

Instructor Leadership in Online Learning: Predictive Relationships Between Servant Leadership and the Community of Inquiry Framework

Sally Meech
Purdue University

Adrie A. Koehler
Purdue University

Abstract

Instructor leadership is widely recognized as essential for facilitating meaningful online learning in higher education. While previous studies have applied organizational leadership theories to the study of instructor leadership, fewer studies have investigated online instructor leadership. This predictive correlational study detailed the associations between the Community of Inquiry (CoI) framework and servant leadership (SL) theory and employed multiple regression analyses to investigate the predictive relationships of seven SL dimensions on the three CoI presences. Survey data were gathered from 148 graduate students enrolled in online courses in education, communication, and engineering master's degree programs using the CoI Survey (Arbaugh et al., 2008) and the SL-28 (Liden et al., 2008). The findings revealed a significant positive correlation between the instruments. The predictive model as a whole explained 66% of the variance in students' perceptions of a CoI. Three SL predictor variables demonstrated the most influence: helping subordinates grow and succeed, conceptual skills, and creating value for the community. Additional analyses at the CoI subscale level revealed that the SL variables accounted for 73% of the variance in teaching presence, 55% of the variance in cognitive presence, and 31% of the variance in social presence. Implications and limitations are discussed and recommendations are proposed to implement online instructor SL.

Keywords: Community of inquiry, instructor leadership, servant leadership

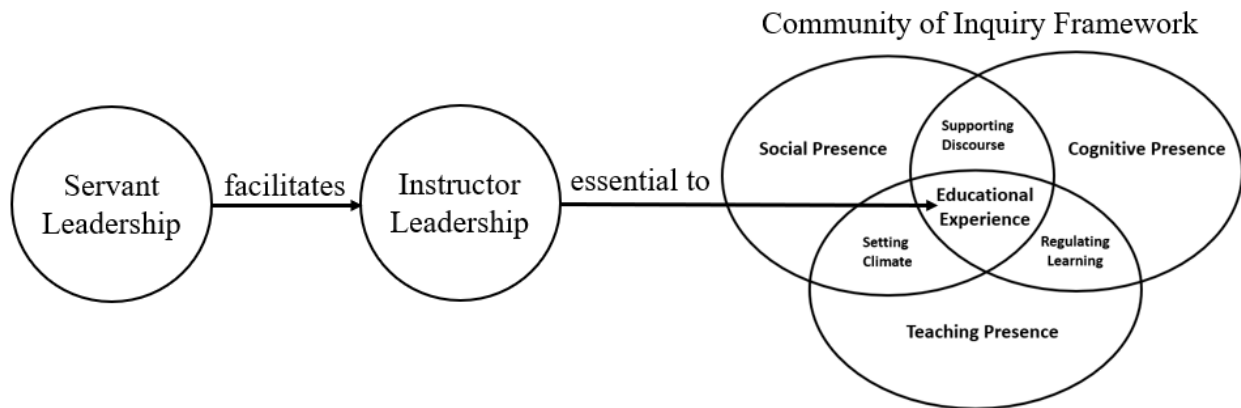
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The Community of Inquiry (CoI) framework (Garrison et al., 2000) is the most referenced and empirically supported model for investigating higher education online learning (HEOL) (Valverde-Berrocoso et al., 2020). Since the framework’s inception, instructor leadership has become recognized as crucial to meaningful online educational experiences (Alotebi et al., 2018; Garrison, 2017; Garrison & Cleveland-Innes, 2005; Szeto, 2015; Xin, 2012), yet there is a lack of clarity about what online instructor leadership entails (Szeto, 2015; Xin, 2012). This study proposes that organizational leadership theories can help elucidate the construct of online instructor leadership and offer insights relevant for the theory and practice of online instruction. Leadership theories have been conceptually and empirically aligned with positive outcomes in higher education teaching and learning (Balwant, 2016; Bolkan & Goodboy, 2009; Chory & McCroskey, 1999; Kondrasuk & Bernard, 2013; Noland & Richards, 2015, 2014; Pounder, 2009), but fewer studies have investigated such theories in the context of online learning (Alotebi, 2018).

Studies have investigated the characteristics and behaviors of effective online instructors (Arbaugh et al., 2010; Author, 2015; Sheridan & Kelly, 2010, Veseley et al., 2007), and while leadership has not been the focus of these studies, the proposed characteristics and behaviors align with values-based organizational leadership theories such as servant leadership (SL) (Liden et al., 2008; van Dierendonck, 2011; Winston & Fields, 2015; Yukl, 2013). Given the significance of instructor leadership within the CoI framework, this study seeks to investigate relationships between instructor SL and the CoI framework, specifically the degree to which students’ perceptions of their instructors’ SL behaviors in an online graduate-level course contributed to students’ perceptions of a CoI. The results offer valuable insights for research and practice in online learning, as the dynamics of online instructor leadership remain under-investigated (Xin, 2012). Figure 1 shows the proposed relationships among the constructs.

Figure 1

Relationships Among Servant Leadership, Instructor Leadership, and The CoI Framework



Note. The Community of Inquiry Framework image is adapted from “E-Learning in the 21st Century: A Community of Inquiry Framework for Research and Practice (3rd ed.),” by D. R. Garrison, 2017, Routledge.

Literature Review

The following sections provide an overview of the Community of Inquiry (CoI) framework, instructor leadership, servant leadership (SL) theory and the instruments used in this study. The review highlights intersections among the constructs, supporting the rationale for this study.

Instructor Leadership and the Community of Inquiry Framework

The CoI framework was proposed by Garrison et al. (2000) as a process model for understanding critical elements of deep and meaningful educational experiences in higher education (HE) online settings (Garrison et al., 2010). Guided by a collaborative-constructivist perspective (Arbaugh et al., 2008), the authors defined three interrelated elements—cognitive presence (CP), social presence (SP), and teaching presence (TP)—which dynamically evolve as instructors and students actively participate in and share responsibility for the learning community (Garrison et al., 2010).

Cognitive Presence

Cognitive presence (CP) constructs meaning through sustained communication, achieved through four categories of experience: triggering event, exploration, integration, and resolution (Garrison et al., 2000). Participants in a CoI progress through the categories in a deliberate cycle of inquiry, with critical thinking as the desired outcome (Garrison et al., 2010). In subsequent studies analyzing discussion transcripts, however, Garrison et al. (2001) and others (e.g., Rourke & Kanuka, 2009) found learners often did not progress to advanced phases and thus recognized the importance of the instructor's teaching presence in achieving high levels of CP. In a study comparing students' cognitive engagement in four online graduate courses, Garrison and Cleveland-Innes (2005) specified instructor leadership as an essential component to facilitate CP: "Students must be provided structure and leadership to become engaged and responsible for approaching learning in a deep manner" (p. 144).

Social Presence

Social presence (SP) is "the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities" (Arbaugh et al., 2008, p. 134). Social presence consists of three indicators: emotional expression, open communication, and group cohesion (Garrison et al., 2000). An important role of the instructor is to facilitate a shared learning experience by modeling, encouraging, and practicing SP in an engaging, responsive, respectful, challenging, and supportive online environment (Garrison et al., 2000). Similarly, SL is founded on the expectation that leaders facilitate followers' development through processes of social exchange, in which leaders and followers provide reciprocal support and social learning, whereby leaders model and followers emulate key behaviors leading to increased trust, positive attitudes, and a mutually supportive environment (Eva et al., 2019; Winston & Fields, 2015). The social construction of knowledge at the core of the CoI framework (Arbaugh et al., 2008) and the association of SL with social learning theories support the connections between the constructs.

Teaching Presence

Teaching presence, proposed as the “binding element” (Garrison et al., 2000, p. 96) in a CoI, influences development of CP and SP to achieve intended educational outcomes. The dimensions of TP include design, facilitation, and direction of cognitive and social processes (Garrison et al., 2000). While leadership is not formally indicated as a construct, Garrison and Arbaugh (2007) stated interaction and discourse in a CoI require “structure (design) and leadership (facilitation and direction)” (p. 164), and a significant body of research supports close associations between TP and instructor leadership (Garrison, 2017; Garrison & Cleveland-Innes, 2005; Shea et al., 2010; Szeto, 2015; Xin, 2012; Zhang et al., 2022; Zhao & Sullivan, 2017). In fact, TP has been interpreted as “effective instructional leadership” (Szeto, 2015, p. 192). However, as Xin (2012) noted, while design, facilitation, and direction are important aspects of online instruction, “the core dynamics of online leadership requires further specification” (para. 39).

Servant Leadership Theory and Higher Education Instruction

Instructor Leadership

Leadership is a phenomenon that has defied singular definition. A common understanding, however, is that leadership is a process of intentional influence that guides, structures, and facilitates group interactions (Yukl, 2013). Balwant (2016), adapting Yukl’s (2013) definition, defined instructor leadership as “*a process whereby instructors exert intentional influence over students to guide, structure, and facilitate activities and relationships*” [emphasis in original] (p. 21). Similarly, Garrison et al. (2000) described TP in a CoI as the instructor’s influence over students’ activity by proactively guiding interactions and managing structural concerns of the course while facilitating an educational transaction. Thus, the essential characteristics of leadership are evident in TP.

The past two decades of research in HE instructional practice has increasingly focused on instructor leadership (Balwant, 2016), conceptualizing the classroom as a “quasi-organization with the teacher as leader and students as followers” (Pounder, 2009, p. 318) and investigating leadership behaviors and student outcomes through the lens of organizational leadership theories (Noland & Richards, 2015). While organizational and educational contexts differ (e.g., degree of distance, relationship duration, and student consumerism) (Balwant, 2016), decades of research have affirmed the legitimacy of applying leadership theories to the study of HE settings (Baba & Ace, 1989; Chory & McCroskey, 1999; Dawson et al., 1972).

Servant Leadership Theory

According to van Dierendonck (2011), “leadership studies have clearly moved away from a strong focus on, most notably, transformational leadership toward a stronger emphasis on a shared, relational, and global perspective where especially the interaction between leader and follower are key elements” (p. 1229). More than any other leadership theory, SL emphasizes the needs and development of followers (van Dierendonck, 2011). Servant leadership is a values-based approach to leadership, originally conceptualized by Greenleaf (1970/2008), in which leaders prioritize the needs, goals, development, and well-being of followers, leading to outcomes such as increased engagement, satisfaction, and effective performance (Eva et al., 2019). Eva et al. (2019) defined SL as: “*an (1) other-oriented approach to leadership (2)*

manifested through one-on-one prioritizing of follower individual needs and interests, (3) and outward reorienting of their concern for self towards concern for others within the organization and the larger community” [emphasis in original] (p. 114).

In their systematic review of SL, Eva et al. (2019) evaluated 270 studies published between 2008 and 2018 and noted the theoretical frameworks employed in SL studies have primarily focused on social interaction theories such as social exchange theory, social learning theory, and social identity theory (Eva et al., 2019). Scholars have noted, for example, that the process of social exchange impacts followers’ perceptions and actions: “Servant leadership is initiated by the behaviors of a leader; and is transmitted by followers reciprocating the leader behaviors” (Winston & Fields, 2015, p. 415). Such theoretical frameworks align with the collaborative-constructivist foundation of the CoI framework, with social construction of knowledge at its core. Thus, if instructor leadership is essential to meaningful educational experiences, and the CoI framework and SL behaviors can both be interpreted through social interaction theories, SL should be positively associated with cognitive, social, and teaching presences in a CoI.

Servant Leadership and Higher Education

Research has demonstrated conceptual and empirical connections between SL and HE learning environments. Buchen (1998), for example, noted instructor SL represents a “democratic circle of common inquiry” (p. 132) in which students and instructors are collaborators, resonant with Greenleaf’s (1970/2008) concept of the leader as *primus inter pares*, or first among equals. This notion is consistent with the concept of all members of a CoI contributing to the core presences (Garrison et al., 2000), as SL acknowledges “in certain situations where the needs and the strengths required are different, someone else steps forth to become the first among equals...the knowledge base is shared not parceled out to insure control” (Buchen, 1998, pp. 132-133). Barbuto (2000) also offered a conceptual connection, explaining that leadership style should be aligned with leaders’ and followers’ developmental stages. The author’s proposed pedagogical model identified SL as the most appropriate leadership theory to achieve higher-order learning outcomes. With the development of higher-order, critical thinking as the focal outcome in a CoI (Garrison et al., 2000), SL seems an appropriate model for instructor leadership in HEOL.

Studies have also offered empirical evidence supporting positive associations between instructor SL behaviors and student outcomes. In Drury’s (2005) study, a sample of 87 undergraduate students associated higher levels of SL behaviors with their most effective professors. Noland and Richards (2015) surveyed 434 undergraduate students in an introductory communications course and found positive associations between instructor SL and students’ learning and engagement. Finally, Sahawneh and Benuto (2018), in one of the few peer-reviewed studies of SL and online learning, reported a strong positive correlation between SL and student satisfaction among online community college students. In sum, given the substantial yet minimally investigated connections between SL and HEOL, this study offers valuable insights for the theory and practice of HEOL.

Relevance of Survey Instruments

The Community of Inquiry Survey

The CoI survey was developed to operationalize and investigate interrelationships among the three presences proposed in the CoI framework (Arbaugh et al., 2008). While more than 100 studies have supported its reliability and validity (Stenbom, 2018), others have suggested potential improvements (e.g., Arbaugh et al., 2008; Kozan & Richardson, 2014). Results of the initial study indicated the potential of a fourth presence, for example, and, although inconclusive, factor loadings demonstrated TP was perceived as two rather than three indicators: (a) design and organization, and (b) facilitation and direct instruction (Arbaugh et al., 2008). Importantly, Garrison and Arbaugh (2007) labeled facilitation and direction as instructor leadership, although the construct was not further elaborated upon (Szeto, 2015). Thus, instructor leadership may be a critical, yet under-investigated construct in the CoI framework.

The Servant Leadership SL-28 Scale

Many survey instruments have been developed to measure SL behaviors (Eva et al., 2019; van Dierendonck, 2011). Eva et al. (2019) evaluated 16 and recommended three, including Liden et al.'s (2008) long-form (SL-28) instrument. Eva et al. (2019) noted the instrument is particularly useful for “community-related outcome variables, or if the research model includes aspects of organizational or cognitive-based competencies” (p. 116). Given the CoI framework’s focus on community and cognitive development, the authors deemed the SL-28 the most relevant measure of instructor SL in HEOL. The SL-28 is one of the most widely used measures in empirical studies of SL (Xu et al., 2020) and has previously been used in educational settings (e.g., Noland & Richards, 2015). Table 1 details the dimensions and definitions of Liden et al.’s (2008) SL model and the definitions adapted for HE.

Table 1

Liden et al.’s (2008) Dimensions of Servant Leadership Adapted to Higher Education

Servant Leadership Dimensions (Liden et al., 2008)	Servant Leadership Definitions (Liden et al., 2008, p. 162)	SL Definitions Adapted to Higher Education (Noland & Richards, 2015, p. 17)
Emotional healing	“The act of showing sensitivity to others’ personal concerns.”	“Expressing concern for student well-being and completeness and support during times of struggle.”
Creating value for the community	“A conscious, genuine concern for helping the community.”	Recognizing “the interdependence of the community and student.”
Conceptual skills	“Possessing the knowledge of the organization and tasks at hand so as to be in a position to effectively support and assist others, especially immediate followers.”	“Balancing classroom management, instruction, and vision tasks while assisting students in achieving success.”
Empowering	“Encouraging and facilitating others, especially immediate followers, in identifying and solving problems, as well as determining when and how to complete work tasks.”	“Validating the intrinsic value of the student and helping them generate personal power to succeed.”

Helping subordinates grow and succeed	“Demonstrating genuine concern for others’ career growth and development by providing support and mentoring.”	Providing “opportunities for students to engage a personal challenge and develop as a result.”
Putting subordinates first	“Using actions and words to make it clear to others (especially immediate followers) that satisfying their work needs is a priority.”	“Emphasizing student development above all other goals and elevating student welfare above self.”
Behaving ethically	“Interacting openly, fairly, and honestly with others.”	“Embodying honesty and integrity in interactions and serving as a role model for students.”

Summary and Research Questions

In summary, the review of relevant literature supports significant associations between the CoI framework and SL theory. Specifically:

- Developing high levels of critical thinking associated with CP requires instructor leadership.
- Instructor facilitation of SP aligns with social theories proposed as foundational to SL.
- There are significant associations between TP and instructor leadership.
- Research supports the application of organizational leadership theory to the HE context.
- SL is conceptually and empirically aligned with student outcomes associated with HEOL.
- Liden et al.’s (2008) SL survey is recommended for studies investigating community outcomes and cognitive competencies.

Given the significant alignments between SL theory and the CoI framework, the following research questions were proposed to guide this study. In an online graduate level course:

1. How do students’ perceptions of their instructors’ servant leadership behaviors correlate with students’ perceptions of the Community of Inquiry dimensions?
2. To what extent do students’ perceptions of each servant leadership subscale (emotional healing, creating value for the community, conceptual skills, empowering, helping subordinates grow and succeed, putting subordinates first, and behaving ethically) contribute to students’ cumulative perceptions of a Community of Inquiry?
3. To what extent do students’ perceptions of each servant leadership subscale contribute to students’ perceptions of cognitive presence?
4. To what extent do students’ perceptions of each servant leadership subscale contribute to students’ perceptions of social presence?
5. To what extent do students’ perceptions of each servant leadership subscale contribute to students’ perceptions of teaching presence?

Methods

This quantitative study used a predictive correlational design to investigate potential relationships between students’ perceptions of instructors’ servant leadership (SL) and Community of Inquiry (CoI) in online graduate-level courses. Liden et al.’s (2008) SL-28 and its seven subscales were predictor variables, and the CoI Survey (Arbaugh et al., 2008) and its three subscales were criterion variables. The researchers employed four separate standard multiple

linear regression analyses to discover how each predictor variable contributed to students' perceptions of the CoI as a whole and to each subscale individually.

Context and Participants

Subjects were recruited from a large, midwestern university during the fall 2021 and spring 2022 academic terms. Following IRB approval, the researchers contacted administrators of online graduate degree programs in multiple colleges. Three college of education programs, one college of liberal arts program, and three college of engineering programs participated. All programs were designed with intensive eight-week-long courses, with students typically taking two successive courses each academic semester.

The program administrators emailed their respective students an invitation to participate in the survey, informing them of the expected duration (15-20 minutes). To encourage participation, students were invited to register for a random drawing for one of seven \$70 gift cards. Of the 1,438 total students, 148 survey responses were submitted, resulting in a ten percent response rate. One incomplete response and six outliers were removed from the data set, resulting in a sample of 141 subjects, including 55 college of education, 38 liberal arts, and 48 engineering students. Most subjects were white (79%), female (70%) and between the ages of 25 and 34 (60%). The survey asked respondents to think of the instructor in one online course they are currently taking as they responded to the survey questions. Subjects identified an equal representation of male (49%) and female (49%) instructors. Subjects had a mix of experiences with online courses, with 33% having completed one to four, 30.5% five to eight, and 35.5% nine or more courses.

Instruments

The SL-28 (Liden et al., 2008) is a 28-item survey that measures seven subscales of servant leadership on a seven-point scale (1 = strongly disagree to 7 = strongly agree). Confirmatory factor analysis supported the validity of the scale, and hierarchical linear modeling demonstrated its ability to explain variance beyond other leadership theories. The researchers received permission from Dr. Robert C. Liden to use a modified version of the survey, which included slight wording variations to conform to the educational setting (e.g., "instructor" in place of "manager").

The CoI Survey (Arbaugh et al., 2008) consists of 34 items that measure three subscales of an online educational experience on a five-point scale (1 = strongly disagree to 5 = strongly agree). Principal component analysis supported the reliability of the three-factor model. Internal consistency was also supported at .94 for TP, .91 for SP, and .95 for CP (Arbaugh et al., 2008).

The two instruments were combined into one survey, with a separate section for each. Participants were also asked demographic and informational questions. While this resulted in a relatively long survey (70 questions), the questions were straightforward, and the separate sections provided a logical break to lessen the potential of survey fatigue.

Data Analysis

The SL-28 and the CoI Survey were developed with different response scales (seven point and five point, respectively). To maintain reliability and validity of the original instruments, each section of the survey used the original scales. However, to analyze survey responses, while not reducing the discrimination of the SL-28 seven-point scale, response data from the CoI survey were converted from a five-point to a seven-point scale using linear interpolation (IBM SPSS Statistics, 2020).

Given the absence of published studies investigating the correlation between SL and the COI framework, the researchers were unable to determine an *a priori* estimate of the association between the constructs to determine the necessary sample size. Thus, G*Power (Faul et al., 2009) was used to conduct a post hoc analysis of achieved power. The positive, strong correlation between the mean SL-28 and COI ratings ($r(138) = .79, p < .001$) indicates a shared variance 62%. G*Power results indicated that the study sample size of 141 participants resulted in 93% power ($\alpha = .001$, two-tailed). Therefore, the sample size was deemed sufficient for the analysis.

The data met assumptions of multiple linear regression (Hair, Jr. et al., 2010), including acceptable tolerance levels ($> .20$) and VIF values (< 5.0), assumptions of independent errors (TP Durbin-Watson value = 2.14; SP Durbin-Watson value = 1.97; CP Durbin-Watson value = 2.09), approximately normally distributed errors, homogeneity of variance and linearity, and non-zero variances and standard residuals (< 3.0). The researchers identified six outliers using univariate and bivariate observations and Mahalanobis distance ($D^2, p < .001$). Data were analyzed using descriptive statistics, Pearson bivariate correlation, and standard multiple linear regression.

Results

Descriptive Statistics

Participant ratings were averaged for the SL-28 and CoI subscales, following standard practice for each instrument. Cronbach's alpha reliability coefficient was .96 for the CoI survey and .96 for the SL-28, indicating internal consistency among each survey's items and reliability of each survey in measuring CoI and SL, respectively. Internal consistency among each of the SL-28 subscales was primarily above alpha level .80, with the exception of the empowering subscale ($\alpha = .60$). However, each subscale consists of only four items, Cronbach's alpha has a positive relationship to the number of items in a scale, and decreased values are acceptable in exploratory studies (Hair, Jr. et al., 2010). Given these conditions, the researchers deemed .60 as an acceptable alpha level. Each of the CoI subscales demonstrated excellent internal consistency with alpha levels above .90.

Research Question One

Research question one asked: How do students' perceptions of their instructors' servant leadership behaviors correlate with students' perceptions of a Community of Inquiry? The correlation between the composite means of respondents' ratings of the SL-28 ($M = 5.17, SD = .93$) and the CoI Survey ($M = 5.56, SD = .88$) was strong and significant, $r(138) = .79, p < .001$. Table 2 presents descriptive statistics and Pearson correlations among the subscales of each instrument. While correlations were significant across all SL-28 and CoI Survey subscales, the strength of correlations varied, with TP demonstrating moderate to strong, CP demonstrating moderate, and SP demonstrating weak to moderate correlations.

Table 2
Means, Standard Deviations, and Correlations Among SL-28 and CoI Survey Subscales

Variable (n = 141)	Mean (SD)	1	2	3	4	5	6	7	8	9	10
EH (1)	4.29 (1.42)	–									
CVC (2)	4.70 (1.08)	.78***	–								
CS (3)	5.55 (1.13)	.62***	.61***	–							
EMP (4)	5.43 (.92)	.47***	.50***	.61***	–						
HSGS (5)	5.44 (1.13)	.75***	.71***	.74***	.55***	–					
PSF (6)	4.90 (1.20)	.74***	.73***	.67***	.56***	.81***	–				
EB (7)	5.86 (.88)	.63***	.67***	.66***	.50***	.76***	.70***	–			
TP (8)	5.67 (1.04)	.63***	.65***	.76***	.53***	.82***	.73***	.68***	–		
SP (9)	5.25 (1.09)	.52***	.49***	.36***	.31***	.49***	.44***	.37***	.51***	–	
CP (10)	5.67 (.91)	.52***	.60***	.69***	.46***	.66***	.57***	.58***	.80***	.60***	–

****p* < .001

Abbreviations: EH, emotional healing; CVC, creating value for the community; CS, conceptual skills; EMP, empowering; HSGS, helping subordinates grow and succeed; PSF, putting subordinates first; EB, ethical behavior; TP, teaching presence; SP, social presence; CP, cognitive presence.

Research Question Two

The second research question asked: To what extent do students’ perceptions of each of the servant leadership subscales contribute to students’ perceptions of a Community of Inquiry? The researchers used standard multiple linear regression modeling to investigate effects of the predictor variables (SL-28 subscales) on subjects’ cumulative CoI ratings. The multiple regression coefficient model indicates the average change in the criterion variable given a one unit increase in the predictor variable (Hair, Jr., et al., 2010) and in this study is expressed as: $CoI' = 1.758 - .006 (EH) + .163 (CVC) + .213 (CS) + .006 (EMP) + .318 (HSGS) + .021 (PSF) + .003 (EB)$, where CoI = community of inquiry, EH = emotional healing, CVC = creating value for the community, CS = conceptual skills, EMP = empowering, HSGS = helping subordinates grow and succeed, PSF = putting subordinates first, and EB = ethical behavior.

In this model, the three most influential predictor variables were HSGS, CS, and CVC, which indicated a one unit increase in the predictor variable would result in an increase of .318 (HSGS), .213 (CS), and .163 (CVC) in subjects’ CoI ratings. The prediction model was statistically significant, $F(7, 133) = 36.56, p < .001, R^2 = .66$ and explained 66% of the variance in students’ perceptions of a CoI (Table 3).

Table 3*Regression Coefficients for Predicting CoI Presences in Select Online Graduate Level Courses*

Variable	B	95% CI	β	t	p
Constant	1.758	[1.067, 2.449]		5.03	<.001
EH	-.006	[-.119, .106]	-.010	-.11	.912
CVC	.163	[.018, .308]	.199	2.22	.028
CS	.213	[.084, .341]	.271	3.27	.001
EMP	.006	[-.121, .132]	.006	.09	.928
HSGS	.318	[.150, .486]	.406	3.75	<.001
PSF	.021	[-.120, .161]	.028	.30	.769
EB	.003	[-.162, .169]	.003	.04	.968

Note. $R^2_{adj} = .64$ ($N = 140$, $p < .001$). CI = confidence interval for B.

Abbreviations: EH, emotional healing; CVC, creating value for the community; CS, conceptual skills; EMP, empowering; HSGS, helping subordinates grow and succeed; PSF, putting subordinates first; EB, ethical behavior; TP, teaching presence; SP, social presence; CP, cognitive presence.

Research Questions Three, Four, and Five

The final three research questions asked: To what extent do students' perceptions of each of the servant leadership subscales contribute to students' perceptions of (a) cognitive presence, (b) social presence, and (c) teaching presence? To understand how each of the predictor variables influenced the CoI subscales, the researchers ran three additional multiple regression tests.

All regression models were significant but showed differences in which predictor variables influenced each of the CoI subscales. The overall regression model for CP was significant, $F(7, 133) = 23.22$, $p < .001$, $R^2 = .55$. Taken as a set, the SL predictors accounted for 55% of the variance in CP. Three individual SL-28 dimensions in the model were significant positive predictors of students' perceptions of CP: conceptual skills ($t = 4.45$, $p < .001$), creating value for the community ($t = 2.43$, $p = .017$), and helping subordinates grow and succeed ($t = 2.22$, $p = .028$).

The overall regression model for SP was also significant, $F(7, 133) = 8.45$, $p < .001$, $R^2 = .31$. Taken as a set, the SL predictors accounted for 31% of the variance in SP. One individual SL-28 dimension in the model was a significant positive predictor of students' perceptions of SP: emotional healing ($t = 1.99$, $p = .049$).

Finally, the overall regression model for TP was significant, $F(7, 133) = 51.42$, $p < .001$, $R^2 = .73$. Taken as a set, the SL predictors accounted for 73% of the variance in TP. Two individual SL-28 dimensions were significant positive predictors of students' perceptions of TP: conceptual skills ($t = 4.16$, $p < .001$) and helping subordinates grow and succeed ($t = 4.98$, $p < .001$).

Discussion

This study detailed significant conceptual and empirical connections among the Community of Inquiry (CoI) framework (Garrison et al., 2000), instructor leadership, leadership theory, and higher education online learning (HEOL). Among leadership theories, servant

leadership (SL) is particularly relevant to HEOL. Specifically, the dimensions of Liden et al.'s (2008) SL theory are markedly aligned with the CoI framework.

The purpose of the study was to investigate relationships between Liden et al.'s (2008) seven dimensions of SL, the CoI framework as a whole, and its three dimensions individually. Understanding the relationships contributes to understanding the under-investigated construct of instructor leadership in higher education online learning (Xin, 2012), the relationships between SL and the CoI framework, and what instructor SL behaviors are most impactful for achieving the meaningful educational outcomes associated with a CoI in HEOL. The final section of the discussion includes practical guidance for instructors interested in implementing SL in their online courses.

Positive Relationships Between Servant Leadership and the Community of Inquiry

The first research question investigated the relationship between students' perceptions of their instructor's SL and their perceptions of a CoI. Results revealed a significant and positive correlation between the CoI Survey (Arbaugh et al., 2008) and the SL-28 (Liden et al., 2008). This finding offers empirical data to support the contention that instructor leadership is essential to a CoI (Alotebi et al., 2018; Garrison, 2017; Garrison & Cleveland-Innes, 2005; Szeto, 2015; Xin, 2012) and affirms that SL is applicable to the study of instructor leadership in the context of HEOL.

Relationships at the subscale level provided additional insights. All seven SL subscales showed significant correlations with each of the CoI subscales but with varying strengths—moderate to strong with TP, moderate with CP, and weak to moderate with SP. The strongest association with TP is consistent with Garrison et al.'s (2000) seminal CoI work that proposed TP as the binding element of the educational experience and the significant body of research that has closely associated TP with instructor leadership behaviors (Garrison, 2017; Garrison & Cleveland-Innes, 2005; Shea et al., 2010; Szeto, 2015; Xin, 2012; Zhang et al., 2022; Zhao & Sullivan, 2017). The weak to moderate association between SP and SL was a surprising finding, given the alignment of both constructs with social theories. One explanation may be that social influences in organizational settings develop over long-term, physically-present relationships, and these influences are harder to distinguish in a short-term, online educational setting with physical and psychological distance (Balwant, 2016). Thus, in practice, instructors may need to focus more intentionally on the quality of interactions to facilitate optimal leadership presence (Garrison & Cleveland-Innes, 2005).

Servant Leadership Variables' Influence on Perceptions of a Community of Inquiry

Research question two investigated how each SL dimension contributed to students' cumulative perceptions of a CoI. The regression model revealed three predictor variables had the most influence: (1) helping subordinates grow and succeed, (2) conceptual skills, and (3) creating value for the community. Thus, the higher participants' sense of these three SL dimensions, the higher their sense of a CoI. This finding is not surprising, as together these three dimensions can be interpreted as the core tasks of an instructor in a CoI: An instructor must balance course and pedagogical elements (conceptual skills) to facilitate students' development (helping subordinates grow and succeed) within a collaborative learning community (creating

value for the community). These three dimensions may be conceived of as *functional dimensions of instructor SL* that are expected outcomes of the teaching and learning process in a CoI.

The dimensions that had weaker influence (emotional healing, empowering, ethical behavior, and putting subordinates first) may be related to the recognition that leadership in an instructional setting differs from leadership in an organizational setting (Balwant, 2016). Emotional healing, empowering, ethical behavior, and putting subordinates first could reasonably be viewed as *relational dimensions of instructor SL* that develop over time and, without concerted effort, may not easily be perceived in an eight-week, online course. The distance, duration, and temporary nature of instructor-student relationships are different from leader-follower relationships in many organizational settings (Balwant, 2016). This study provides some clarity to Balwant's (2016) contention that "leader behaviors that necessitate a long-term relationship are not likely to be applicable to a HEI [higher education institution] course context" (p. 23). While the relational dimensions of instructor SL were not the most influential relative to a CoI, each dimension demonstrated significant, positive correlations with the individual CoI elements. Thus, an instructor may choose to focus on the most influential SL dimensions for functional impact, but using behaviors across all dimensions may strengthen the relational nature of instructor-student interactions and enhance meaningful educational experiences in a CoI.

Conceptualizing the SL dimensions in this study's regression model as functional and relational also leads to an intriguing question: Are the results representative of SL, or could they be explained by other leadership models? Significant research has established the relevance of transformational leadership to HE teaching (Balwant, 2016; Bolkan & Goodboy, 2009; Kondrasuk & Bernard, 2013; Noland & Richards, 2014; Pounder, 2009). However, functional leadership and relational leadership are two other perspectives of leadership also worthy of consideration. Briefly, functional leadership involves the integration of task, team, and individual in achieving desired outcomes (Adair, 2009), while relational leadership focuses on "*the relational dynamics of leading and organizing* [emphasis in original]" (Uhl-Bien, 2006, p. 667). Investigating other leadership theories may offer additional insights to help facilitate the theory and practice of online instructor leadership.

Finally, the weaker influences of SL relational dimensions may be a function of the study design, as the sample included a mix of disciplines—education, liberal arts, and engineering. Much research in online learning has focused on participants' perceptions absent considerations of course content effects (Arbaugh et al., 2010). Richardson et al. (2012), for example, noted the dynamics of online learning may be discipline specific. In their study, the researchers concluded hard disciplines, such as engineering, focused on the design and presentation of content and less on application, which led to lower perceptions of social and cognitive presences, while perceptions of teaching presence remained consistent across disciplines. While this study did not evaluate discipline-specific results, 34% of participants were engineering students, thus this may have reduced overall perceptions of SP and CP, yet had little impact on TP. While a full review of the impact of different leadership theories and discipline-specific influences is beyond the scope of this paper, given the results of this study, these considerations may offer alternative perspectives relative to instructor leadership in a CoI.

Servant Leadership Dimensions That Predict Community of Inquiry Subscales

Research questions three, four, and five investigated the relative importance of the predictor variables (SL dimensions) to each of the criterion variables (CoI dimensions). This level of analysis provided a different perspective, as it investigated the extent to which SL dimensions predicted each of the CoI dimensions individually, rather than the CoI as a whole. Results demonstrated SL dimensions had the most influence on teaching presence (TP), with the SL predictors accounting for more than 73% of the variance in TP. Two dimensions of SL were significant positive predictors of TP—conceptual skills and helping followers grow and succeed. Conceptual skills involve the leader’s knowledge of the organization and tasks needed to provide followers with effective assistance, while helping them grow and succeed involves providing followers with support and mentoring (Liden et al., 2008). These results resonate with the proposition of a two-factor model of TP, including design and organization and facilitation and direct instruction (Arbaugh et al., 2008). A servant leader’s conceptual skills may align with the course design and organization, while ways in which the instructor helps learners grow and succeed may be related to the pedagogical elements of facilitation and direct instruction as the course progresses.

The SL dimensions had a substantial impact on CP as well, with the SL predictors accounting for 55% of the variance in CP. The two SL dimensions that were significant positive predictors for TP (conceptual skills and helping subordinates grow and succeed) were also significant positive predictors for CP. CoI research has conceptualized TP as necessary to achieve the critical thinking central to CP (Garrison et al., 2010; Garrison & Arbaugh, 2007). Thus, the two shared SL dimensions may represent an instructor’s leadership in regulating learning, which lies at the intersection between TP and CP (Garrison, 2017).

A third SL dimension, creating value for the community, was also a significant positive predictor of and uniquely associated with CP. Questions from the SL-28 relative to this dimension are related to the instructor helping others and encouraging students to do the same (Liden et al., 2008). Others have also noted the importance of servant leaders developing helping behaviors among followers (Parris & Peachey, 2013). In a CoI, students are likely to interpret helping behaviors relative to their learning needs. For example, Xu et al. (2013) noted in collaborative online learning, an important role of the instructor is to promote a culture of help seeking, which can positively influence learning, engagement, and achievement. These ideas are in line with Noland and Richards’s (2015) emphasis on interdependence as the predominant way in which servant teachers create value for the community.

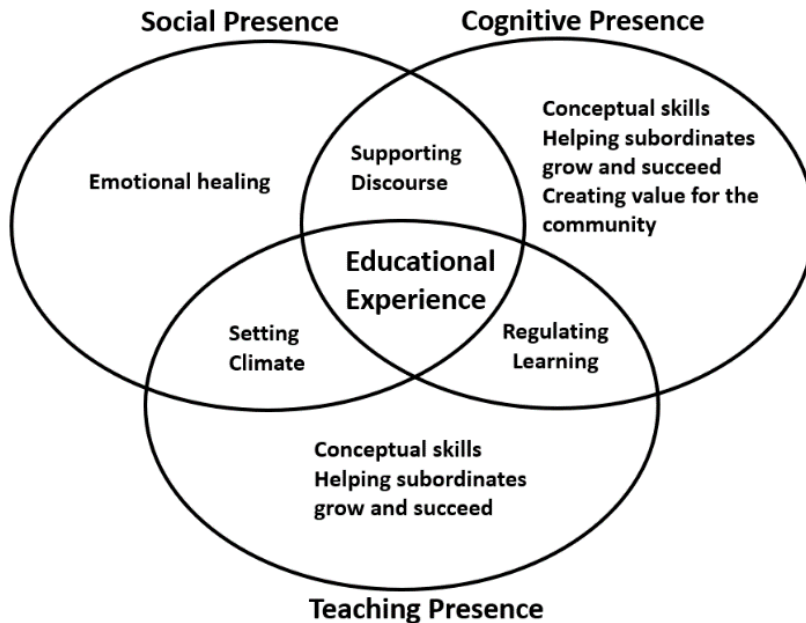
The final regression model indicated SL predictors accounted for 31% of the variance in SP. While only one SL dimension, emotional healing, was a positive predictor for SP, the definition of the dimension is conceptually relevant as it involves sensitivity to followers’ personal concerns (Liden et al., 2008). This finding is consistent with research into effective behaviors of online instructors, including responsiveness to students’ needs (Arbaugh et al., 2010; Sheridan & Kelly, 2010) and demonstrating empathy (Sheridan & Kelly, 2010).

While the regression model using participants’ cumulative CoI perceptions as the criterion variable revealed three influential SL dimensions (helping subordinates grow and succeed, conceptual skills, and creating value for the community), using the CoI presences as

individual criterion variables helped surface the presences upon which the SL dimensions have the most influence. The analyses also revealed that emotional healing, while not influential in the overall regression model, had substantial influence on SP. Figure 2 shows the instructor SL dimensions that had significant impact within the context of the CoI framework.

Figure 2

Dimensions of Servant Leadership That Contribute to a Community of Inquiry



Recommended Instructor Servant Leadership Behaviors

Given the significant, positive relationships among SL dimensions and the CoI presences and the substantial influences of the SL dimensions on CP, SP and TP, instructors may benefit from recommendations for applying SL in a HEOL setting. Table 4 recommends instructor SL behaviors aligned with Liden et al.’s (2008) seven SL dimensions and effective online instructor behaviors.

Table 4

Dimensions of Servant Leadership Aligned With Instructor Behaviors in Online Learning

Servant Leadership Dimensions (Liden et al., 2008)	Instructor Servant Leadership Behaviors	Instructor Behaviors in Online Learning
Emotional healing	<ul style="list-style-type: none"> Actively listen to students’ needs.^a Provide input to help students resolve problems.^b 	<ul style="list-style-type: none"> Demonstrate empathy.^d Elicit shared personal viewpoints and experiences.^e
Creating value for the community	<ul style="list-style-type: none"> Address the social importance of individuals’ group contributions.^b Encourage interdependence.^c 	<ul style="list-style-type: none"> Demonstrate active involvement in discourse.^f

Conceptual skills	<ul style="list-style-type: none"> • Integrate students' learning within academic and social contexts.^b • Demonstrate a multidimensional perspective regarding causes and consequences of problems.^a • Scaffold learning and create conditions to help benefit learners' work, life, and the broader community.^b 	<ul style="list-style-type: none"> • Promote student engagement and participation.^f • Create a rich setting for collaboration.^e • Model behaviors and interactions.^e • Summarize ideas and offer alternative perspectives.^f • Provide scaffolding to help students make sense of course and field concepts.^f
Empowering	<ul style="list-style-type: none"> • Encourage students to believe they can and will achieve their goals.^b • Involve students as co-creators of knowledge.^a • Inspire students to dream big dreams.^b 	<ul style="list-style-type: none"> • Empower students to take ownership.^f • Provide time for discussion and interaction.^e • Encourage student success beyond the course.^f
Helping subordinates grow and succeed	<ul style="list-style-type: none"> • Encourage students to ask questions without fear of judgement.^b • Identify and utilize teachable moments.^b • Offer opportunities for students' self-evaluation and reflection.^a 	<ul style="list-style-type: none"> • Provide direction to ideas and prompts to encourage critical thinking.^f • Share helpful resources.^f • Support, model, and clarify.^{e, f}
Putting subordinates first	<ul style="list-style-type: none"> • Align your success with students' success.^b • Alter pedagogical approaches to meet students' needs.^c • Model flexibility to accommodate students' schedules.^a 	<ul style="list-style-type: none"> • Elicit feedback from students.^f • Be responsive to students' needs.^d • Be willing and available to support students as needed.^f
Behaving ethically	<ul style="list-style-type: none"> • Demonstrate personal values of benevolence, integrity, and competency.^a • Consider how actions and words impact others and encourage students to do the same.^a • Explain course policies and procedures to help students understand their importance to the learning community.^a 	<ul style="list-style-type: none"> • Create an appropriate climate.^f • Provide students with honest feedback.^e • Follow through with promises made to students.^d

Note. ^aKondrasuk and Bernard (2013); ^bSetliff (2014); ^cNoland and Richards (2015); ^dSheridan and Kelly (2010); ^eVesely et al. (2007); ^fRichardson et al., (2015)

Limitations and Future Research

This study investigated relationships between the Community of Inquiry (CoI) framework and servant leadership (SL) theory with a sample of 141 graduate students in one institutions' eight-week, online courses across multiple disciplines. Results may not be generalizable to different populations, including other educational levels, course formats and durations, disciplines, and geographies. Research studies using different populations are needed to examine differences in outcomes to develop deeper understandings of the associations found in this study. While the sample size for this study was deemed sufficient for the research methodology, studies using larger sample sizes would also help confirm the results.

The instrument used in the study combined two separate instruments into one survey, resulting in a 70-item scale. While the researchers took steps to maximize participation and minimize survey fatigue, data quality due to survey fatigue is always possible with longer surveys, although with potentially small effect sizes (Galesic & Bosnjak, 2009). In addition, this study defined SL relationships using one instrument, Liden et al.'s (2008) SL-28. Servant leadership is an evolving theory and many dimensions and instruments have been proposed to measure the construct. Using different instruments with different dimensions may offer additional insights into the relationships between SL and the CoI framework. Results also indicated the possibility that other leadership theories may explain instructor leadership in a CoI. Researchers are encouraged to apply different leadership theories to the study of instructor leadership in a CoI to help advance the understanding of this under-researched concept. Such investigations can help develop research and practice in online learning, resulting in evidence-based pedagogical practices to facilitate the meaningful educational experiences at the core of a CoI. Finally, while literature supports conceptual and empirical alignments between the two constructs, investigating social interaction theories may offer theoretical insights into associations between the constructs.

Conclusion

Instructor leadership is recognized as an essential element of a CoI. In the past two decades, researchers have shown increasing interest in SL (Eva et al., 2019), instructor leadership (Balwant, 2016), and instructor behaviors in HEOL (Author, 2015; Sheridan & Kelly, 2010; Vesely et al., 2007). While previous studies investigating effective online instructor behaviors have not done so through the lens of servant leadership theory, the resultant behaviors are aligned with those of a servant leader (Author, 2015; Sheridan & Kelly, 2010; Vesely et al., 2007). This study provides a refined lens through which to consider what the role of an instructor is and can be in online learning.

Instructor leadership in a CoI is most often associated with teaching presence (TP) (Garrison, 2017; Garrison & Cleveland-Innes, 2005; Shea et al., 2010; Szeto, 2015; Xin, 2012; Zhang et al., 2022; Zhao & Sullivan, 2017), but the intersection of TP with social presence (SP) and cognitive presence (CP) indicates instructor leadership should influence those elements as well. This study demonstrated alignment between SL and the CoI framework and offered new insights, demonstrating that instructor leadership, interpreted through the lens of SL, can be observed across TP, CP, and SP. The results are significant, as extant literature does not offer clarity about the dimensions of and operationalization of instructor leadership in a CoI (Szeto, 2015; Xin, 2018), and little guidance exists regarding the practical applications of SL dimensions

(Coetzer et al., 2017). The results of this study help answer Xin's (2012) call for further specification of the core dynamics of online leadership, offering evidence that SL is a valid theoretical framework worthy of future investigation and detailing specific instructor SL behaviors that may have a positive impact on the meaningful educational experience at the core of a CoI in HEOL.

Declarations

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

The authors assert that approval was obtained from an ethics review board (IRB) at Purdue University.

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