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An Investigation of Teaching, Social and Cognitive Presence in Online Learning

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Abstract

The purpose of this investigation was to explore the Community of Inquiry model (CoI) elements of teaching, social, and cognitive presence were mostly present in online learning environments. A quantitative approach was employed, and data were collected via survey from eighty-nine respondents. The findings revealed that teaching presence was the most influential element and evident in the design and facilitation of the courses, as instructors provided clear instructions and timely feedback. Social presence was evident through the use of discussion forums and group projects, which allowed students to interact and build relationships with one another. Finally, cognitive presence was evident through the use of reflective activities and challenging assignments, which encouraged students to think critically and engage with the course material. Overall, the results suggest that a balance of teaching, social, and cognitive presence is essential for effective online learning environments. Instructors should design courses that promote interaction and collaboration among students, provide clear instructions and feedback, and incorporate activities that encourage students to think deeply about the course material.

Keywords: Community of Inquiry Model, Cognitive Presence, Teaching Presence, Social Presence

Introduction

Background of Study

Covid-19 has affected and spread rapidly around the world since the early year of 2020. As reported by The Straits Times (2021), Malaysia was hit with three times more cases than any other country in Southeast Asia. During this time, the Prime Minister, Tan Sri Dato' Hj. Muhyiddin bin Hj. Mohd then declared Movement Control Order (MCO) where roadblocks were imposed, events, non-essential businesses and schools were closed. Many sectors were affected by this drastic change of norm and education is no exception. Teachers and students were tremendously hit by this pandemic where the normal traditional learning was impossible to take place due to the restrictions imposed. As a consequence, the pandemic has accelerated the need to conduct teaching and learning via online.

There are many definitions of online learning. Some define it as teaching and learning that takes place over the internet or “learning that is enabled electronically” (Abernathy as cited in Tamm, 2019). Dhull and Sakshi (2017) further claim that teaching via the internet involves a range of technologies such as online forums and video conferencing delivered through computer connections which are used to impart knowledge and skills. Amir et al. (2020) then defines e-Learning as a type of learning that involves the use of Information and Communication Technology (ICTs). In addition, Fidalgo et al (2020), refers to distance learning as a type of educational method where learning takes place off campus and both learners and teachers are separated physically. Teaching and learning method roots back to the 1800s where learning happens through correspondence delivered using postal service (Moore et al., 2011). The Economic Times (2021) further defines e-learning as a platform for learning with the help of electronic resources.

Due to the COVID-19 pandemic, academic institutes were forced to migrate to online learning. This migration occurs to ensure that the pandemic is controlled and could not spread among the students, resulting in isolation and obstructed forms of communication (Amir, 2020). This movement is not an easy transition for both students and teachers as there is many unforeseen challenges. The question is no longer about whether or not learners and teachers preferred online mode; the issue is making online works for all parties. When online first started, many were concerned over the perceived loss of engagement during online classes. Blakey and Major (2019) reported that engagement in online classes comes in several forms. They can be either behavioral, cognitive, social, emotional and agentic engagement. This study, hence, will explore in-depth on what learners perceive as teaching, social and cognitive presence during online learning. This is a call for all educators to be aware of students’ presence on e-learning to ensure that the students are able to manage this new learning norm successfully and productively.

Statement of Problem

Research on the Community of Inquiry model (Garrison, Anderson & Archer, 2003) suggests that presence and engagement with learners is the most significant variable in teaching and learning effectiveness and satisfaction. Previous research on Col framework have been conducted from various perspectives namely, the extensive examination in qualitative studies (Caskurlu et al., 2021; Zulkanain et al., 2020; Jan & Vlachopoulos, 2019), and individual components of the framework have been examined empirically (Faridah et al., 2020; Archibald, 2010; Arbaugh & Hwang, 2006). However, the empirical evidence examining all components of the framework simultaneously is surprisingly thin. Hence, this study will look into the three components which are teaching, social and cognitive and to identify which has the most influence in online learning. Therefore, this study makes a significant contribution to the Col literature by being the first study to identify which Col components influence the most in online learning. To achieve this, the following research questions were posed:

Objective and Research Questions

- How is teaching presence represented in online learning?
- How is social presence represented in online learning?
- How is cognitive presence represented in online learning?
- Which presence has the most influence in online learning?

Literature Review

Community of Inquiry

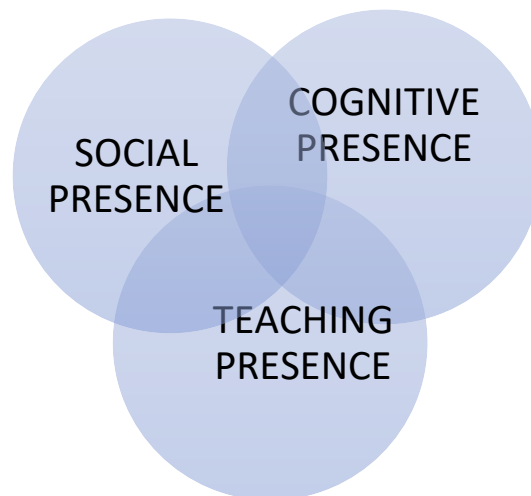


Figure 1: Community of Inquiry (CoI)
Source: Garrison & Arbaugh (2007)

In order for a community to participate actively in a supportive way, some elements must combine to allow effective communication. Figure 1 presents a community of inquiry by (Garrison and Arbaugh, 2007). There are three elements in the community of inquiry. The first element is (a) social presence and this is the ability of the learners in the community of inquiry to communicate effectively within the social context. Social presence is defined by three types of communication action and they are (i) emotional, (ii) cohesive and (iii) open. The second element is (b) teaching presence. This includes the use of (i) instructional design, (ii) discourse facilitation, and (iii) direct instruction. The third element is (c) cognitive presence. This is the extent to which the learners can construct meaning through sustained communication. The cognitive presence is identified through four types of discourse and they are (i) triggering events, (ii) exploration, (iii) integration and (iv) resolution.

Blakey and Major (2019) stated that engagement comes in several forms such as behavioural, cognitive, social, emotional and agentic engagement.

Teaching in Online Learning

During the Covid-19 pandemic, interaction between instructors and students were limited due to many constraints such as internet connectivity, infrastructure facilities, financial and so forth. Despite these limitations, students have the opportunities to take charge over their own learning where they have more control over their interactions among their peers. Students have more freedom to make collective decisions and are less dependable on instructors teaching. Thus, students are able to develop their own learning strategies on their own instructional challenges through personal online research activities, group collaborations and they are more efficient in making decisions about their learning projects or activities (Mahmud, 2018). In order for students to excel in their education during this pandemic requires them to be equipped with required technical support and readiness which include facilities, cost, networking and so forth. New students may not have the experience to engage in total online learning activities. Those who have experiences would have their ways in defeating the system such as plagiarizing, copying and pasting others work, not attending

online classes, making all technical exercises and so forth. Therefore, educators need to adapt to new teaching methodology that would capture students' interest in learning.

Learners' Behaviour in Online Learning

Behaviour can be a reflection of learners' motivation or interest, their readiness and attitudes or experiences towards online learning activities. Nevertheless, students need to be in the right motivational disposition. They need to be able to see, understand and recognize that what they are doing presently are of importance for the future. Thus, sustaining students' motivation, attention and interests is the key to a productive learning behavior of a good online learning behavior. Other factors that can also affect online learning behavior include students' skills, time spent online (Champaign et al., 2014), mode of learning, traditional or online method, teachers teaching the subjects (Ateia & Hamtini, 2016; Mahmud et al., 2016) and so forth. No doubt that our education today has changed its paradigm from traditional to online due to the recent Covid-19 pandemic. Technology has totally changed the way our students learned and paved their way through education. At present, as technology advances, more interactive multimedia and technology tools are being used in online teaching or learning. Students who lack computer literacy or those who do not own computers will definitely face challenging online learning experiences (Farajollahi et al., 2016).

Past Studies

Teaching presence in an online education is not the same as face-to-face teaching. The former depends very much on the course design and organization, facilitation of online discourse and well-focused direct instruction whereas the latter depends on physical presence and teacher immediacy. An extensive body of research attests to the importance of teaching presence for successful online learning (Heilporn & Lakhali, 2020; Caskurlu, 2018; Kozan & Richardson, 2014). Notably, teaching presence can reduce students' retention. A research study conducted by (Boston et al., 2010) explored the relationship between the Col indicators and student's likelihood to remain enrolled in an online program in an American Public University. More than 28,000 students participated in this survey. A linear regression was used in analysing the relationship between the independent and dependent variables. The study found that teacher presence was an important determinant as it impacted students' satisfaction with the course and contributed to higher success rate.

Next, teaching presence is also crucial as it creates feelings of belonging to a learning community thus improves retention by motivating students to continue studying. According to Shea et al (2006) teaching presence is seen as the core roles of the online instructor. In their survey research, they used a 'Teaching Presence Scale' (TPS) instrument to measure students' sense of connectedness and learning and their perceptions of teaching presence levels. A random sample of 2253 students participated in the survey. The result indicated that the correlations between the learning community and teaching presence were high with coefficients of .83. The participants were significantly more likely to report higher levels of learning and community when their instructors exhibited more salient teaching presence behaviours. Therefore, teacher presence was an important determinant as it fostered a sense of belonging. This resulted in students wanting to continue with learning in the online context.

Social Presence

Garrison et al (2010) defines social presence as students' ability to interact or communicate socially and emotionally with other students and mirrors them as 'real' people through the means of communication used. A number of studies have investigated learners' social and cognitive presences through the Col framework. A study on social presence was conducted by Padmawidjaja et al (2022) to examine the effect of Teaching Presence on Cognitive Presence with Social Presence as a mediating variable in online learning during the Covid-19 pandemic. 266 students from a management study program in a private university in Surabaya were selected as the respondents. It is found that the Teaching Presence directly affects Social Presence in students. The study found that interaction among students and between students and lecturers have a higher impact than the teaching methods offered by the lecturers. This implies that students prefer to be the stakeholders of their own learning where interaction among themselves takes place. Here, students are more concerned with how they interact with others in the classroom when conducting online learning. The interaction encourages improvement in students' knowledge and skills and provides more impact in learning efficacy among students.

Another study by Kilis and Yildirim (2019) examined posting patterns of students' social presence, cognitive presence and teaching presence in an online learning setting. 91 students who had prior experience in online learning and were enrolled in a fully online degree program in the Department of Medical Documentary and Secretary (MDS) at a well-known public university were purposely selected for the study. They were mostly involved in most of the six discussion activities in the course. Six postings were categorized under affective/personal, open communication, and group cohesion. For social presence, students' posts in regard to social presence reflected mostly in affective/personal (87%), followed by open communication (73%), and group cohesion (47%). This study found a higher level of social presence where the reason for this open communication and group cohesion could be due to the usage of the Facebook and WhatsApp group. Both Facebook and WhatsApp usage contributed to students' interaction and communication with the rest of the class.

Cognitive Presence

Online learning classes can provide cognitive presence to learners in many ways. The study by Farrell and Brunton (2020) explored online engagement experiences of 24 students. This qualitative study was done by documenting experiences from students. The findings suggested that online learning can be successful if learners experience psychosocial factors such as peer community, engaging with the online teacher. Students need to be involved in activities that give them confidence. A quantitative study was done by Martin and Bollinger (2018) to investigate the types of engagement that learners need in online classes. A survey of 38 items was used as the instrument. Findings showed that factors like learner-to-learner, learner-to-instructor, and learner-to-content engagement are important for learners to feel connected to the lessons. Cognitive presence gave students confidence to be part of the online community.

Conceptual Framework

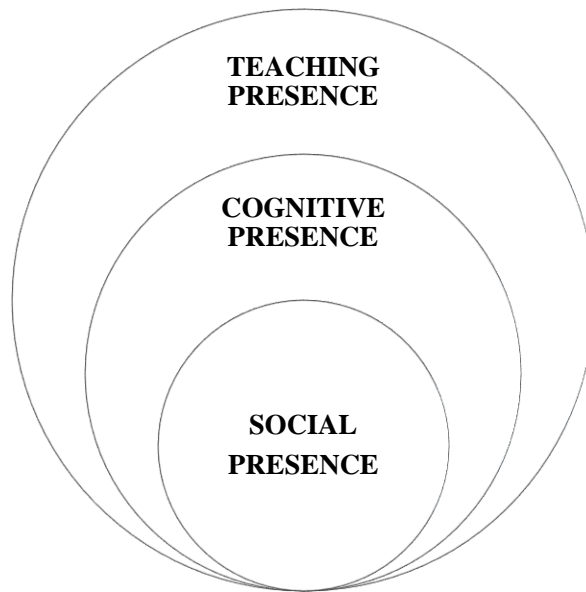


Figure 2-Conceptual Framework of the Study
Source: Garrison & Arbaugh (2007)

Figure 2 presents the conceptual framework of the study. This study is rooted from the concept that in online learning, the (a) teaching presence anchors the learning journey of the students. The teacher plans activities to capture learners' (b) cognitive presence. Learners use cognitive presence to engage with their peers through (c) social presence in the online classroom.

Methodology

This quantitative study is done to explore online presence. 89 respondents participated in the survey. The instrument is a 5 Likert survey with 35 items. The survey is adopted from (Garrison & Arbaugh, 2007). Table 1 showed the reliability statistics for the instrument. SPSS analysis showed a Cronbach Alpha of 0.973; thus, revealing a high reliability. Further SPSS analysis was done to answer the research questions.

Table 1
Reliability Statistics of the Instrument

Reliability Statistics	
Cronbach's Alpha	N of Items
.973	35

Findings

Findings for Demographic Profile

Q1. Gender

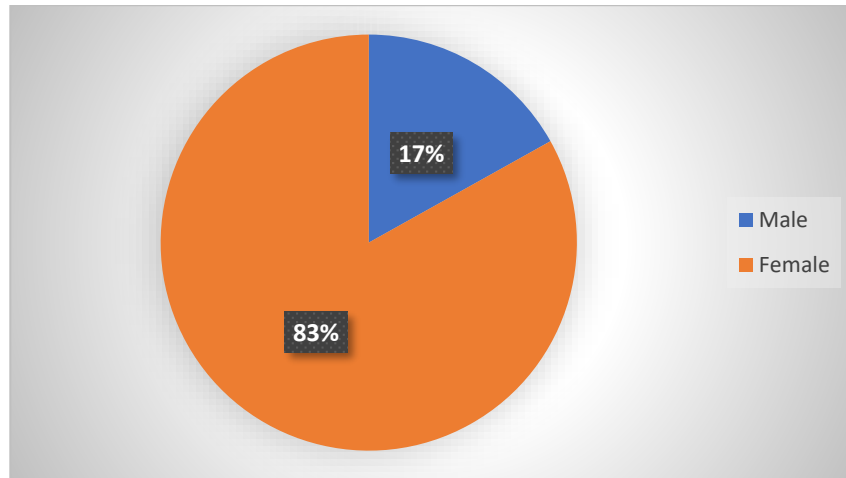


Figure 3- Percentage for Gender

The figure 3 above shows that eighty-nine students responded to the survey distributed. 83 percent were female, and 17 percent were male.

Q2. Age Group

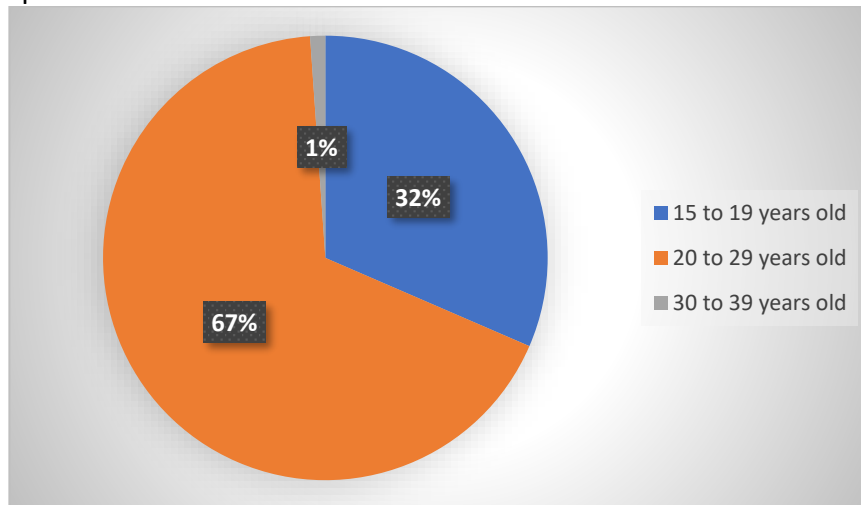


Figure 4- Percentage for Age Group

As seen from figure 4 above, most of the respondents were in the 20-29 years old age range (67 %), followed by those who were between 15-19 years old (32 %). Only a few (1 %) were from the 30-39 age group.

Q3. Highest Academic Level

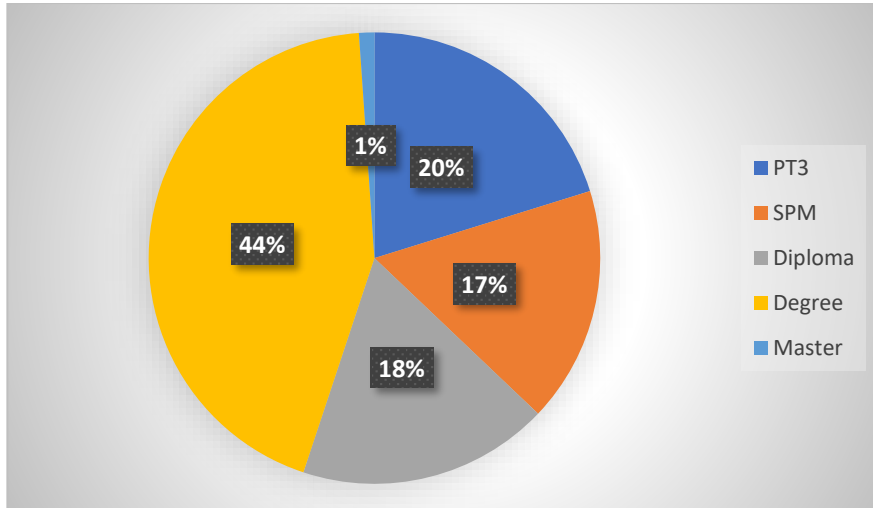


Figure 5- Percentage for Highest Academic Level

As shown in figure 5 above, the largest group of respondents was undergraduate students (44%) followed by secondary school students – PT3 and SPM (37%) and diploma students (18%). Only a very small percentage of the respondents were in post-graduate studies (1%).

Q4. Type of Industry

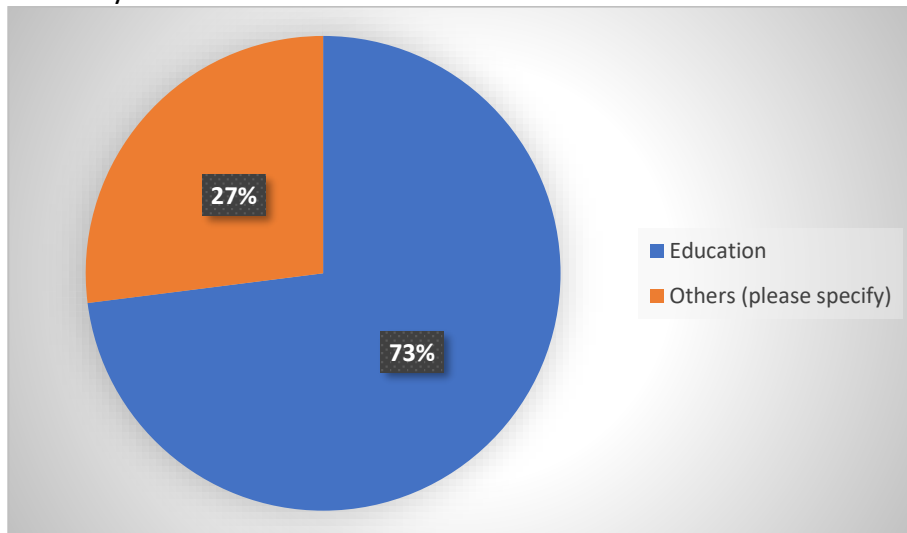


Figure 6- Percentage for Type of Industry

As seen in figure 6, more than 73 percent of the respondents were from the education sector while 27 percent were from other sectors.

Q5. Semester

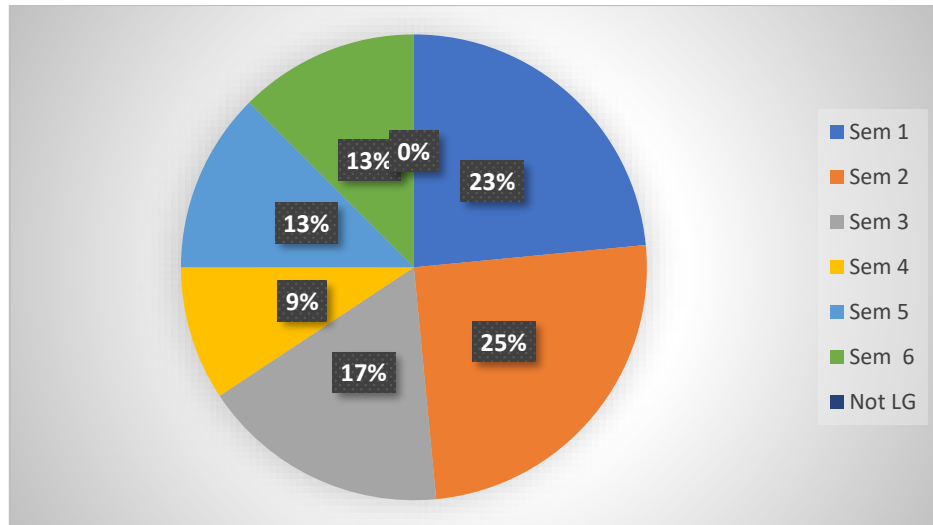


Figure 7- Percentage for Semester

Students from all levels of undergraduate study participated in the survey. Most of them were in the lower levels with Semester 2 (18%), followed by semester 1 (17 %) and semester 3 (12%). A small number of them came from levels 5 and 6 (9% respectively). Only 7 percent were semester 4 and not LG students.

Findings for Teaching Presence

This section presents data to answer research question 1- How is teaching presence represented in online learning?

Table 2

Mean for Teaching Presence

	Design & Organisation	mean
Q6	The instructor clearly communicated important course topics.	3.9
Q7	The instructor clearly communicated important course goals.	3.9
Q8	The instructor provided clear instructions on how to participate in course learning activities.	3.8
Q9	The instructor clearly communicated important due dates/time frames for learning activities.	4.1
	Facilitation	
Q10	The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.	3.9
Q11	The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.	3.8
Q12	The instructor helped to keep course participants engaged and participating in productive dialogue.	3.7
Q13	The instructor helped keep the course participants on task in a	3.8

	way that helped me to learn.	
Q14	The instructor encouraged course participants to explore new concepts in this course.	4
Q15	Instructor actions reinforced the development of a sense of community among course participants.	3.7
	Direct Instruction	
Q16	The instructor helped to focus discussion on relevant issues in a way that helped me to learn.	3.9
Q17	The instructor provided feedback that helped me understand my strengths and weaknesses relative to the course's goals and objectives.	3.7
Q18	The instructor provided feedback in a timely fashion.	3.6

The table 2 above lists the mean scores of the representations of the Teaching Presence element of Garrison and Arbaugh's (2007) Community of Enquiry (CoI) in online learning. In general, the respondents indicated that they largely agreed that the teaching presence was represented well through clear communication by the course instructor. They also agreed that the course instructors were helpful and provided reinforcement as well as feedback. Minimal differences in the agreement were shown in these factors of teaching presences (M= 3.6 to 3.9) but the strong agreement was expressed in the area of the course, instructors giving clear information on important due dates/time frames for learning activities (M=4) and encouraged course participants to explore new concepts in this course. (M=4.1).

Findings for Cognitive Presence

This section presents data to answer research question 2- How is cognitive presence represented in online learning?

Table 3

Mean for Cognitive Presence

	Triggering Events	mean
Q28	Problems posed increased my interest in course issues.	3.4
Q29	Course activities piqued my curiosity	3.6
Q30	I felt motivated to explore content related questions.	3.8
	Exploration	
Q31	I utilized a variety of information sources to explore problems posed in this course.	3.8
Q32	Brainstorming and finding relevant information helped me resolve content related questions.	3.9
Q33	Online discussions were valuable in helping me appreciate different perspectives.	3.7
	Integration	
Q34	Combining new information helped me answer questions raised in course activities.	3.9
Q35	Learning activities helped me construct explanations/	3.8

	solutions.	
Q36	Reflection on course content and discussions helped me understand fundamental concepts in this class.	3.9
	Resolution	
Q37	I can describe ways to test and apply the knowledge created in this course.	3.6
Q38	I have developed solutions to course problems that can be applied in practice.	3.6
Q39	I can apply the knowledge created in this course to my work or other non-class related activities.	3.8
Q40	Overall, I am satisfied with my ODL method of learning	3.5

In looking at how cognitive presence (refer to table 3 above) was represented in online learning, the responses show a slightly different pattern of ratings whereby no strong agreement is seen. All factors in cognitive presence however have been perceived to be represented in online classes. Many agreed that thinking activities such as brainstorming, reflective exercises, and relating knowledge and information to questions and problems, took place in class (M= 3.8 to 3.9).

Findings for Social Presence

This section presents data to answer research question 3- How is social presence represented in online learning?

Table 4

Mean for Social Presence

	Affective Expression	mean
Q19	Getting to know other course participants gave me a sense of belonging in the course.	3.7
Q20	I was able to form distinct impressions of some course participants.	3.6
Q21	Online or web-based communication is an excellent medium for social interaction.	3.4
	Open Communication	
Q22	I felt comfortable conversing through the online medium.	3.6
Q23	I felt comfortable participating in the course discussions.	3.5
Q24	I felt comfortable interacting with other course participants.	3.5
	Group Cohesion	
Q25	I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.	3.1
Q26	I felt that my point of view was acknowledged by other course participants.	3.4
Q27	Online discussions help me to develop a sense of collaboration.	3.4

Similar to cognitive presence (table 4 above), all the responses for representations of social presence in online learning were under the range of agreement but with a lower mean range of 3.1 to 3.7. The lowest item with a mean score of 3.1 was respondents feeling comfortable disagreeing with other course participants while still maintaining a sense of trust. Getting to know other course participants and gaining a sense of belonging in the course, showed the highest mean score of 3.7.

Most Influenced Presence

This section presents data to answer research question 4- Which presence has the most influence in online learning?

Table 5

Comparison of Total mean

Presence	Average Mean
Teaching Presence	3.8
Cognitive Presence	3.7
Social Presence	3.5

Overall, the respondents of the study (refer to table 5) felt that all three elements of the Community of Inquiry (Col) were influential in online learning. Even though teaching presence has been perceived to be most influential in online learning (M=3.8) followed respectively by cognitive (M= 3.7) and social presence (M= 3.5), there is only a slight difference in the average mean between the three elements of teaching presence, cognitive presence and social presence, as can be observed in the table.

Conclusion

Summary of Findings and Discussion

The study was carried out to identify how the Col elements of teaching presence, cognitive presence and social presence influence online learning experiences and which component is perceived by the respondents to be the most influential. The findings demonstrate that all three elements were seen to be well represented in online classrooms. Teaching presence was the most influential element and evident in the design and facilitation of the courses, as instructors clearly communicated important due dates/time frames for learning activities and encouraged course participants to explore new concepts in this course and provided clear instructions and timely feedback. Teaching presence was also felt to be the most influential among all three elements in online learning even though the difference in the agreements is very minimal. This corroborates with many other previous studies such as Boston et al (2010); Caskurlu (2018); Heilporn and Lakhali (2020); Kozan and Richardson (2014); Shea et al (2006) on the important role of teacher presence in online classrooms. Social presence was evident through the use of discussion forums and group projects, which allowed students to interact and build relationships with one another. Tentatively, teacher presence nonetheless does not seem to influence social presence unlike mentioned by Padmawidjaja et al (2022) because the level of agreement of representation of social presence is the lowest found in this study. Finally, cognitive presence was evident through the use of reflective activities and challenging assignments, which encouraged students to think critically and engage with the course material. The cognitive presence which had more levels of agreement in its representation in online classrooms supports Farrell and Brunton (2020) even with online classes, thinking skills

can be developed among students. Overall, the results suggest that all three elements were seen to be well represented in online classrooms with students having a strong agreement in teachers' presence for effective online learning environments.

Pedagogical Implications

How do you suggest teaching should improve?

This study suggests that while course instructors focus on the preparation of course content, delivery of courses, and doing activities and assessments, the instructors need to also focus on how to make students feel a good sense of belonging or classroom community in the class. Efforts need to be made for the students to get to know, engage or even bond with the instructor and fellow classmates.

Suggestions for Future Research

What do you suggest future researchers look at?

Further research can be conducted to look at how social presence can be increased in online classrooms. Also, more investigations can be done to look at what students at a specific level of study or academic programme expect to do for classroom activities which can create a higher cognitive and social presence.

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