Student Teaching Presence and Its Relation to Social and Cognitive Presences

Kadir Kozan

Purdue University

Abstract

This study basically examined the interrelationships between and among student teaching presence, social presence, and cognitive presence as well as different instructor participation or response styles in asynchronous online discussions across three graduate-level online courses. Partially in line with previous research, the results revealed that cognitive presence can be a powerful mediating variable for the relationship between student teaching presence and social presence. On the other hand, the relationship between student teaching presence and cognitive presence as well as the one between social presence and cognitive presence seem to be independent of the third presence to a certain extent. Overall, these suggest that cognitive presence might be playing a larger role in construction and maintenance of an educational community of inquiry in online learning environments.

*Keywords:* presence, community of inquiry, satisfaction, instructor participation

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Lloyd, Byrne and McCoy (2012) pinpointed that there has been an increasing demand and need for online courses in higher education. Similarly, according to Allen and Seaman (2013), more than 6.7 million students took at least one online course, and 69.1 % of chief academic leaders reported that online education crucially relate to institutional long term strategy in 2012. Similar to the previous reports (e.g., Allen & Seaman, 2006, 2007, 2010, 2011), the 2013 report also highlighted (a) the continuously growing number of online higher education students in the United States recently; (b) that the growth rate of online enrollment increase (9.3%) has been considerably more than that of overall higher education (-0,1%).

However, attrition or dropout rates have been a bigger problem for distance or online education compared to institutionalized or on-campus higher education (Bernard, Abrami, Lou, & Borokhovski, 2004; Boston, Diaz, Gibson, Ice, Richardson, & Swan, 2009; Carr, 2000; Ice, Gibson, Boston, & Becher, 2011; Parker, 2003; Wilson, 2008). Given both the high growth and attrition rates, it is reasonable to assume that efforts to encourage student retention or persistence are important. Previous research pointed to some factors that positively affect student persistence ranging from quality interaction and feedback (Ivankova & Stick, 2007; Ojokheta, 2010) to relevance of the content and learner satisfaction (Ivankova & Stick, 2007; Levy, 2007; Müller, 2008; Park & Choi, 2009).

More specifically, Levy (2007) asserted that learner satisfaction is a deterministic factor for student persistence in online learning, and that persistent students have a higher level of satisfaction with online learning. Additionally, Fredericksen, Pickett, Shea, Pelz and Swan (2000) showed that higher learner satisfaction is closely associable with higher levels of perceived learning. Similarly, Richardson and Swan (2003) found positive correlations between students` level of perceived learning, and their satisfaction with the instructor. Additionally, Ojokheta (2010) claimed that instructor feedback directly impacts students` perception of the content, and that feedback calibrates learners` success in finishing online courses. Consequently, instructor participation could be a boundary factor for student satisfaction, as well as retention and success in an online course.

How exactly instructor participation relates to learner satisfaction in online education warrants further research. Such a research attempt needs to operationalize instructor participation in order for it to be measured in a similar fashion to learner satisfaction. Teaching presence component of Community of Inquiry (CoI) Framework (Garrison, 2008; Garrison & Anderson, 2007; Garrison, Anderson, & Archer, 2000, 2001, 2010) that is described as the design and social processes in order to enhance learning (Garrison et al., 2000) would be one way to go. After all, there is evidence showing that teaching presence significantly determines learners` satisfaction and perceived learning as well as their sense of community (e.g., Akyol &Garrison, 2008; Arbaugh, 2008).

The CoI Framework also incorporates social presence, associating oneself with other members of the learning community through purposeful interaction (Garrison, 2008), and cognitive presence, engaging in learning through thoughtful reflection and discourse (Garrison et al., 2000). Previous research showed that these are highly correlated (Akyol & Garrison, 2008; Garrison, Cleveland-Innes, Fung, 2010), and that they are significantly related to learner satisfaction and perceived learning except that there is a lack of significant relation between social presence and perceived learning (Akyol & Garrison, 2008). Consequently, of particular interest for the present study is to test the extent to which instructor participation or teaching presence affects learner satisfaction in online education while controlling for any possible effects of social presence and cognitive presence. Secondly, the paper focuses on the effect of the way instructor participates in online discussion on learners` motivation and engagement levels while controlling for self-efficacy. In what follows, the paper first presents the theoretical background of the study. The methods and procedures were presented in the third section. The fourth section provides results followed by the fifth section focusing on discussion. A conclusions section follows all these.

**Teaching Styles**

Arguing that teaching styles and learning styles are different entities no matter how complementary they are, Gayle (1994) stated that “Teaching styles evinces a certain predictability which is ensured by an internal syntax and coherence distinguishable from the purely accidental and deriving its direction from the person exhibiting the style.” (p. 9). As long as this holds true, it is reasonable to claim that teachers` teaching styles emanate from or at least get affected by their own characteristics including but maybe not limited to their beliefs, values and the like to a certain extent. Support for such a claim seems to come from Fischer and Fischer (1979) who argued that the word style “refers to a pervasive quality in the behavior of an individual, *a quality that persists though the content may change.*” (p. 245). Such possible connections between teachers` personalities and their teaching style urge them to be aware of themselves, examine themselves carefully and determine a style that can belong to the type of person that they would like to be while teaching.

According to Fischer and Fischer (1979), teaching styles range from task oriented to emotional which refers to emotionally being involved in teaching as well as rationally. The last emotional category is interesting in that it appears to require teachers to be emotionally involved in their profession. This emotional involvement might be triggered by teachers` personalities too in order for it to be genuine. In this regard, Eide and McCarthy (1995) asserted that the main task is to establish supporting learning environments that encourage imagination, motivation and risk-taking on the part of the learners so that they can appreciate learning, themselves and all stake-holders of the learning process. Additionally, due to possible individual differences among the learners in terms of what motivates and interests them, Eide and McCarthy (1995) further claimed that teachers have to adapt different teaching approaches instead of sticking to just one.

The assumption that teachers need to make use of a variety of styles depending on the profile of learners in a given learning situation implies that teachers need to be flexible in terms of how they want to teach, which may need to be independent of their personality characteristics to some extent. After all, there might be many roles to take over for teachers even in a single learning environment. Assuming that teachers need to be comfortable with their teaching roles in the long term (Grasha, 1994), the challenge seems to bridging the gap between what a teacher really wants to be while teaching partly depending on her or his personality and on the needs of learners having different desires, motivations and the like.

Walczyk and Ramsey (2003) contended that it is the teachers who make use of different sorts of teaching styles or methods that can create a student-centered learning environment thus fostering learning. This way, teachers may be able to achieve what Brophy (1986) expected them to do. Specifically speaking, Brophy (1986) contended that teachers are capable of making a difference in their students` learning based on the effectiveness of their teaching style. Further, Volkman and Zgagacz (2004) argued for developing a teaching identity. Given that teachers may be in continuous need of changing their styles, such an identity may not be static though. Moreover, it seems that such an identity should be in line with both teachers personal characteristics and flexible enough in order to speak to their students` different ways of learning.

These seem to align with what students expect from their teachers as well. McCabe (1995) revealed that they want their teachers to go beyond purely transferring information by inspiring them to learn the content. Achieving this appears to trigger and enrich student attitude towards the content area thereby increasing their level of motivation too (Myers & Fouts, 1992). Further, Myers and Fouts (1992) diagnosed available teacher support, being organized and using a variety of different teaching techniques to be factors that positively affect students` attitudes.

As a result, it seems that teachers are in a sharp need of implementing a variety of teaching styles based on the content to teach, their personality, and especially on individual differences among the students. The pure reason is that such a flexible and effective approach might contribute a lot to student satisfaction which might in turn foster meaningful learning due to increased teaching presence in relation to social and cognitive presences. The following section displays insights into these factors.

**Community of Inquiry Framework**

The community of inquiry (CoI) framework consists of social, cognitive and teaching presences (Garrison et al., 2000). The basic tenet of this framework is that meaningful learning is a byproduct of a community of inquiry of learners. In this regard, inquiry is students` questioning of learning issues to which there is not an available answer (Redmond, 2011, p. 36). This seems to align with the construct of learning communities defined by Cross (1998) as “groups of people engaged in intellectual interaction for the purpose of learning.” (p. 4). Additionally, Garrison et al. (2010) stated that the CoI framework stems from asynchronous, text-based group discussions situated in computerized higher education learning environments, which makes it useful for the purposes of the present study. Of special concern for the present study is teaching presence since it seems to relate to instructor participation in online discussions more directly.

**Teaching presence.** According to Garrison et al. (2000), student interaction with learning content and environment is vulnerable to the effects of teaching presence in that it functions as a guiding power. Garrison et al. (2000) defined teaching presence as designing and facilitating online learning environments. Anderson, Rourke, Garrison, and Archer (2001) listed the three components of teaching presence as follows: (a) instructional design and organization; (b) facilitating discourse; (c) direct instruction. Garrison and Arbaugh (2007) contended that teaching presence is deterministic of not only a sense of community but also both learner satisfaction and perceived learning.

Moreover, even though teaching presence is primarily thought to be an instructor responsibility, Garrison et al. (2000) highlighted that all stakeholders in an online learning environment can have a share in teaching presence. Garrison and Anderson (2003) went one step further and argued that students ` role in teaching presence can balance teacher impact and lead to more independent discussions (as cited in Akyol & Garrison, 2008, p. 5). In anyway, consequently, teaching presence influences both social and cognitive presence on the part of learners. As for manifestation of teaching presence, it would range from scaffolding to feedback that can be provided by both the instructor and peer learners.

However, there does not seem to be enough previous research effort that focused on what kind of a relationship exists between instructor teaching presence and student teaching presence. Such a relationship might be under the effect of social presence though given the positive and high correlational (e.g., Akyol & Garrison, 2008) as well as causal (e.g., Garrison et al., 2010) relationships between and among teaching presence, social presence and cognitive presence. As a result, the present study purports to identify the relationship between instructor teaching presence and learner teaching presence by controlling for possible effects of social and cognitive presences that are presented briefly below:

**Social presence.** According to Garrison, Cleveland-Innes, and Fung (2004), “Social presence encompasses the ability of participants to coalesce for a common purpose.” (p. 63). Further, social presence was related to such things as (a) how concrete the existence of others is (Short, Williams & Christie, 1976, as cited in Kim, 2011, p. 2); (b) intimacy (e.g., Argyle & Dean, 1965) or immediacy (e.g., Mehrabian, 1969) (as cited in Kim, 2011, p. 2). As a result, Kim (2011) described social presence as “the specific awareness of relations among the members in a mediated communication environment and the degree of proximity and affiliation formed through it.” (p. 766). All these imply that having a sense of trust would of crucial importance for establishing social presence in an online learning environment (Rourke, Anderson, garrison, & Archer, 1999).

Moreover, from the perspective of establishing and sustaining a community of learning, social presence can have a key role in creating the desirable atmosphere that is desirable. For developing and creating such a sense of community, Abedin, Daneshgar, and D`Ambra (2010) pointed out the importance of (a) connectedness; (b) lack of isolation; (c) respect; (d) cohesion; (e) awareness of others; (f) sense of belonging; (g) interdependence (p. 589). Under the assumption that social presence is a triggering factor for both setting up and fostering interactions among learners as suggested by previous research, then, it can help to encourage the factors listed by Abedin et al. (2010) above.

Social presence has also been diagnosed as an important factor impacting learning (e.g., Kim, 2011; Richardson & Swan, 2003; Swan & Shih, 2005). Kim (2011), for instance, found that instructor`s and learners` perceived social presence are strong predictors for perceived learning and learning satisfaction. These social presence effects seem to be mediated by teaching presence though. In this respect, Garrison, Clevelend-Innes, and Fung (2010) identified social presence as a covariate that functions in between teaching presence and cognitive presence. Besides, Garrison et al. (2010) asserted that social presence is driven by teaching presence.

**Cognitive presence.** According to Garrison et al. (2010), cognitive presence has a developmental characteristic, which would heavily impact online learning experiences. Cognitive presence has also been associated strongly with critical thinking (Garrison et al., 2010). Garrison et al. (2001) defined cognitive presence as creating and sustaining meaning through reflection in “a critical community of inquiry” (p. 11). In a similar vein, Garrison (2003) pinpointed that cognitive presence comes into being based on reflection, critical thinking, and collaboration. All these align with Garrison and Arbaugh`s (2007) claim that cognitive presence incorporates reflection and discourse, which serves learning outcomes.

Moreover, cognitive presence seems to relate closely to critical thinking. To illustrate, according to Kanuka and Garrison (2004), cognitive presence strongly serves critical thinking, which in turn promotes learning substantially. In other words, the authors implied that cognitive presence is a precursor for critical thinking or higher-order thinking. It seems that cognitive presence does not only relate to higher-order thinking but also to higher-order knowledge and its acquisition. In this regard, based on Garrison et al. (2001), cognitive presence involves both acquiring and applying higher-order knowledge.

As for operationalization of cognitive presence, Garrison et al. (2000) offered a practical inquiry model which defines inquiry as an integrated process consisting of various components or phases. The practical inquiry model assumes that a learning experience follows the following cycle consecutively: (a) a triggering event; (b) a solution or resolution. This involves a circular relationship since solutions or resolutions result in new triggering events that would ask for new solutions or resolutions. As a consequence, learning originates from and closely relates to being cognitively present or active during all the phases of practical inquiry approach to learning.

To sum up, teaching presence shown either by the instructor or the students, refer to perceived existence of guidance and facilitation in a learning experience. Social presence, on the other hand, refers to perceived awareness of the existence of others as well as the established relationships with them while cognitive presence is employing higher-order thinking or critical thinking through reserved reflection and discussion. Despite these difference definitions, there are close interrelationships between and among the presences though. Moreover, teaching presence can be employed by all members of a learning community including students.

However, the relationship between student teaching presence and social and cognitive presences is an underexplored issue as well as the effects of teaching styles on learner motivation and engagement without self-efficacy as a confounding factor. Consequently, the present study examined the following research questions:

* What are the interrelationships between student teaching presence and social presence and cognitive presences while controlling for each others` possible effects?
* What are the effects of online instructor participation styles (constructive versus destructive discourse style) on students' motivation and engagement levels while controlling for self-efficacy?

**The Present Study**

The current study examines whether different online teaching styles (e.g., playing devil`s advocate, challenging students, affirming students etc.) affect students` motivation and engagement under the condition of student self-efficacy. It also explores the relationship between instructor teaching presence and learner teaching presence while controlling for possible effects of social and cognitive presences.

In this regard, the following research hypotheses were examined in the current study: The first hypothesis assumed that students` motivation and engagement should increase as an instructor employs an approachable teaching style more and more. In other words, it was expected to find lower student motivation and engagement levels associated with a teaching style that challenges learners excessively, which is the case in a devil`s advocate approach. This effect was expected to be independent of any possible effects of student self-efficacy. Secondly, the second hypothesis predicted that student self-efficacy should relate significantly to student motivation and engagement, which is independent of instructor participation styles. It is expected to be independent of instructor participation style, since the question was examined through analysis of covariance (ANCOVA), a statistical test that gauges the relationship of a covariate to a dependent variable regardless of the independent variable.

**Methods**

**Design and Sampling.** The experimental design used in the present study is non-experimental in that no independent variable was manipulated and no random assignment or selection of individual participants was realized. More specifically, this an ex-post facto non-experimental design in which a purposive sampling method was used. Courses that constituted the research context were randomly selected in order to identify the participants though.

Moreover, this is a quantitative study based on quantitative data analysis. Additionally, it implemented Likert-scaled survey instruments. Specifically speaking, (a) dependent data were created through content analysis by the researcher by coding both instructor and student discussion posts; (b) research questions were addressed through ANCOVA and partial correlation analysis.

**Researcher role.** All **a**nalyses were conducted by the researcher as well as coding or doing the content analysis. The researcher wrote this paper too.

**Participants.** X number of graduate-level American college students (X females and X males; *M* = X years, SD= X) enrolling in a fully online Learning, Design, and Technology Master`s of Science Program at a large public Midwest university in the USA participated in the current study. Besides, three instructors (X females and X males; *M* = X years, SD= X) with a mean of X years of online teaching experience contributed to the study. Participation was voluntary and participants were contacted via email throughout the experiment.

**Research context.** The learning context employed was a distance education learning management system called “Blackboard”. This system allows for asynchronous interaction between and among students as well as the instructor. Each course had its own syllabus and learning materials ranging from articles to books. However, the basic communication tool used throughout the eight weeks in which the courses were offered was asynchronous online discussion threads. Through these threads, learners were able to post and edit their ideas, ask questions to other learners and the instructor. Table 1 below displays the descriptive information about each course:

Table 1. Description of Online Graduate Courses

|  |  |
| --- | --- |
| Course | Description |
| Learning Theories and Instructional Design | This course provides both theoretical and practical insights into learning theories and how they can be used to enhance instructional design process. |
| Educational Applications of Hypermedia | Fueled by both theoretical points and research findings, this course includes creating hypermedia instructional materials. |
| Foundations of Distance Learning | Examining core concepts and principles of distance learning as well as theory and research, this course provides an introduction. |

**Instruments.** The following data collection instruments were used in the present study:

***Participant Profile.*** Participants answered a short demographic survey asking for their gender, ethnicity, learning method preferred, number of online courses taken and computer proficiency.

***Motivation and Engagement Survey.*** After completing the participant profile, participants were asked to complete the motivation and engagement survey adapted from Guay, Vallerand, and Blanchard`s (2000) situational motivation scale. There were 16 questions asking for why the participants would engage or participate in the online discussions based on a 7-point scale ranging from *corresponds not all* (1) to *corresponds exactly* (7).

***Self-efficacy Survey.*** For the purposes of the present study, self-efficacy was operationalized from the perspective of knowledge sharing. Consequently, the knowledge-sharing self-efficacy instrument developed by Hsu, Ju, Yen, and Chang (2007) was used. This survey comprises seven items or questions based on a scale that ranges from *not at all confident* (1) to *extremely confident* (7). These asked participants to indicate their level of confidence in taking certain actions such as articulating oneself or authoring an article under conditions ranging from while interacting with others to while participating in discussions.

**Data collection and Procedures.**First of all, since some of the instruments were adapted, these were piloted with four American college student enrolling at a large Midwest US university. The purpose was to determine the comprehensibility of the items of the instruments in terms of vocabulary, wording and grammaticality as well as any possibility of a floor effect. This pilot study revealed the need to modify some of the items included in the instruments at the word level only.

Both during the pilot study and actual data collection, the researchers were absent in that the participants were sent emails to participate in the study and fill in the surveys in the given order. Participants were asked to sign a consent form before the data collection. The data were collected in the middle of the semester when the courses were still going on. Participants were asked to not talk about the content of the experiment with other participants they might know. The participants first completed the participant profile. Then, they took the the motivation instrument, and the self-efficacy scale. Overall, the experiment took a participant almost half an hour to complete the surveys.

**Data Analysis.** Both instructor participation styles and the presences were determined through a content analysis based on an analysis of the online discussion postings of the learners and instructors. At the beginning, a negotiated coding section was held in which all both of the scoring researchers participated. The aim was to train each other in scoring student postings by reaching consensus. This section continued intermittently until a consensus of at least 80% was reached between and among all the researchers.

Four groups of researchers in pairs independently score the discussion postings based on Wosley`s (2008) classification of instructor feedback on online written assignments. This classification included ten categories ranging from *simple affirmations* (1) to *aggressive questioning* (10) on an increasing continuum. There were a total of 100 online discussion postings. Each researcher pair`s job was to score 25 postings based on Wosley`s (2008) classification by assigning numbers 1 to 10 to each posting. Researchers in each pair also scored the postings independently of each other. Then, each researcher’s scorings were correlated with those of the other researcher who participated in the same pair. These produced the inter-rater reliability indexes in addition to Holsti`s (1969) reliability coefficient, the ratio of the double the number of coding agreements between to coders to the total of coding decisions made (Rourke et al., 1999). As for intra-rater reliability, each researchers scoring of the same category during the negotiated coding section was again correlated with their scoring of the same category included in the research data.

Furthermore, content analysis of the discussion postings in terms of teaching, social and cognitive presences was done based on specific indicators for each presence. The indicators determined by Akyol and Garrison (2008) were used for this purpose as shown by the tables below in an adapted format from Akyol and Garrison (2008, p. 4):

Table 2. Teaching Presence Indicators

|  |  |  |
| --- | --- | --- |
| Presence | Component | Indicators |
| Teaching presence | Design and organization | Setting curriculum/methods |
| Facilitating discourse | Shaping constructive exchange |
| Direct instruction | Focusing and resolving issues |

Table 3. Social Presence Indicators

|  |  |  |
| --- | --- | --- |
| Presence | Component | Indicators |
| Social presence | Open communication | Risk-free or learning atmosphere-free expression |
| Group cohesion | Group identity/collaboration |
| Personal/affective | Self-expression emotions |

Table 4. Cognitive Presence Indicators

|  |  |  |
| --- | --- | --- |
| Presence | Component | Indicators |
| Cognitive presence | Triggering event | Sense of puzzlement |
| Exploration | Information exchange |
| Integration | Connecting ideas |
| Resolution | Applying new ideas |

While coding both instructor responses and the presence, message was chosen as the unit of analysis. Specifically speaking, the number of instances of each instructor response to or addressing learner postings was calculated based on the unit of messages posted following Rourke, Anderson, Garrison, and Archer (2001), Akyol and Garrison, (2008), and Garrison et al. (2001). Garrison et al. (2001) stated that messages refer to “what one participant posted into one thread of the conference on one occasion” (p. 16). It was also practical to identify each message and its content as it relates to one or more than one type of online instructor response as suggested by Garrison et al. (2001).

As for survey data, after reverse items were recoded, total scores were calculated by adding ratings of each of the survey items. These totals functioned as the dependent variable for further ANCOVA analyses with instructor participation style as the independent variable, and self-efficacy as the covariate. Due to the possibility that instructors might switch from one style to another style while participating in online discussions, each style was numerically expressed as the total of the number of times each style was observed during content analysis. The style that most frequently occurred was taken as the deterministic style to which each student was exposed to in order not to repeat a student`s data over and over again based on each different instructor participation style during data analysis.

Moreover, concerning internal consistency or validity of the surveys, due to modifications run on them, Cronbach`s Alpha was run on participants` ratings on the motivation/engagement and self-efficacy surveys. Based on these analyses, the next section provides results of the current study.

**Results**

**Instructor Participation or Teaching Style, and Learner Motivation and Engagement.** Due to lack of data regarding student motivation, engagement and self-efficacy, the present study could not answer the question of the effects of instructors` participation in online discussions on students` motivation and engagement while controlling for the effects of self-efficacy. Instead, this study managed to report the descriptive statistics for the instructors` different participations styles. This analysis was based on Wosley`s (2008) ten-categories of online instructor feedback. Table 5 below illustrates the coding results for these categories of instructor responses in online discussions:

Table 5. Categories of Instructors` Responses in Online Discussions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Instructors`  Online  Response | Courses | | | | | |
| Course 1 | | Course 2 | | Course 3 | |
| Total | Percentage | Total | Percentage | Total | Percentage |
| Simple affirmations | 0 | 0% | 2 | 8.7% | 2 | 12.5% |
| Complex affirmations | 0 | 0% | 2 | 8.7% | 1 | 6.25% |
| Personal | 1 | 12.5% | 6 | 26.09% | 2 | 12.5% |
| Observations | 1 | 12.5% | 1 | 4.35% | 3 | 18.75% |
| Exploratory | 0 | 0% | 1 | 4.35% | 0 | 0% |
| Clarifications | 3 | 37.5% | 4 | 17.40% | 4 | 25% |
| Questions | 1 | 12.5 | 6 | 26.09% | 3 | 18.75% |
| Corrections | 0 | 0% | 0 | 0% | 0 | 0% |
| Correction to content | 1 | 12.5% | 1 | 4.35% | 1 | 6.25% |
| Aggressive questioning | 0 | 0% | 0 | 0% | 0 | 0% |
| Nothing detected | 1 | 12.5% | 0 | 0% | 0 | 0% |
| Total | 8 | 100% | 23 | 100% | 16 | 100% |

These numbers stemmed from a total number of thirteen messages posted. There were four messages taken from the first course, six from the second course, and three from the last one. It should be noted here that the total number of instructor responses is greater than the total number of messages since each message may have included more than one response. Likewise, there were cases where one single syntactic unit such as a sentence contained more than one response category while there were also more than one sentence that constituted a certain type of response all together. For instance, a question sentence referred to both a question and clarification response while a few question sentences were actually asking for the same information. Finally, Table 5 above shows that instructor participation differed across the courses in terms of the number of responses they posted during online discussions. Inconclusively, this might refer to different levels of participation on the part of the instructors.

**Interrelationships among the Presences.** The research question focusing on the relationships among the presences ask for partial correlational analyses that control for the effect of a third presence on the relationships between the other two presences. The present results, however, also include bivariate correlational analyses as well in order to supplement the information provided by the partial correlation analyses. The important thing to keep in mind is that since anonymous coding of the discussions transcripts did not allow identifying common owner of more than one single discussion thread, it was assumed that these were coming from different students, which resulted in an overestimation of the number of students. In this regard, only the main discussion threads and those threads whose content were legible were taken into account. This resulted in data coming from (a) sixty-three students from the first course; (b) on e hundred and thirty-two students from the second course; (c) eighteen students from the third course.

Depending on the unit of message again, discussion threads were coded by counting the indicators of each presence. Totals of these formed the index for each presence. Any given syntactic unit such as sentence could have included instances of more than ones presence.

Following sections presents results of the correlational analyses done on these data. Preliminary analysis referred to the violation of the normality assumption by the data of all the presences. As a result, Spearman`s rho (*rs* ) was used to calculate the correlation coefficients. Moreover, due to previous research showing both positive significant correlations among the presences (e.g., Akyol & Garrison, 2008) and causal relationships among the presences (e.g., Garrison et al., 2010), one-tailed probability was employed. Finally, in order to judge the strength of relationships, Cohen`s (1998) guideline was used as suggested by Pallant (2007, p. 132).

***Student Teaching Presence and Social Presence Relationship.***

The number of student teaching instances caught during content analysis ranged from 12 to 70 (*M =* 50.60, *SD =* 3.31) while those of social presence ranged from 13 to 56 (*M =* 37.40, *SD =* 5.71). Correlational analysis referred to a positive significant and small-size correlation coefficient, *rs* = .23, *n* = 213, *p* (one-tailed) *=* .000, = .052. Partial correlation analysis between student teaching presence and social presence while controlling for cognitive presence yielded a positive non-significant correlation coefficient between teaching presence and social presence, *pr* = .04, *n* = 213, *p* (one-tailed) *=* .303. These show that when the possible effect of cognitive presence disappears, the significant relationship between teaching presence and social presence also disappears suggesting that cognitive presence mediates the relationship between the two.

***Student Teaching Presence and Cognitive Presence Relationship.***

The range of the number of cognitive presence cases detected through content analysis was from 29 to 69 (*M =* 50.30, *SD =* 6.70). This indicates that cognitive presence instances were very close to teaching presence instances both of which were higher than social presence on average. There was a positive, significant, medium-size relationship between teaching presence and cognitive presence, *rs* = .47, *n* = 213, *p* (one-tailed) *=* .000, = .22. When possible effect of social presence was under control, there was still a positive, significant, and medium-size relationship between teaching presence and cognitive presence, *pr* = .40, *n* = 213, *p* (one-tailed) *=* .000, *R2* = .16. These indicate that the relationship between teaching presence and cognitive presence is not as dependent on social presence as the relationship between teaching presence and social presence depends on cognitive presence.

***Social Presence and Cognitive Presence Relationship.***

Analyses revealed a positive, significant, and small-size correlation coefficient between social presence and cognitive presence, *rs* = .28, *n* = 213, *p* (one-tailed) *=* .000, = .08. Further, a partial correlation analysis controlling for the effect of teaching presence resulted in positive, significant, small-size relationship between social presence and cognitive presence, *pr* = .21, *n* = 213, *p* (one-tailed) *=* .001, *R2* = .05. The latter suggests that the relationship between social presence and cognitive presence is independent of teaching presence to a certain extent.

**Discussion**

This study investigated (a) possible effects of instructor participation in online discussions or teaching styles on learner motivation and engagement independent of learners` level of self-efficacy; (b) the interrelationships between and among student teaching presence, social presence and cognitive presence. Regarding the first aim, since it was not possible to collect enough data, the current study revealed no concrete findings or results, which limits any discussion of these too. Still though, the descriptive statistics given in Table 5 is worth reflecting on a little bit since these might shed light on the interpretation of the interrelationships found among the presences.

To begin with, it is clear from the descriptive statistics that there could be different types of instructor participation, feedback or response in asynchronous online discussions of the across different courses. Such differences might relate to different factors including but not limited to (a) content (e.g., Ivankova & Stick, 2007; Müller, 2008); (b) instructor feedback and interaction with the instructor (e.g., Ivankova & Stick, 2007; Ojokheta, 2010); (c) learner satisfaction (e.g., Akyol & Garrison, 2008; Fredericksen et al., 2000); (d) teaching styles as well as teacher characteristics (e.g., Fischer & Fischer, 1979; Gayle, 1994) or teaching identity (e.g., Volkman & Zgagacz, 2004). Moreover, learner-driven dynamics may add to such instructor-driven dynamics in a synergistic manner thereby promoting different types of instructor participation styles in online discussions.

Moreover, concerning the second aim of the study, or the interrelationships between and among the presences, the results revealed some interesting insights. First, even though the present results referred to significant positive relationships between teaching presence and cognitive presence found by previous research (e.g., Akyol & Garrison, 2008), it also resulted in positive significant relationships between teaching and social presences as well as between social presence and cognitive presence. The latter finding does partially align with some previous research (e.g., Garrison et al., 2010) while it does not align with some other (e.g., Akyol & Garrison, 2008) to some extent.

Akyol and Garrison (2008), for instance, found a positive significant and large correlation between teaching presence and cognitive presence (*rs* = .78) while the present study produced a positive, significant but medium-size (*rs* = .47) correlation. There might be several reasons for this: (a) Akyol and Garrison`s (2008) sample size was16 out of whose data only those of 15 were used in correlational analyses while it was 213 for this study; (b) While the present study used content analysis in order to produce correlation data, Akyol and Garrison (2008) used Likert-type survey data.

Using the same Likert-scaled instrument and structural equation modeling, Garrison et al. (2010) yielded (a) a significant association between teaching presence and cognitive presence, and between teaching presence and social presence; (b) a mediating association between social presence and cognitive presence. These implied a direct causal effect of teaching presence on social presence, and an indirect causal effect of social presence on cognitive presence. In other words, teaching presence effect on cognitive presence is also being mediate by social presence. However, the present partial correlation results referred to cognitive presence as a covariate that mediates the relationship between teaching presence and social presence. This was found to be the case to such an extent that without cognitive presence there was not a relationship between teaching presence and social presence. These differences might have stemmed from different methodologies employed though.

The present results seem to concur greatly with Richardson, Kozan, Mutlu & Taeho Yu (2013) that used partial correlation analyses based on the survey used by both Akyol and Garrison (2008) and Garrison et al. (2010). This study found large, significant and positive correlations among the presences. The researchers reported (a) no correlation between teaching presence and social presence when the effect of cognitive presence was removed; (b) still large, positive, and significant correlations between teaching and cognitive presence, and between social and cognitive presence while controlling for the effect of the other third presence. These are closely in line with the current results of this study except that the current results indicated either medium or small-size relationships. Still though, the similarity of the present results stemming from content analysis with results from a survey is eye-catching in terms of methodology triangulation and generalizability.

It should be noted here that the other studies implemented teaching presence as an aspect of the instructor while the present study operationalized it as an aspect of students. Since student teaching presence does not seem to have radically different relationships with social and cognitive presences compared to instructor teaching presence, it is reasonable to argue that instructor participation or teaching styles can also be a responsibility of the students in online learning environments. At least, as long as the students whose discussions threads contributed to the present study are concerned, they were good at employing teaching presence to a certain extent.

Overall, this study provided further evidence of close interrelationships between and among the presences. These relationships are positive in the sense that higher levels of a presence are closely associable with higher levels of the other two presences. Combined with previous research, all these suggest that (a) cognitive presence may be the mediator variable between teaching presence and social presence; (b) students` contribution to teaching presence may work as well as that of their instructors depending on the level of cognitive presence especially in terms of encouraging social presence or creating an effective social environment.

**Conclusions**

The close association found between the student teaching presence and social and cognitive presences in this study, the similarity of these to the relationship between instructor teaching presence and social and cognitive presence educationally imply that students can take over the role of instructor successfully. Further, student teaching presence can be a complementary pedagogical power to use in addition to or in tandem with instructor teaching presence. These warrant further research on how student and instructor teaching presence can combine into one single driver for meaningful learning. An equally important topic waiting for further research seems to be how to achieve this or what strategies to use in order to accomplish this.

It should be noted that the presence study did not include a learning or learner satisfaction measure. In order to fully paint a picture of how to employ both student and instructor teaching presence to foster learning, future research needs to employ such measures. In addition to these, a single study incorporating both content analysis and survey results would provide methodological triangulation and eliminate the possibility that any results can originate from methodological differences. Since it used content analysis only, this point also limits the generalizability of the current findings.

Moreover, the data used in the current study were coded by the researcher only. As a result, no reliability analyses could be run. This is a severe limitation and should be taken seriously by future research. Future research might apply both inter and intra-rater reliability analysis in order to increase scientific value of their findings.

Finally, being correlational in nature, the presence results have nothing to do with cause-and-effect relationships or direct effects of presences on each other. In other words, the present correlational relationships can be under the mediating or moderating effects of some other variables that warrant further research to be explored. Consequently, further research could apply statistical measures that can provide causal insights into the relationships between and among presences, and into their relationships with learning outcomes.

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