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# Developing Pre-service Teachers' Understanding of Good Teaching: A Global Collaborative Project Using Online Discussion

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*This study aims to explore the pre-service teachers' learning experiences in a global collaborative project which engaged students in online discussion about "good teaching". The project involved two teacher education courses in Korea and the U.S. The research question includes: (1) the pre-service teachers' perceptions with regard to "good teaching" and (2) cognitive presence for developing their understanding in online discussion. The pre-service teachers from both classes posted their group artifacts on the discussion forum and participated in asynchronous discussions. The results showed that the global project enhanced pre-service teachers' critical thinking of their own country's education and understanding of different perspectives on effective teaching. Online discussions facilitated their cognitive presence in the discourse on contributing factors in good teaching. The study discusses the implications of the global collaborative project through online discussion to promote pre-service teachers' critical thinking process.*

*Keywords: Cognitive presence, Collaborative learning, Good teaching, Online discussion, Teacher education*

## Introduction

The advancement of information and communication technology has enhanced students' social exchanges for their learning in higher education settings. Online communication tools engage students in virtual learning communities in which they formulate, exchange, evaluate, and apply information in local and global contexts. Studies have shown that such social exchanges could be influential in advancing students' knowledge construction level (Garrison, 2007; Johnson & Johnson, 2004). Knowledge is constructed through the social exchanges when new and deeper understandings are found in the online discourse. Specifically, pre-service teachers need to have such learning experiences of working collaboratively across geographic locations as they prepare to meet the educational needs of diverse learners. The importance of online social interaction for learning in teacher education programs has been extensively documented in the literature (Duncan-Howell, J., 2010; Espinoza & McKinzie, 1999; Kurtts, Hibbard, & Levin, 2005; Mouza, Kaplan, & Expinet, 2000). This study was planned as a collaborative project to provide such learning experiences for pre-service teachers in two different countries to develop their meanings about good teaching.

The question about how and what contributes to "good teaching" is an important issue dealt in the teacher education curriculum. A key concern of discussions around good teaching relates to what is defined as "good" (Devine, Fahie, & McGillicuddy, 2013). Korthagen (2004) indicated that good teaching is an ambiguous term that cannot be readily defined. There are ongoing debates concerning the characteristics of effective teaching. However, with knowledge of what constitutes effective teaching for the targeted students, teachers could more effectively model their teaching practices. Thus, to discuss and define the characteristics of good teaching could be an essential and interesting learning task in teacher education programs (Korthagen, 2004).

This study proposed a learning task related to good teaching as a collaborative project for pre-service teachers to promote their critical thinking on teaching practices. Specifically the proposed collaborative task emphasized social interaction in online discourses among students of the teacher education programs in Korea and the U.S. It could involve the pre-service teachers in generating, comparing, and evaluating their ideas on good teaching through discussions with others in different education systems. Social constructivists assert that students acquire knowledge

mainly when they are engaged in meaning making processes through social interaction in learning environments (Driscoll, 2000; Jonassen, Davidson, Collins, Campbell, & Hagg, 1995). The pre-service teachers may benefit from the social exchanges when deeper understandings are developed in their discourse.

However, the social exchange in computer-mediated communication environments is substantively different from face-to-face classroom teaching. The challenge facing educators is the need to develop critical learning experiences within the virtual environment. Also, assessing the nature of online discourse is required as a means to achieve learning goals. Garrison, Anderson, and Archer (2000) suggested a model of "cognitive presence" to assess the quality of discourse that take place within a text-based educational environment. Specifically, they proposed cognitive presence as a manifestation of higher-order knowledge acquisition in online discourses. Cognitive presence is defined as the extent to which learners are able to construct and confirm meaning through discourse in a critical community of inquiry (Garrison, et al., 2000). To describe cognitive presence in an educational context, Garrison, et al. (2000) defined four phases of critical inquiry: triggering event, exploration, integration, and resolution of the problem or issue. This four-phase model of critical thinking is the framework within which the nature and quality of the critical thinking process in online discourses is described.

This study aims to explore the pre-service teachers' learning experiences in a global collaborative project which engaged students in asynchronous online discussion about the concept of good teaching. Although technology advancement has enabled students to easily interact with others in different countries, it is needed to examine if the computer-mediated communication really works for the pre-service teachers to engage in critical thinking and knowledge construction in the interaction processes. Based on Garrison, et al.'s (2000) framework of cognitive presence, this study examines the online discourse which the pre-service teachers developed.

Thus, this study focuses on two research questions: (1) how do the pre-service teachers perceive the concept of good teaching in two classes? and (2) how do online discussions enable the students' cognitive presence in developing their concepts of good teaching?

## Literature Review

### Collective Knowledge Construction

Numerous studies have shown that learning through collaboration, as compared to individual learning, usually results in higher achievement (Johnson & Johnson, 1989). From the constructivist perspective of learning, Brown, Collins, and Duguid (1989) stated that students need to be able to work with and listen to others and to develop ways of dealing with problems from various contexts. To achieve this learning outcome, collaboration to enhance group processing skills should be emphasized. Within the collaborative process, knowledge is not simply transmitted from individual to individual. Instead, knowledge is developed by the synthesis of social experiences (An, Kim, & Kim, 2008). Students explain their ideas and need to debate about the extent in which their individual ideas fit those of others. In doing so, the students are not only sharing individual knowledge, but also collectively modifying each other's ideas for improvement. Kimmerle, Moskaliuk, Oeberst, and Cress (2015) mentioned this as a crucial knowledge-building principle for collaborative learning.

Discourse within a group, which is usually supported by using computers and shared digital artifacts, contributes to the development of collective knowledge (Kimmerle et al., 2015; Scardamalia, 2002). Current study tends to focus on the cognitive process by emphasizing task-oriented communication in online discourse. It has been argued that incorporating online collaborative activities into teacher education benefits students, since higher order thinking skills are more likely to be generated (Shultz, 2003), and to impact the learning process by enhancing critical thinking (Jegede, 2002). However, simply assigning students into a group to work collaboratively will not guarantee that they will effectively develop collective knowledge. Educators should understand how participants experience their collaborative learning in online environments so as to ensure the development of effective course and activities (An, Kim, & Kim, 2008).

### Cognitive Presence

The adoption of computer-mediated communication in higher education has far out-paced our understanding of how the medium should be used so as to best promote higher-order learning (Garrison, Anderson, & Archer, 2001). Researchers have proposed theoretical frameworks to assess knowledge construction supported by online communication technology (Garrison, 1997; Gunawadena, Lowe, & Anderson, 1997; Koh, Herring, & Hew, 2010). But these studies have faced methodological challenges in apply valid indicators that represent the quality of meaningful approaches to learning facilitated in online discourses. To specify indicators applicable in the actual

analysis of discourses in online environments, specifically, Garrison, et al. (2001) proposed a model of Community of Inquiry. The model assumes that learning occurs within the community through the interaction of three essential elements: cognitive presence, social presence, and teaching presence. Many studies have argued that the elements of Community of Inquiry are closely related to establish critical thinking in online communication and to sustain meaningful online learning (Garrison, Cleveland-Innes, & Fung, 2010; Shea & Bidjeraon, 2009).

According to Garrison et al. (2001), "cognitive presence" is the most basic and vital element to success in higher education, since it reflects the learning and inquiry process. Cognitive presence is defined with four phases in the inquiry process. The phases are definition of a problem or task, exploration for relevant information, making sense of and integrating ideas, and testing plausible solutions (Garrison, Cleveland-lnnes, & Fung, 2010). Table 1 shows the coding scheme of cognitive presence adopted by the current study. Previous studies using Garrison et al.'s (2001) framework have reported that the majority of students' online discussion posts involved the exploration of ideas, while at most 10% of those reached the highest level of resolution (Garrison, 2007; Kanuka, Rourke, & Laflamme, 2007; Vaughan & Garrison, 2004). The challenge is to facilitate students' attainment of the higher levels of integration, resolution, and application in online learning environments.

Table 1
*Coding Scheme of Cognitive Presence (adopted from Garrison, et al., 2001)*

| Phase | Indicator | Description |
|---|---|---|
| Trigger event | Recognize problem<br>Sense of puzzlement | - Presenting background information about a question<br>- Posting questions or messages that take discussion in a new direction |
| Exploration | Exploration within the online community<br>Exploration within a single message<br>Information exchange<br>Suggestions for consideration<br>Leaps to conclusions | - Unsubstantiated agreement or disagreement<br>- Many different ideas/themes presented in one message<br>- Personal narratives or description/ Add points but does not systematically defend/develop situation<br>- Author explicitly characterizes message as exploration<br>- Offers unsupported opinions |
| Integration | Integration among groups members<br>Integration within a single message<br>Connecting ideas, synthesis<br>Creating solutions | - Reference to previous message followed by substantiated agreement or disagreement<br>- Justified, developed, defensible, yet tentative hypotheses<br>- Integrating information form one or more sources<br>- Explicit characterization of message as a solution by participant |
| Resolution | Vicarious application to real world testing solution<br>Defending solutions | - Providing examples of how problem were solved<br>- Defending why a problem was solved in a specific manner |

# Research Design and Methods

## Context and Participants

This study employs an action research approach (Sagor, 2011) for the purpose of designing and implementing learning activities to improve teacher candidates' global educational understanding. Specifically this research project intends to provide the college students from South Korea and the U.S with collaborative learning experiences to promote authentic understandings of good teaching. The selected classes include an introductory course of Education at a mid-size university in the East Coast of the United States, and an introductory course of Educational Technology in a large university in South Korea. The two courses were offered in pre-service teacher education programs. The student participants included seven female Caucasians and forty-eight Koreans who were Education majors.

The students were assigned into groups within each domestic class (the Korean class included 8 groups; the U.S. class included 3 student groups). In both classes, students were asked to complete the identical assignments related to the term "good teaching". Student groups were asked to develop concept maps and video clips based on their group's shared knowledge of good teaching. The students posted their group artifacts and messages on the discussion forum at each milestone during five weeks. Each instructor facilitated the domestic student groups'

collaboration to develop concept maps and video clips in face-to-face classes, based on the instructional scripts of the collaborative assignments. But the instructors did not participate in online discussions.

Table 2
*Lesson Procedures with Student Activities*

| Week | Activities | Methods of Interaction | Artifacts/Data |
|---|---|---|---|
| 1 | Introduction<br>(project orientation) | Posting intro video & greeting messages online<br>(eCampus) | Two introduction movie presentations, Pre-reflection |
| 2-3 | In-class discussion; constructing concept maps about "Good Teaching" | Posting group concept maps and discussion online | 11 group maps<br>116 messages posted |
| 4-5 | In-class discussion; developing movie presentations on "Good Teaching" | Posting links of movie presentations and discussion online | 11 video clips (3-6 min. length)<br>101 messages posted |
| 6 | Reflective discussion on the project | | Post-reflection,<br>Focus group interviews |

In the first week, the student groups created collaborative concept maps in class and posted to the discussion board. In the next class, students discussed about the concept maps posted by other groups in class. Discussion prompts guided dialogs. Examples of the prompts included "What differences or interesting things do you find in this team's map (or movie)?", "What similarities do you find comparing with your team's map (or movie)?", and "What is your question for this team?" It was followed by another one-week long discussion board in the LMS with other students from both countries, in regards to their artifacts as well as any other interesting topics. Each group had opportunity to discuss about the online discussion experiences in class later. Upon completion of the concept map, the participants were asked to create a movie presentation about "good teaching" as a group assignment. After that, the participants had an opportunity to view other student groups' video presentations and participate in online discussion in the same way of concept mapping session.

### Data Collection and Analysis

The study employed the qualitative approach of content analysis to explore the students' constructed knowledge related to the concept of "good teaching." The posted artifacts of student groups and the scripts of online discussion forums were used for this study, which were triangulated through individual reflection surveys. Content analysis was conducted on a total of 240 postings (116 postings for concept maps; 101 postings for video clips) in asynchronous discussion boards about the collaborative projects. In terms of the second research question, three independent researchers coded the students' discourse using the coding scheme of cognitive presence suggested by Garrison, et al. (2000). The data were coded by the three researchers, and multiple rounds of negotiation were carried out until a Cohen's kappa of at least .75 was reached for all categories, as recommended by Rourke, Anderson, Garrison, and Archer (2001).

## Results

### Participants' Perceptions of "Good Teaching"

The first research question is how the pre-service teachers perceived the concept of good teaching. Based on their face-to-face group discussions, the students developed total eleven concept maps and eleven video clips. The three researchers individually coded the emerging themes and issues from the artifacts and postings related to descriptions of the artifacts, and compared each researcher's work to develop consensus for the final result. Emerging themes from the students' concept maps and video clips were as follows:

**Teacher's attitude toward facilitating learners.** Most student maps (10 out of 11 maps) indicated that the 'good' teacher has a passion for teaching and learning. Students agreed with that one of the most important factors of good teaching is 'the teacher' who has professional knowledge of curriculum and strong positive attitudes for teaching and learning. Mostly they have discussed about the teachers' role for facilitating learning and motivating students. Student videos illustrated good teachers' characteristics as being creative, passionate, experimenting, engaging with students, and so on. Also student videos demonstrated that the preservice teachers had tried to apply

educational theories (e.g., motivation theories) to explain good teachers' behaviors to promote students' motivation in class.

**Interaction between teacher and learner.** Many Korean students' maps (7 out of 8) and videos (8 clips) showed that the meaningful interaction among learners and teachers is an important factor for good teaching. They focused on methods and adaptable styles of interaction between teacher and students. The factor of interaction seems like a crucial circumstance that involves various cultural issues as well as teacher's individual communication skills. Korean student videos specifically showed short skits regarding specific classroom situations in which the meaningful interactions between teacher and learners occur. In the asynchronous discussion on video clips, the pre-service teachers shared many examples of teaching methods and strategies to improve interaction between teacher and learners.

> "……From this group video, I learned that the classroom should be more student-oriented …."
> "……It is different from our video in the sense that we incorporated more photos of the students/teachers interacting in the classroom as opposed to classroom setup….."
> "……As we said before, we think media as a way of interaction. For students, it is same that they can interact with each other through the media. For example, they can use PPT when they do a presentation, or they can use online messenger to do chatting to share each person's idea. I hope my reply resolves your question……."

**Integration of components in education systems.** Students' maps and videos showed a variety of components of educational system, such as instructor, learner, environments of class, curriculum, community, instructional methods and so on. Specifically their artifacts were more focusing on integrating or harmonization of these components. Their maps emphasized the interrelationships among the components to achieve the goal of education.

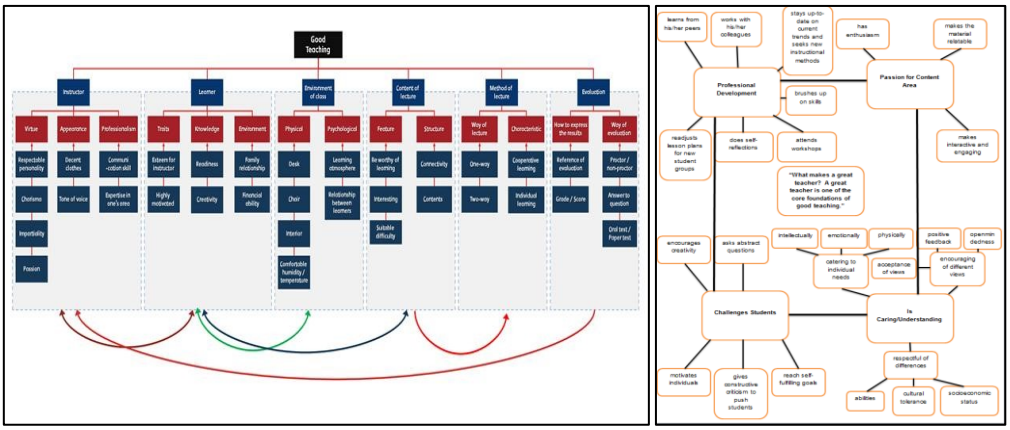


*Figure 1* Examples of student group concept maps

In addition, the students were talking about various issues to exploring other education system and culture in the asynchronous online discussion. Specifically the discussion topics included; problems of one-way lecturing style and communication, students-teacher ratio, teachers' style, diverse learners, special education/integration, culturally diverse students, bullying, school violence and prevention, teachers' responsibility and tenure, safety drills, and so on.

During the online discussions, students confirmed, corrected, developed, and expanded their perception of good teaching. Both universities' students agreed on most ideas of what made good teaching, but also saw some differences between the U.S and Korea (such as, different idea of teachers' responsibility (or fault), different significance of interaction in teaching and learning, different issues in school safety) and were interested in exploring further by talking with their other country's peers.

## Cognitive Presence in Asynchronous Discussions

In this study, each message was broken down into its thematic indicator as analysis unit, using the coding scheme of cognitive presence (Garrison, Anderson, & Archer, 2001). Rourke et al. (1999) stated that thematic units reflect the

logic of the indicators; they resist reliable and consistent identification (p. 60). Table 3 summarizes the findings of cognitive presence phases in two online discussion forums.

Table 3
*Students' levels of cognitive presence in online discourses*

| | Trigger events<br>*N (%)* | Exploration<br>*N (%)* | Integration<br>*N (%)* | Resolution<br>*N (%)* | Total<br>*N (%)* |
|---|---|---|---|---|---|
| Concept map | 18 (11.8) | 65 (42.8) | 58 (38.2) | 11 ( 7.2) | 152 (100) |
| Video clips | 17 (17.5) | 41 (42.3) | 35 (36.1) | 4 ( 4.1) | 97 (100) |
| Total | 35 (14.1) | 106 (42.6) | 93 (37.3) | 15 ( 6.0) | 249 (100) |

It was found that the first phases of cognitive presence (trigger) had 14.1 % of the responses. As trigger events, students just posted questions about some words or cues in the artifacts without evidence of idea exploration. The second phase, exploration, had the highest frequency (42.6%) of coded responses. The exploration includes brainstorming to share their insights, clarifying personal points, and contributing relevant information. Although the frequency of responses for resolution/application was a few, the findings of integration phase (37.3%) indicated that the students had engaged in more higher-order cognitive activities including critically reflecting and synthesizing of information. Certainly integration seems to be more challenge than exploration for students (Garrison, Anderson, & Archer, 2001).

## Discussion

This study explored how the pre-service teachers perceive the concept of "good teaching" in conducting the collaborative projects, and how they constructed and confirmed such knowledge during asynchronous online discussions. In this study, students articulated their ideas through two artifacts such as concept maps and video clips. These artifacts externalized students' current state of knowledge (Blumentfeld et al., 1991), and functioned as triggers to facilitate their critical thinking process in online discussions.

It appears that there are both similarities and differences in terms of how the participants from the two countries perceived "good teaching". From the data, the participants from the both countries mostly agreed that teachers played an important role in good teaching. While the participants in Korea considered various elements, including teachers, students, administrators, and environment, the participants in the U.S. seemed to focus more about the characteristics of good teachers. Even though the American students' maps depicted "classroom" and "curriculum", their comments in online discussion indicated that teachers' role as facilitators in the classroom and curriculum should be emphasized. Such differences could be due to their personal experiences as students. In asynchronous discussion, one American participant explained that the delightful memories of teachers in schools led her group focused on "teachers' characteristics" affecting good teaching. Several Korean participants had concerns over the competitive education system and they focused on the reform they wanted to see. However, through the interactions with other country students, the participants reflected on their experiences, but they also gained insights that they had not considered which expanded their ideas of good teaching and helped them to realize their stereotypes that they had before. Overcoming stereotypes is important in multicultural education (Gomez, 1991).

This exploratory content analysis indicated that students were engaged in critical inquiry during the asynchronous discussions. According to Garrison, et al. (2001)'s, the four phases of practical inquiry including initiation, exploration, integration, and resolution reflect critical thinking. The finding showed somewhat higher records of exploration (42.6%) and integration (37.4%). This may have occurred because of the explicit instruction given to the participants for discussions in advance. In the asynchronous discussions, students started with their postings of the groups' artifacts and short descriptions. The instructors specifically provided several questions for the participants to answer in asynchronous discussions. Therefore, the questions served as prompts and directions of what they had to write on the online forum. This notion supports previous studies' (Meyer, 2003; Vaughan & Garrison, 2005) contention that the nature of the initial discussion question that specifically asked for an issue to be resolved is critical. When organizing online discussion for collaborative learning, instructors should consider the use of problem-based tasks to provide common learning experiences that students can draw from to promote deeper levels of reflective inquiry (Bangert, 2008).

In addition, the asynchronous discussions allowed the students to participate more thoughtfully in interacting with peers and other country students. The participants were given the questions ahead of time and they were able to

think and draft their questions and response in advance. Meyer (2003) found that online discussions gave learners more time for reflection rather than face to face meetings, partially because they were not limited by class time. Time could be essential to the development of critical inquiry in this kind of global learning project.

However, to reach much higher level of cognitive presence, that is, the resolution phase was still challenge. There were also many postings that stayed in the phase of trigger events (14.1%), which is the lowest level of cognitive presence. This meant that the participants required some guidance in order to understand the necessary steps to take in the dialog. Garrison et al. (2001)'s initial research, which assessed the cognitive presence of graduate learners enrolled in an online learning course, did not identify a large percent of messages classified at the resolution phase. Their research only focused on identifying the phases of critical inquiry that emerged from learners' dialogues without controlling teacher presence. Garrison and Anderson (2003) also content that the instructor plays a pivotal role in moving discussions toward the highest levels of cognitive presence, that is, from exploration to integration and then to resolution. In this study, instructors did not participate in online dialogues. The instructors could have emphasized differing student perspectives and stimulated their social interaction in online discussions. Also it might be important for instructors to facilitate discourse that directly engage students by posing reflective questions that require additional in-depth responses. Tagg and Dickenson (1995) stated that student activity is influenced by tutor behavior in a computer conference. The continual tutor presence, such as short messages acknowledging a student's contribution and followed by guidance, increased student activity (Tagg & Dickenson, 1995). The instructors' feedback and critique for the production of artifacts may also help students to further their level of higher-order cognitive presence in the online discussion process. Further study is necessary to investigate the effects of instructor's scaffolding to stimulate students' critical inquiry in this online discussion setting.

Also this action research supports the notion that the collaborative group project should be well-designed with specific problem-based tasks and prompts. In this study, the collaborative activities to develop concept maps and video clips based on the group's ideas about good teaching were critical prompts to engage students in online discussion. The online collaborative activity can be enhanced by attention to task (Kutts, Hibbard, & Levin, 2005). The online discussion with peers focusing on the project artifacts led to a meaningful learning process for the pre-service teachers. Teacher educators must look more closely at how they engage pre-service teachers to think critically about successful instruction for diverse learners. Online collaborative tasks to design instruction that meets the needs of diverse learners in global settings may be useful to prepare pre-service teachers for challenges of diverse classrooms.

Global class projects through online discussion could provide preservice teachers with meaningful learning experiences. It could expand ideas of educational concepts in multiple perspectives, and enhance their understanding of good teaching. Although this action research presents practical implications for teacher education program and instructional design, there are some limitations. Because the two class sizes were so different in this case, it is hard to generalize the differences of learners' perspectives between two countries from the results. Also, limited time allotted for online discussions and scheduling deadlines between two courses caused difficulty in students following up on all of the comments in discussion boards. Improvements can be made by offering longer discussion periods to enhance opportunities of feedbacks, and changing the size of discussion groups. In addition, more experimental form of research to investigate the effects of teaching presence on cognitive presence and global understanding could be conducted in future.

## References


An, H., Kim, S., & Kim, B. (2008). Teacher perspectives on online collaborative learning: Factors perceived as facilitating and impeding successful online group work. *Contemporary Issues in Technology and Teacher Education, 8*(1), 65-83.

Bangert, A. (2008). The influence of social presence and teaching presence on the quality of online critical inquiry. *Journal of Computing in Higher Education, 20*(1), 34-61.

Blumentfeld, P., Soloway, E., Marx, R., Krajcik, J., Guzdial, M., & Palincsar, A. (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. *Educational Psychologist, 26*(3/4), 369-398.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher, 18*(1), 32-42.

Devine, D., Fahie, D., & McGillicuddy, D. (2013). What is 'good' teaching? Teacher beliefs and practices about their teaching. *Irish Educational Studies, 32*(1), 83-108.

Driscoll, M. (2000). Psychology of learning for instruction. Needham Heights, MA: Allyn & Bacon.

Duncan-Howell, J. (2010). Teachers making connections: online communities as a source of professional learning. *British Journal of Educational Technology, 41*, 324-340.

Espinoza, S., & McKinzie, L. (1999). *Online collaboration: Two models.* Paper presented at the annual meeting of the Society for Information Technology and Teacher Education International Conference. San Antonio, TX.

Garrison, D. R. (2007). Online community of inquiry review: Social, cognitive, and teaching presence issues. *Journal of Asynchronous Learning Networks, 11*(1), 61-72.

Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21st century: A framework for research and practice.* London: Routledge.

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), 1-19.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education, 15*(1), 7-23.

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring casual relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *Internet and Higher Education, 13*, 31-36.

Gomez, A. (1991). Teaching with a multicultural perspective. *ERIC Digest*. Retrieved from http://www.ericdigests.org/1992-5/perspective.htm.

Gunawardena, C., Lowe, C., & Anderson, T. (1997). Analysis of a global online debate and the development of an interaction analysis model for examining the social construction of knowledge in computer conferencing. *Journal of Educational Computing Research, 17*(4), 397-431.

Jegede, O. J. (2002). Facilitating and sustaining interest through an on-line distance peer-tutoring system in a cooperative learning environment. *Virtual University Gazette*, 35-45.

Johnson, D. W., & Johnson, R. T. (2004). Cooperation and the use of technology. In D. H. Jonassen (2nd ed.), *Handbook of research on educational communications and technology* (pp. 785-811). Mahwah, NJ: Lawrence Erlbaum Associates.

Jonassen, D. H., Davidson, M., Collins, M., Campbell, J., & Hagg, B. B. (1995). Constructivism and computer-mediated communication in distance education. *American Journal of Distance Education, 9*(2), 7-25.

Kanuka, H., & Rourke, L., & Laflamme, E. (2007). The influence of instructional methods on the quality of online discussion. *British Journal of Educational Technology, 38*(2), 260-271.

Kimmerle, J., Moskaliuk, J., Oeberst, A., & Cress, U. (2015). Learning and collective knowledge construction with social media: A process-oriented perspective. *Educational Psychologist, 50*(2), 120-137.

Korthagen, F. A. J. (2004). In search of the essence of a good teacher: towards a more holistic approach in teacher education. *Teaching and Teacher Education, 20*, 77–97.

Kurtts, S., Hibbard, K., & Levin, B. (2005). Collaborative online problem solving with pre-service general education and special education teachers. *Journal of Technology and Teacher Education, 13*(3), 397-414.

Meyer, K. A. (2003). Face-to-face versus threaded discussions: The role of time and higher-order thinking. *Journal of Asynchronous Learning Networks, 7*(3), 55-65.

Mouza, C., Kaplan, D., & Expinet, I. (2000). A web-based model for online collaboration between distance learning and campus students. Proceedings of the WebNet 2000 World Conference on the WWW and Internet Proceedings. San Antonio, TX.

Rourke, L., Anderson, T., Garrison, D. R., & Archer, W. (2001). Methodological issues in the content analysis of computer conference transcripts. *International Journal of Artificial Intelligence in Education, 12*, 8-22.

Rourke, L., Anderson, T., Archer, W., & Garrison, D. R. (1999). Assessing social presence in knowledge in computer conferencing. *Journal of Distance Education, 14*(2), 50-71.

Sagor, R. (2011). *The action research guidebook: A four-stage process for educators and school teams,* (2nd Ed.). CA: SAGE Company.

Scardamalia, M. (2002). Collective cognitive responsibility for the advancement of knowledge. In. B. Smith (Ed.), *Liberal education in a knowledge society* (pp. 67-98). Chicago, IL: Open Court.

Shea, P., & Bidjeraon, T. (2009). Community of inquiry as a theoretical framework to foster "epistemic engagement" and "cognitive presence" in online education. *Computers and Education, 52*(3), 543-553.

Shultz, B. (2003). Collaborative learning in an online environment: Will it work for teacher training? In *Proceedings of the 14th annual Society for Information Technology and Teacher Education International Conference* (pp. 503-504). Charlottesville, VA: Association for the Advancement of Computers in Education.

Tagg, A. C., & Dickenson, J. A. (1995). Tutor messaging and its effectiveness in encouraging student participation on computer conferences. *Journal of Distance Education, 10*(2), 33-55.

Vaughan, N., & Garrison, D. R. (2005). Creating cognitive presence in a blended faculty development community. *The Internet and Higher Education, 8*, 1-12.