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Improving online social presence through asynchronous video

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ABSTRACT

Online learning has become a reality for many students in higher education. Unfortunately, something that has also become a reality is a sense of isolation in online courses, and Moore (1980) has warned that students' sense of distance can threaten their ability to learn. The community of inquiry framework (Garrison, Anderson, & Archer, 2000) has provided insight into ways that online interactions can improve students' and instructors' social presence and learning. Emerging video technologies may be able to improve these interactions and thus more easily support the development of communities of inquiry. In this study we interviewed students in three distinct courses using different video-based instructional strategies. A large majority of students indicated feeling that the video-based communication made their instructors seem more real, present, and familiar, and that these relationships were similar to face-to-face instruction. Video communication impacted students' social presence in similar ways, although to a lesser degree than they believed it impacted instructor social presence. We conclude with discussion for future research and practice.

1. Introduction

Online learning has forever changed the educational landscape, but the same separation that provides online students with accessibility, flexibility, and reflective interaction (Graham, 2006; Garrison, 1997; Rourke, Anderson, Garrison, & Archer, 2001) can also create a sense of isolation, making it particularly difficult for a community of inquiry to thrive. Moore (1980) explained that students' sense of distance can threaten their learning. He also stated that this potential source of difficulty can become a remedy, since students' psychological sense of distance is determined not by location, but by the quantity of their interactions. Dawson (2006) supported this claim by finding a strong correlation between the frequency of interaction and online students' sense of community and satisfaction.

Garrison et al. (2000) stated that stronger online communities of inquiry exist when interactions allow students to establish their social presence as *real people* with individual thoughts, feelings, and humor. Although this is not a new concept, Garrison et al.'s important contribution was their assertion that social presence has direct academic implications (Garrison, Anderson, & Archer, 2010). Rourke et al. (2001) contended that students with social presence are likely to instigate, sustain, and support content-related communication because it becomes more engaging and rewarding. These and other scholars have demonstrated that social presence and a shared emotional connection within the community can positively affect online learning and student satisfaction.

Although researchers recognize these benefits, they do not fully understand how instructors and course designers can effectively establish online social presence. Research has found that social presence can be established in a text-based course (Caspi & Blau, 2008; Garrison et al., 2000; Kehrwald, 2008; Rourke et al., 2001), but the absence of visual conversational cues can make it more difficult (Garrison & Arbaugh, 2007; Garrison et al., 2000; Rovai, 2002b).

Video technologies might contribute to overcoming these challenges. Moore (1993) explained that instructors can decrease students' sense of distance, thus increasing their feeling of emotional connection, by "manipulating the communications media" (p. 25). An extensive survey administered to students in 115 higher education institutions found they wanted the use of technology to be "balanced with the human touch" of a *real* person (Smith, Salaway, Caruso, & Katz, 2009, p. 21). It may be possible to more effectively provide this human/technology balance by manipulating the communications medium to involve more video that could provide visual and audio cues not expressed in text.

Correspondence courses have used synchronous video for this reason; however, synchronous communication requires commitment to a specific time period, removing much of the flexibility that has made distance learning popular. Further, synchronous video technologies do not allow much reflection prior to contributing a comment and can still be technically unreliable, which can create real time and focus costs (Griffiths & Graham, 2010). Some scholars have suggested that the flexible and reflective nature of asynchronous communication could be accomplished via video that is high in fidelity, thus combining the *human touch* aspects of face-to-face communication with the flexibility of online environments (Borup, Graham, & Velasquez, 2011; Griffiths & Graham, 2009a,b).

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As yet there is little research on how instructors can effectively use asynchronous video to strengthen social presence (and by extension cognitive presence) and how students perceive their experience in video-mediated environments. In this paper we first review social, cognitive, and teaching presence as critical components of an online community of inquiry (Garrison et al., 2000). Second, we discuss the limited research related to asynchronous video- and audio-mediated online learning. We then present case studies of three sections of an online instructional technology course for preservice teachers in which the instructors of all sections attempted, in slightly different ways, to foster an effective community of inquiry using video as a main pedagogical tool. We conclude with implications for future design and research of video-mediated online learning with its potential for improving students' affective outcomes.

2. Review of literature

2.1. Social presence within a community of inquiry

In 1997 Garrison recognized the need for a framework for online learning focused less on mass production, self-instruction, and independence and more on communication and personalization. In 2000, Garrison et al. presented the community of inquiry (CoI) framework based on the theory that quality learning results from three core constructs: cognitive presence, social presence, and teaching presence.

Cognitive presence, the most basic of the three, is defined as the extent to which learners can "construct meaning through sustained communication" (Garrison et al., 2000, p. 89). Garrison, Anderson, and Archer (2001) described four essential phases related to student cognitive presence: a triggering event during which the issue is recognized, individual and social exploration of ideas to better grasp the issue, evaluation and integration of the ideas generated, and resolution of the issue though "direct or vicarious action" (p.11). Much like Moore's (1993) assertion that the communication mode can affect dialog, Garrison et al. (2000) explained that cognitive presence "is partly dependent upon how communication is restricted or encouraged by [its] medium" (p. 93).

In the CoI framework, teaching presence and social presence facilitate students' cognitive presence and improve their learning. Anderson, Rourke, Garrison, and Archer (2001) stated that *teaching presence* consists of three core instructor responsibilities: designing and organizing the course, facilitating discourse, and providing direct instruction. Course design includes selecting curriculum materials and communication tools, setting project deadlines, and creating learning activities that best utilize the tools and materials. In addition, instructors motivate, encourage, and assess student performance, and use direct instruction to scaffold student learning.

Social presence is not original to the CoI framework. Short, Williams, and Christie (1976) originally defined *social presence* as "the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships," specifying that it is the "quality of the medium itself" (p. 65). However, this distinction soon changed, and social presence became less about the objective qualities of the medium and more about perception (Swan & Shih, 2005). Garrison et al. (2000) have also adopted the perceptual view of social presence, defining it as individuals' ability to convey themselves as real people. Garrison et al. further stated that social presence has three identifiers: emotional expression, open communication, and group cohesion. *Emotional expression* includes self-disclosure, humor, and the expression of feelings related to learning. *Open communication* requires that others recognize and respectfully attend to an individual's contributions, enabling risk-free exchanges. The third identifier of social presence, *group cohesion*, can be "exemplified by activities that build and sustain a sense of group commitment" (Garrison et al., 2000, p. 101). Picciano (2002) would later add that social presence includes "a sense of being in a place and belonging to a group" (p. 22).

Teaching presence and social presence are not entirely distinct constructs. Anderson et al. (2001) explained that teaching presence "overlaps with many of the behaviors identified in [the] larger model of 'social presence' as the teacher is an active member of the community of inquiry" (p. 7). Lowenthal and Lowenthal (2010) termed this overlap *instructor's social presence* and stated that research on the topic is extremely limited. Swan and Shih (2005) found instructor social presence to have a larger impact than student social presence on positive course outcomes such as perceived learning.

Notably, the CoI framework emerged from the study of text-based online learning environments, and much of the initial CoI research focused on students' abilities to establish social presence within these textual constraints. Although research has shown that social presence can be established in these text-based environments (Caspi & Blau, 2008; Garrison et al., 2000; Kehrwald, 2008; Rourke et al., 2001), more than 10 years have now passed since Garrison et al.'s (2000) seminal article —a decade during which computer-mediated communication has advanced to become a "media cornucopia" of communication tools including asynchronous video (Rice, Hiltz, & Spencer, 2005). These new tools enable new kinds of interaction possibilities, but little is known about student and instructor use of asynchronous video communication and its effects on the online learning experience.

2.2. Video-mediated online interactions

Some researchers have begun to investigate how high fidelity asynchronous communication tools can establish a strong sense of connection and social presence while still maintaining the flexible and the reflective nature of asynchronous communication. In teaching seven asynchronous text-based online courses, Ice, Curtis, Phillips, and Wells (2007) recognized that connection and social presence were often inadequate, so they began using asynchronous audio feedback. They found through a post-semester survey ($n=31$) and interviews ($n=27$) that most of the students (26 of the 31 survey respondents and 25 of the 27 interviewed students) felt audio feedback was more effective than text because of the vocal cues, a feeling that they were more engaged and could better remember the content, and a stronger perception that their instructor cared about their learning.

Oomen-Early, Bold, Wiginton, Gallien, and Anderson (2008) conducted a similar but larger study involving 156 online students. During the semester instructors posted five audio messages accompanied with text summaries. In addition, students received at least two individual audio feedback comments. A large majority of respondents indicated that audio communication improved the instructor–student relationship (82%) and helped them better comprehend the material (72%). In addition, qualitative survey responses indicated that the audio communication *humanized* the instructor. However, despite these benefits, student preferences were split, with 52% stating they preferred text communication, perhaps because many of the students were enrolled in writing-intensive programs. In addition qualitative survey responses indicated that students used audio messages largely to "augment and expand the text-based commentary" (p. 273). A large majority of students (85%) perceived the combination of audio and text to be beneficial.

Although audio communication contains vocal cues, it lacks visual cues such as facial expressions and hand gestures. Consequently, researchers have begun examining instructors' use of asynchronous video communication. In one study (Griffiths & Graham, 2009a), an instructor used asynchronous video to explain the instructional material and ask students questions. Students recorded and transmitted their responses to the instructor as email attachments, and the instructor responded using asynchronous video. Students in the online section using these methods gave considerably higher ratings on

overall course satisfaction and on their perceptions of the instructor than did students in a comparable face-to-face version of the course.

These scholars have conducted other research (Borup et al., 2011; Griffiths & Graham, 2009a,b) which found that asynchronous video can be used effectively to establish social presence. Because their findings have relied heavily on course surveys, more in-depth research is needed to better understand why and how regular asynchronous video communication can establish instructor and student social presence. In this paper we explore this issue by specifically addressing the following research questions in the context of a one- and two-credit technology integration course for preservice teachers:

1. How did video-based strategies influence students' perceptions of the instructor's social presence?
2. How did video-based strategies influence students' perceptions of their own and their peers' social presence?

3. Methodology

3.1. Research design

A cross-case design (Merriam, 1998) was used for this study. Data were collected for three cases to show how different instructors organized and taught their courses via asynchronous video and how these decisions impacted their students' perceptions about social presence within the course.

3.2. Research context

This study was conducted in the context of a semester-based technology integration course for preservice teachers, offered online through one of the largest teacher preparation programs in the country, which graduates nearly 900 new teachers a year. All preservice teachers are required to take a technology integration course (course code: 286 for secondary education, a one-credit course; 287 for elementary and early childhood education, a two-credit course). Traditionally technology integration courses have focused primarily on teaching preservice teachers how to use technology (Ertmer, 1999). However, Nillas (2008) recommended that these courses should also help preservice teachers develop a positive disposition toward teaching with technology. Many researchers have found that courses improving preservice teachers' technological skills alone may not improve their intentions to actually use technology in their teaching (Browne, 2007; Laffey, 2004; Lambert, Gong, & Cuper, 2008). But studies have shown that increasing students' sense of closeness to and belonging in a class community may help preservice teachers learn (Liu, Magjuka, Bonk, & Lee, 2006; Caspi & Blau, 2008; Rovai, 2002a) and develop a positive disposition toward effective technology integration (Beyerbach, Walsh, & Vannatta, 2001; Ertmer, 2005; Putnam & Borko, 2000). Indeed, Zhao and Frank (2003) and West, Waddoups, and Graham (2007) found that many teachers are more responsive to peer attitudes than to dispositions promoted by institutional and professional development initiatives. Responsive to these findings, the instructional technology integration course we studied focused on both improving teachers' technological skills and developing their positive and supportive relationships with other teachers. Thus the course was an effective context for the current research.

3.3. Participant sampling

For this study researchers selected three predominantly online sections (two sections of secondary teachers and one of elementary teachers), taught by three different instructors, all of whom had experience teaching online and face-to-face. Although the courses were online, the enrolled students carried a full-time course load and took the majority of their courses on campus. In addition, many students had more than one course in common. Student participants were selected from this population specifically to make the most informative case studies (Patton, 1980). For example, secondary education students were selected for their high and low perceptions of community in the course, as shown on an end-of-course survey based on Rovai's (2002c) Classroom Community Scale (CCS) and Rovai, Wighting, and Lucking's (2004) Classroom and School Community Inventory (CSCI). Elementary education students were selected by their instructor for their varying personality characteristics (i.e. some were shy, extraverted, task-oriented, prone to procrastination etc.). In total, 12 secondary education preservice teachers (enrolled in the 286 course), and 6 elementary education preservice teachers (enrolled in the 287 course) were interviewed. The students were predominantly female and in different stages of their programs.

3.4. Course procedures

Course assignments and procedures were similar across all sections. The instructors organized students into small learning groups of three to eight students and required them to discuss class topics each week on individual blogs, on the instructor's blog, or via the video technologies. Two instructors used VoiceThreads to mediate these conversations (http://www.voicethread.com), and one instructor used YouTube (http://www.youtube.com). Two instructors began the semester by meeting face-to-face for the first class session. John's secondary education section was completely online and never met face-to-face. All instructors used different strategies to establish social presence, including video recording themselves teaching the initial class, asking students to introduce themselves in a video, and requiring regular participation in discussions.

3.5. Data collection

The primary source of data was a semi-structured interview with all 18 participants. The interview questions, which were based on the community of inquiry concepts of social presence, probed for whether the students felt connected to their instructors and peers in the course and which technologies and methods aided them in developing this connection. Each interview was digitally recorded and then transcribed.

3.6. Data analysis

Interview transcriptions were analyzed inductively using constant comparison coding methods. From the initial coding, which examined all aspects of community formation, several of the major themes that emerged referred to the use of video communication to establish instructors' and students' social presence in the course. Guided by Garrison et al.'s (2000) three subcategories of social presence (i.e. emotional expression, open communication, and cohesion), definitions and coding categories were discussed among the members of the research team to improve agreement (see Table 1). Subsequently a member of the research team coded all of the 18 interviews according to these categories, being sensitive to emerging new themes and continually checking them with the research team. Once the coding was complete, the categories were analyzed first within each case to determine important themes and then across cases to identify comparative findings.

4. Results

To establish the context for our findings, we will first describe how video was used by each teacher and then present our cross-case analysis.

Table 1
Social presence coding categories and definitions.

Category	Definition
Emotional expression	
Expression of personality	Participants' ability to perceive and/or transmit personality, including feelings, sense of humor, sarcasm, energy level, etc.
Verbal self-disclosure	Participants' sharing of personal thoughts and experiences that extend beyond the boundaries of the course
Visual self-disclosure	Participants intentionally or unintentionally sharing personal information with others through their appearance and/or environment
Open communication	
Informational exchange	Participants' perception that others in the course are attending to their comments and in turn they are attending to others' comments
Natural expression	Participants' ability to share insights and thoughts in a natural, easy, and efficient way
Fidelity	Participants' ability to see and hear the people they are communicating with and know that they are real
Cohesion	
Connection	Participants' perception that they have formed a sense of connection with others that allows for safe communication
Support	Participants' perception that they could count on others for help if needed
Similarities	Participants' perception that they are similar to others in the course

4.1. VoiceThread for student–instructor interaction (Ronald)

Ronald, the instructor of a one-credit version of the course for secondary education majors, chose to use VoiceThread (http://www.voicethread.com) as the primary medium for conveying weekly content to and moderating discussions with his online students. VoiceThread is an interactive communication tool launched in March 2007 (Rad, 2007). Although it was not intended to be an exclusively academic tool, reports affirm that 90% of all VoiceThread activity has been performed by the educational community (Berman, Holsing, Meyer, Stubbs, & Winck, 2009). To create a VoiceThread, a user uploads media including images, video, PowerPoint presentations, and PDF documents, and then creates a video or audio narration. Students can comment on the VoiceThread presentation via text, audio, or video. Users can upload their photos and then click on the photo icons to view specific comments. Despite its name, VoiceThread is constrained by its inability to show the thread of the discussion.

For his class, each week Ronald created a multi-slide VoiceThread that he required students to view and comment on during the week. The beginning of each VoiceThread was a short 3-slide presentation given by one of the students using video narration, which was followed by Ronald's portion of the VoiceThread which included a greeting, class announcements, and instruction via PowerPoint slides, images, a video clip, or urls to other websites. Ronald video-narrated each slide to present the material and frequently interspersed slides that contained only questions for students to respond to for weekly class participation. Commonly questions asked students to apply course principles to their specific field of teaching and to share personal insights and experiences. At the end of each VoiceThread Ronald described the week's assignment in detail.

Students were strongly encouraged to respond to these discussions with video comments. However, most comments from students were text. Within VoiceThread each week, Ronald encouraged students to talk to each other and to him about class topics, and it was common for students to mention each other: e.g., “I also agree with …” or “Like most of you, I … .” Ronald also typically responded to student questions or gave supportive feedback on specific comments near the end of each week's cycle. These VoiceThreads were sent by email to every student in the class, with minimal content in the email itself so that students would need to engage with the VoiceThread each week. However, Ronald did respond (usually within 24 h) to emails from students, sometimes directing them to portions of his VoiceThread or to a class website where they could find resources. He also invited them to visit with him in person if they had lingering questions.

4.2. VoiceThread for instructor and small group interaction (Joseph)

In the two-credit version of the course for elementary education majors, Joseph also utilized VoiceThread. For his students, Joseph used the tool in three ways: (1) to orient students to assignments, (2) to facilitate small group peer interaction regarding course topics, and (3) to provide students with personalized feedback on completed projects. Similar to Ronald's 286 section, each week Joseph created and video narrated a multi-slide VoiceThread regarding that week's assignments. Joseph's video narration elaborated on text instructions for completing the week's assignment and provided general feedback on the previous week's homework. However, Joseph did not ask students questions or require them to comment on these whole-class VoiceThreads. Instead students were organized into small groups of 6–8 and received participation points for posting a video response to their group's private VoiceThread. These group VoiceThreads typically contained only one slide with a discussion prompt. Commonly students shared past experiences and personal thoughts; they received points only for posting a video response.

Joseph participated regularly in the VoiceThread discussions, often referring to students by name, and regularly posted two video comments on each group's VoiceThread: once in the middle of the week to encourage participation and correct misconceptions and once at the end to summarize the discussion. Joseph only required students to make one comment a week but encouraged them to view and build off of the comments previously made by other students. Each student created a personal VoiceThread where Joseph left video feedback following each project throughout the semester.

4.3. YouTube for student–instructor interaction (John)

In contrast to Joseph and Ronald, John used YouTube as a tool for regular video communications with students in his one-credit section of the course for secondary education majors. Launched in 2005, YouTube has quickly become the largest free video hosting site, where users can upload videos or directly record videos using webcams. YouTube also allows account holders to host conversations (with text or video responses) attached to each uploaded video.

Each week John uploaded a video of himself to YouTube for his students, typically 5–15 min, sharing class announcements, direct instruction, orientation to the week's assignments, and multiple questions for students to potentially respond to concerning how they could apply course principles in their future teaching. While John allowed students to post text responses, he required at least half of students' responses to be short 30–60 second video postings. However, John found the large majority of students' posts to be video. John encouraged students to post video replies to peer videos; however, students rarely referred to peer comments, and John sensed that they were not watching peer comments.

4.4. Analysis of students' social presence in multiple cases

The following sections will report the findings from the cross-case analysis of the three course sections. First, we will report findings from students' comments regarding their perceptions of instructor social presence. Following, we will report findings regarding student social presence. Within each section, findings are organized by the three social presence subcategories cited by Garrison et al. (2000): open communication, emotional expression, and cohesion.

4.4.1. Instructor's open communication

Open communication was coded when students stated that video communication helped them to recognize and attend to their

instructor's comments and in turn to know that the instructor was recognizing and attending to their contributions (see Table 2). All interviewed students indicated that video communication with their instructor positively impacted the course. Sixteen responded similar to Cindy, who stated, "I feel like I was talking to [my instructor] every week on this video, like he's just sitting there talking to me." Students stated that this feeling resulted from the instructor both asking questions and responding to student comments as well as providing points for students to participate.

Half of the students mentioned that video communication improved their instructor's teaching. Keith from John's section stated that video communication made it "easier to understand the instructions, especially when he can expound on something when he is talking." Natalie form Ronald's section said, "There was just a lot of information to portray . . . we would both see and hear what he wanted us to do, so it was probably the most efficient way." Jackie from Joseph's section added that "just reading it can be a little bit confusing . . . but I feel like [video] makes the course a lot clearer." Five students indicated the communication was natural and, like Natalie from Ronald's class, felt "it was almost like [the instructor] is interacting with you almost just like you would in the classroom."

Individual video feedback on projects was unique to Joseph's section, and all six of his students found it to be beneficial. Angela stated that the video feedback helped because she "knew exactly why [she] got the points that [she] did and how to fix it." Angela had procrastinated work in other online classes but found that video feedback helped her to stay current in the course. She said,

> There was one assignment that I did a week late, and I remember looking at my VoiceThread feedback and . . . I could see [Joseph's] face saying "Ok, well if you want to do that this week, that would be great." I felt like "Ok, well I should probably do it. He's looking for it." And so I did it quicker than I probably would have done it otherwise . . . I think that it would have been easier to disregard an e-mail for a little longer . . . because it is not a person.

Five students stated that they would have liked more communication with their instructor. Michele noted that John never commented on her responses; she said that she wished she "had gotten an occasional comment." She stated that John's reply would have helped her because then she "would know that he was actually watching or that it mattered or that [she] should say something that [John] could comment on."

Comments from 14 students indicated that the fidelity of the video communication improved their learning experience because they could see the instructor. Dana from Ronald's section noted, "It made him feel like a real teacher. He was actually lecturing, you could see his face as he talked about the slides." Similarly, Cathy from Joseph's section explained, "There's just something about seeing [the instructor's] face instead of just text that makes it seem more real."

4.4.2. Instructor's emotional expression

Information regarding the instructors' self-disclosure and expression of personality was coded as *emotional expression* (see Table 3). Eight students commented that their instructors' self-disclosure strengthened the course experience. Natalie from Ronald's section stated, "It was just like being in a classroom, so you saw him and he gave similar examples. He shared things about his family. . . he shared those personal experiences, and so you felt like you knew him more." Four students also found that the fidelity of the video helped them to learn about their instructor. Amber stated that seeing John make comments from home made him feel like a "real person." Similarly, Vanessa said that seeing Ronald in his home and hearing his kids running in the background helped her view him as a "dad kind of figure."

Five students reported that video helped them gain a perception of their instructor's personality. Dana stated that video comments helped her know Ronald was a "good person" who was willing to help her because "he was very energetic and happy on all the VoiceThreads." Dana also felt that this energy and happiness could not be shown in text because it came from the instructor's "facial expressions and movement." She added, "You can do a lot with text. I love to read because reading is engaging, but I feel like you learn more about a person watching them speak then just listening or reading their words."

Not all students felt they came to know their professors this well, and five students indicated that the instructors either didn't express their personality or self-disclose very effectively. For example, Elizabeth from Ronald's section stated, "You don't get to know the professor because he's just saying what needs to be said and then he's closing his computer." She added that Ronald did not "go off on tangents" like her face-to-face instructors. She admitted that such tangents are "not very educational" but help her learn a lot about her professors. It could be that while video enables instructors to communicate their personalities better than text, it is still not as rich as face-to-face interaction and that teachers need to provide more emotional expression in video-based courses then they would otherwise use.

4.4.3. Cohesion with the instructor

Cohesion with the instructor was coded when students indicated that video communication helped build a sense of commitment and closeness with their instructor (see Table 4). Fifteen students felt the video communication helped them develop a sense of familiarity and closeness with their instructor. Dana from Ronald's section stated, "I definitely feel like I got to know him." Anna described an experience in which she and Joseph recognized each other on campus: "That's nice because I have been in a lot of classes where the professor wouldn't even know my name, which is sometimes fine, sometimes frustrating." Amber stated, "[John] was very connected to the online students. I never felt not connected. I felt like our class was watching his videos and being there focusing one-on-one with the teacher." Angela indicated that the connection she felt with Ronald was more efficiently established through video: "[Video] was easier to connect with. I didn't have to put in any effort to read, so I just immediately felt a connection." Fourteen students also felt that they could rely on their instructor for support and that he wanted them to succeed. Natalie said that she knew Ronald "was there to help," and Amber said that John's videos helped her to be more persistent "because he was there [saying] . . . 'No! You can do it!'"

Table 2
Coded comments related to open communication as part of instructor social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Informational exchange	18	49	5	7
Natural expression	5	11	0	0
Fidelity	14	28	0	0

Table 3
Coded comments related to emotional expression as part of instructor social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Expression of personality	5	9	3	4
Verbal self-disclosure	8	9	4	5
Visual self-disclosure	4	7	0	0

Table 4
Coded comments related to group cohesion as part of instructor social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Connection	15	34	5	10
Support	14	39	2	3
Similarities	1	1	0	0

In contrast, five students felt a lack of familiarity and connection with the instructor. Angela stated, "I still felt like I could rely on [Ronald] to answer my questions, but if I saw him in a hall he wouldn't be like, 'Hey [Ang], how are you?' . . . at least I feel like he doesn't know me." This disparity indicates a need for further research to understand the reasons why some students may apparently feel a greater connection to their instructors through video-mediated instruction than do others.

4.5. Student social presence

This section will report the findings regarding the effects of asynchronous video communication on students' social presence. Similar to the section on instructor presence, these findings will be organized according to the three social presence subcategories cited by Garrison et al. (2000).

4.5.1. Students' open communication

Students' *open communication* was coded when students stated that they attended to their peers' comments and in turn felt that their peers were attending to their contributions (see Table 5). Twelve students indicated the fidelity of video communication benefited open communication by letting them see their peers as real people. Amber from John's section stated, "It wasn't just reading their responses or seeing a picture. It was [seeing] them live and their video . . . I was like, 'Okay, [this is] a real person. I am not just talking to a computer.'" Fifteen students stated that video communication benefited the informational exchange between peers. Of those 15 students, 12 indicated that they viewed peer comments and felt that doing so benefited their learning. Dana from Ronald's section remarked, "Every week you were seeing other people's opinions, or thoughts, or ideas, where sometimes, even in a normal classroom, you don't get that." However, somewhat ironically, all students cited disadvantaged to the use of asynchronous video for informational exchanges with their peers including twelve students who indicated they did not think that their peers were watching their comments. Interviews showed that this feeling was not entirely baseless: Eight students indicated watching few of their peers' comments and responses.

Nine students stated that their perception that peers were not listening was in part due to instructors only requiring students to comment once which did not encourage extended conversations. Nancy from Joseph's section described the video discussions and stated, "Everybody just responded once . . . and that was it. End of discussion." While peers often built on previous comments, the discussion was not threaded, making it difficult for students to know if a peer had commented on their video, which might have influenced the low number of return postings. Susan from John's section acknowledged that some students would use peer comments as a "springboard" for their comments, but that "there was no way of knowing [if someone commented about your post] unless you went in and watched every video." Six students suggested that if conversations were synchronous they would know that others were attending to their comments. However, several of them agreed with Nancy from Joseph's section who said that having synchronous conversations would be a "trade-off of convenience."

Ten students found communicating through video to be more natural than using text. Anna from Joseph's section said, "[Video communication] was more comfortable because I could just say exactly what I wanted, whereas with text I would have analyzed and made sure that I sounded the way I wanted . . . a lot more 'me' came through." Although eight students felt video communication was somewhat awkward, all but one stated that the discomfort was minor and/or subsided throughout the semester. To this point Michele from John's section stated, "It was always kind of awkward to see myself on the computer, but it was okay. I got used to it."

4.5.2. Students' emotional expression

Information regarding the students' self-disclosure and expression of personality was coded as *emotional expression* (see Table 6). Opinions varied on the benefits of students' emotional expression. Ten of the interviewed students stated that verbal self-disclosure—i.e., sharing of personal thoughts and experiences that extend beyond the boundaries of the course—benefited the learning community. Nancy in Joseph's section stated that she enjoyed hearing "what people have going on different from just regular school stuff" and that it helped her relate to them: "This is a person. They have feelings. They have a life outside of school." Eight students indicated that their peers disclosed little information about themselves during the course. Perhaps Beth from John's section summarized this position best when she stated that she did not get to know "the things you normally ask in a first conversation . . . [such as] where they are from, what they are majoring in, and what they played in high school sports." However, five students (including Beth) found the visual and auditory fidelity of the video alone helped them learn about their peers, even without verbal self-disclosure. For example Beth noted, "[A peer's video] had her three screaming kids running around in the background . . . . Her husband even walked by in one shot, and so I really felt that I like almost knew her better, and so I was almost more excited the next week to see what she put up to see if I could find anything else about her family."

Five students specifically stated that students' personalities were more evident in video communication than would have been expressed in text. Cathy from Joseph's section explained, "When you see someone talking and hear their voice inflections, you get more of a sense of their personality than just seeing something written." Similarly, Dana from Ronald's section stated that personality "comes from the face, it comes from people-to-people interaction, where

Table 5
Coded comments related to open communication as part of student social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Informational exchange	15	60	18	75
Natural expression	10	19	8	15
Fidelity	12	28	4	5

Table 6
Coded comments related to emotional expression as part of student social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Expression of personality	5	6	6	9
Verbal self-disclosure	10	20	8	9
Visual self-disclosure	5	8	2	5

black and white words don't really give me a sense of people." In addition, Cindy from John's section stated that video communication helps avoid misconceptions about peers' personalities because "you get the real way they say it. If they're being sarcastic and you don't know them and they just type it, you could think they're a really rude person." Three students in Ronald's section stated that video was not used enough in the course to allow them to see students' personalities. To this point Anna stated, "I think if it was required to have everybody do a video comment, then you would understand who these people were because when you are just reading text you can't connect that with anybody." Three additional students in John's section stated that they felt they were not able to gain a sense of their peers' personalities because students "were trying to be professional," indicating that perhaps the benefits from connecting emotionally through video communication depend on how natural the participants are in their communication.

4.5.3. Student cohesion

Student cohesion was coded when students indicated video communication helped build a sense of commitment and closeness with their peers (see Table 7). Thirteen students felt similar to Jackie in Joseph's section, who remarked that video communication felt like having "an experience with that person," resulting in a feeling of familiarity and cohesion with peers. Cindy from John's section stated that when she saw her peers' videos "it just made it feel more like we're just all friends." Angela from Joseph's section said, "[Video communication] makes me feel closer to them and more like they're real people."

While Beth from John's section felt that video communication is "the closest you can get to [face-to-face]," there appeared to be limitations to the level of familiarity and closeness developed through video communication. Anna from Joseph's section explained, "There's still an emotional divide that [video communication] doesn't quite breach." Similar to Anna, 9 of the 13 students who indicated that video communication helped them to develop a connection with peers were also among the 14 students who felt this sense of familiarity was limited to only a few peers. Students provided several reasons why they did not develop a sense of familiarity with others, including students choosing to use text rather than video, comments lacking emotional expression, and students neglecting to view peer comments. Similar reasons were provided by the nine students who indicated that they did not form a strong emotional connection. Angela from Ronald's section stated that even when she would watch her peers' videos she had a hard time feeling "their presence" because they "were so separated from reality."

Because a sense of familiarity and emotional closeness closely related to a perception of peer support, we found that students also differed on feeling that they could rely on their peers for help when needed. Nine students felt that if they needed peer help, they would be able to receive it. Natalie from Ronald's section stated that video communication helped her to develop a "we are all in this together type thing." Most students asked their instructor for help rather than peers, but as Amber from John's section explained, "[I asked] the professor first just because that is the resource I would go to, but definitely there was still that openness as peers that we could have [asked each other for help]." In contrast, nine students stated that they would not have felt comfortable asking peers for help. Elizabeth from Ronald's section explained, "I don't like to ask for help, and if I don't know you I'm not going to ask you for help."

The variation in these statements may reflect differences in the importance students attached to forming a community with their peers in an online course. Just under half of the students (n = 8) agreed with Anna from Ronald's section who said, "I don't feel like I really wanted or needed to be connected to [my peers]." The large portion of students who did not consider it important to form a community with their peers could be due to the purposeful sampling techniques that were used to ensure a balanced perspective, ranging from students who were likely to be well connected to their peers to some who were not.

Table 7
Coded comments related to group cohesion as part of student social presence.

Category	Positive examples		Negative examples	
	n = persons	n = total comments	n = persons	n = total comments
Connection	13	43	14	47
Support	9	10	9	10
Similarities	4	5	2	2

5. Conclusion

Interviews showed that video communication had a substantial impact on establishing the instructors' social presence. A large majority of students indicated feeling like they were talking to their instructor when they made video comments and that viewing the instructors' video communication helped them perceive the teacher as a real person. Some students also indicated that their interaction with their instructor was similar to that of face-to-face instruction. In addition, the majority of students stated that video communication helped them to develop an emotional connection with their instructor and to know that they could rely on him for help. Some students also said that the fidelity of the video contained a type of visual self-disclosure that helped them to get to know their instructor. Further, all students who received individual video feedback from their instructor found it to be beneficial supporting previous research that found asynchronous audio feedback to be helpful (Ice et al., 2007; Oomen-Early et al., 2008).

There was also evidence that the instructors' emotional expression was higher due to the use of video. One student explained that she knew that her instructor was "energetic and happy" because of his "facial expressions and movement" that could not have been seen in text or audio communication. However, some students perceived their instructors' emotional expression as low. It could be that while video enables instructors to express their personalities better than text, it is still not as rich as face-to-face interaction. Teachers may need to provide more emotional expression in video-based courses then they would otherwise use.

Video communication impacted students' social presence in similar ways, although to a lesser degree. The majority of students regularly viewed their peers' comments, found that doing so helped them perceive their peers as real people with emotions, and stated that video communication felt more natural than text. However, many students cited disadvantages to using asynchronous video to communicate with their peers. The disadvantage most commonly cited was feeling their peers were not viewing their comments, a conception which negatively influenced students' emotional expressions and group cohesion. This feeling was likely the result of a limitation of the communication tools that did not allow for threaded video conversations. In addition, instructors only required students to post one comment on every discussion, and students' perceived value of peer-to-peer video communication would likely increase as the number of student video peer-to-peer comments increased. As asynchronous video communication tools evolve to allow threaded conversations, researchers should seek to find and examine cases about more interactive video communication experiences. Overall, the majority of students indicated that video communication helped improve the social presence exhibited by instructors and peers and that social presence in the course would have been weaker if text communication had been used exclusively.

In addition, asynchronous video communication improved the emotional expression for several participants. Due to the risk of being misunderstood, Garrison and Anderson (2003) found that

emotional expressions such as humor are not commonly found in a text-based online learning environment. In part this risk can be reduced when using asynchronous video communication, and several participants indicated that its use helped to improve the emotional expression in the course. One student stated that video communication helped to avoid misconceptions because "you get the real way they say it. If they're being sarcastic and you don't know them and they just type it, you could think they're a really rude person." It is also important that instructors be aware of unintended consequences of increasing the level of emotional expression and in turn the social presence in a course. Garrison and Anderson (2003) warned that while too little social presence can be harmful to a learning community, "too much social presence may inhibit disagreement and encourage surface comments and social banter" (p. 53). As students perceive their peers as real people with emotions they may be less likely to criticize or challenge their peer's ideas because they might offend or hurt their peers. "This is where the teacher, in encouraging questioning of his or her own comments, can be an excellent model. The tone is set by the teacher in making all participants feel this is acceptable and not a personal attack" (p. 54).

One student said video communication "should be required for each online course because it was just very helpful in every way." While such wholesale adoption of any educational tool for all situations without thought may be unwise, the results of this study do indicate that the use of asynchronous video communication may be beneficial to instructors who wish to improve the social presence in their courses. However, researchers found limitations to the video communication tools used in this research. One major limitation was being unable to hold extended threaded conversations; we recognize that a threaded and easily implemented video discussion tool should be developed. In addition, knowledge of effective asynchronous video communication pedagogy appears to be currently limited, as these instructors struggled to implement the video tools into their courses effectively—despite all having knowledge and experience in both online and face-to-face instruction. We encourage online instructors to explore innovative methods of incorporating video communication within more traditional forms of online instruction, thus leveraging the benefits of video effectively.

Additionally, one limitation of the current and previous research on asynchronous video communication is that it relies primarily on students' perceptions. Researchers should work to move beyond perception and empirically examine the effect that regular instructor–student and student–student asynchronous video communication has on course outcomes, including student performance and attrition. In doing so researchers will need to establish criteria for reliably examining and measuring the social presence conveyed in video, similar to the work that has already been established for measuring social presence in text-based learning environments by Rourke et al. (2001). In addition, future research should take a more holistic view and examine the effects of asynchronous video communication on all three types of presences that are identified in the CoI framework.

It is also important to note that the participating students and instructors were distinct from the general higher education online population in several ways. First, the large majority of the students were female and all were preservice teachers. Similarly, it was a goal of the instructors to demonstrate effective use of educational technology such as asynchronous video. Furthermore, participants in this research were on-campus students, which may have affected their desire to establish social presence and form a community with their peers. Future research should seek to examine the use of asynchronous video in other types of courses with a more general type of online student population. Though challenging, the possibilities for improving online learning through video-based communication methods make these endeavors critical for future online teachers and learners.

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