The Relationship among Motivation, Self-Efficacy, Community of Inquiry and learning Performance in Online Learning Environments: A Path Analysis

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Article Info

ABSTRACT

The COVID-19 pandemic has necessitated a rapid shift to online learning, making the community of inquiry (COI) framework increasingly relevant for creating meaningful and effective online learning experiences. However, the impact of COI presences (i.e., teaching, social, and cognitive presence) on students' learning outcomes has been inconsistent in the literature, and a recent meta-analysis has identified a publication bias in this relationship suggesting the need for further investigation. This study aimed to enhance our understanding of how the COI presence influences college students' learning outcomes and whether it has a mediating role in the effect of self-efficacy and motivation on e-learner's academic achievement. In this cross-sectional study, using a correlational research design, among all graduate students studying in online courses, a total of 269 graduate students were selected from online programs in seven public universities in Iran between April 2022 and June 2023, to be the sample of the study. The data were obtained from the answers to the community of inquiry (COI) scale, self- efficacy scale, academic motivation scale and students' last semester grade point average. To examine the questions of the study, a path analysis was applied whose results showed that motivation and self-efficacy affected the community of inquiry positively (p<0.000). Also, the community of inquiry affected learning performance positively (p<0.000). The outcomes can provide significant theoretical and practical contributions to the key stakeholders to design a satisfying and successful online curriculum for the post-COVID-19 era and offer valuable insights into the design of productive online learning communities.

Introduction

The use of technology in education has revolutionized the learning experience and opened up new opportunities for teaching and learning (Siemens et al., 2015; Veletsianos, 2016). With a growing diversity of students in higher education who require flexibility in their academic, personal, and professional responsibilities (Lopez et al., 2018; Taylor et al., 2018), online learning environments have become increasingly popular. Bates (2005) argued that online learning is the use of web and internet in learning. Also, Hartnett (2016) defined online learning as 'distance education mediated by technological tools where learners are geographically separated from the instructor and the main institution'.

As mentioned in some studies (e.g. Alabbasi, 2017; Huang et al., 2020; Powell et al., 2015), online learning can be characterized into its two main points: content and instruction. Firstly, the content of online course greatly influences the learners' learning outcome. It needs to engage learners remotely based on technology via the internet with various interactive content from audio, video, animation, and simulation. The content can be adaptable and customized based on learners' requirement in order to reveal their competency to understand the learning material and ready to continue to the new one. Secondly, the instructions are conducting over the internet in which leaners can have comments about their assignments directly. Similar to the content in which it can be flexible and individualized, the instructions can also be adjusted on the pedagogy demands, interaction rules, and gadgets' availability on the basis of the hosting education institutions' policy. The instructions are provided by teachers through interaction in the same time-space communication like video conferencing such as using Zoom or Google Meet, and through separate time-space communication like email or chat texting applications. Those forms of communication must be accessible from any places. Online learning environments offer students greater flexibility while also promoting active learning through the use of interactive technologies (Seaman et al., 2018; Siemens et al., 2015; Vaughan et al., 2013).

For e-learning to become an effective pedagogical platform, educators need to identify elements that are crucial to successful e-learning. To this end, researchers have drawn on the community of inquiry (COI) model as a theoretical framework for e-learning (Arbaugh et al., 2008; Garrison, 2007, 2013; Kozan & Caskurlu, 2018; Law et al., 2019; Ma et al., 2015; Wicks et al., 2015). The Community of Inquiry (COI) theoretical framework is a popular and adaptable model for technology-based learning design that is often cited and utilized (Anderson, 2016). It has been extensively studied in

online learning research to enhance student learning outcomes (Burgess et al., 2010; Garrison et al., 2010; Kazanidis et al., 2018; Rubin et al., 2013). COI has been one of the most used and cited theoretical frameworks in research on online teaching and distance education in the last decade (Bozkurt et al., 2015; Kim & Gurvitch, 2020; Valverde-Berrocoso et al., 2020). Its initial point is creating a community which is highly important as it creates the social fabric of learning and learning includes a matter of belonging and intellectual process. A strong community enhances the interactions and relationships based on mutual respect and trust, increments a willingness to share, and encourages collaboration, etc. (Wenger et al., 2002). COI postulates that satisfactory e-learning experience stems from teachers and students forming a community of inquiry to engage in critical thinking. It further stipulates that effective engagements between teachers and students in an online environment center on three presences – social, cognitive, and teaching.

The COI includes cognitive presence, which refers to the ability of learners to construct and confirm meaning through reflection and discourse in a critical community. This involves four phases: a triggering event, exploration, integration, and resolution. A problem or issue needed to explore is identified as a triggering event, followed by critical reflection and discourse to the issue that is considered as the exploration phase. Learners then construct meaning based on the explored ideas during the integration phase, and finally apply the newly developed knowledge to their school environment during the resolution phase (Akyol & Garrison, 2011). Cognitive presence is considered the most crucial element for success in higher education according to the COI model. This involves students constructing and verifying meaning through reflection and discourse, focusing on higher-order thinking processes rather than individual learning outcomes (Garrison et al., 2001).

The concept of social presence encompasses various aspects such as the affective expression, open communication, and group cohesion. Its primary objective is to enable participants to connect with the group or course they are studying, communicate effectively in a trustworthy environment, and gradually build personal relationships by expressing their individual personalities. Additionally, social presence emphasizes the communication abilities of learners and encourages collaborative learning contexct (Akyol & Garrison, 2011). Garrison (2011) explained that social presence is important in academia as it involves creating an environment that values and encourages the sharing of ideas and questions. It takes time to develop a sense of belonging, which is necessary for critical thinking and discourse. Participants can develop social presence by

interacting with each other during learning activities allowing them to identify with a group, communicate effectively in a safe environment, and gradually form personal and emotional relationships that reflect their unique personalities (Garrison, 2009). The significance of social presence lies in its ability to indirectly support critical thinking processes by promoting cognitive presence within the learning community.

The last component of COI is teaching presence, which involves designing and facilitating cognitive and social processes to achieve individually and educationally precious learning outcomes. Teaching presence has three subdimensions: instructional design and organization, facilitation of discourse, and direct instruction are three subdimensions of teaching presence. Studies have shown that teaching presence is crucial for establishing and maintaining a COI environment(Akyol & Garrison, 2011; Van Niekerk, 2015; Garrison et al., 2010). In order to achieve educational goals, it is important to balance cognitive and social aspects through teaching presence. This can be done by any member of the learning community, as well as by the teacher's active leadership (Garrison et al., 2000). Research supports the significance of teaching presence in terms of student satisfaction, perceived learning, and sense of community (Garrison & Arbaugh, 2007). In online learning, self-efficacy plays a significant role in promoting productive and self-directed learning, as well as helping learners overcome feelings of isolation (Hodges, 2008; Ponton et al., 2005; Song & Hill, 2007).

Self-efficacy pertains to an individual's belief in their capacity to learn and perform tasks competently (Bandura, 1986). Studies have found that high self-efficacy is linked to academic achievement and motivates individuals to put in more effort (Ferede et al., 2016; Valentine et al., 2004; Vogel & Human-Vogel, 2016; Wang & Finch, 2018). The formation of self-efficacy beliefs is influenced by both mastery and vicarious experiences (Bandura, 1997). Thus, self-efficacy can be both a cause and an effect that is impacted by the educational experiences and collaborative environment within a COI (Akyol & Garrison, 2011). In the context of online learning, self-efficacy plays a role to determine the level of students' confidence to get success in the learning process. Students with a high level of self-efficacy will not perceive a difficult task as an obstacle to be avoided, but rather as a challenge to develop abilities. Therefore, self-efficacy can be seen as a prerequisite for success in online learning environments (Taipjutorus et al., 2012; Yavuzalp & Bahcivan, 2020), as it is closely linked to independent work and learning self-regulation (Busch, 1996; Putarek & Pavlin-Bernardiæ, 2020). Additionally,

high self-efficacy is vital for students' confidence levels in accomplishing learning tasks. In this study, it is suggested that self-efficacy can serve as a precursor in facilitating the elements within the COI framework.

While online course setting provides flexibility and ease of access to online learning content, it may foster a lack of motivation of students to complete learning tasks (Bennett et al., 2011 & Torrisi-Steele & Drew 2013). Motivation is the deeper intention that exists in each learner and has a direction or goal. Bandura (1986) suggested that people are proactive in engaging with the environment as a result of their self-beliefs. A learner's beliefs about capability are often a better indicator of motivation and success than actual capability (Pintrich, 2000). Motivation corresponds to a set of physiological processes, which can determine the direction and persistence of behaviors (Moos & Marroquin, 2010). A student with the goal of improving or developing competence in a particular task or subject area will often seek help and reflection as an opportunity to learn. Furthermore, students who are motivated, have strong relationships with teachers and want to develop social relationships with peers (Patrick et al., 2007; Wentzel et al., 2010). These students often have a more positive effect on school and may cope with the digital learning environment and learning problems more effectively (Zimmergembeck & Locke, 2007).

In online learning, students must take responsibility for their own learning and cannot simply rely on others to guide them. This requires them to actively engage with the course material and interact with both the teacher and other students to acquire new knowledge and information (Knowles & Kerkman, 2007). Schunk et al. (2014) suggested that students' motivation is crucial for successful learning outcomes, while Nakayama et al. (2014) argued that extrinsic factors such as the learning environment and intrinsic factors like personality can affect students' motivation differently. With the increment in online enrollments, scholarly interest in motivation has also increased (Dabbagh & Kitsantas, 2004; Green & Azevedo, 2007). The point has been investigated in depth within the nature of the online learning environment; however, its effect on the COI framework or on its three constructs has been rare. For example, in a study conducted by Polat (2013) with 165 students concluded that no significant relationship was found between motivation and the perceived scores of online students on the three presences. Another study conducted by Kim in 2015, examining the effect of motivation on the three-presence of the COI, concluded that there was a positive significant correlation between motivation and each of the three presences.

In a study conducted by Kilis and Yildrim (2017) with 1535 students enrolled in an online course, the

findings notably revealed that motivation significantly contributed to the prediction of COI and its three presence types. Therefore, there is no consensus between these studies revealing the need for more studies to form a clear understanding of the effect of motivation on the COI framework and its three-presences. Also, it is considered important to study the effect of motivation on learning performance considering the mediating role of the COI framework and its three presences. Studies have shown that online learners tend to be more motivated by intrinsic factors compared to their face-to-face counterparts (Keller, 2008; Wighting et al., 2008; Yukselturk & Bulut, 2007). However, internal motivation such as feelings of isolation, technology failure, and poor time management skills have been identified as factors that can negatively impact the success of online learners (Hara & Kling, 2003; Paulus & Scherff, 2008). Overcoming these barriers through increased familiarity with technology can improve online learning outcomes (Keller & Suzuki, 2004). On the other hand, amotivation or a lack of both intrinsic and extrinsic motivation is the biggest obstacle for unsuccessful online learners (Keller, 2008). Therefore, motivation is a crucial factor that needs to be considered in online learning to ensure successful outcomes.

Although several studies have been conducted on the impact of self-efficacy and motivation on the academic achievement of learners in online courses (Kilis, 2018; Chang et al., 2014; Yusuf, 2011; Chang & Tsai, 2022), there has been no study examining the mediation role of COI framework and its three presences on the effect of self-efficacy and motivation on e-learner's academic achievement. Additionally, research into COI in e-learning context is often conceptual rather than empirical (e.g., Bangert, 2008; Breivik, 2016; Kanuka & Garrison, 2004; Tu, 2002). Also, COI studies that simultaneously consider the influence of all three presences are rare (Arbaugh, 2007; Lee & Faulkner, 2011) as most studies have portrayed the three presences as direct and independent influences on e-learning experiences (e.g., Garrison & Arbaugh, 2007; Kozan & Caskurlu, 2018; Law et al., 2019; Lee & Faulkner, 2011; Yu & Richardson, 2015). To address this gap, we developed a conceptual model to illustrate the influence of self-efficacy and motivation on COI and the effect of three presences on e-learning performance.

In light of the issues discussed in the literature, the current study focused on students' perceptions of self-efficacy, motivation, and COI and its three elements of social, cognitive, and teaching presence in order to gain a better understanding of their effect on e-learning performance. By doing so, we hoped to better understand the nature of online learning and its influences on students' learning outcomes. Thus, the validation of our model may assist educators in comprehending how various elements interact to influence students' e-learning performance. Such insight would be helpful in designing online curricula and systems that enhance learning outcomes. A representation of the hypothesized model tested in this study is illustrated in Figure 1. This model was represented by the following research questions:

- What are the students' perceived levels of community of inquiry (social presence, cognitive presence, teaching presence), self-efficacy, motivation and learning performance in the online course environment?
- To what degree do students' perceived levels of self-efficacy and motivation in the online course environment predict their perception of social presence, cognitive presence and teaching presence?

To what degree do students' perceived levels of social presence, cognitive presence and teaching presence in the online course environment predict their learning performance?

Figure 1.
Proposed Theoretical Model
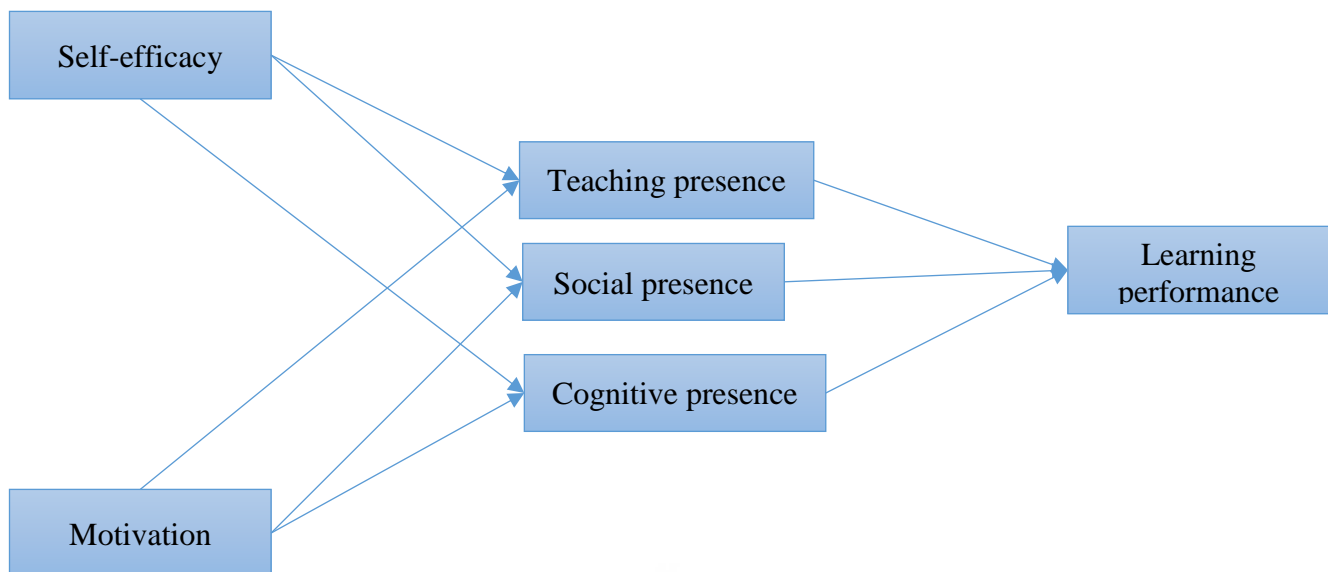
Method

In order to examine the research questions and discover associations among the variables, a correlational research design was applied. Furthermore, since the research was designed in order to study the participants at a single point of time, rather than over a period of time; therefore; the current study was cross-sectional. It particularly sought to explain and discover the contribution of self-efficacy, motivation and three types of presence on their learning performance in online learning settings.

Participants

An online survey was conducted with graduate students from seven universities in Iran between April 2022 and June 2023 using a convenience sampling method. A total of 282 students (64 % male, 36 % female) with an average age of 28 (SD = 4.2) years participated voluntarily in the study. Of these, 162 respondents (58%) were the sophomore, 86 respondents (30%) were the freshmen and 34 respondents (12 %) were senior students. The majority of the students (43 %) were between 22 and 26 years old. In order to be eligible for participation, students were required to satisfy specific criteria including willingness to engage in the study, non-enrollment as an undergraduate student, and enrollment in completely online courses. The study's objective was explained to all participants, and it was made sure that their responses remained anonymous. There was no missing data as the online questionnaires required all questions to be answered before submission.

Instruments

To measure students' perceptions of the community of inquiry and its three presence types, COI scale, originally developed by Arbaugh et al. (2008) and adapted and validated for use in an Iranian context by Taghizade et al. (2017) was used. The survey consists of 34 five-point, Likert-type items (TP: 13-items, SP: 12-items, CP: 9-items). In the present study, the Cronbach's alpha coefficients were .92 for teaching presence, .89 for social presence, .93 for cognitive presence and .96 for the whole scale.

Also, the MSLQ (self-Efficacy component) scale was used to measure students' self-efficacy levels consisted of 9 seven-point Likert-type items, developed by Pintrich et al. (1991) and was adapted for use in Iran by Feiz et al. (2013). The reliability calculated through Cronbach alpha revealed that the questionnaire was reasonably reliable (=.95).

Academic motivation scale (AMS) was also used to measure students' motivation developed by Vallerand et al. (1992) and was adapted for use in Iran by Mohammadali et al. (2020). This scale assesses 7 types of constructs: intrinsic motivation towards knowledge, accomplishments, and stimulation, as well as external, interjected and identified regulations, and finally amotivation. It contains 28 items (4 items per subscale) assessed on a 7-point scale. Vallerand et al. (1992) investigated its reliability using Cronbach's alpha coefficient ranging between .83 and .86. In this study, the reliability calculated with Cronbach alpha was .82 showing that the questionnaire was reasonably reliable. Moreover, the GPA (Grade Point Average) from the

students' previous semester was considered for performance learning.

Data Collection Procedure

In April 2022, the survey was administered online to all college students in seven universities in Iran before the end of the semester. An explanation of the objectives of the study and assured anonymity and confidentiality of participation were provided in the online form. Participants were instructed to focus only on their online learning experience for their responses to the survey. Participants responded to items measuring their perceived level of social presence, teaching presence, cognitive presence, motivation, self-efficacy as well as demographic information. They also declared their previous semester's GPA in the same online survey form. Participants should answer all questions before submitting the questionnaire. A total of 282 questionnaires were collected.

Data Analysis

The study followed recommended guidelines for sample size in conducting structural equation modeling (SEM), with a minimum sample size of 100-200 and five to ten

observations per estimated parameter (Kline, 2011). The study collected data from 282 students, which is considered sufficient for SEM analysis. First, the Statistical Package for Social Sciences (SPSS) Version 26.0 was used for the data analyses of descriptive statistics and correlation. Then, path analysis was performed using Lisrel software version 8.80 to assess the fitness of the proposed model.

Results

The descriptive statistics (the means, standard deviations, correlations and Cronbach alpha coefficients for all variables) are presented in Table 1. Prior to analyzing the data, the researchers ensured that the necessary assumptions for path analysis were satisfied. Outliers were eliminated from the original sample of 282 participants, resulting in 269 participants. According to skewness and kurtosis values, the variables were found to be normally distributed. Additionally, the means ranged from 2.80 to 16.11, with standard deviations ranging from 0.41 to 1.68. All variables were significantly correlated ($p < .01$), and Cronbach's alphas were above .70, indicating high reliability for all variables.

Table 1.
Correlation Coefficients and Descriptive Statistics

FACTORS	Mean	SD	Skewness	Kurtosis	Cronbach alpha	1	2	3	4	5	6
1. Self-efficacy	4.52	0.79	-0.61	0.22	0.75	1					
2. Motivation	4.15	1.34	-0.47	-0.29	0.74	0.58*	1				
3. Teaching Presence	3.33	0.52	-0.75	-0.41	0.83	0.42*	0.50*	1			
4. Social Presence	3.06	0.47	0.32	0.20	0.85	0.54*	0.57*	0.57*	1		
5. Cognitive Presence	2.80	0.41	0.41	0.18	0.87	0.49*	0.41*	0.52*	0.48*	1	
6. Learning performance	16.11	1.68	0.19	-0.51	_	0.62*	0.55*	0.51*	0.56*	0.60*	1

*p<0.01
SD = standard deviation
The obtained model fit indices, presented in Table 2, such as c2/df=1.81, SRMR=0.024, NFI=0.992, CFI=0.943, RMSEA=0.062, and GFI=0.963, demonstrated that the structural model adequately fit the data sets.

Table 2.
Evaluation of Model Fit Indices

Fit index	Acceptable	Model value (standard)	Fit	Resource
X^2/df	$0 \leq x^2/df \leq 3$	1.81	Perfect	Kline (2011)
RMSEA	$0 \leq RMSEA \leq 0.08$	0.062	Perfect	Hooper et al. (2008)
SRMR	$0 \leq SRMR \leq 0.08$	0.024	Perfect	Brown (2006)
NFI	$0.90 \leq NFI \leq 1$	0.992	Perfect	Thompson (2004)
CFI	$0.90 \leq CFI \leq 1$	0.943	Perfect	Tabachnick and Fidell (2007)
GFI	$0.90 \leq GFI \leq 1$	0.963	Perfect	Hair et al. (2006)
AGFI	$0.80 \leq AGFI \leq 1$	0.914	Perfect	Marsh et al. (1988)

The results of the path coefficients, presented in Table 3 and Figure 2, showed that self-efficacy (β= 0.45, t value= 4.12, p<0.000; β= 0.52, t value= 5.13, p<0.000; β= 0.42, t value= 4.07, p<0.000) and motivation (β= 0.35, t value= 3.79, p<0.000; β= 0.46, t value= 4.29, p<0.000; β= 0.32, t value= 3.18, p<0.000) had significant positive effects on teaching presence, social presence, cognitive presence, respectively. Additionally, teaching presence, social presence, and cognitive presence had significant positive effects on learning performance, respectively. (β= 0.39, t value= 3.76, p<0.000; β= 0.40, t value= 3.82, p<0.000; β= 0.35, t value= 3.12, p<0.000). Overall, the obtained results supported the research questions posed by the study.

Table 3.
Proposed Testing Results

Variables	Path		Path coefficient	SE	t-value	p	Results
learning performance	←	Teaching presence	0.39*	0.09	3.76	0.000	Supported
		social presence	0.40*	0.05	3.82	0.000	Supported
		cognitive presence	0.35*	0.06	3.12	0.000	Supported
Teaching Presence	←	Self-efficacy	0.45*	0.12	4.12	0.000	Supported
		motivation	0.35*	0.06	3.79	0.000	Supported
social presence	←	Self-efficacy	0.52*	0.12	5.13	0.000	Supported
		motivation	0.46*	0.06	4.29	0.000	Supported
Cognitive presence	←	Self-efficacy	0.42*	0.12	4.07	0.000	Supported
		motivation	0.32*	0.06	3.18	0.001	Supported

*p<0.001.

Figure 2.
Results of Path Coefficients of the Research Model
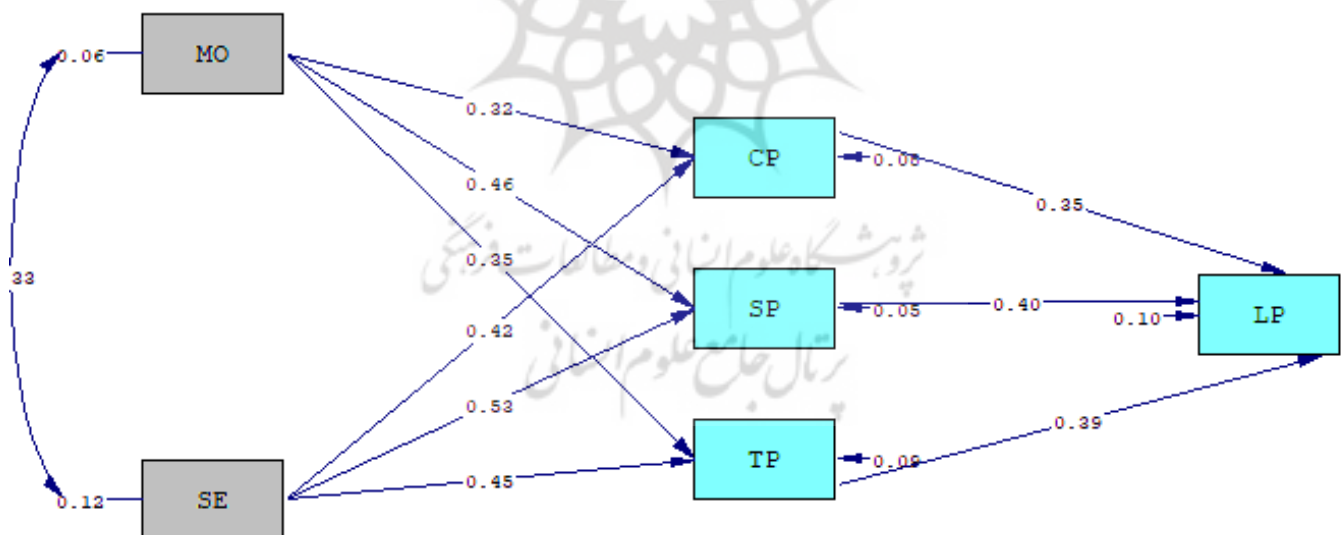
Chi-Square=9.05, df=5, P-value=0.00000, RMSEA=0.062

Discussion

This study aimed to explore the impact of the community of inquiry (COI) framework and its three components, namely social presence, cognitive presence, and teaching presence on e-learning performance, while considering the influence of self-efficacy and motivation. Thus, the data from 269 participants were analyzed using structural equation modeling and the findings were discussed separately for each of the predictor variables mentioned above.

Self-efficacy is found to have a significant direct effect on the three presence types of the COI framework, teaching, social, and cognitive presence in this study. This result is in the line with the studies regarding the efficacy of self-efficacy in predicting student's perceived presence (Akcaoglu & Akcaoglu, 2022; Yandra, 2021). Self-efficacy is an important component for developing a theoretical framework for online education, especially in the absence of a traditional classroom environment. In challenging learning environments, such as online learning environments, where students may experience social isolation due to limited interaction with others, student self-efficacy plays a crucial role in academic success (Cho & Jonassen, 2009; Cho & Laffey, 2010). A lack of self-efficacy has been linked to higher dropout rates (Lee & Choi, 2011). Therefore, it is important to understand self-efficacy in online learning and improve online education to enhance academic achievement in distance education (Hodges, 2008). It is therefore highly recommended that self-efficacy, is included in the COI model due to being a strong predictor of community of inquiry and providing control over learning, time and process.

Also, motivation has a positive direct effect on the three presence types of the COI framework, namely teaching, social, and cognitive presence types. This result is in line with previous research (Akcaoglu & Akcaoglu, 2022; Karaoglan, 2017; Kilis & Yıldırım, 2018; Kim, 2015). Thus, the current study may contribute to the literature by demonstrating the significant contribution of motivation as a predictor of the COI and its three elements. This was an expected result, but it confirms the theoretical underpinnings of the model in that these components are interconnected (Garrison et al., 2010). Motivated learners are expected to be more socially present in the learning environment, as they tend to be more interested in the learning process, more active, and engaged in learning activities.

Also, we found that teaching presence, social presence and cognitive presence were significantly related to students' e-learning performance. These results are consistent with the majority of COI studies regarding the effect of these three presences in predicting student's e-learning performance (e.g. Garrison & Arbaugh, 2007; Kozan & Caskurlu, 2018). Particularly in a virtual setting that precludes face-to-face interactions among students and teachers, students' ability to communicate and collaborate with others in order to construct knowledge clearly enhances their e-learning experience and satisfaction.

In addition, this study also found that cognitive presence has a direct positive influence on e-learning performance. This finding is consistent with results from previous studies (Akyol & Garrison, 2008; Law et al.,

2019; Shea & Bidjerano, 2009). In order to achieve high-level learning in an interactive online environment, online discussions should encourage learners' cognitive participation in synthesizing, integrating, and evaluating ideas. To achieve this goal, strategies should be employed enabling learners to create an exploratory community where they can participate in a meaningful critical discourse, which requires social presence. Since these outcomes provide the focus and success of the learning experience, cognitive presence may be regarded as an important factor for students in terms of learning. As stated by Akyol and Garrison (2008), cognitive presence is related to the purpose of students enrolling in an online course.

Furthermore, the results showed that teaching presence has significant influence on e-learning performance. The study findings are consistent with those of previous studies (Arbaugh, 2008; Estelami, 2012; Maddrell et al., 2008). Teaching presence, which begins prior to course implementation with curriculum design through the duration of the course with facilitation, is generally carried out by instructors, but can also involve peers as "teachers". It involves developing materials and scaffolding, monitoring and managing purposeful collaboration and reflection, and facilitating interactions in order to create meaningful learning (Garrison et al., 2010; Joo et al., 2013). Teaching presence has been shown to lead to increased cognitive presence and social presence (Kozan & Richardson, 2014). Therefore, effective instructional design and engaging teaching activities are extremely important in ensuring online learners' performance. It is assumed that the level of teaching presence is an indicator of online teaching quality.

Also, the results showed that social presence has significant influence on e-learning performance. The study findings are in accordance with those of previous studies (Pifarré et al, 2014; Wei et al, 2012). As stated by Armellini and De Stefani (2016), social presence plays an important role in the construction of meaningful teaching and cognitive discourse, and both teaching presence and cognitive presence have "become social". Therefore, social presence may aid in enhancing learning through interactions with the other two presences. According to Garrison (2011), social presence, defined as the degree to which individuals represent themselves socially in a given environment, plays a crucial role in creating interaction among class members and developing a community of learning. It indicates the ability of participants in a learning community to identify the community, establish purposeful communication in a trustworthy environment, and develop interpersonal relationships. It should be noted that social presence does not mean

supporting a polite atmosphere where learners lack critical opinions about the ideas presented by others for fear of hurting their feelings or disrupting the flow of communication. Questioning, skepticism, and presenting clarifying ideas are more appropriate because in online learning environments, learners may have negative experiences of feeling isolated and alienated due to physical separation from other learners. These negative experiences can be reduced or eliminated by increasing learners' perceived social presence, which can lead to increased motivation and satisfaction and subsequently improve their learning and academic progress.

Conclusions

This present study looked into self-efficacy and motivation based on the COI framework and its three constructs and their impact on learning performance and found their significant contributions as mentioned in the previous section. This study findings indicated that self-efficacy and motivation are missing from the original model and their inclusion would improve it. Among the two elements, self-efficacy was shown to have a higher contribution. This study can add to the literature by examining motivation and self-efficacy, both on the COI overall and its three presence types separately. Numerous studies have shown that the COI framework is cost-effective in online collaborative learning communities, although some aspects remain unclear (Kaul et al., 2017; Kozan & Caskurlu, 2018; Ma et al., 2017). Therefore, investigating the predictors of online learners' performance based on the COI framework can offer significant contributions to online education theory and practice.

The study had certain limitations that could limit its generalizability. Firstly, cross-sectional surveys, have inherent limitations such as potential bias due to self-reporting and providing only a snapshot of the situation. Thus, to investigate the relationship identified in the study, it is necessary to conduct further research using other methods, especially qualitative ones. Secondly, since the study only examined learning performance as the learning outcome, it is reasonable to extend the research to investigate other significant variables.

The findings can provide suggestions for instructional strategies for the online classroom. It is important for online teachers and designers to design appropriate learning contexts to increase perceived sense of presence for learners in order to increase online learning performance. For example, by designing online learning contextual elements such as learning activities, positive learning atmosphere, social interactions, various media resources, learners' perceived presence is activated and learners' performance in online learning improves. Also, online teachers and designers can promote learning performance by fostering social presence by teaching social skills and the rules of connectedness prior to the course, to show consideration and appreciation for the learners and foster friendly relationships with them. Based on our findings and the suggested path model, online education programs should develop experiences to holistically support students' perceived self-efficacy and motivation toward distance learning. Finally, to ensure a certain level of engagement in online learning, teachers should use learning assessment methods that are predominantly promotion-focused and supplemented by prevention-focused methods to accommodate students' different motivational orientations.

Conflicts of Interest

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

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