is the use of a case study, debate or critiquing an article. Because case studies are based upon a real-life situation, students can readily relate to the situation and are effective in involving all members of the group. In a collaborative learning environment it is important that students respond to other contributions and build upon ideas offered by members of the community. In addition, the teacher must facilitate the threaded discourse as a member of the community and model the inquiry process emphasizing the importance of moving toward resolution.

C. Direct Instruction

Direct instruction is about academic and pedagogic leadership. That is, educational leadership that provides disciplinary focus and structure/scaffolding, but where there is choice and opportunity to assume responsibility for one's learning. This is more than a "guide on the side" but less than a "sage on the stage". It is a collaborative-constructivist approach where learning (i.e., cognition) is socially shared. This is the path to a meaningful, systematic and worthwhile educational experience. Students remain engaged and focused in achieving desired learning outcomes.

1. Social Presence

From a social presence perspective, direct instruction may be counter-intuitive in that it can increase confidence and respect by managing potential conflict and ensuring that students are collaborating constructively. Direction is important for the group to remain productive and, therefore, provide a welcoming context for individuals to stay engaged and continue their development.

Principle: Evolve collaborative relationships where students are supported in assuming increasing responsibility for their learning.

In an online learning environment, it is essential that there is a strong teaching presence to establish the climate for collaborative learning. In an online environment, the sense of community is often fragile. Students will have an increasing sense of independence and direct teaching presence may be required to reinforce collaboration and a cohesive community of inquiry. It is especially important to intervene in a timely manner when inevitable tensions threaten the cohesiveness of the community.

Guidelines associated with this principle are to be supportive but expect students to be self-directed and work collaboratively to complete tasks. From a teaching presence perspective, there will be a stage in terms of group dynamics where tensions and conflicts arise. It is crucial that the teacher directly address these situations and resolve conflicts where necessary. It may be a willingness to negotiate expectations or correct a student who is out of line (e.g., excessive or flaming messages). It is important not to get directly involved in all these situations and mediate in a manner that encourages the students to address and resolve their own conflicts. Students should also feel that they can question the teacher and they will be treated respectfully. Team building activities will give students the opportunity to develop the connection and support of the community to accomplish the assigned tasks.

2. Cognitive Presence

Direct teaching intervention is more natural and expected in terms of cognitive tasks. As with most aspects of teaching presence, it is important to find the right balance. Too little direct teaching presence may see students lose focus and purpose. At the same time, too much direct intervention can undermine students assuming responsibility for their learning. The primary role for direct instruction is to ensure that discourse and collaboration achieve the larger educational goals.

Principle: Ensure that there is resolution and metacognitive development.

Recent research has begun to emphasize the importance of strong leadership to ensure discussions stay "on task and on track" [22]. This was also a significant conclusion of Meyer [18] when she stated:

Faculty may need to be more direct in their assignments for threaded discussions, charging the participants to resolve a particular problem, and pressing the group to integrate their ideas and perhaps, even, to prepare a resolution of the matters under discussion. (p. 8)

Inquiry is founded in a question based approach. While it is necessary for students to struggle with questions, there are times when direct answers need to be provided, whether it is associated with content or management of the process. Students value input when discussions are fragmented or floundering for lack of insights. It may mean providing a deeper explanation. Diagnosing misconceptions and providing explanations is an essential educational responsibility. In an educational context it is important to manage time and not to allow students to become frustrated to a point they disengage. As a subject matter expert, direction may be needed to help students become aware of the nuances of the discipline. Confirmation of understanding often requires direct intervention. Moreover, appropriate intervention ensures that students experience success.

While students expect strong teaching presence, too much direct intervention will most assuredly reduce discourse and collaboration. The risk in an online environment is too little direct teaching presence. Early in the emergence of online learning the perceived democratic potential of asynchronous communication produced many advocates for the “guide on the side” approach. In an educational context, this was not always appropriate and left a lot of students at drift and faculty confused and disillusioned. There are recurring situations that require more than facilitation and guidance. Direct instruction has a legitimate place in an online learning environment to ensure that the discourse, verbal or text, evolves in educationally appropriate directions. In a recent study Shea and colleagues (in press) found that learners were more likely to report higher levels of connectedness and learning when they had online instructors who provided more “directed facilitation” towards the accomplishment of educational objectives.

Ultimately the goal is to have students become self-directed and to have learned to learn. This necessitates metacognitive awareness. Awareness of the inquiry process is essential if students are to assume increased responsibility for their learning. Online learning activities can provide an opportunity for students to reflect on learning tasks and strategies. This requires having a model of inquiry that they can use to assess their learning strategies and judge their effectiveness. The practical inquiry model which operationalizes cognitive presence can serve to increase metacognitive awareness [5].

Guidelines associated with this principle are to be prepared to contribute ideas and perspectives that will constructively shape the discourse. It is important to diagnose misconceptions so students do not get side-tracked and frustrated. It is necessary to make connections among ideas, integrate of ideas and summarize the discussion before moving on. Team projects should be introduced during the core part of the course. If expectations and guidelines are clear, team projects can provide opportunities to develop collaboration skills as well as engage in a substantial realistic and applied problem. Through collaboration, students must recognize the need for leadership, set goals, plan and manage tasks, assess progress, and adjust strategies where necessary. These activities ensure that students become self-directed and increase awareness of metacognitive processes. Other activities that foster metacognitive awareness include student-authored learning journals in which learners reflect on their learning processes and outcomes. Such journals can be a component of a segment of a course or as a component of each module in a course. Appropriately designed learning journals can foster the kinds of reflection that allow students to be more aware of and strategic about the process of collaboration and its impact on their learning.

D. Assessment

Finally, assessment is a very important aspect of an educational experience. From a formative

perspective, it speaks to the importance of discourse to identify misconceptions. The challenge is to engage in deep discussion with all the students. Since there is a greater opportunity for participation, rigor of expression, and permanence of thought in the online environment, this may have an advantage for formative assessment.

In terms of summative assessment, an online environment may prove to be a challenge. First, think twice about evaluating participation. This may well undermine genuine collaboration. The other concern is finding a rubric and the time to assess participation. If the activities are relevant and meaningful, participation should be in the best interests of the student. The other challenge of collaborative learning is whether to assign the same grade to all students, provide individual tasks that contribute to the team project, and whether to employ some form of self-evaluation. Exploring these issues is beyond the scope of this paper but can be found in another chapter of this monograph.

IV. CONCLUSION

For purposes of analysis, there has been an attempt to isolate the various presences. This is an artificial separation that suggests one can discuss social presence in isolation from cognitive presence. The goal is to create a community of inquiry. Therefore, we must consider the integration of all the presences as contributing to a collaborative-constructive learning process. The challenge is to imagine the integration of the approaches and media to most effectively and efficiently achieve the intended learning process and outcomes. It is not that particular learning activities cannot be effectively used in one medium or the other. It may be just too impractical from a cost or convenience perspective to create an intellectually stimulating environment and achieve the same levels of collaboration. Compared to traditional lecture approaches in higher education, the online classroom offers permanency and perhaps more reflective and rigorous thought.

V. REFERENCES

1. **Garrison, D. R., and W. Archer.** *A Transactional Perspective on Teaching-Learning: A Framework for Adult and Higher Education*. Oxford, UK: Pergamon, 2000.
2. **Oliver, R., and A. Omari.** Using Online Technologies to Support Problem Based Learning: Learners' Responses and Perceptions. *Australian Journal of Educational Technology* 15(1): 58–79, 1999.
3. **Lobel, M., M. Neubauer, and R. Swedburg.** Selected Topics From a Matched Study Between a Face-to-Face Section and a Real-Time Online Section of a University Course. *International Review of Research in Open and Distance Learning* 6(2): 2005. Online: <http://www.irrodl.org/content/v6.2/lobel.html>.
4. **Garrison, D. R., T. Anderson, and W. Archer.** Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education* 2(2/3): 87–105, 2000.
5. **Garrison, D. R., and T. Anderson.** *E-Learning in the 21st century: A Framework for Research and Practice*. London: Routledge/Falmer, 2003.
6. **Swan, K., and L. F. Shih.** On the Nature and Development of Social presence in Online Course Discussions. *Journal of Asynchronous Learning Networks* 9(3): 2005.
7. **Tu, C., and M. McIsaac.** The Relationship of Social Presence and Interaction in Online Classes. *The American Journal of Distance Education* 16(3): 131–150, 2002.
8. **Garrison, D. R., and M. Cleveland-Innes.** Facilitating Cognitive Presence in Online Learning: Interaction is Not Enough. *American Journal of Distance Education* 19(3): 133–148, 2005.

9. **Fabro, K. R., and D. R. Garrison.** Computer Conferencing and Higher Order Learning. *Indian Journal of Open Learning* 7(1): 41–54, 1998.
10. **Rocco, E.** Cooperative efforts in electronic contexts: The relevance of prior face-to-face interactions. Computational and Mathematical Organization Theory Workshop, Washington, DC. 1996. <http://64.233.167.104/search?q=cache:e-G4SnB0YkJ:www.casos.ece.cmu.edu/pdf/1996.PDF+cooperative+efforts+and+elena+rocco&hl=en&start=8>.
11. **Coppola, N. W., S. R. Hiltz, and N. Rotter.** Becoming a Virtual Professor. Pedagogical Roles and Asynchronous Learning Networks. *Journal of Management Information Systems* 18(4): 169–190, 2002.
12. **Vaughan, N. D.** Investigating how a blended learning approach can support an inquiry process within a faculty learning community. Doctoral dissertation, University of Calgary, 2004.
13. **Archer, W.** Cited in D. R. Garrison, and T. Anderson. *E-Learning in the 21st century: A Framework for Research and Practice*. London: Routledge/Falmer, 2003.
14. **Rovai, A. P.** Sense of Community, Perceived Cognitive Learning, and Persistence in Asynchronous Learning Networks. *The Internet and Higher Education* 5(4): 319–332, 2002.
15. **Shea, P., C. S. Li, K. Swan, and A. Pickett.** Developing Learning Community in Online Asynchronous College Courses: The Role of Teaching Presence. *Journal of Asynchronous Learning Networks* 9(4): December 2005.
16. **Newman, D. R., B. Webb, and C. Cochrane.** A Content Analysis Method to Measure Critical Thinking in Face-to-Face and Computer Supported Group Learning. *Interpersonal Computing and Technology* 3(2): 56–77, 1995.
Newman, D. R., C. Johnson, C. Cochrane, and B. Webb. An Experiment in Group Learning Technology: Evaluating Critical Thinking in Face-to-Face and Computer-Supported Seminars. *Interpersonal Computing and Technology* 4(1): 57–74, 1996. Online: <http://www.helsinki.fi/science/optek/1996/n1/newman.txt>.
17. **Meyer, K. A.** Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks* 7(3): 55–65, 2003.
18. **Hawkes, M., and A. Romiszowski.** Examining the Reflective Outcomes of Asynchronous Computer-Mediated Communication on Inservice Teacher Development. *Journal of Technology and Teacher Education* 9(2): 285–308, 2001.
19. **Shea, P., E. Fredericksen, A. Pickett, and W. Pelz.** A Preliminary Investigation of Teaching Presence in the SUNY Learning Network. *Elements of Quality Online Education: Practice and Direction*, Vol 4 in the Sloan-C Series, 279–312. Needham, MA: Sloan-C, 2003.
20. **Shea, P., A. Pickett, and W. Pelz.** A Follow-up Investigation of Teaching Presence in the SUNY Learning Network. *The Journal of Asynchronous Learning Networks* 7(2): 61–80, 2003.
21. **Vaughan, N., and D. R. Garrison.** Creating Cognitive Presence in a Blended Faculty Development Community. *Internet and Higher Education* 8: 1–12, 2004.

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