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Student-led facilitation strategies in online discussions

Evrim Baran* and Ana-Paula Correia

aCenter for Technology in Learning and Teaching, N108 Lagomarcino Hall, Iowa State University, Ames, IA 50011-3191, USA

This study explored student-led facilitation strategies used to overcome the challenges of instructor-dominated facilitation, enhance the sense of learning community, and encourage student participation in online discussions. It presents a series of cases of students' facilitation strategies and using qualitative data analysis of discussion threads within the naturalistic inquiry framework, identifies three facilitation strategies: inspirational; practice-oriented; and highly structured. The study shows that these facilitation strategies generated innovative ideas, motivated students to participate, and provided a risk-free and relaxed atmosphere for participation.

Keywords: facilitation; peer facilitation; online discussions; online learning; distance education; case study

Introduction

Online discussions have been widely used in both blended and online courses as a platform for exchanging information, communicating, and supporting learning. The design and development of meaningful learning activities as part of online discussions presents new challenges to the instructors who are used to getting feedback via audio, visual, and contextual cues in face-to-face classrooms (Collins & Berge, 1997). Providing the quality of online participation has been one of these challenges because students may fail to engage in deep conversations and provide thoughtful and reflective contributions related to the discussion requirements (Dennen & Wieland, 2007).

Although discussion techniques have been used in face-to-face classrooms, using them in an online environment requires the utilization of different pedagogical approaches because of the affordances and the limitations of asynchronous online communication technologies. According to Harasim (1990), the key differences between online and face-to-face discussions are time and place dependence, and the richness and the structure of communication. Moreover, in online asynchronous discussions, communication relies on text-based information, which lacks immediate instructors' verbal feedback used in face-to-face classrooms as well as nonverbal and contextual cues critical for communication. Even when using synchronous technology as conference calls, online students perceive the lack of nonverbal and contextual cues as a serious obstacle for establishing reciprocal understanding (Karpova, Correia, & Baran, 2009).

*Corresponding author. Email: evrimb@iastate.edu

From a social constructivist perspective, online discussions create opportunities for students to construct meanings together and integrate new knowledge into their prior experiences (Rourke & Anderson, 2002). This is the underlying learning and teaching perspective used in this study. Online discussions can serve as a platform for students and instructors to interact in a social environment without boundaries of time and distance, promoting students' critical thinking and helping students to reflect on their ideas (Brooks & Jeong, 2006; Hew & Cheung, 2008; Wang, 2008).

Research has identified several problems related to online discussions, such as limited student participation (Hewitt, 2005); inadequate critical analysis of peers' ideas (Rourke & Anderson, 2002); and lack of motivation, commitment, and time, and failure to communicate effectively (Brooks & Jeong, 2006). To address some of these pitfalls, a number of facilitation strategies, mostly focusing on the instructor as facilitator or moderator, have been described in the literature (Anderson, Rourke, Garrison, & Archer, 2001). Although tutors and instructors play a critical role in online discussion environments, their domination may result in an instructor-centered discussion, suppressing students' active participation (Rovai, 2007).

The use of discussions in online education has far outpaced our understanding of how these should be designed and moderated to support students' learning. Despite the potential of peer facilitation in online discussions, strategies that nurture meaningful dialogue and participation have not been widely explored, a key gap this study attempts to address.

This naturalistic case study used an online graduate course to look at strategies utilized by student facilitators to promote meaningful dialogue and participation in asynchronous online discussions. This study investigated two research issues: (a) what peer-facilitation strategies increase participation and foster meaningful dialogue and (b) how these strategies accomplish that.

Teaching presence and instructor facilitation in online discussions

Anderson et al. (2001) defined teaching presence as 'the design, facilitation and direction of cognitive and social processes for the purpose of realizing [students'] personally meaningful and educationally worthwhile outcomes' (p. 5). Instructor facilitation has been considered an important indicator of teaching presence, strong enough to encourage students' participation in online discussions. Consequently, a number of facilitation strategies focusing on the role of the instructor as a facilitator have been identified (Berge, 1995; Mason, 1991; Paulsen, 1995). For instance, Paulsen (1995) and Mason (1991) separated teachers' moderation roles into three categories: organizational, social, and intellectual. Facilitation techniques are recommended by category. When serving in an organizational role, the moderator sets the agenda, objectives, and procedures for posting and interacting in an online discussion. The social role involves reinforcement of good discussion behaviors through welcoming messages and prompt feedback with a positive tone. The intellectual role, being the most important, uses techniques to encourage a high level of students' responses by asking questions, synthesizing key points, and nurturing the intellectual climate in online discussions (Mason, 1991). Berge (1995) added a technical role and used a pedagogical role instead of intellectual. Anderson et al. (2001) identified three teacher roles and responsibilities: (1) instructional design and organization, (2) discourse facilitation, and (3) direct instruction. Facilitating discourse 'is critical to maintaining the interest, motivation and engagement of students in active learning' (p. 7) and

includes responsibilities such as 'identifying areas of agreement/disagreement, seeking to reach consensus/understanding, encouraging, acknowledging, or reinforcing student contributions, setting climate for learning, drawing in participants, prompting discussion and assessing the efficacy of the process' (p. 8). According to Hewitt (2005), 'These kinds of operations are thought to foster higher levels of student–student interaction, increase the connections between participants' ideas, and reduce the likelihood that discussions will become sidetracked or terminate prematurely' (p. 569).

When looking at the importance of a teacher's presence in online learning environments, much of the research has focused on facilitation roles of instructors (Hara, Bonk, & Angeli, 2000; Zhu, 1998). For instance, when investigating the relationship between student perceptions of others in an online class, Russo and Benson (2005) found a significant correlation between students' perceptions of teacher presence and their satisfaction with learning. Therefore, instructors' moderation has been identified as an important factor for effective online interaction (Hara et al., 2000; Zhu, 1998). Research also identified some of the shortcomings of instructor-led facilitation of online discussions. For example, instructors may not be able to fulfill all the facilitation responsibilities because of the high time commitment required (Rourke & Anderson, 2002). Managing a large discussion group online may be overwhelming. Although instructor-led discussions do not necessarily result in instructor-dominated discussion, having the instructor as the center of the discussion may create an 'authoritarian presence' (Rourke & Anderson, 2002, p. 4) not conducive to genuine conversations. Although in their community of inquiry model Garrison, Anderson, and Archer (2000) assigned most of the moderation activities to teachers, they acknowledged that teaching presence can also be achieved through a meaningful interaction among students.

In this line of reasoning, facilitation is a shared responsibility among instructors and students, changing the traditional role of the instructor from having 'total control of the teaching environment to sharing with the student as fellow learner' and giving 'more emphasis on students as autonomous, independent, self-motivated managers of their own time and learning process' (Collins & Berge, 1996).

Peer facilitation in online discussions

Although students' participation in online discussions is important in supporting group discourse and communication, the dialogue does not innately result in learning. Social learning may occur via peer interaction and social presence, but these do not guarantee the co-construction of meaning and mediated learning. As Dennen and Wieland (2007) explained, 'Learners must interact in some particular ways, engaging with each other and course material at deep (as opposed to surface) levels, which lead toward negotiation and internalization of knowledge rather than just rote memorization of knowledge' (p. 283).

According to Tagg (1994), a *direction from within* approach requires a reconsideration of facilitation roles that are traditionally linked to 'leadership' and gives students the power to take practical and meaningful roles in the online classroom (p. 45). Peer facilitation in online discussions may encourage students to ask questions and challenge the statements of others freely without being inhibited and/or intimidated (Rourke & Anderson, 2002). Peer facilitation does not hinder teaching presence but provides the instructor with a strategy to increase his or her level of participation in

discussions by addressing misconceptions and assisting students with their struggles (Rourke & Anderson, 2002) as well as contributing to the discussion as a participant. In their study, Correia and Davis (2007) found that peer facilitation, as opposed to instructor facilitation, in online discussions was the most popular collaboration design preferred by online learners. Students found peer-facilitated discussions more meaningful and interactive and felt their contributions created a strong sense of community. This seems consistent with Poole's analysis (2000) of length and number of postings in an online discussion environment. He found considerably longer and more postings when students moderated the discussions.

Although the majority of the research focuses on instructor facilitation strategies, a limited number of researchers have also examined the use of facilitation strategies in peer-facilitation contexts. Using the criteria of achieving a thread depth with six or more levels, Hew and Cheung (2008) categorized successful facilitation techniques into three phases: introduction (establishing ground rules); engagement (giving opinions/experiences, questioning showing appreciation); and monitoring (suggesting new direction, summarizing, personally inviting people to contribute). Stahl (2006) proposed the concept of group-mediated learning and indicated how co-construction of knowledge is best explained at the small-group level. In online group discussions, a facilitator or a moderator often takes a role of ensuring that meaningful dialogue occurs and students co-construct their knowledge together. In a student-facilitated discussion context, students take different roles and use different strategies to increase their peers' participation and help them better understand the content.

Methodology

Grounding theory

Lincoln and Guba's naturalistic research paradigm (1985) was considered as most coherent and consistent with the research issues at hand, which deal with peer-facilitation strategies to increase participation and foster meaningful dialogue. As Denzin and Lincoln (2000) explained, qualitative research is:

> [a] situated activity that locates the observer in the world. It consists of a set of interpretative, material practices that makes the world visible … [and] involves an interpretative, naturalistic approach to the world. This means that the qualitative researcher studies things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them. (p. 3)

An analysis of the interactions within an online course was completed in order to characterize successful student-led facilitation strategies in asynchronous online discussions during a 16-week period.

Context

This study took place in the context of an online master of education degree program in curriculum and instructional technology at a large research university in the Midwestern USA. The program was designed primarily for teachers of kindergarten to 12th grade (K-12) across rural Midwestern USA. It was a three-year program of 32 credits offered in a learning community environment to a cohort of students every two years. Each cohort had 8–20 students, who were maintained as a group for the entire

program, starting and ending the program at the same time, when everything went as planned. Each online course was planned to have one to three on-campus meetings to develop a strong sense of community and to encourage students to support one another to continue their degree to completion. The program is housed in the Department of Curriculum and Instruction and the Center for Technology in Learning and Teaching (CTLT) (http://www.ctlt.iastate.edu). CTLT's mission is to provide leadership in the use of ICT in teacher education through research, development, and service within a pluralistic and global society. The faculty and staff of the center were responsible for creating this online program.

One of the courses in this program was an intermediate level class in instructional design offered every August through December. As an online course, this class was primarily an asynchronous experience; students worked on their own time and at their own pace. However, in order to foster opportunities for more direct and informal interaction with classmates and the instructor, two on-campus meetings were scheduled. Chat office hours were also set so students and the instructor could engage in synchronous interactions.

The teaching philosophy and approach to the course emphasized two core types of activities (Correia, 2008):

- Working in real-world situations. People learn better when they are actively engaged in learning tasks that are directly related to their needs and interests. Most of the learning in this course occurred within the context of projects and situations similar to those that students were experiencing or would be likely to encounter in real-world contexts.
- Working as a team member. In addition to introducing models and theories of instructional design, this course provided students with concepts, tools, and techniques to help them learn how to work through the design process in teams. The course required that participants be active members of their design teams as well as of the e-learning community formed by all of the course participants.

It was part of the instructor's belief that working in partnership with her students would result in trustful and professional-to-professional relationships.

The purpose of this course was to introduce students to models and theories of instructional design and at the same time teach them how to work as virtual team members as part of design teams. Therefore, different student teams engaged in a variety of instructional design projects. However, because discussion is particularly important when designing instruction, participation in weekly asynchronous discussions was also required. Readings/topics on instructional design principles, models, and strategies were addressed in these discussions. Students' participation in the online discussions accounted for 20% of their final grade.

The evaluation criteria used to determine students' participation grade in the course discussions followed Stinson's criteria (2004). In accordance with these criteria, participation was assessed at four levels: (a) comments based on prior experience, (b) reporting the results of some type of research (content), (c) advancing the discussion by building on others' contributions, and (d) synthesizing the discussion and providing an overall response to the question.

Each week of the course, students were asked to volunteer to lead a discussion depending on their preference of the readings/topics and/or availability. Every week

the class was divided into two discussion groups. Students were welcome to participate in both discussions, but were expected to participate in their assigned group discussions.

The instructor strongly encouraged students to volunteer to be online facilitators. She stressed how important it was to practice their skills as online facilitators and to get some extra credit toward their final grade. She modeled online facilitation and illustrated ways of leading online discussions on the first three weeks of the course. At the start of the course the instructor also offered a short set of guidelines that defined everyone's roles and responsibilities for the online discussions. A facilitator's role and responsibilities were to:

- Set the agenda for the discussion: objectives, guiding questions, or scenarios.
- Clarify the purpose: what is the expected outcome of the discussion?
- Encourage participation: create a trustful atmosphere.
- Guide the discussion by asking leading questions rather than speaking for students.
- Ensure that some participants do not dominate the conversation by inviting less participative members to enter into the discussion.
- Keep the discussion focused on the topics related with the readings.
- Encourage multiple views of the same issue(s).
- Bring the discussion to an end by summarizing the highlights (short posting).

The instructor's role and responsibilities were to:

- Assign the weekly readings.
- Work with the weekly facilitators on logistics (for example, set discussion area, make readings readily available).
- Define a deadline for end of discussion.
- Contribute to the discussion as a participant.

As participants in the online discussions, everyone was responsible for maintaining a sense of freedom to express thoughts while providing a safe environment for diverse opinions and expressions.

Within the roles defined, students leading the discussions were encouraged to explore different ways to promote meaningful dialogue and engage their peers. Students enthusiastically volunteered for and embraced this opportunity and led extensive animated discussions on instructional design processes and models, analysis of learners, content, contexts and needs, motivation and learning, the role of K-12 teachers as instructional designers, and evaluating and implementing instruction.

In sum, during the online discussions students served in the role of both facilitator and participant and the course instructor performed the role of participant, as well.

Participants

Sixteen students participated in this study from August 2007 to December 2007. Four of the students were male and 12 were female, ranging in age from 22 to 55. All students had a background in teaching, and most were or had been full-time K-12 teachers, with the exception of three students who worked as educators at college

level. All students volunteered to lead a weekly discussion at least once. Twenty-five percent of the students led the discussions twice during the semester.

The course instructor had extensive experience in instructional design for diverse contexts in North America and Europe. Her major role in the discussions, in addition to setting up the online discussions, was more of a contributor than a leader. She would share her experiences and/or her thoughts whenever critical issues arose. By constantly eliciting student input on course activities as they developed, she strived to tailor activities so that they truly met learner expectations and inspired learner interest. Allowing students to facilitate, lead, and maintain a lively dialogue in the online discussions emerged from that feedback.

Data sources

Data sources included online documents, such as student-led weekly discussion threads, course-related materials (e.g., readings, syllabus, and schedule), and guidelines on asynchronous discussions (e.g., facilitator's role and responsibilities).

Threaded discussions took place in WebCT, the learning management system used in the course. The WebCT discussion tool, used extensively in the course, provided the students and instructor a platform for asynchronous communication. Each week the instructor created a discussion category with that specific week's discussion topic. Students were given one week to contribute to the discussion. The instructor posted the readings to each team's discussion area along with other additional relevant resources that students could find helpful while reading and reflecting on the topics.

The weekly online discussions were used to enable students to converse about instructional design issues and refine their analysis and critical thinking skills. Although the course instructor did not explicitly state that knowledge construction, negotiation of meanings, and critical thinking would be the outcome of the online discussions, she stressed that these would serve as a student-centered model in which course participants (including herself) would share their perspectives on instructional design, teaching, and learning. Facilitators were encouraged to explore genuine ways of facilitation and raise their own questions and issues related to the readings.

Data analysis

Two main approaches emerged from the literature for examining online interaction: (a) quantitative (e.g., thread length, number of postings, and interaction patterns), and (b) the quality of interaction (Nisbet, 2004). A discussion thread is defined here as 'a hierarchically organized collection of notes in which all notes but one (the note that started the thread) are written as "replies" to earlier notes' (Hewitt, 2005, p. 568).

Quantitative data on participation, such as the number of instructor and student facilitator postings per week, was collected as part of a preliminary analysis. This helped to establish a pattern of participation in the online discussions. After that threads were analyzed following the naturalistic inquiry framework (Lincoln & Guba, 1985), which required (a) unitizing (identifying and coding units of information); (b) categorizing (bringing together units of information into categories internally as homogeneous as possible and externally as heterogeneous as possible); and (c) filling in patterns (identifying relationships among categories). The research issues – (a) what peer-facilitation strategies increase participation and foster meaningful dialogue and (b) how these strategies accomplish that – drove this analysis. Meaningful

dialogue, defined here, is a relevant and genuine conversation among participants where issues and topics link directly to their interests and needs, and thoughts and ideas are sincerely expressed. Participation is defined here as the demonstration and articulation of course knowledge, critical analysis of issues, and support of others' learning (Stinson, 2004). The mini-cases selected showed strong evidence of meaningful dialogue and active participation. For example, the following instances were identified:

- The student facilitator encouraged a genuine conversation among his or her peers.
- The participants in the discussion articulated course knowledge with their professional practices and prior experiences.
- The participants and student facilitator advanced the discussion by building on others' contributions.
- The students critically analyzed issues addressed in the readings.
- The student facilitator synthesized the discussion.
- The participants and student facilitator supported learning of others by providing resources and commenting on others' ideas.

Trustworthiness

Three criteria were used to establish trustworthiness within the framework of naturalistic inquiry (Lincoln & Guba, 1985). They were (1) credibility, (2) transferability, and (3) confirmability. The following paragraphs describe the activities developed in this study to support these criteria.

Credibility of the findings

Prolonged engagement, persistent observation, triangulation, and peer debriefing were the activities used. This study took place during an entire 16-week semester, allowing for an insider view of the students leading the weekly discussions, especially by the course instructor, who was also a co-researcher for this study. Another activity developed was investigator triangulation, since both researchers independently analyzed the data sources in order to corroborate the categories and conclusions drawn from these analyses, inconsistencies, and contradictions. Along with the analysis of the student-led discussions other artifacts, such as class readings, syllabus, and guidelines on asynchronous discussion, were analyzed. Even though researchers might not have agreed on every interpretation, as they experienced 'unique interactional experiences with the phenomenon that are observed' (Denzin, 1989, p. 239), this type of triangulation made it possible to 'reveal elements of the phenomenon that would not necessarily be seen by just one researcher' (p. 245). Disagreement was managed through consensus reaching: both researchers needed to agree on as many levels of evidence as possible. As Mathison (1988) explained, there are:

> several levels of evidence necessary for the researcher to construct plausible explanations. There are obviously the data on hand. There is, also, a holistic understanding of the project itself, its history, the intentions of the developers, the ongoing relationships within the project, and so on … And lastly, the researcher/evaluator has a store of knowledge and

understandings about the social world which allows such projects and evaluations of them to exist … It takes all of these levels to provide good explanations around the data collected through triangulation strategies. (p. 16)

Peer debriefing is another activity that provides an external check on the inquiry process (Lincoln & Guba, 1985). They defined it as a 'process of exposing oneself to a disinterested peer in a manner paralleling an analytical session and for the purpose of exploring aspects of the inquiry that might otherwise remain only implicit within the inquirer's mind' (p. 308).

Transferability of findings

Case studies are not accountable for assuring sampling representativeness. Instead they are responsible for providing 'sufficient information about the context in which an inquiry is carried out so that anyone else interested in transferability has a base of information appropriate to the judgment' (Lincoln & Guba, 1985, p. 124). This implies what is known in the literature as a thick description (Lincoln & Guba, 1985) which allows readers to understand and make sense of the findings and to judge to what extent the study's findings apply to other situations. A systematic description of the program, course, philosophy of learning and teaching, assessment strategies, and participants/students are presented above. All weekly discussions formed a narrative text that was analyzed, which significantly added to the thick description of participants' experiences.

Confirmability of findings

Confirmability parallels to objectivity. It consists of confirming that the findings and interpretations of the study are not a complete result of the researcher's imagination. Confirmability is supported by an audit trail as well as by triangulation and by the researcher keeping a reflective journal. An audit was not carried out in this study. However, triangulation was used as described above and the course instructor maintained a reflective journal while teaching the course. The journal worked mainly as her personal diary where she wrote about her assumptions and biases toward online learning and teaching and her insights about online facilitation.

Findings

Each facilitation strategy is presented here as a separate mini-case. Each mini-case illustrates different successful facilitation experiences and outcomes. Sequences of postings within a thread (posting number), along with participants (names) and comments on the function of each posting (content) are included as a way to illustrate how the discussion evolved. All names used here are pseudonyms and other identifying details were also changed. Quotes from discussion postings are used intact (except for the students' real names) and with the format and grammar retained.

Mini-case 1: highly structured facilitation

Ross, a high school mathematics teacher and the student facilitator for week 5 of the course, had seven students in his group in addition to the instructor. Ross was born

and raised in eastern Iowa, USA, and taught at a high school located in western Iowa. He was training to run the half marathon and enjoyed hanging out at coffee shops, teaching math, and listening to the radio. He was in his early 30s and had been traveling extensively since high school.

Ross led the discussion on analyzing tasks, a chapter from the course textbook, *Making Instructional Design Decisions* (Seels & Glasgow, 1998). This reading addresses the process of task analysis, which requires a thorough understanding of the tasks to teach or that the learners are expected to perform well. It may include creating an inventory of tasks, describing tasks, selecting tasks, sequencing tasks and task components, and analyzing content.

Ross exposed the group to a very precise facilitation strategy, named the Know-Want-Learn (K-W-L) strategy. He opened the weekly meeting by explaining this strategy to the group:

Ross, Sept. 20, K-W-L

This week, we're going to try something a little bit different … We're going to do a K-W-L exercise to go along with our reading. For those of you who are not familiar with K-W-L, K stands for 'what do you want to Know?'; W stands for 'what do you Want to know?'; and L stands for 'what did you Learn?'

After explaining the strategy, Ross acknowledged the difficulty for the group to participate in the weekly discussion because not everyone reads the material at the same time. By probing K ('what do you want to Know?') answers first he wanted to get the discussion going on the topic before any chapter readings took place. Only after that, could he then move on to the next stage, the W ('what do you Want to know?') phase of the discussion. Through this strategy Ross structured the discussion in a way that allowed for full participation and engagement over the course of the week. He went on to a more detailed explanation of the strategy:

Ross, Sept. 20, K-W-L

Our first theme/question (K) does not require you to have read the text at all. I will create a new thread for the 'K' portion of our K-W-L. Friday, I'll post the 'W' – again, not requiring you to have read the text yet, but will still get our thoughts rolling. Monday, I'll post the 'L.' Please have the text read by Monday! I hope this structure enables us to bring up some questions we might not have otherwise thought of in this new (at least to me) idea of analyzing tasks.

Later Ross opened four threads to structure the discussion around K-W-L questions. For example, one of the threads started with the question: 'What do you KNOW about analyzing tasks?' Answering this question did not require participants in the discussion to read the chapter; rather the purpose was to get their earliest insights on the topic before any readings. Ross encouraged his peers to respond to this question based on what they already knew or thought they knew about task analysis. This is how he explained it:

Ross, Sept. 20, K – What do you KNOW about analyzing tasks?

No wrong answers here … type as much or as little as you know. Please take the time to comment or ask probing questions to at least two other members of the group as well after they have posted their 'K' response. Thank you.

A total of 49 postings (average length of 96 words) were posted in the five threads initiated by Ross and one by the class instructor (in which she shared an example of a well-developed task analysis for the students' reference). Students participated enthusiastically, sharing their thoughts, providing examples from their teaching experiences, commenting, and giving feedback about each others' ideas. All students were active participants of the discussion with at least two postings each. The following excerpts show how students were engaged in meaningful dialogue and how Ross fed the conversation:

Susan, Sept. 21, Re: K – What do you KNOW about analyzing tasks?

Analyzing in general is looking at a situation to see what makes it tick. If it were to be torn apart piece by piece what a task would consist of – what makes it work/flow.

Sally, Sept. 23, Re: K – What do you KNOW about analyzing tasks?

I agree with you Susan, I think sometimes we forget the analysis part at the beginning and I know I rely on the assessment at the end to change it. More of a trial and error, but I think if I spent more time up front less of that would have to happen.

Ross, Sept. 23, Front-end analysis

Susan and Sally are on to something here … 'I think sometimes we forget the analysis part at the beginning and I know I rely on the assessment at the end to change it.'

How might this 'front-end analysis' (if you'll allow me to paraphrase your thoughts) work in your classroom? This question is leading us to what I see as the 'big picture' for us all in the chapter …

Mary, Sept. 24, Re: Front-end analysis

I think with all of the emphasis on NCLB [No Child Left Behind] the 'front-end analysis' is becoming huge in making sure we know where our students are and where they need to be. Our school is big on learning good formative assessment strategies so that we can analyze this information to improve our teaching. Sounds just like the analysis step to me.

Ross, Sept. 24, Re: Front-end analysis

Right on, Mary. Good connection with NCLB, analysis, and formative assessment. I can almost see a Venn diagram of your thoughts …! :)

Sally, Sept. 26, Re: Front-end analysis

I agree with Ross and Mary. Although sometimes I think you can front-end analysis the lesson to death and have it so structured that it takes all the fun out of it. Some of my best science labs have been, 'Here's some stuff, what do you want to do with it? Or here's some information, equipment, how would you answer the question?' I guess I'm more of an inquiry based model, but I bet after reading the text there might be help for that too.

It is clear from the postings that the students were engaged in the discussion by providing comments on each others' ideas and situating the topic in their own teaching and learning experiences, rather than just contributing because participation in

discussions was a course requirement. Such authentic conversation and active partic-ipation provided evidence of the success of this facilitation strategy. When invited to respond, students reflected on their own views and offered rationale for their stances.

In the W phase of the discussion, all students posted their thoughts on what they wanted to learn about task analysis prior to reading the chapter. Their expectations were mostly about the connections with the topic and their actual classroom experi-ences. Later Ross opened new threads for the L phase. This is how he explained this phase:

Ross, Sept. 23, L – What did you LEARN about task analysis?

Okay folks, here is the icing on the cake. The final K-W-L question is 'What did you LEARN about task analysis?' I want to go one step further and ask a question in the spirit of our team name … 'What WOW'ed you about this chapter?' What one or two things did you think to yourself, 'Wow, I never knew that!' or 'Wow, I already do that in my classroom' or 'Wow, people actually take the time to do that?!?!'

All students responded to this posting by sharing a variety of ideas about the points mentioned in the chapter, their misconceptions before reading, and also unclear points after reading the article. One of the students posted a comment on the facilitation strat-egy used by Ross:

Sharon, Sept. 25, Re: L – What did you LEARN about task analysis?

Ross, before I get to your 'WOW' questions I would like to add that I like the approach you took in leading our discussion this week with the K-W-L strategy. If we as educators don't practice the strategies that we want our students to be able to do, then usually we forget about them and don't practice them with our students. This is an excellent strategy to use with students, so thanks for allowing us to practice it as well. Way to Go!

In sum, Ross took the role of a relentless discussion facilitator, offering an orga-nized process that kept the discussion focused on the issues at hand. He managed the discussion by systematically responding to his peers' postings and providing resources and support. The facilitation strategy he followed was named highly structured facil-itation. The K-W-L strategy is widely used as an instructional reading strategy (Ogle, 1986), and Ross also fulfilled the role of educating the class about this strategy by providing three online resources. His peers were particularly appreciative of that.

Mini-case 2: inspirational facilitation

Student facilitator, Sally, led a team of six students. Sally was from the Midwestern USA and taught mainly Anatomy and Physiology to health occupation students at Southeastern Iowa Community College. She was in her mid-30s and enjoyed travel-ing, reading, scrapbooking, cooking, and watching movies. She was very close to her immediate family and friends, with whom she spent extensive periods of time.

Sally facilitated the discussion on implementing instruction, a chapter from the course textbook, *Making Instructional Design Decisions* (Seels & Glasgow, 1998). This chapter focuses on common barriers to implementation and strategies to over-come these barriers by dealing with the uncertainty of bringing to life a new idea, process, or product alternative to those previously in existence. This chapter was assigned to class on week 12.

After the instructor posted the chapter in the WebCT discussion area, Sally initiated the discussion, asking other students to dream about an initiative, course, or classroom and think about how they would implement this dream in their current contexts of practice. Here is how she presented the question to her peers:

Sally, Nov. 12, Questions for the Readings

If you had the opportunity to design a DREAM initiative, course, or classroom lesson how would you go about implementing it at your institution?

In addition to the issues raised in the textbook chapter, she also provided some guiding ideas for the discussion by making explicit links to the reading material, for example:

Sally, Nov. 12, Questions for the Readings

What would be the process or channels you would have to go through to do so at your institution?

Do you have to do a need analysis?

What's your budget procedure is this even a concern at the level you work at? (for example would you need grant money or money from another department to push your initiative) What would it cost?

How would you get buy in from other members at your institution to help you push your design? (How would you diffuse the information?)

Lastly, make sure to include which one of the four summative evaluations would work best for your initiative, using your book for information and Figure 12.1 on page 305.

All students responded to Sally's questions by providing specific scenarios with direct application to their contexts of practice. For example, Tom specifically addressed each of Sally's questions when describing his dream initiative. Although he did not make any explicit references to the reading, he elaborated on the question within his particular situation, as this excerpt shows:

Tom, Nov. 14, Re: Questions for the Readings

So my goal would be to design a training camp that is specific to the player [Tom was a former basketball coach]. To do this I would have to decide a maximum of players allowed at the camp (about 5 or 6) and then perform a needs analysis that tells me what the players need work with, what can they already do, etc. From there I would use my experience as a player and coach to design a 2 or 3 day program that puts the players through drills that strengthens their weak skills and builds on their previous skills.

There would definitely have to be a cost/benefit analysis. Providing individualized instruction would definitely cost more for the player since the instructors' time is devoted to the individual. The support needed would have to come from the parents of the player, the player, and the instructor. To get the members to buy into the instruction there would have to be a piece that describes how beneficial individualized learning is and that it's worth the price to get that type of attention. Since the camp would only have

5 or 6 players the instructor can constantly and accurately ask and monitor each player to see if they are benefiting from the camp and get feedback to see if the design/drills need to be changed.

Tom's peers, including Sally, responded to his dream initiative scenario by asking detailed questions, such as:

Lea, Nov. 17, Re: Questions for the Readings

I would love to do that for some of my girls! Do you think you would have to have more than one instructor? Also, since you're going to individualize, would you have the participants work together or separately (I'm just thinking of drills and wondering how effective they would be doing them individually). Cool concept though.

Sally also initiated a new thread and posted her own dream class. She addressed all the questions she asked within her specific context. Following her postings other students also posted their dreams, visions, and idealistic scenarios.

A total of 22 messages (average length of 181 words) were posted throughout the week, including two by the instructor (9% of the total messages in the group). The instructor took on the role of participant in the discussion, addressing the issues proposed by Sally. Here is an excerpt of her posting:

Course Instructor, Nov. 16, Re: Dream Class, Goal, or Lesson

My dream … builds on Sally's idea of bringing cadavers to campus so that health occupation students can study the human body by learning on human bodies. In my case I bring clients … into my instructional design classes so students can learn instructional design by acting as ID consultants in real-world projects.

All students responded to Sally's discussion questions with at least one posting. Sally's responses to her peers' dreams, goals, and visions acted as a motivating force that created a very relaxed and safe environment to share without fear of imagining idealistic scenarios, searching for inner goals, and discussing ways to achieve them. In her role as a facilitator, Sally motivated and inspired discussion participants to share dreams, goals, and drives within a variety of contexts. Dreams ranged from technology integration in schools to centering the curriculum on specific software or using iPods for language arts lessons. One of the students posted:

Nancy, Nov. 14, Re: Dream Class, Goal, or Lesson

I enjoy this type of question because it let's us dream!! If I could have a dream classroom, I would envision personal handhelds or laptops for my students.

In summary, participants in this discussion did not extensively address the assigned reading, but it served as more like an excuse to talk about their inner goals rather than being the center of the conversation. This behavior was modeled by Sally and the instructor, who found the discussion highly engaging and genuine. By sharing their ideal scenarios participants certainly discussed the challenges they would have to face to implement their dream lesson. However, there was a lack of in-depth discussions on the reading material and/or explicit connections between the material and personal scenarios.

Many students began their postings with social acknowledgements, either commenting on others' ideas or praising Sally for the facilitation strategy used. All students participated actively in the discussion and expressed their dream initiatives in detail. In doing so, they provided clear evidence of having understood the purpose of Sally's initial questions. This facilitation strategy was named inspirational facilitation because it was centered mainly on the participants' stories and contexts. Due to the practical nature of the topic 'implementing instruction,' students showed a high level of motivation in sharing their personal teaching experiences and ambitions and contributing to the discussion with personal stories.

Mini-case 3: practice-oriented facilitation

Nancy led a team of seven colleagues during week 14. Nancy was a native of Iowa, USA, and taught students with special needs at an eastern Iowan elementary school. She was in her early 20s and enjoyed traveling internationally and playing volleyball. Nancy was also a volleyball coach at her school district's high school. She was one of the youngest students in the cohort.

Nancy facilitated the discussion on 'Paradigms in the Theory and Practice of Education and Training Design' (Visscher-Voerman & Gustafson, 2004), assigned to the class. The article's authors argued that most descriptions of instructional design and development processes imply a homogeneous view of design. By investigating how instructional designers design in reality these authors proposed a more heterogeneous view of the process. As a result four design paradigms were identified: (a) instrumental (planning by objectives), (b) communicative (communication to reach consensus), (c) pragmatic (interactive and repeated tryout and revision), and (d) artistic (creation of products based on connoisseurship).

After the reading had been posted in the WebCT discussion area, Nancy made her first posting informing the group that she would post the discussion questions soon. Later, instead of starting one thread with a set of questions, she created a new thread for each paradigm introduced in the article and asked specific questions referring to pages on the article. Nancy tied her questions to teachers' real-life practices, for example:

Nancy, Nov. 26, Instrumental Paradigm

On page 77, the authors thoroughly describe the instrumental process. Can you relate to this design process within your classroom or out?

Nancy, Nov. 26, Communicative Paradigm

How does the communicative process, or communication in general, effect you as a professional?

Nancy, Nov. 29, Pragmatic Paradigm

'… products are created through a process of quickly building through a process of quickly building, testing, and revising several prototypes' (p. 81). The authors mention this paradigm is the most prominent with application to software design. Is this happening within our teaching? Do any of you see yourself as this type of instructor? All of the time or in certain instances?

Nancy, Nov. 29, Artistic Paradigm

Artistic designers create and solve problems in their own way. Because of this '… designers are likely to focus on some features of design situations while neglecting others' (p. 82). Do you think this is only true with this type of approach?

Her peers were generous in sharing their practices as educators and relating them to Nancy's questions. She identified her struggles as a young teacher with many of the challenges shared by her colleagues, as in this quote:

Nancy, Nov. 28, Instrumental Paradigm

I think I am in the same boat as many of you when I say overall I am an instrumental instructor. I have those IEP goals constantly on my mind. Even though you have goals within those, ultimately, those are the 'big' things that we need to accomplish in those 36 weeks.

A total of 70 messages (average length of 150 words) were posted within the seven threads initiated by Nancy and two by the instructor. The instructor participated in the discussion along with the students, but her participation was limited to 2.9% of the overall postings for that week. Nancy was very active in the discussions by constantly responding to her peers, providing examples, offering questions to explore and bringing different ideas together. She posted 18 messages during the week, 26% of the overall discussion postings. Most of Nancy's postings made connections with the reading material and teaching practices. She elicited input from her peers on the implementation of the paradigms described in the reading within their own teaching contexts. For instance, after she asked discussion participants to react to the instrumental paradigm and its implications to classroom teaching, one of the students responded:

Ross, Nov. 26, Re: Instrumental Paradigm

Good question, Nancy. In my first year or two of teaching, I really tried to be this type of 'instrumental' teacher. I really wanted to let students know what the learning goals were there and if they had met them or not …

Nancy, Nov. 28, Re: Instrumental Paradigm

Definitely, Ross. I have found as a beginning teacher that you have to play around with different approaches to see what fits you best. I think a huge part of this is the curriculum and what you need to accomplish … Good point, Ross.

Throughout Nancy's postings, she addressed previous points in which her peers explored different thoughts and examples in an effort to bring extra light to the issues at hand. For instance, here is an example of the conversation between Nancy and Mary:

Mary, Nov. 27, Re: Communicative Paradigm

I think that communication is so important in teaching.… It is very difficult to keep communication open when your school grows so much in size and there isn't time during the day to do it.

The article mentions that to 'reach a shared vision, decisions should be based on deliberation and consensus' (79). It is difficult in a big school to come to a consensus on anything and to find the time to discuss these visions.

Nancy, Nov. 28, Re: Communicative Paradigm

Mary, you are right about as the 'teams' getting bigger, it is more difficult to reach every-one. We currently have 4 sections of each grade, and I know the teachers have found it difficult to meet weekly unless it's before or after school.

I think often times we may not even use 'deliberation and consensus' because it seems like TIME is always an issue! Unless someone is very strong willed, do you think some people comprise more than they normally would?

Although the discussion in this group was anchored around a particular reading, it did not revolve directly around the content of the reading itself. Rather, it spanned participants' teaching and learning contexts. Because all participants in the discussion were teachers, Nancy facilitated discussion around their perspectives on teaching practices and classroom experiences, often providing examples from her own classroom and encouraging her peers to elaborate on their ideas within their own contexts. Participants revealed themselves as experienced online *talkers* by refocusing the conversation and making very explicit which part of a posting they were addressing in their replies, a practice that Nancy consistently used. For instance, the discussion on instrumental paradigm was contextualized in math education by one of the students with a specific focus on defining goals and objectives, as follows:

Ross, Nov. 28, Re: Instrumental Paradigm

'but if asked to meet some of those same goals and objectives at the end of the year it would be tough because the kids would have to base it off of their prior knowledge and previous experiences that we hope that would be able to use.' I think I follow your reasoning here, Daniel. I find this same sort of pattern in math. Students are able to meet a certain objective and then later on in the year, they've mysteriously forgotten how to do it … or somehow slipped through the cracks and never 'really knew it' to begin with. With so many objectives, goals, etc., it seems like an impossible task.…

If a mechanic or doctor don't fix the problem the first time around, the client comes back knocking at the door … asking for a refund or at least a free 2nd fix. I wonder what we could do to encourage students to become this motivated.…

Daniel, Nov. 28, Re: Instrumental Paradigm

If a mechanic or doctor don't fix the problem the first time around, the client comes back knocking at the door … asking for a refund or at least a free 2nd fix. I wonder what we could do to encourage students to become this motivated.… Awesome correlation Ross.

Nancy, Nov. 28, Re: Instrumental Paradigm

Ross and Daniel,

These thoughts go right along with our math curriculum. Does anyone here use 'Every-dayMath?' It is a 'spiraling curriculum' so it's a much different approach compared to the traditional math.

After Nancy introduced 'Everyday Math' to the participants in the discussion and asked for their opinions, the discussion centered on math curriculum, sharing different

opinions, asking for further explanations, and talking about their experiences. One of the students commented on Nancy's open style as a facilitator:

Ross, Nov. 29, Re: Everyday Math

> Thanks for sharing your perspective, Nancy. I've learned a lot from hearing your struggles and successes with the program … Have y'all ever read the document 'Focal Points' that was put out by the NCTM not very long ago? It addresses several of the things you're mentioning, Nancy, about basic facts and the importance of students knowing how to add/subtract/multiply/divide at certain grade levels … Sorry for the digression, but the 'communication' we're having here seems valuable. :)

In summary, Nancy's facilitation strategy focused on making constant links to practice and connections with real-life professional situations. In using this strategy, she encouraged participants to reflect on educational issues that related to their schools and classrooms. Through this facilitation strategy, her peers used examples from their work, shared practitioner insights, and made connections between the article and what they were involved in at their schools. Particularly noteworthy in this group discussion is Nancy's constant involvement in the discussion process inviting responses from her peers and synthesizing the ideas around examples and issues. A closer inspection reveals that students in this group not only provided their own examples and opinions but also made real-life connections to the main ideas in the article. Nancy used a *practice-oriented facilitation* to promote high levels of participation and meaningful dialogue.

Discussion and conclusions

This study examined three different mini-cases of student-led peer-facilitation strategies in the context of an online graduate course. In the first case, a highly structured facilitation strategy was used to structure the discussion and maintain strong and explicit connections to the topic under discussion. The student facilitator organized the discussion around the questions of what the participants already knew, wanted to know, and learned in a predefined sequence before and after reading the assigned chapter for the week. In the second case, the student facilitator used an inspirational facilitation strategy by inviting her peers to imagine idealistic scenarios, search for inner goals, and discuss ways to achieve them. This facilitation strategy centered around the personal stories and contexts of practice rather than explicitly on the readings. In the third case, practice-oriented facilitation was used to encourage participants to reflect on real-life situations and their actual teaching and learning contexts with constant links to the reading material. The student facilitator invited responses from others, synthesized the ideas around examples, and made connections with the readings and the professional reality of each participant.

In each mini-case, student facilitators chose different facilitation strategies, but all were able to promote meaningful dialogue and to produce high levels of participation and quality conversation around the weekly topics. It seems that student facilitators might have drawn from their experiences as learners and educators to define their facilitation strategies. Student-led facilitation ranged from structured to personal and practical. Student facilitators used strategies that better fit their teaching styles and profile as online learners themselves. Sally made the online discussions alive and

personal; Nancy made them meaningful to their current practice; and Ross brought order and a system to a somewhat chaotic activity, such as online discussions. Students particularly appreciated the highly structured facilitation strategy as a way to make online discussions more effective and efficient.

By participating in the online discussions, students not only shared their thoughts but also explored others' opinions on a variety of topics. Although each week the instructor posted a different topic and related article for discussion, each student facilitator used these shared artifacts differently and selected a facilitation strategy freely. For instance, Nancy made explicit connections to the reading materials and centered the discussion on the subtopics in the reading and teachers' practices. On the other hand, Sally facilitated the discussion without mentioning the reading explicitly, but still anchored it to the shared artifact. In this context, the reading materials were used as shared artifacts to start the online discussions and a pretext to come together and participate in a professional conversation.

The instructor took on the role of student in the discussions, posting her own thoughts and sharing resources and personal and professional stories. With the exception of assigning the weekly readings, working with the student facilitators on WebCT logistics, and facilitating the discussions during the first three weeks, she never took control during the discussions, giving students the freedom to decide on the facilitation strategy to follow. During the online discussions, the instructor never had to intervene in order to bring the discussion back on track, to stop inappropriate participation, or encourage the start of a conversation. Her online facilitation style in the first three weeks helped to prepare the ground for student-led facilitation and model facilitator's behaviors. She wanted her students to feel free to experience strategies that better fit their needs as full-time educators pursuing an online advanced degree. Therefore, she never had to spend time correcting students or trying to prune discussions. Moreover, using a peer-facilitation approach should not mean that the instructor shifts the facilitation workload to her students in order to reduce his or her teaching load under the pretext of being more student-centered. Without careful planning and design of instruction, the online discussions would easily become superficial and disconnected from the course activities.

Findings in this study indicate that peer-facilitation strategies can help generate innovative ideas, motivate students to participate actively in the discussions, and provide an atmosphere for involvement and commitment. This is in line with Tagg's direction from within approach to facilitation (1994), a strategy that requires a reconsideration of facilitation roles, which are traditionally linked to leadership. The change of responsibilities means giving students the power to take practical and meaningful roles in the online classroom. As such, by analyzing both the quantity and the quality of the discussion threads in this study, it was found that the direction from within approach serves as an empowering opportunity for students.

This study explored student-led facilitation strategies that can be used to overcome the challenges of instructor-led facilitation, enhance the sense of a learning community, and encourage students' participation in online discussions. Research on students as online discussion facilitators (e.g., Rourke & Anderson, 2002) also has suggested that this approach is beneficial not only to encourage student involvement, but also to improve learning outcomes. It has the potential to reduce the instructor's related workload while teaching online. Using successful facilitation strategies, students explore new ways to engage their peers in online discussions.

Additionally, the use of peer facilitation in online discussions can enhance the social presence of helping 'participants to overcome the limits of text-only communication and make these lean media environments more productive' (Kehrwald, 2008, p. 99).

Literature has described a variety of roles, such as technical assistance, social hosting, content instruction, and discussion management, that facilitators often take in online discussions (Salmon, 2003; Wang, 2008). Yet the complicated and context-dependent nature of online discussions makes generalizability difficult. In this study we found that students' facilitation strategies are linked to contextual dynamics such as the nature of shared artifacts, student characteristics, context of the course, and history of the students working together. Moreover, the instructor's role and level of involvement in the discussions, along with the technology used and the design of the course, affect the strategies students use to promote peer participation and meaningful dialogue in online discussions.

Having graduate students as discussion participants and/or facilitators does not guarantee participation or meaningful dialogue in online discussions. Although the students in this study were full-time professionals with a strong teaching background, they were not simply expected to know how to facilitate discussions and take a leadership role. In the same way instructors should not expect that students become successful team players just because they are assigned to teams. The design of online discussion activities requires a thorough learner and needs analysis designing the online activities to target learners' needs, expectations, and constraints. Careful planning needs to be put into the instructional activities, such as modeling online facilitation, being present in the discussions, as well as preparing students before they take the lead in the discussions.

Directions for future research

This study examined peer-facilitation strategies used by a particular student group, in a specific context and time. The peer-facilitation approach may not work similarly well in the general context, that is, where 'learning to facilitate' is not part of the instructional goals and objectives of the course, and students have no teaching background. Future research should examine strategies used at different academic (e.g., undergraduate) and educational contexts (e.g., informal contexts). Since participants in this study had a strong teaching background, this could have affected the dynamics of the online discussions and thus their proficiency in using facilitation strategies. Further research may also focus on the use of peer facilitation in other disciplines and content areas.

This study looked at how the use of peer-facilitation strategies can promote meaningful dialogue to produce a high level of participation in asynchronous discussions. Future studies should investigate how peer-facilitation strategies impact critical learning outcomes and student performance in an online course.

The online discussion activities in this study were designed based on the needs and the characteristics of students. For instance, the instructor modeled online facilitation in the first three weeks of the course and provided students with guidelines that defined everyone's roles and responsibilities for the online discussions. Further research could investigate the effects of different kinds of instructor modeling, instructor intervention, and facilitation training on meaningful dialogue and participation in online discussions.

Instructional implications

Even though case studies cannot assure sampling representativeness, the mini-cases presented here can offer important information to be used in similar contexts and situations. As Lincoln and Guba (1985) explained, a naturalistic case study is responsible for providing 'sufficient information about the context in which an inquiry is carried out so that anyone else interested in transferability has a base of information appropriate to the judgment' (p. 124).

Instead of taking an authoritarian role in online discussions, instructors can share the facilitation role with students, giving them the opportunity to explore unique ways to promote peers' active participation and meaningful dialogue. It is particularly important for an instructor to collect as much information as possible about the context of the course along with the characteristics of the students to set up the landscape for peer facilitation. By informing students about different facilitation strategies, as well as encouraging them to explore their own facilitation strategy, instructors can empower students to drive their own learning. Yet, giving students the role of discussion facilitator does not mean that instructors do not have a critical role to perform. For example, instructors should consistently read students' comments and participate in the discussions as *participants*, sharing their own professional stories, advice, and resources. They should address misconceptions and share insights on emergent issues. Given the findings of this study, having students facilitate online discussions in graduate courses may prove to be an effective method of encouraging participation and meaningful dialogue.

Notes on contributors

Evrim Baran is a doctoral candidate in curriculum and instructional technology and human computer interaction programs at Iowa State University, USA. Her research focuses on online learning, technological pedagogical content knowledge (TPACK) and the design of online collaborative learning environments.

Ana-Paula Correia is an assistant professor in curriculum and instructional technology in the Center for Technology in Learning and Teaching at Iowa State University, USA. Her major research interests are computer-supported collaborative learning, design of instruction, and evaluation and assessment educational of products and experiences.

References

Anderson, T., Rourke, L., Garrison, D.R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing environment. *Journal of Asynchronous Learning Networks, 5*(2), 1–17.

Berge, Z.L. (1995). Facilitating computer conferencing: Recommendations from the field. *Educational Technology, 15*(1), 22–30.

Brooks, D., & Jeong, A. (2006). The effects of pre-structuring discussion threads on group interaction and group performance in computer-supported collaborative argumentation. *Distance Education, 27*(3), 371–390.

Collins, M., & Berge, Z. (1996). *Facilitating interaction in computer mediated online courses.* Paper presented at the FSU/AECT Distance Education Conference, Tallahasee, FL. Retrieved August 2, 2009, from http://www.emoderators.com/moderators/flcc.html

Collins, M.P., & Berge, Z.L. (1997). *Moderating online electronic discussion groups.* Paper presented at the American Educational Research Association, Chicago, IL. Retrieved August 2, 2009, from http://www.emoderators.com/moderators/sur_aera97.html

Correia, A.-P. (2008). Moving from theory to real-world experiences in an e-learning community. *Innovate, 4*(4). Retrieved May 12, 2008, from http://www.innovateonline.info/index.php?view=article&id=495

Correia, A.-P., & Davis, N.E. (2007). The design of collaboration in the virtual classroom. In M. Simonson (Ed.), *30th Annual Proceedings of Selected Papers on the Practice of Educational Communications and Technology (Vol. 2,* pp. 84–87). Bloomington, IN: AECT.

Dennen, V.P., & Wieland, K. (2007). From interaction to intersubjectivity: Facilitating online group discourse processes. *Distance Education, 28*(3), 281–297.

Denzin, N. (1989). *The research act: A theoretical introduction to sociological methods* (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.

Denzin, N.K., & Lincoln, Y.S. (Eds.). (2000). *Handbook of qualitative research* (2nd ed.). London: Sage.

Garrison, D.R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2/3), 87–105.

Hara, N., Bonk, C.J., & Angeli, C. (2000). Content analysis of online discussion in an applied educational psychology course. *Instructional Science, 28*(2), 115–152.

Harasim, L.M. (1990). *Online education: An environment for collaboration and intellectual amplification.* In L.M. Harasim (Ed.), *Online education: Perspectives on a new environment* (pp. 39–64). New York: Praeger.

Hew, K.F., & Cheung, W.S. (2008). Attracting student participation in asynchronous online discussions: A case study of peer facilitation. *Computers & Education, 51*(3), 1111–1124.

Hewitt, J. (2005). Toward an understanding of how threads die in asynchronous computer conferences. *Journal of the Learning Sciences, 14*(4), 567–589.

Karpova, E., Correia, A.-P., & Baran, E. (2009). Learn to use and use to learn: Technology in virtual collaboration experience. *The Internet and Higher Education, 12*(1), 45–52.

Kehrwald, B.A. (2008). Understanding social presence in text-based online learning environments. *Distance Education, 29*(1), 89–106.

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage.

Mason, R. (1991). Moderating educational computer conferencing. *DEOSNEWS, 1*(19). Retrieved May 3, 2009, from http://www.emoderators.com/papers/mason.html

Mathison, S. (1988). Why triangulate? *Educational Researcher, 17*(2), 13–17.

Nisbet, D. (2004). Measuring the quantity and quality of online discussion group interaction. *Journal of eLiteracy, 1*(2), 122–139.

Ogle, D.M. (1986). K-W-L: A teaching model that develops active reading of expository text. *Reading Teacher, 39*(6), 564–570.

Paulsen, M.P. (1995). Moderating educational computer conferences. In Z.L. Berge & M.P. Collins (Eds.), *Computer-mediated communication and the on-line classroom in distance education* (pp. 81–104). Cresskill, NJ: Hampton Press.

Poole, D. (2000). Student participation in a discussion-oriented online course: A case study. *Journal of Research on Computing in Education, 33*(2), 162–177.

Rourke, L., & Anderson, T. (2002). Using peer teams to lead online discussions. *Journal of Interactive Media in Education, 1*(1), 1–21.

Rovai, A.P. (2007). Facilitating online discussions effectively. *Internet and Higher Education, 10*(1), 77–88.

Russo, T., & Benson, S. (2005). Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning. *Educational Technology & Society, 8*(1), 54–62.

Salmon, G. (2003). *E-moderating: The key to teaching and learning online* (2nd ed.). London: Routledge Falmer.

Seels, B., & Glasgow, Z. (1998). *Making instructional design decisions* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Stahl, G. (2006). *Group cognition: Computer support for building collaborative knowledge.* Cambridge, MA: MIT Press.

Stinson, J. (2004). A continuing learning community for graduates of an MBA program: The experiment at Ohio University. In T. Duffy & J. Kirkley (Eds.), *Learner-centered theory*

and practice in distance education: Cases from higher education (pp. 167–182). Mahwah, NJ: Lawrence Erlbaum.

Tagg, A.C. (1994). Leadership from within: Student moderation of computer conferences. *American Journal of Distance Education, 8*(3), 40–50.

Visscher-Voerman, I., & Gustafson, K. (2004). Paradigms in the theory and practice of education and training design. *Educational Technology Research & Development, 52*(2), 69–89.

Wang, Q.Y. (2008). Student-facilitators' roles of moderating online discussions. *British Journal of Educational Technology, 39*(5), 859–874.

Zhu, P. (1998). Learning and mentoring: Electronic discussion in a distance learning course. In C.J. Bonk & K.S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (pp. 233–259). Mahwah, NJ: Lawrence Erlbaum.