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Research Article

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Instructor Presence in a Virtual Classroom

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Abstract: Synchronous online learning platforms have been used actively during the COVID-19 period. They have opened possibilities for online learning and interaction, but have also posed new challenges for instructors. This article provides insights into one teacher's interactions and examines how the instructor presence is expressed in the teachers' activities in virtual classrooms in higher education. Instructor presence is investigated using the social and teaching presence indicators of the community of inquiry (CoI) framework. Twelve hours of interactions across six online classes were recorded, transcribed, and analysed using content analysis. The findings suggest that indicators of teaching presence dominate interactions in a virtual classroom, but it often involves co-occurrences of indicators of social presence. The typical features of instructor presence included addressing students by name, encouraging them, expressing gratitude for and acknowledging their contributions, describing actions on the dashboard, clarifying and summarising content, and responding to technical concerns. These findings may suggest holistic and pedagogical ways to understand and develop synchronous online interactions and teaching and learning practices. They also have implications for the skills instructors need in virtual classrooms.

Keywords: social presence; teaching presence; instructor presence; virtual classroom; synchronous interaction

1 Introduction

Synchronous online learning platforms have been used for online learning for years, but their use increased at all levels of education during the widespread lockdowns from April 2020. Instructors had to look for alternative ways to have contact and maintain presence and interaction with students. The situation challenged the concept and practices of classroom interaction. Synchronous online learning environments, also called virtual classrooms, enable text-, audio-, and video-based communication in real time. With multiple media possibilities, virtual classrooms could diversify interaction and increase the perception of presence (Baker, 2010; Moallem, 2015; Watts, 2016; Yilmaz & Keser, 2017), which have been shown to be the keys to success of online learning (Zhao, Lei, Yan, Lai, & Tan, 2005). The use of online learning technology has been found to be important for the learning experience, course satisfaction, and facilitating presence (Rubin, Fernandes, & Avgerinou, 2013); therefore, it is crucial to understand how instructors with synchronous online course technology interact and express their presence. Despite the growing use of virtual classrooms in higher education, there has been scant research on synchronous online learning (Çakiroğlu, 2019; Martin, Ahlgirm-Detzell, & Budhrani 2017; Mykota 2018). This descriptive study aims to fill this gap by closely analysing the interactional practices of one instructor in a virtual classroom. Information about the instructor's practices in a virtual classroom helps to develop the pedagogy in virtual classrooms and the integration of synchronous technology into online teaching and learning. The community of inquiry (CoI) framework and its indicators of teaching and social presence are used as lenses to describe the communication and instruction strategies the instructor uses in a virtual classroom. The CoI framework has played a well-established role in the research, development, and evaluation of online courses in asynchronous learning environments since the late 1990s (Bozkurt et al., 2015; Garrison, Anderson, & Archer, 2010; Kineshanko, 2016). Further attention in research to the CoI framework is recommended to understand what instructors actually do during online lessons (Loventhal & Dunlap, 2014). These actions and behaviours of instructors as an intersection of teaching and social presence are called 'instructor presence' (Richardson et al., 2015). Peacock and Cowan (2016) use the concept of tutoring presence to emphasise student-centred learning. This study uses the word instructor, without the authoritative connotation, just to highlight the responsible role the instructor has

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in the course and in assignment design, creating the collaborative learning environment, and facilitating learning and discourse in a virtual classroom.

2 Instructor Presence as an Intersection of Teaching Presence and Social Presence

The CoI is a collaborative socio-constructivist framework that defines an optimal online educational experience as comprising three elements: social presence, cognitive presence, and teaching presence (Garrison, Anderson, & Archer, 2000). The CoI framework posits that meaningful online educational experiences require a community of learners and these three interdependent elements. Each of these elements is operationally defined in terms of its constituting categories (Garrison et al., 2000). Teaching presence and social presence are required to move students through the phases of inquiry and to facilitate cognitive presence (Joksimović, Gašević, Kovanović, Riecke, & Hatala, 2015). Cognitive presence is the extent to which learners are able to construct meaning through communication (Garrison et al., 2000). High levels of both perceived teaching and social presence are related to higher levels of students' cognitive presence (Kozan, 2014).

The CoI framework has been criticised for failing to highlight the teacher's role in online learning (Richardson et al., 2015; Richardson & Lowenthal, 2017). Recently, researchers have begun to use the concept of instructor presence because they want to strengthen the teacher's role in online learning, especially in the 'live' portion of a course compared to the design process (Richardson et al., 2015; Richardson, Besser, Koehler, Lim, & Strait, 2016; Richardson & Lowenthal, 2017). Richardson et al. (2015) define instructor presence as 'the specific actions and behaviours taken by the instructor that project him/herself as a real person' (p. 259). Within the CoI framework, instructor presence represents an intersection of teaching presence and social presence based on more observable instructional behaviours and actions than teaching presence. It relates to how an instructor is positioned socially and pedagogically in an online community (Richardson et al., 2015). Instructor presence highlights the teacher's active role as a technical facilitator, but it can also be described as a more complex mix of the teacher's persona, including characteristics such as openness, humanness, humility, authenticity, and engagement (Thomas & Thorpe, 2019). Instructors themselves view social presence actions and communication strategies, such as setting an approachable tone, sharing personal information, and using feedback, as important strategies in establishing their instructor presence (Richardson et al., 2016).

The first part of instructor presence is social presence (Richardson et al. 2015), which is defined in the CoI framework as participants' ability to fully present themselves socially and emotionally as 'real people'. Social presence consists of three categories: interpersonal affective communication, open communication, and sustained group cohesion, each of which has its own indicators (Garrison et al., 2000). The purpose of social presence is to create a social and academic climate that supports inquiry in the form of discourse (Garrison, 2017, p. 38). Social presence is a mediating variable between cognitive and teaching presence (Garrison, Cleveland-Innes, & Fung, 2010). It is also positively related to the quality of cognitive presence, such that the higher the social presence is, the better the quality of cognitive presence will be (Lee, 2014).

Research definitions and measurements of social presence vary (Oztok & Kehrwald, 2017; Richardson, Maeda, Lv, & Caskurlu, 2017). A meta-analysis has shown strong positive relationships between social presence and satisfaction with online courses and between social presence and perceived learning (Richardson et al., 2017). Perceived instructor presence may be a more influential factor in determining student satisfaction than perceived peer presence (Swan & Shih, 2005). Social presence can also positively influence retention (Boston et al., 2010), participation (Mykota 2018; Swan & Shih, 2005), group cohesion (Mykota, 2018), interaction (Wei, Chen, & Kinshuk, 2012), and intention to enrol in online courses (Reio & Crim, 2013).

Instructor social presence, or the sense that an instructor is 'real and there', involves instructor immediacy (Wiener & Mehrabian, 1968) and intimacy (Argyle & Dean, 1965). Instructors can establish and maintain social presence by using an instructor persona, doing things that make them appear authentic, designing courses that reflect their personalities and instructional values, and communicating online in a variety of ways. (Richardson & Lowenthal, 2017). Students appreciate online instructors who are responsive to their needs, and they see instructors as more socially present when they engage in frequent communication; are affective, interactive, and use cohesive communication strategies; use visibility strategies; and share personal information (Christen, Kelly, Fall, & Snyder, 2015). Social words, positive emotions, emotional tone, and speech acts

such as greetings, accepting, and thanking are used in asynchronous online discussions to encourage social presence (Zhu, Herring, & Bonk, 2019). Students' perceptions of teachers' self-disclosure also increase their feelings of social presence about their teacher and lead to teacher–student relationship satisfaction (Song, Kim, & Park, 2019). Timely and immediate responses and feedback (Martin, Wang, & Sadaf, 2018); clear instructions and design; instructor availability (Hodges & Cowan, 2012; Sheridan & Kelly, 2010); and attitude, passion, empathy, and patience (Yeung, 2014) are also important student concerns. It has been found that different students prefer different social presence strategies and have different overall social presence needs (Lowenthal & Dunlap, 2018).

Another part of instructor presence is teaching presence (Richardson et al. 2015). Teaching presence is defined as 'the design, facilitation, and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes' (Anderson, Rourke, Garrison, & Archer, 2001, p. 5). It involves the critical roles of design, organisation, facilitating discourse, and direct instruction (Anderson et al., 2001). Speech acts such as informing, elaborating, managing, or inquiring are found in asynchronous online discussions to indicate teaching presence (Zhu et al., 2019). The CoI framework uses the concept of teaching presence instead of teacher presence because teaching presence involves the roles and responsibilities of both the teacher and the learners (Garrison, 2017, p. 27).

Teaching presence is key for creating and maintaining social and cognitive presence in online learning (Garrison et al., 2010; Joksimović et al., 2015). Clear course design and scaffolded instructions are necessary for students to achieve interaction quality instead of quantity, to take a deep approach to their learning (Garrison & Cleveland-Innes, 2005), and to create meaningful and purposeful interactions (Joksimović et al., 2015). The level of teaching presence in asynchronous online learning affects online learners' perceived learning and learning satisfaction (Akyol & Garrison, 2008; Ladyshewsky, 2013), subjectively measured cognitive learning and motivation (Baker, 2010), sense of a learning community (Shea, Li, & Pickett, 2006), and cognitive presence (Akyol & Garrison, 2008; Garrison et al., 2010). Teaching presence also has a positive impact on learners' constructive and interactive engagement behaviours, like posting and commenting (Zhang, Lin, Zhan, & Ren, 2016), and is correlated with self-efficacy (Shea & Bidjerano, 2010). Perspective-widening or elaboration-encouraging comments lead to high interactivity among students (Kwon, Park, Shin, & Chang, 2019). By contrast, a high level of teaching presence has been associated with lower levels of student participation, peer interaction, cognitive presence, and learning uptake in asynchronous discussions (Zhao & Sullivan, 2017) and has been found to have no effect on student grades (Preisman, 2014). Students seem to prefer an instructor who is actively engaged, but not so much that it will overwhelm their ability to interact with others (Larson, Aroz, & Nordin, 2019).

3 Synchronous Online Interaction

Synchronous online interaction and learning refers to instruction that occurs in real time, but with a separation between learner and instructor, such that students communicate with other students and instructors through text and audio- and/or video-based media (Martin et al., 2017). A meta-analysis of research on distance education has shown that the degree of instructor involvement and interaction with students is a significant determinant of effective learning (Zhao et al., 2005). Both synchronous and asynchronous interactions work online, and instructors must understand the demands of the content, the needs of the students, and the availability of technical support to use these tools effectively when designing their courses and interaction methods (Watts, 2016).

Online synchronous interaction strengthens interactions and decreases perceptions of transactional distance (i.e. psychological and communicative space) between learners and instructors compared with asynchronous interaction (Watts, 2016; Yilmaz & Keser, 2017). Synchronous communication and combinations of asynchronous and synchronous methods appear to support high levels of social presence (Baker, 2010). Creating immediacy and intimacy is much easier in synchronous communication (Moallem, 2015), and it also positively affects the amount of participation, produces a sense of working together (Hratisnski, 2008), enhances the building and sustaining of an online community of enquiry, and can be useful in quickly establishing and building a social presence (Çakiroğlu, 2019; Tolu, 2010). Self-reported perceptions of social and teaching presence have been shown to be higher during synchronous interaction than during text-based asynchronous interaction (Clark, Strudler, & Grove, 2015) and to be more positive during live online sessions than during recordings (Weissman, 2017). The affordances of web conferencing systems play a facilitator role and positively influence students' cognitive presence (Çakiroğlu, 2019).

Students appreciate the synchronous interaction of online learning because it allows them to connect with their peers and instructors, receive instantaneous feedback, and observe peers' visual cues (Watts, 2016). However, participation in such environments can also be challenging: students may face technical problems, scheduling conflicts (Gedera, 2014; Olson & McCraken, 2015; Teng, 2012), or gaps in technical, procedural, or operational knowledge (Gedera, 2014). The use of images affects the perceived consciousness of presence (Yamada & Akahori, 2007), and video posts create a sense of social presence (Pinsk, Curran, Poirier, & Coulson, 2014). Camera proximity, gazes, pauses (Satar & Wigham, 2017), smiling (Oh, Bailenson, Krämer, & Li, 2016), facial expressions (Wang, 2019), dominance, silence, inappropriate self-disclosures, and humour (Fayram, 2017, pp. 206–208) are all meaningful interactions that can increase or break the sense of presence. The use of figurative language, such as metaphors, analogies, emoticons, and textual features, has also been found to increase social presence in online learning environments (Delfino & Manca, 2007).

4 Objectives

This qualitative case study aims to investigate the interactional activities and features of one instructor in a virtual classroom. This examination of presence reveals important information about how to improve instructor presence in an online learning environment. The specific research question of this study is how the instructor presence is expressed in the teachers' activities in virtual classrooms in higher education. Instructor presence is investigated using the social and teaching presence indicators of the CoI framework. The study also assesses the applicability of the CoI framework in investigating synchronous interactions in virtual classrooms.

5 Method

5.1 Context and Participants

Data were collected from one instructor and two synchronous online health science classes offered through the Open University of one University in Finland. The instructor and the designer of the course had extensive experience in online learning and working in a virtual classroom. The course in school health education included six hours of classes on ethical issues. Students, 15 women and two men, were mainly working adults studying part-time for degrees as health education teachers. Four of the participants were students of teacher education. Only a few students had previous experience studying in a virtual classroom. They were organised into two groups (10 and 7 students, respectively), each of which met three times in a virtual classroom. Each class lasted for 120 minutes and consisted of discussions about the pre-assignments and mini-lectures delivered by the instructor. After successful completion of the classes, students should have been able to review ethical issues of teachers' work and school health education. This ethical reflection could be seen in pre-assignments and discussions in class. Both the students and the instructor were informed of the research and gave their consent.

Adobe Connect (AC), which offers video, audio, text chat, notes, a presentation display, a whiteboard, polling, and desktop sharing, was the virtual classroom platform used in this study. Students interacted using audio, text channels, and icons. They could ask for the floor by pressing the raise a hand icon. It was decided that live video would not be used for these classes because the use of multiple webcams created technical problems. Students had a photo displayed, and only the instructor had a live camera. Chat, notes, and presentation displays with some theoretical concepts, questions, or figures were open all the time. Classes were recorded using an AC function.

In total, the researchers transcribed 12 hours of recordings, including audio, notes, chat discussions, and descriptions of the instructor's main activities in the classroom. The final transcripts were checked for accuracy by comparing them to the original recordings.

5.2 Data Analysis

Instructor presence was described using CoI framework indicators of social and teaching presence. The theory-guided content analysis technique, also known as transcript analysis in studies of asynchronous online educational discourse, was used to analyse the textual data (Garrison, Cleveland-Innes, Koole, & Kappelman, 2006; de Wever, Schellens, Valcke, & van Keer, 2006). Transcript analysis facilitates an understanding of the quality of the discourse and interaction patterns in online communities of inquiry (Garrison & Cleveland-Innes, 2005; Garrison et al., 2006).

The coding schema was based on established indicators of social presence (Richardson et al., 2015; Rourke, Anderson, Garrison, & Archer, 1999; Shea et al., 2010b; Swan, 2002) and teaching presence (Anderson

et al., 2001; Richardson et al., 2015; Shea et al., 2010a) (Table 1). The CoI framework was judged to have good validity because of its theoretical background (Garrison et al., 2006), development, and wide usage (Garrison, Anderson, & Archer, 2010; Kineshanko, 2016). Data, all the transcribed instructor's interactions, and written text from chat and notes were coded at the indicator level. Citations that did not belong under any indicator were coded inductively during the first phase. Some of these were later integrated into other codes (Table 1); however, it was also necessary to include one new emergent code for explanations and descriptions of the instructor's actions (e.g. when she changed the appearance of the dashboard, moved open windows or integrated the chat posts into her talk). Such actions were coded under teaching presence within the category of design and organisation because their purpose was awareness and transparency of the activities in which the students were participating (Anderson et al., 2001).

The instructor expressed gratitude frequently, an action that was later coded as part of encouraging, acknowledging, and reinforcing student contribution. In some studies, it has also been seen as an indicator of social presence because it was part of expressing appreciation (Castro, 2019; Zhu et al., 2019). Empathic expressions were first coded inductively, but later integrated into emotions in the category of affective indicators because empathy was one of the instructor's personal expressions and emotions. Empathic expressions enabled learners to see the instructor as a caring and listening person. Group references, which have been shown to produce a sense of group commitment (Swan, 2002), were expanded in the present study to include building commitment to the wider group of health education teachers: a primary goal of the course. Written sum-ups and clarifications of student talks were coded as rephrasing. The final coding schema comprised 26 indicators for teaching presence and 14 indicators for social presence across a total of 1,840 coded citations.

Following Rourke and colleagues (1999), the unit of analysis was chosen to be a unit of meaning with a certain interaction goal or content. Multiple codes were allowed for single sentences or paragraphs, if needed. Some codes were clearly manifested (e.g. responses to technical concerns), while others were more latent and dealt with the context of the talk (e.g. humour). ATLAS.ti was used to code the text material by identifying one form of presence indicator at a time.

The three researchers in the research group used a negotiated approach (Garrison et al., 2006; de Wever et al., 2006) and actively discussed and refined the codes over several phases to arrive at a final version of the coding scheme. All researchers had teaching experience with AC, and it was easy to define and agree with the codes in the coding schema. The clear definitions of the codes improved the quality of the coding. The coding was conducted by one researcher because this researcher transcribed and checked the video data and, thus, knew the data well. The first coding schema was tested with a transcription of one 120-minute class, and the codes were discussed by all three researchers. The codes were next discussed after half of the transcripts had been coded. To conduct the final check of the codes and citation lists, the three researchers compared the citations and the definitions of the indicators and counted the frequencies of the indicators to ensure the credibility of the findings.

6 Results

The majority (66%) of observed citations indicated teaching presence, while the remainder (34%) indicated social presence. Teaching presence was coded more frequently during the first and third classes for both groups. The total number of frequencies of the observed indicators can be seen in Table 2. The instructor used all interactive channels of the platform: video, audio, text chat, notes, and a presentation display.

Teaching presence was coded for direct instruction, design, organisation, and facilitating discourse. The majority of the observed citations involved direct instruction (Table 2), with fairly even numbers from different indicators. Facilitating discussion had the fewest citations. In design and organisation, the most-coded indicator was describing actions on the dashboard. Design and organisation also had the most obvious change: The percentage of indicators decreased for the second class and increased again for the last class.

Social presence was analysed by coding categories for affective indicators, group cohesion indicators, and open communication. Cohesive indicators were coded the most throughout all three classes for both groups, and affective indicators were coded the least. Most of the cohesive indicator codes were vocatives, in which the instructor called students by name. Cohesive indicators exhibited the most obvious change, with the percentage of indicators decreasing every class. The percentage of interactive indicators increased after the first class.

The most-observed teaching and social presence indicators illustrated the instructor's actions and behaviours in the synchronous virtual classroom. The most-observed indicator of teaching presence (Table

Table 1: Coding schema for instructor presence (Anderson et al., 2001[1]; Richardson et al., 2015[2]; Rourke, Anderson, Garrison, & Archer, 1999[3]; Shea et al., 2010a[4]; Shea et al., 2010b[5]; Swan, 2002[6]).

	Category	Indicator	Definition	Source
Social presence	Affective indicators	Self-disclosure	Presenting details of own life outside of class, own preferences, own vulnerability.	2,3,4,6
		Personal values, attitudes	Expressing personal values, beliefs and attitudes.	2,4,6
		Expressing emotions	Expressing emotion, also emojis in text.	2,3,4,6
		Expressing empathy	Expressing empathy.	Emergent (Later combined with emotions)
		Use of humour	Teasing, irony, sarcasm.	2,3,4,6
	Open communication	Invitation	Asking students to participate, inviting response.	2,3,6
		Acknowledgement, referencing	Referring others or content.	2,3,4,6
		Approval	Offering praise, complimenting, expressing approval of others or content.	2,3,4,6
		Agreement, disagreement	Expressing agreement or disagreement with others or content.	2,3,4,6
	Group cohesion	Vocatives	Addressing or referring to students by name.	2,3,4,6
		Group reference	Addressing or referring to the studying group using inclusive pronouns as 'we, us, our'.	2,3,4,6
		Group reference	Addressing or referring to the wider professional / teacher group.	Emergent (Later combined with group reference)
		Greetings and salutations	Communication with social function, greeting, or closure. Can be also nonverbal like raising hand.	3,4,6
		Social sharing	Sharing information unrelated to the course.	4,6
		Course reflection	Reflection of the course itself.	4,6
		Promoting collaboration	Promoting working together.	2
Teaching presence	Design and organisation	Describing actions on dashboard	Explaining and describing the instructor's actions on dashboard.	Emergent
		Designing methods	Providing instructions how to participate in course learning activities, how to complete course.	1,2,4,5
		Utilising medium effectively	Informing of possibilities to interact and take advantage of the online environment.	1,2,4,5
		Availability, contacting the teacher	Informing of the ways to contact teacher.	2
		Establishing time parameters	Communicating dates and time frames for learning activities.	1,2,4
		Establishing netiquette	Communicating of suitable and polite forms of interaction.	1,2,4,5

Continued **Table 1:** Coding schema for instructor presence (Anderson et al., 2001[1]; Richardson et al., 2015[2]; Rourke, Anderson, Garrison, & Archer, 1999[3]; Shea et al., 2010a[4]; Shea et al., 2010b[5]; Swan, 2002[6]).

	Category	Indicator	Definition	Source
Teaching presence	Design and organisation	Setting curriculum	Communicating important course outcomes: goals, content, instructor expectations.	1,2,4,5
		Macro-level comments about course content	Providing rationale for topic.	4 5
	Facilitating discourse	Encouraging, acknowledging, reinforcing student contributions	Supporting and encouraging participation by modelling appropriate behaviours, commenting upon, and encouraging student responses.	1,4,5
		Expressing gratitude	Sentence includes word 'thank'.	Emergent (Later combined with encouraging and acknowledging)
		Prompting discussion	Drawing in participants, helping participation, questioning about the last phrase.	1,2,4,5
		Assess the efficacy of the process	Assessing the working.	1
		Summarise the discourse	Reviewing and summarising discussion or collective findings to highlight key topics or concepts.	2,4,5
		Seeking to reach consensus	Guiding class toward shared understanding.	2,4,5
		Identifying areas of agreement / disagreement, alternative views	Helping to identify areas of agreement or disagreement in order to enhance learning.	2,4,5
		Focusing the discussion	Helping focus discussion on relevant issues.	4,5
		Setting climate for learning	Encouraging discussion by creating and promoting a warm psychosocial online learning environment.	1,4,5
	Direct instruction	Rephrasing, clarifying content	Reformulating, clarifying and summarising last content. Also written sum-ups.	1,2
		Responding to technical concerns	Providing technical advice and information.	1
		Technical encouragement	Providing psychosocial technical support.	Emergent (later combined with technical advice)
		Assessment, explanatory feedback	Confirming understanding through assessment and explanatory feedback.	1,2,5
		Example, illustration	Making content comprehensible thorough providing an example of the discussed content.	2,4,5
		Providing analogies	Making content comprehensible thorough providing analogies and highlighting similarities.	2,4,5
		Present content	Providing information of the topic.	1 4, 5 (in Facilitating discussion)

Continued **Table 1:** Coding schema for instructor presence (Anderson et al., 2001[1]; Richardson et al., 2015[2]; Rourke, Anderson, Garrison, & Archer, 1999[3]; Shea et al., 2010a[4]; Shea et al., 2010b[5]; Swan, 2002[6]).

	Category	Indicator	Definition	Source
Teaching presence	Direct instruction	Present question	Presenting a question of the content.	1 4, 5 (in Facilitating discussion)
		Inject knowledge sources, references	Providing additional resources, useful sources, articles, and links.	1,2,4,5
		Informative demonstration	Making content comprehensible thorough opening processes and providing a work-oriented example.	2,4,5
		Diagnosing misconception	Helping to pay attention to misconceptions.	1,2

Table 2: Interaction categories and number of observations.

	Category	Indicator	Example	Number of observations
Social presence (629)	Affective indicators (86)	Self-disclosure	'I have read assignments for ten years…'	34
		Personal values, attitudes	'I would like to hear more criticism against society in a classroom.'	20
		Expressing emotions • emotions • empathy	 'Now I am a little bit unsure' 'You have woken up early this morning.'	19 (10) (9)
		Use of humour	'If you are driving (student is in a car) I won't talk to you (laughing).'	13
	Open communication (152)	Invitation	'What kinds of thoughts did you have?' 'Does somebody have a story, comment or finding?'	101
		Acknowledge, referencing	'What you said is very typical today…'	34
		Approval	'You brought a valuable point of view to the discussion.'	15
		Agreement, disagreement	'It is easy to agree with that.'	2
	Group cohesion (391)	Vocatives	'Sanna, what did you think about that?' 'Virve, your microphone is off at the moment.' 'As you said, Juuso, you never know.'	296
		Group reference • Reference to studying group • Reference to teacher group	 'Shall we start?' 'It is easy for us as teachers to work for the values of the school.'	58 (41) (17)
		Greetings and salutations	'Hello, welcome…'	29
		Social sharing	'It was quite a weather…'	5
		Course reflection	'We have had a hard and fruitful workshop'	2
		Promoting collaboration	'You encourage each other so well.'	1

Continued **Table 2:** Interaction categories and number of observations.

	Category	Indicator	Example	Number of observations
Teaching presence (1211)	Design and organisation (333)	Describing actions on dashboard	'Now, I'll take the note away.' 'Let's increase the font size a little bit.'	123
		Designing methods	'Next we'll work in groups of five.'	55
		Utilising medium effectively	'You can use chat on the left…'	36
		Availability, contacting the teacher	'You can mail me.'	31
		Establishing time parameters	'You have five minutes time to…'	30
		Establishing netiquette	'Write short chat messages so that we find time to read them.'	25
		Setting curriculum	'We have three sessions and today the topic is…'	17
		Macro-level comments about course content	'These topics are especially usable in the classroom.'	16
	Facilitating discourse (235)	Encouraging, reinforcing • Expressing gratitude • Encouraging	'Thank you. You made the issues richer with good examples.' 'Great, Heidi. Thank you. You are brave when you start.'	147 (103) (44)
		Prompting discussion	'What could be a reason for that?'	39
		Assess the efficacy of the process	'Our discussion is now zoning out of topic.'	29
		Summarise the discourse	'A concept like ethical sensitivity could summarise this discourse.'	11
		Seeking to reach consensus	'Are you satisfied with this conclusion?'	4
		Identifying areas of agreement / disagreement	'You both told about the same topic'	2
		Focusing the discussion	'Let's think about the third point'	2
		Setting climate for learning	'Don't hesitate to bring uncompleted thoughts on discussion'	1
	Direct instruction (643)	Rephrasing, reformulating, and clarifying content	'I will sum up your…' 'I picked up the word 'family.'	108
		Responding to technical concerns	'The microphone is turned on from the microphone icon.'	106
		Assessment, feedback	'Yes that was a good ethical example.'	86
		Example, illustration	'That responsibility is higher with young pupils…'	78
		Providing analogies	'We discussed about these things last time when…'	66
		Present content	a mini lecture of a topic	59
		Present question	'What kind of values this has?'	51
		Source, reference	'You can find more information from this web site. '	47
		Informative demonstration	'You can use this in a classroom…'	42
		Diagnosing misconception	-	0

2) was encouraging, acknowledging, and reinforcing student contributions. Expressing gratitude, e.g. starting a sentence with 'thank you' was particularly common. In some situations, a strong warm thank you, followed by the student's name, was sufficient.

The instructor described the actions in the virtual classroom to let the students know what was happening on the dashboard or to help them pay attention to certain things. The instructor also rephrased or clarified students' presentations by writing text on notes or by talking. More than half of the reformulating and clarifying codes were text. Responding to technical concerns was more common during the first classes for both groups and decreased during the next two classes. These responses consisted of advice, feedback on sound or actions, or solutions to technical problems. The instructor confirmed understanding through assessments and explanatory feedback after students' turns. The instructor also provided examples that made the course content more comprehensible.

The most commonly observed indicators of social presence were vocatives, or cases in which the instructor addressed students by name. The instructor used vocatives for seven different purposes: to welcome students at the beginning of the class, to check that things were technically ok, to address technical advice, to question or express gratitude, to confirm turn-taking, to describe observed actions in the virtual classroom, and to reinforce students' responses. Invitations asked and encouraged students to participate in or respond to different interactions. Group references referenced the study group and built a sense of identity among the health education teachers. During self-disclosures, the instructor offered information about herself, admitted her vulnerabilities, or noticed her own mistakes. Reference to students' talk or text could be either general or personal (i.e. containing students' names). The recordings included numerous greetings because students arrived in the virtual classroom one by one and the instructor welcomed each individually.

There were 327 citations involving co-occurrences of social presence and teaching presence. Typical examples were sentences in which the instructor expressed gratitude for students' contributions or used students' names while also giving feedback on content; referring to, clarifying, or summarising a contribution (e.g. the feelings Suvi mentioned are important issues. You could call them ethical feelings. I will write them down here on the list); giving technical advice or feedback; or describing activities on the dashboard.

7 Discussion

The purpose of this study was to discover how the instructor presence is expressed in the teachers' activities in a virtual classroom in higher education. Indicators of teaching presence were found to dominate classes through the roles, chosen tasks, and functions of teacher-led activities. By direct instructions, with a clear agenda, timetable, and common interaction rules, the teacher organised the work towards learning goals and made sure that all students knew what was expected during the seminars and how to behave in a virtual classroom. The results suggest that the discussion platform is instructor-led because students ask for the floor by 'raising their hands' and the instructor acts as a chair who manages turns. These behaviours minimise spontaneity and slow down the discussion by emphasising the instructor's leadership, with a possible negative impact on social presence. Fayram (2017, p. 232) emphasises that these aspects of teaching presence are essential for managing the online environment and supporting the use of tools in a synchronous environment. The present study also suggests that technically assisting or encouraging students is a big part of instructors' work in an online environment. In the observations, this activity decreased as students became more experienced.

The results of this synchronous online course study contradict previous research on asynchronous online courses by Richardson et al. (2015) and Watson, Watson, Janakiraman, and Richardson (2017), who observed discussion forums in which instructors' actions were fairly balanced between social and teaching presence indicators. The most prevalent social presence codes in Richardson et al.'s (2015) work included emphasising and highlighting points and expressing emotions and approval. The most prevalent teaching presence codes included providing general information about the course, clarifying instructions, and giving advice. Watson et al. (2017) observed self-disclosures, and using names and greetings to be the most used indicators of social presence, and clarifying, directing attention, and providing tips to be the most used indicators of teaching presence in asynchronous online courses. In this study, synchronous interaction with voice and camera gave possibilities to nonverbal social cues, which might have led to less spoken social presence indicators.

The manifestation of presence depends on the course design (Richardson et al., 2015) and the tasks used (Fayram, 2017, p. 240). These studied classes had the flipped classroom idea, where students had pre-assignments and groups gathered together to discuss the topics. Ethics in health education is a topic that

often has no right or wrong answers and no consensus; thus, problems that arise may remain unresolved. The goal of such classes is, therefore, to discuss and share the thoughts and perspectives and ethical reflection or analysis of experiences the participants have. This is why the present study did not identify many teaching presence codes, such as disagreements, misconceptions, or attempts to reach consensus. Ethics can also be considered a relatively private topic in which the instructor is likely to be polite and sensitive in order to encourage and draw in participants with different kinds of opening phrases. This is likely why codes relating to these activities were so prevalent. Efforts to address students by name or refer to the contents of their talk or posts provided the instructor means to allocate feedback personally and make contact with students.

All classes had the same instructor, whose personal style affected the class's design and interaction style. Certain characteristics can also be seen in the use of different interactive channels: speaking, writing on notes or chat and non-verbal messages, at the same time. Castro (2019), Shea, Hayes, and Vickers (2010a), and Richardson et al. (2015) have shown that instructors have different interaction patterns, varied ways of establishing their presence, and different dominating roles. The existence of indicators such as encouraging and attempting to create group cohesion, providing a relaxed and sharing learning environment, and facilitating collaboration could also be seen as signs of the philosophical stance of the instructor, which they bring to the instructional stance. The CoI framework has a collaborative constructivist view of teaching and learning (Garrison, 2017, pp. 9–10), which is challenged if the instructor needs to take the lead in discussions on the platform or if their presence is more mechanistic or technical than a person-centred approach to facilitation (Thomas & Thorpe, 2019).

In some instances, teaching, and social presence co-occurred in the instructor's talk, as was also observed by Gutiérrez-Santiuste and Gallego-Arrufat (2017) and suggested by Armellini and De Stefani (2016). Similarly, Shea et al. (2014) integrated a social dimension into the presences, introducing the concept of social–teaching presence to describe roles specific to online instructors. The social dimensions in interaction strengthen the teacher-student relationship. Learning in a virtual classroom needs ice-breaking, familiarisation, feelings of approval, invitation or encouragement, and advice for gradually growing participation, which is built by the indicators of social presence. Richardson et al. (2015) point out that when social presence indicators are enhanced by the roles of teaching presence, instructor presence can be more powerful and meaningful. In this study, social presence could also be a content-specific softening part of the ethical discussion, which creates the human view and offers an instructor model for teacher-students. Or, it can prevent embarrassment related to technical problems. The CoI framework calls the common area between social and teaching presence 'setting climate' (Garrison 2017, p. 25), and Peacock and Cowan (2016) labelled it 'trusting'. This trust building was seen in this study in the instructor's activity. For instance, teachers' empathy (Mikkonen, Kyngäs, & Kääriäinen, 2015), connection, and humanity (Valkonen, Tyrväinen, & Uotinen, 2020) have been found to create trust in online learning. Instructor can show his/her own teacher persona especially via social presence indicators.

The CoI framework indicators worked well for coding, even though they were primarily developed to study asynchronous online interactions. With some elaborations and insertions, the CoI framework indicators were able to measure synchronous interactions. Synchronous online interactions in virtual classrooms involve certain special features showing the expanding meanings of certain activities in a virtual classroom. The gratitude expression served not only to encourage or reinforce students by supporting opinions, as described by the CoI framework indicators (Garrison, 2017, p. 75), but also to facilitate discussions by clarifying turn-taking. Designating turns without live videos or nonverbal cues was challenging, but the instructor addressed these issues by using vocatives and expressing gratitude, as also observed by Satar and Wigham (2017). Earlier research has shown that descriptive language, verification questions, and student confirmations can compensate for the lack of nonverbal cues (Epp, Green, Rahman, & Weaver, 2010). The use of sum-ups or clarifications in instructors' talk also serves a confirmatory purpose because instructors cannot check students' understanding nonverbally, and students can confirm the text in their next turn. Sum-ups, clarifications, and references to students' talk can also be seen as online listening activities (Wise, Hausknecht, & Zhao, 2014), which illustrate the important role of online listening skills in a virtual classroom.

This study comprised observations of one instructor (i.e. one teacher persona) within a certain course design, with specific methods, topics, and restricted subjects. Therefore, the findings presented here may not apply to other virtual classrooms or disciplines. However, the results help to understand the pedagogical and communicational affordances of virtual classrooms and the skills needed by instructors and students. Results enable teachers to compare the described interaction with

their own teaching. This coding schema could be used as a tool in instructors' self-reflection, which helps to see the typical features of their own interaction.

Only one researcher coded the data, and no inter-rater reliability was reported. However, reliability was increased by a clear coding schema. Categories for each of the presences were clearly distinguishable. Furthermore, all three members of the research team discussed and checked the codes together. The instructor turns often contained more than one simultaneous unit of analysis. Certain features recurred often, whereas others (e.g. salutations) occurred only once per lesson. One of the researchers was also the instructor of the classes, which may have led to socially desirable activities.

The development of virtual classroom pedagogy requires research on the characteristics of interactions in virtual classrooms and their effects on student participation and learning. Instructors' pedagogical philosophies with respect to online strategies for promoting the teaching of social presence across different disciplines could also expand our understanding of instructor presence. The lack of a proper multimodal transcription or analysis of nonverbal cues is a limitation of the present study because the richness of interactions in virtual classrooms can only be fully comprehended through video data. Because of the importance of nonverbal and immediate instructor behaviours in improving the effectiveness of online learning environments (Dixson, Greenwell, Rogers-Stacy, Weister, 2017) and affecting social presence (Yamada & Akahori, 2007), future research should examine nonverbal behaviours. This study focused on the practices of one instructor and did not pay attention to students or learning. Students' learning could be seen in the topics and reflections they brought to the discussions. It could also be interesting to study how the instructor manages to deepen the thinking of students, the cognitive presence, in discussions.

8 Conclusions

The role of the instructor in synchronous discussions is crucial (Çakiroğlu, 2019). Short timeframes, technical challenges, cognitive loads, and myriad roles of instructors related to promoting teaching and social presence presume a multitasking instructor with many skills. Technology provides teachers with possibilities to interact, but instructors must plan how to appropriately use it contextually and pedagogically in a purposeful manner. Pre-planned interaction, tasks, and used tools are the basis of teaching and learning in a virtual classroom. The quality of interaction in a virtual classroom is not determined by technology but by the instructor.

As Richardson et al. (2015) claim that maintaining instructor presence is easy and not time-consuming. Synchronous interaction through different channels has the potential to open up new pedagogical tools and strategies for online instructors. The development of virtual classroom pedagogy requires holistically oriented instructors who are interested in designing courses and planning purposeful interactions in online environments with diverse channels, who have self-reflective practices, and who manage technological uncertainty.

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References

Akyol, Z., & Garrison, D. R. (2008). The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive and teaching presence. *Journal of Asynchronous Learning Networks, 12*(3), 3–22. Retrieved from https://files.eric.ed.gov/fulltext/EJ837483.pdf

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), 1–17. Retrieved from https://auspace.athabascau.ca/bitstream/handle/2149/725/assessing_teaching_presence.pdf?sequence=1&isAllowed=y

Argyle, M., & Dean, J. (1965). Eye contact and distance affiliation. *Sociometry,* 28, 289–304.

Armellini, A., & De Stefani, M. (2016). Social presence in the 21st century: An adjustment to the community of inquiry framework. *British Journal of Educational Technology, 47*(6), 1202–1216. doi:10.1111/bjet.12302

Baker, C. (2010). The impact of instructor immediacy and presence for online student affective learning, cognition, and motivation. *Journal of Educators Online, 7*(1), 1–30. doi:10.9743/jeo.2010.1.1

Boston, W., Diaz, S. R., Gibson, A. M., Ice, P., Richardson, J., & Swan, K. (2010). An exploration of the relationship between indicators of the community of inquiry framework and retention in online programs. *Journal of Asynchronous Learning Networks, 14*(1), 3–19. Retrieved from https://digitalcommons.apus.edu/facultySAH/3

Bozkurt, A., Akgun-Ozbek, E., Yilmazel, S., Erdogdu, E., Ucar, H., Guler, E., . . . Aydin, C. H. (2015). Trends in distance education research: A content analysis of journals 2009–2013. *The International Review of Research in Open and Distributed Learning, 16*(1). 330–363. doi:10.19173/irrodl.v16i1.1953

Çakiroğlu, U. (2019). Community of inquiry in web conferencing: Relationships between cognitive presence and academic achievements. *Open Praxis, (11)*3. 243–260. Retrieved from https://openpraxis.org/index.php/OpenPraxis/article/view/968

Castro, L. F. (2019). Social presence in an online professional conference. *TechTrends, 63*(2). doi.org/10.1007/s11528-019-00382-6

Christen, S., Kelly, S., Fall, L. & Snyder, L. G. (2015). Exploring business students' communicative needs: Social presence in effective online instruction. *The Journal of Research in Business Education, 57*(1), 31–46. Retrieved from https://search-proquest-com.ezproxy.jyu.fi/docview/1862879797

Clark, C., Strudler, N., & Grove, K. (2015). Comparing asynchronous and synchronous video vs. text based discussions in an online teacher education course. *Online Learning, 19*(3), 48–69. Retrieved from https://files.eric.ed.gov/fulltext/EJ1067484.pdf

Delfino, M., & Manca, S. (2007). The expression of social presence through the use of figurative language in a web-based learning environment. *Computers in Human Behavior, 23*(5), 2190–2211. doi:10.1016/j.chb.2006.03.001

Dixson, M. D., Greenwell, M. R., Rogers-Stacy, C., Weister, T., & Lauer, S. (2017). Nonverbal immediacy behaviors and online student engagement: Bringing past instructional research into the present virtual classroom. *Communication Education, 66*(1), 37–53. doi:10.1080/03634523.2016.1209222

Epp, E. M., Green, K. F., Rahman, A. M. & Weaver, K. C. (2010). Analysis of student—instructor interaction patterns in real-time, scientific online discourse. *Journal of Science Education and Technology, 19*(1), 49–57. doi:10.1007/s10956-009-9177-z

Fayram, J. (2017). *The nature and role of social presence in audiographic, synchronous online language learning contexts* (Unpublished doctoral thesis). The Open University. United Kingdom. Retrieved from http://oro.open.ac.uk/48112/

Garrison, D. R. (2017). *E-learning in the 21st century. A community of inquiry framework for research and practise* (3rd ed.). New York, NY: Routledge.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2), 87–105. doi:10.1016/S1096-7516(00)00016-6

Garrison, D. R., Anderson, T., & Archer, W. (2010). The first decade of the community of inquiry framework: A retrospective. *The Internet and Higher Education, 13*(1), 5–9. doi:10.1016/j.iheduc.2009.10.003

Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough. *American Journal of Distance Education, 19*(3), 133–148. doi:10.1207/s15389286ajde1903_2

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *The Internet and Higher Education, 13*(1), 31–36. doi:10.1016/j.iheduc.2009.10.002

Garrison, D. R., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in transcript analysis: Negotiated coding and reliability. *The Internet and Higher Education, 9*(1), 1–8. doi:10.1016/j.iheduc.2005.11.001

Gedera, D. S. P. (2014). Students' experiences of learning in a virtual classroom. *International Journal of Education and Development Using Information and Communication Technology, 10*(4), 93–101. Retrieved from https://files.eric.ed.gov/fulltext/EJ1059024.pdf

Gutiérrez-Santiuste, E., & Gallego-Arrufat, M. (2017). Type and degree of co-occurrence of the educational communication in a community of inquiry. *Interactive Learning Environments, 25*(1), 62–10. doi:10.1080/10494820.2015.1114498

Hodges, C. B., & Cowan, S. F. (2012). Preservice teachers' views of instructor presence in online courses. *Journal of Digital Learning in Teacher Education, 28*(4), 139–145. doi:10.1080/21532974.2012.10784694

Hrastinski, S. (2007). The potential of synchronous communication to enhance participation in online discussions. In *ICIS 2007 proceedings*.80. AISeL. Retrieved from http://aisel.aisnet.org/icis2007/80

Joksimović, S., Gašević, D., Kovanović, V., Riecke, B. E., & Hatala, M. (2015). Social presence in online discussions as a process predictor of academic performance. *Journal of Computer Assisted Learning, 31*(6), 638–654. doi:10.1111/jcal.12107

Kineshanko, M. (2016). *A thematic synthesis of community of inquiry research 2000 to 2014* (Unpublished doctoral dissertation). Athabasca University, Canada. Retrieved from https://dt.athabascau.ca/jspui/handle/10791/190

Kozan, K. & Richardsson, J. (2014). Interrelationships between and among social, teaching, and cognitive presence. *Internet and Higher Education 21*, 68–73. doi.org/10.1016/j.iheduc.2013.10.007

Kwon, K., Park, S. J., Shin, S. & Chang, C. Y. (2019). E ects of di erent types of instructor comments in online discussions. *Distance Education*, *40*(2), 226–242. doi:10.1080/01587919.2019.1602469

Ladyshewsky, R. (2013). Instructor presence in online courses and student satisfaction. *International Journal for the Scholarship of Teaching and Learning, 7*(1). doi.org/10.20429/ijsotl.2013.070113

Larson, E., Aroz, J., & Nordin. E. (2019). The Goldilocks paradox: The need for instructor presence but not too much in an online discussion forum. *Journal of Instructional Research, 8*(2), 22–33. https://files.eric.ed.gov/fulltext/EJ1242593.pdf

Lee, S. (2014). The relationships between higher order thinking skills, cognitive density, and social presence in online learning. *The Internet and Higher Education, 21*, 41–52. doi:10.1016/j.iheduc.2013.12.002

Lowenthal, P. R., & Dunlap, J. C. (2014). Problems measuring social presence in a community of inquiry. *E-Learning and Digital Media, 11*(1), 19–30. doi:10.2304/elea.2014.11.1.19

Lowenthal, P., & Dunlap, J. (2018). Investigating students' perceptions of instructional strategies to establish social presence. *Distance Education, 39*(3), 281–298. doi:10.1080/01587919.2018.1476844

Martin, F., Ahlgrim-Delzell, L., & Budhrani, K. (2017). Systematic review of two decades (1995 to 2014) of research on synchronous online learning. *American Journal of Distance Education, 31*(1), 3–15. doi:10.1080/08923647.2017.1264807

Martin, F., Wang, C., & Sadaf, A. (2018). Student perception of helpfulness of facilitation strategies that enhance instructor presence, connectedness, engagement and learning in online courses. *The Internet and Higher Education, 37*, 52–65. doi.org/10.1016/j.iheduc.2018.01.003

Mikkonen, K., Kyngäs, H., Kääriäinen, M. (2015). Nursing students' experiences of the empathy of their teachers: a qualitative study. *Advances in Health Sciences Education, 20*(3), 669–682. doi:10.1007/s10459-014-9554-0

Moallem, M. (2015). The impact of synchronous and asynchronous communication tools on learner self-regulation, social

presence, immediacy, intimacy and satisfaction in collaborative online learning. *The Online Journal of Distance Education and e-Learning*, *3*(3), 55–77. Retrieved from http://www.tojdel.net/journals/tojdel/volumes/tojdel-volume03-i03.pdf

Mykota, D. (2018). The Effective affect: A Scoping review of social presence. *International Journal of E-learning & Distance Education, 33*(2). Retrieved from http://www.ijede.ca/index.php/jde/article/view/1080

Oh, S. Y., Bailenson, J., Krämer, N., & Li, B. (2016). Let the avatar brighten your smile: Effects of enhancing facial expressions in virtual environments. *PloS One, 11*(9), e0161794. doi:10.1371/journal.pone.0161794

Olson, J. S., & McCracken, F. E. (2015). Is it worth the effort? The impact of incorporating synchronous lectures into an online course. *Online Learning, 19*(2). doi:10.24059/olj.v19i2.499

Oztok, M., & Kehrwald, B. A. (2017). Social presence reconsidered: Moving beyond, going back, or killing social presence. *Distance Education, 38*(2), 259–266. doi:10.1080/01587919.2017.1322456

Peacock, S., & Cowan, J. (2016). From presences to linked influences within communities of inquiry. *International Review of Research in Open and Distributed Learning, 17*(5). doi.org/10.19173/irrodl.v17i5.2602

Pinsk, R., Curran, M. J., Poirier, R., & Coulson, G. (2014). Student perceptions of the use of student-generated video in online discussions as a mechanism to establish social presence for non-traditional students: A case study. *Issues in Information System, 15*(1), 267–276. Retrieved from http://iacis.org/iis/2014/49_iis_2014_267-276.pdf

Preisman, K. A. (2014). Teaching presence in online education: From the instructor's point-of-view. *Online Learning, 18*(3), 1–16. doi:10.24059/olj.v18i3.446

Reio, T. G., & Crim, S. J. (2013). Social presence and student satisfaction as predictors of online enrollment intent. *American Journal of Distance Education, 27*(2), 122–133. doi:10.1080/08923647.2013.775801

Richardson, J. C., Besser, E., Koehler, A., Lim, J., & Strait, M. (2016). Instructors' perceptions of instructor presence in online learning environments. *The International Review of Research in Open and Distributed Learning, 17*(4), 82–103. doi:10.19173/irrodl.v17i4.2330

Richardson, J. C., Koehler, A. A., Besser, E. D., Caskurlu, S., Lim, J., & Mueller, C. M. (2015). Conceptualizing and investigating instructor presence in online learning environments. *The International Review of Research in Open and Distributed Learning, 16*(3), 256–297. doi:10.19173/irrodl.v16i3.2123

Richardson, J. C., & Lowenthal, P. (2017). Instructor social presence. Learners' needs and a neglected component of the community of inquiry framework. In A. L. Whiteside, D. A. Garrett, & K. Swan (Eds.), *Social presence in online learning: Multiple perspectives on practice and research* (pp. 86–98). Sterling. Stylus Publishing.

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior, 71*, 402–417. doi:10.1016/j.chb.2017.02.001

Rourke, L., Anderson, T., Garrison, D. R. & Archer, W. (1999). Assessing social presence in asynchronous, text-based computer conferencing. *Journal of Distance Education, 14*(3), 51–70. Retrieved from http://www.ijede.ca/index.php/jde/article/viewArticle/153/341

Rubin, B., Fernandes, R., & Avgerinou, M. D. (2013). The effects of technology on the community of inquiry and satisfaction with online courses. *The Internet and Higher Education, 17*, 48–57. doi:10.1016/j.iheduc.2012.09.006

Satar, H. M., & Wigham, C. R. (2017). Multimodal instruction-giving practices in webconferencing-supported language teaching. *System, 70*, 63–80. doi:10.1016/j.system.2017.09.002

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers & Education, 55*(4), 1721–1731. doi:10.1016/j.compedu.2010.07.017

Shea, P., Hayes, S., Uzuner-Smith, S., Gozza-Cohen, M., Vickers, J., & Bidjerano, T. (2014). Reconceptualizing the community of inquiry framework: An exploratory analysis. *The Internet and Higher Education, 23*, 9–17. doi:10.1016/j.iheduc.2014.05.002

Shea, P., Hayes, S., & Vickers, J. (2010a). Online instructional effort measured through the lens of teaching presence in the community of inquiry framework: A re-examination of measures and approach. *The International Review of Research in Open and Distributed Learning, 11*(3), 127–153. doi:10.19173/irrodl.v11i3.915

Shea, P., Hayes, S., Vickers, J., Gozza-Cohen, M., Uzuner, S., Mehta, R., . . . Rangan, P. (2010b). A re-examination of the community of inquiry framework: Social network and content analysis. *The Internet and Higher Education, 13*(1), 10–21. doi:10.1016/j.iheduc.2009.11.002

Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education, 9*(3), 175–190. doi:10.1016/j.iheduc.2006.06.005

Sheridan, K., & Kelly, M. A. (2010). The indicators of instructor presence that are important to students in online courses. *Journal of Online Learning and Teaching, 6*(4), 767–779. Retrieved from https://search-proquest-com.ezproxy.jyu.fi/docview/1497198590

Song, H., Kim, J., & Park, N. (2019). I know my professor: Teacher self-disclosure in online education and a mediating role of social presence. *International Journal of Human–Computer Interaction, 35*(6), 448–455. doi:10.1080/10447318.2018.1455126

Swan, K. (2002). Building learning communities in online courses: The importance of interaction. *Education, Communication & Information, 2*(1), 23–49. doi:10.1080/1463631022000005016

Swan, K., & Shih, L. F. (2005). On the nature and development of social presence in online course discussions. *Journal of Asynchronous Learning Networks, 9*(3), 115–136. Retrieved from http://www.mentormob.com/hosted/cards/71114_c54c4ed8fcd99e8e8a1448efa7c6f6a3.pdf

Teng, D. C., Chen, N., Kinshuk, & Leo, T. (2012). Exploring students' learning experience in an international online research seminar in the synchronous cyber classroom. *Computers & Education, 58*(3), 918–930. doi:10.1016/j.compedu.2011.10.018

Thomas, G., & Thorpe, S. (2019). Enhancing the facilitation of online groups in higher education: a review of the literature on face-to-face and online group-facilitation. *Interactive learning environments, 27*(1), 62–71. doi:10.1080/10494820.2018.1451897

Tolu, A. T. (2010). *An exploration of synchronous communication in an online preservice ESOL course: Community of inquiry perspective* (Unpublished doctoral dissertation). University of South Florida, Tampa, FL. Retrieved from http://scholarcommons.usf.edu/etd/3707

Valkonen, L., Tyrväinen, H. & Uotinen, S. (2020). Luottamuksen rakentuminen verkko-opetuksessa. [*Building trust in online learning*]. Kasvatus 51 (1), 21–37.

Wang, Y., Liu, Q., Chen, W., Wang, Q., & Stein, D. (2019). Effects of instructor's facial expressions on students' learning with video lectures. *British Journal of Educational Technology, 50*(3), 1381–1395. doi:10.1111/bjet.12633

Watson, S. L., Watson, W. R. Janakiraman, S. & Richardson, J. (2017). A team of instructors' use of social presence, teaching presence, and attitudinal dissonance strategies: An animal behaviour and welfare MOOC. *International Review of Research in Open and Distance Learning, 18*(2), 68–90. Retrieved from https://search.proquest.com/docview/1931682985

Watts, L. (2016). Synchronous and asynchronous communication in distance learning: A review of the literature. *Quarterly Review of Distance Education, 17*(1), 23–32. Retrieved from http://www.infoagepub.com/qrde-issue.html?i=p5760190b408a2

Wei, C., Chen, N., & Kinshuk. (2012). A model for social presence in online classrooms. *Educational Technology, Research and Development 60*(3), 529–545. DOI 10.1007/s11423-012-9234-9

Weissman, N. (2017). *Evaluating the effectiveness of a synchronous online environment in establishing social, cognitive, and teaching presence* (Unpublished doctoral dissertation). Kent State University, Ohio. Retrieved from https://etd.ohiolink.edu/

de Wever, B., Schellens, T., Valcke, M., & Van Keer, H. (2006). Content analysis schemes to analyze transcripts of online asynchronous discussion groups: A review. *Computers & Education, 46*(1), 6–28. doi:10.1016/j.compedu.2005.04.005

Wiener, M., & Mehrabian, A. (1968). Language within language: Immediacy, a channel in verbal communication. New York: Appleton-Century-Crofts.

Wise, A., Hausknecht, S., & Zhao, Y. (2014). Attending to others' posts in asynchronous discussions: Learners' online "listening" and its relationship to speaking. *International Journal of Computer-Supported Collaborative Learning, 9*(2), 185–209. doi:10.1007/s11412-014-9192-9

Yamada, M., & Akahori, K. (2007). Social presence in synchronous CMC-based language learning: How does it affect the productive performance and consciousness of learning objectives? *Computer Assisted Language Learning, 20*(1), 37–65. doi:10.1080/09588220601118503

Yeung, S. K. (2014). Synchronous web conferencing: Towards a pedagogical model for effective learning. *Advances in SoTL Scholarship of Teaching & Learning, 1*(1). 1–17. Retrieved from http://tlc.unisim.edu.sg/research/AdvSoTL/pdf/szekiu.pdf

Yilmaz, R., & Keser, H. (2017). The impact of interactive environment and metacognitive support on academic achievement and transactional distance in online learning. *Journal of Educational Computing Research, 55*(1), 95–122. doi:10.1177/0735633116656453

Zhao, Y., Lei, J., Yan, B., Lai, C., & Tan, H. S. (2005). What makes the difference? A practical analysis of research on the effectiveness of distance education. *Teachers College Record, 107*(8), 1836–1884. doi:10.1111/j.1467-9620.2005.00544.x

Zhao, H., & Sullivan, K. P. H. (2017). Teaching presence in computer conferencing learning environments: Effects on interaction, cognition and learning uptake. *British Journal of Educational Technology, 48*(2), 538–551. doi:10.1111/bjet.12383

Zhang, H., Lin, L., Zhan, Y., & Ren, Y. (2016). The impact of teaching presence on online engagement behaviors. *Journal of Educational Computing Research*, *54*(7), 887–900. doi:10.1177/0735633116648171

Zhu M., Herring S. C., & Bonk C. J. (2019). Exploring presence in online learning through three forms of computer-mediated discourse analysis, *Distance Education, 40*(2), 205–225. doi: 10.1080/01587919.2019.1600365