The Influence of Social Presence in Online Group Work

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Abstract
This paper explores the influence of social presence in online group work, emphasizing its impact on collaboration, communication, and overall group performance. Social presence, defined as the ability of participants to perceive each other as real and engaged in the online environment, is critical for fostering a sense of community and trust among group members. We present a quantitative survey in which 122 participants carried out a survey among the undergraduates. The survey has 4 key elements which consist of demographic profile, cognitive presence, social presence and teaching presence. The findings showed that the social presence posted a moderate significant between cognitive presence. Furthermore, analysis of cognitive presence revealed that a moderate significant correlation has been reported between teaching presence. Besides that, the results indicated that a moderate significant of the correlations between teaching and social presence. The implications for educators, facilitators, and organizations implementing online group work are considered, highlighting the necessity of designing online environments that support and enhance social presence in online group work.
Keywords: Social Presence, Teaching Presence, Cognitive Presence, Online Group Work, Learning Task.

Introduction
Background of Study
Social presence, defined as the degree of awareness of others in an online learning environment, constitutes a critical component of effective online education (Akcaoglu & Lee, 2016; Yoon & Leem, 2021a). In other words, certain online learning environments facilitate more social interactions, making them inherently more sociable. Sociability, in this context, refers to the extent to which an online learning platform can create an effective social space where learners trust one another and feel connected with the group. Social presence is an important construct in online group learning. It influences the way how social interaction

unfolds online and affects learning and social outcomes (Kreijns et al., 2022). Several studies have demonstrated a positive correlation between social interaction and both learning outcomes and student satisfaction. Furthermore, social presence fosters comfort and emotional connections among learners in online learning environments. The perception of social presence is significantly influenced by the design and inherent characteristics of online learning platforms (Yoon & Leem, 2021a). Todays, Malaysia has seen a significant increase in internet penetration and digital literacy. With Malaysia's strong emphasis on advancing its education system, particularly through initiatives such as the Malaysia Education Blueprint 2013-2025, there is a growing adoption of online learning platforms. The widespread availability of technology facilitates online education and group work (Alakrash et al., 2021). Social presence in online group work can help maintain these cultural values by promoting interaction and emotional connections among students from diverse backgrounds, thereby fostering a more inclusive and collaborative online learning experience. As aforementioned, since the world increasingly shifts towards digital communication and collaboration, the need to understand the dynamics of social presence in online group work becomes more urgent. Without adequate social presence, online group work can fail to achieve its full potential, leading to disengagement, poor performance, and unsatisfactory outcomes. Research on this topic is essential for ensuring that online group work remains a viable and productive mode of collaboration in both educational and professional contexts. Besides that, it can provide insights into the best practices for fostering social presence, identify potential barriers to effective online collaboration, and offer solutions to overcome these challenges. By exploring this topic, educators, researchers, and professionals can develop more effective online learning and working environments that not only replicate but also enhance the benefits of face-to-face interactions. On the other hands, organizations and educational institutions need to develop strategies to enhance social presence in online environments to ensure the success of their programs. This engagement is crucial for achieving high-quality outcomes in both educational and professional settings.

The significance of this study lies in its exploration of the essential human element within digital group dynamics and its implications for the effectiveness of online collaboration. For example, the investigation of how social presence in an online space can counteract thus fostering a more connected and engaged group experience where one of the most pressing challenges is the lack of physical presence, which can lead to feelings of isolation and disengagement. Furthermore, this study can lead to practical recommendations for educators and organizations on how to enhance social presence in virtual teams, thereby improving both the process and outcomes of group work. This could include strategies for using technology more effectively, designing better online learning environments, and training individuals to interact more meaningfully in digital spaces. Besides that, this study offers an exploration of this relevance, contributing to the broader discourse on how to adapt to and thrive in increasingly digital environments. Thus, highlights the need for ongoing research and innovation to ensure that online group work remains a productive and fulfilling experience that could empower participants to be more effective communicators and collaborators in the digital age, thereby enhancing their overall digital competency.

Therefore, by studying the influence of social presence in online group work, educational institutions in Malaysia can better prepare students for the demands of the digital workplace, where remote and virtual collaboration are common. Moreover, this study

represents a focused inquiry into how human interaction can be optimized in virtual settings, with the potential to improve the quality of online group work and, by extension, the broader experiences of learning and working online.

Statement of Problem

Current research on the influence of social presence in online group work its significant impact on various aspects of virtual learning environments, including group cohesion, academic performance, and student satisfaction. Recently, researchers have shown an increased interest in influence of social presence. In (Kreijns et al., 2024), the authors have developed comprehensive frameworks to understand social presence in online, hybrid, and blended learning environments. These frameworks integrate theories such as Social Information Processing (SIP), Construal Level Theory (CLT), and Telepresence Theory. They address how psychological distance and impression formation affect students' experiences of social presence, particularly in settings with geographically dispersed students. Furthermore, a study by (Yoon & Leem, 2021) have examined the role of social presence in virtual conferencing and its relationship with group cohesion, group efficacy, and academic performance. Surveys such as that conducted involving 121 participants in 35 virtual learning groups, found that social presence significantly enhances group cohesion and group efficacy, which in turn improves academic performance. This underscores the importance of fostering social interaction in online learning environments. A same line also was introduced by this study where the authors indicates that social presence fosters emotional connections among students, which are essential for effective online collaboration. Positive emotional connections and a sense of belonging contribute to higher levels of student satisfaction and engagement in online learning settings (Lowenthal & Dunlap, 2020). Besides that the authors in have shown that the design and inherent characteristics of online learning platforms significantly influence students' perceptions of social presence. Effective design can create a more engaging and sociable environment, facilitating trust and connection among learners. This aspect is crucial for improving collaborative learning outcomes in virtual setting (Lee & Kim, 2023). Most studies in the field of social presence have only focused on group cohesion, emotional and satisfaction however, there is a little study on understanding the psychological and emotional mechanisms through which social presence influences individual student well-being and motivation in online group settings.

As the world increasingly shifts towards digital communication and collaboration, the need to understand the dynamics of social presence in online group work becomes more urgent. Without adequate social presence, online group work can fail to achieve its full potential, leading to disengagement, poor performance, and unsatisfactory outcomes. Research on this topic is essential for ensuring that online group work remains a viable and productive mode of collaboration in both educational and professional contexts.

In conclusion, the influence of social presence in online group work is a critical factor in the success of remote collaboration. By studying this topic, better understanding on how to create effective online environments that foster connection, communication, and collaboration, ultimately leading to improve the outcomes for all participants.

Objective of the Study and Research Questions

This study is done to explore perception of learners on their use of learning strategies. Specifically, this study is done to get an overview and feedback from learners on their inline group work. Besides, the analysis also can help the instructor identifying the problem faced by students in shaping and improvising their learning strategies. The analysis covers in three areas include cognitive, social and teaching presences which could contribute to the process of learning. Thus, this study aims to cater the following research questions:

- How do learners perceive cognitive presence in online group work?
- How do learners perceive social presence in online group work?
- How do learners perceive teaching presence in online group work?
- Is there a relationship between all types of presence in online group work?

Literature Review

Online group work has become increasingly prevalent in educational and professional settings, particularly with the rise of digital learning platforms and remote work environments. While online collaboration offers numerous benefits, such as flexibility and access to diverse perspectives, it also presents significant challenges. This literature review examines the key associated with online group work, drawing from recent research to provide a comprehensive understanding of these issues.

Difficulties of Group Work Online

One of the most difficulties in online group work is the challenge of effective communication. Unlike face-to-face interactions, online communication often lacks nonverbal cues such as body language and facial expressions, which are crucial for conveying tone and intent (Hrastinski, 2008). This can lead to misunderstandings and reduced clarity in communication. For instance, asynchronous communication like emails and discussion boards offer flexibility, they can also result in delayed responses, leading to fragmented conversations and reduced immediacy (Afzal & Fardous, 2016). As for synchronous Communication such as video conferencing can mitigate some of these issues but introduce other challenges, including scheduling difficulties across different time zones and technical problems such as connectivity issues (Aluko et al., 2011). Furthermore, in the contact of social presence, difficulties of group work online exists where the sense of social presence with others in a virtual environment, is often diminished in online group work. Building trust and a sense of group cohesion can be more challenging where opportunities for informal interactions and relationship-building are limited (Jarvenpaa & Leidner, 1998). Other authors also addressed that a lack of social presence can lead to feelings of isolation and reduced group cohesion (Kreijns et al., 2003a).

Advantages and Drawbacks of Online Group Work

Online group work refers to collaborative activities that involves a group of individuals working together towards a common goal or task, utilizing online technologies to communicate, share resources, and coordinate their efforts. Online group work leverages the growing utilization of the internet as a communication medium. The advantages of online group work often revolve of their flexibility, accessibility, efficiency, and collaboration among the members. Online group work allows for flexible scheduling and participation, accommodating diverse time zones and individual preferences (Arbaugh, 2000). Also, the

flexibility of online tools supports asynchronous collaboration, enabling members to work at their own pace. Furthermore, online group work promote diversity by facilitating participation from individuals with varying backgrounds and geographical locations (Lin & Wang, 2012). The other advantages of online group work it sometimes can reduce barriers to participation, making it easier for introverted or marginalized members to contribute (Kreijns et al., 2003b). Although the advantages have been highlighted, however the drawbacks of the online group work have been investigated. In (Debacq et al., 2021), the authors stressed about the connection problem that sometimes may lead to misunderstandings and communication breakdowns. In term of social due to online group works, that mostly relies on virtual interactions sometimes can effect the feeling such as social isolation and detachment from the team (Hewitt & Brett, 2007). Therefore, lack of informal social interactions in online environments can impact team cohesion and trust.

Past Studies on Group Work Online

Many Studies have been done to investigate the learning of social presence. In (Remesal & Colomina, 2013), the social presence is the ability of participants to project themselves socially and emotionally in a virtual environment, social presence fosters a sense of community and collaboration among group members. Moreover, the authors in (Richardson & Swan, 2003) indicated that the social presence correlate with increased student satisfaction and perceived learning outcomes. Moreover, effective communication and trust within online groups are bolstered by a strong social presence, which can mitigate feelings of isolation and disconnection often experienced in virtual settings (Whiteside, 2015). Previous studies have reported that the interconnected between social presence and teaching presence is essential in having effectiveness of online group work. Studies have shown that strong teaching presence can enhance social presence by creating a structured yet interactive atmosphere that encourages student participation and collaboration (Armellini & De Stefani, 2016). For instance, clear communication from instructors regarding expectations and course design helps students feel more connected and supported, thereby increasing their sense of social presence (Swan et al., 2009). Additionally, effective facilitation by instructors can help build a cohesive learning community, where students are more likely to engage in meaningful discourse and develop interpersonal relationships (Shea et al., 2006). Therefore, the relationship between social and teaching presence is essential for achieving optimal learning outcomes in online group work. Several studies have documented how the group cohesion gave significant to group efficacy and performance in virtual learning environments, and also the social presence in a virtual learning environment plays a crucial role in enhancing group cohesion, thereby improving group performance. For instance, the authors in Yoon & Leem (2021), have done experimental studies were conducted with 121 participants, organized into 35 virtual learning groups. The findings indicate that a sense of social presence positively influences group efficacy, and that the moderating effect of social presence significantly enhances both group cohesion and group efficacy. This research offers a theoretical and empirical foundation for designing methods to maximize positive outcomes, thereby supporting group learning and collaboration in virtual learning environments. However, the authors in Lee & Kim (2023), highlighted the negative effect of social presence was often neglected which leads to a lack of comprehensiveness in managing an online lecturing environment of some collaborators. The authors have examined online lecture system for an introductory human–computer interaction session and collected data from 83 participants. Then, the model was then analysed using Partial Least Square Structural Equation Modelling

(PLS-SEM). The findings revealed that variations in the level of social presence affect both student engagement and information overload. Additionally, it demonstrates that the impact of these changes in social presence differs based on learning attainment and experience.

In summary, research to date shown that the social presence is strongly perceived by participants in computer-mediated communication, and that students' perceptions of social presence significantly influence their satisfaction with online courses and potentially their learning outcomes.

Conceptual Framework

As classrooms become familiar with online activities, the nature of the task begins to change to. Online classes are now assigning group work online. In online classrooms, learners need to feel autonomy, satisfied to have more confidence to proceed with learning tasks (Rahmat,et.al, 2021). Figure 1 shows the conceptual framework of the study. This study explores learners' perception on online group work. This framework is rooted from Aderibigb's (2021) category in types of presence in online group work.
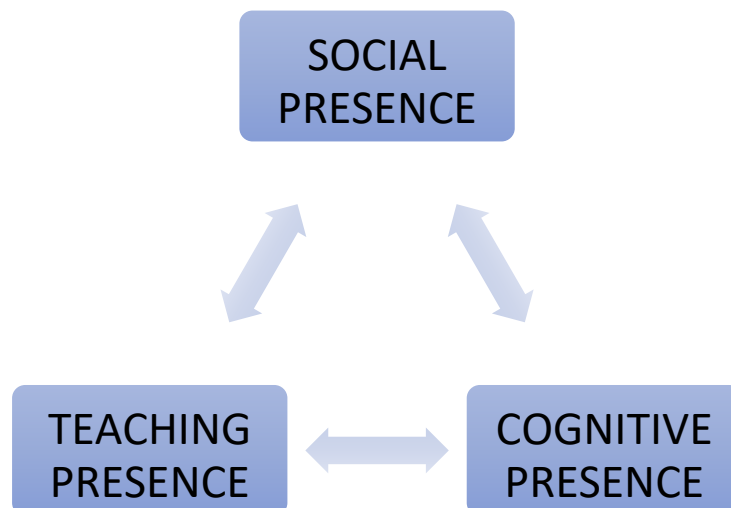
SOCIAL PRESENCE

TEACHING PRESENCE

COGNITIVE PRESENCE

Figure 1- Conceptual Framework of the Study

Methodology

This quantitative study is done to explore online group work among undergraduates. A purposive sample of 122 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Aderibigbe (2021), to reveal the variables in Table 1 below. The survey has 4 sections. Section A has items on demographic profile. Section B measured on cognitive presence while section C discussed on social presence. Besides that, Section D has items on teaching presence profile and Section E measured the relationship between social and cognitive presence and also cognitive and teaching presence.

Table 1
Distribution of Items in the Survey

SECTION	ELEMENTS (Aderibigbe, 2021)	NO.OF ITEMS
B	COGNITIVE PRESENCE	7
C	SOCIAL PRESENCE	8
D	TEACHING PRESENCE	8
		23

Table 2
Reliability of Survey Statistics

Parameter	
Cronbach's Alpha	.882
No of Items, N	23

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of .882, thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

Literature Review
Findings for Demographic Profile

Table 3
Percentage for Gender

No	Gender	Percentage
1	Male	72%
2	Female	28%

This quantitative research is performed on gender: male and female respondents in range of 18 - 23 years old. The percentage showed that the male respondents was 72 % while for female respondents was 28 %.

Table 4
Percentage for Level of Study

No	Level of Study	Percentage
1	Diploma	89%
2	Bachelor	11%

The respondents mostly from Diploma and Degree of Electrical Engineering. The table 4 tabulated the percentage of diploma students and degree students which is 89% and 11% respectively.

Table 5
Percentage for Strength of Wi-Fi

No	Strength of Wi-Fi	Percentage
1	Strong	25%
2	Average	55%
3	Poor	15%
4	Very Poor	5%

Nowadays, the internet connection is important in order to have an online group work. Therefore, the strength of Wi-Fi is a crucial problem where it guarantees our online group work runs smoothly. The are four stage of Wi-Fi strength such as strong, average, poor and very poor. Based on the findings, the highest is average which is 55% followed by strong which percentage of 25% while the percentage of 15% is poor and the lowest is 5% which is very poor.

Table 6
Percentage for Online Learning Experience

No	Online Learning Experience	Percentage
1	Less than one year	21%
2	1 year and above	79%

Table 6 showed the percentage for online experience. Based on the result, the highest percentage indicated where the respondents have 1 year and above towards their learning online which contributed about 79% meanwhile 21% contributed for respondents that experienced less than one year in online learning.

Findings for Cognitive Presence
This section presents data to answer research question 1- How do learners perceive cognitive presence in online group work? There are 7 criteria for cognitive presence as tabulated in Table 7.

Table 7
Mean for Cognitive Presence

Criteria	Mean, M
CPQ1At the beginning of the group work, I am lost at how to begin the discussion	2.7
CPQ2When I work in groups online, I am confused over the different types of ideas discussed	2.7
CPQ3When in online groups, I am amazed at how much ideas the group can come out with	3.5
CPQ4At the beginning of the online group	3.9
CPQ5Group work allows group exchange of information	3.8
CPQ6My team members present new information in the group discussion	4.1
CPQ7Group work allows team members to connect their ideas	3.9

In the analysis result for mean of cognitive presence, learners perceive their cognitive level through the team members that presented the new information during group discussion (M=4.1). Also, the cognitive element is perceived at the beginning of the online group where the team members explain and give information before doing a task and at the same time the team members allow to connect their ideas (M=3.9). For mean of 3.8, learners perceive the cognitive level by exchanging information when doing group online work. Besides that, the mean of 3.5 which is the learners amazed at how much the ideas can come out with during online group discussion. The lowest mean which is 2.7 where the learners lost the idea or information to begin the discussion at the beginning of the group work. In addition, learners get confused over the different types of ideas in such topics in group discussion.

Findings for Social Presence

This section presents data to answer research question 2- How do learners perceive social presence in online group work? There are 8 criteria that discuss on the mean for social presence as tabulated in Table 8.

Table 8
Mean for Social Presence

Criteria	Mean, M
SPQ1In online group discussions, I can feel how happy the team is	3.4
SPQ2In online group discussion, I can feel how unhappy the team is	2.6
SPQ3Being online lets me show my feelings without being seen by my friends	3.3
SPQ4I am not shy to tell the group about my new ideas	3.5
SPQ5I am not afraid to disagree with any ideas when I am online	3.4
SPQ6I am not afraid to voice my opinion when I am online	3.5
SPQ7Online group discussions allow me to communicate clearly with my team members	3.4
SPQ8Online group discussions give me a chance to collaborate on a project with the team members	3.7

Table 8 showed the result of mean for social presence used by the students. The highest mean indicated the amount of 3.7 for social presence level is when the learners have a chance to collaborate on a given task with the team members during online group work. Learners feel not afraid to voice their opinion and not shy to share the new ideas in online group (M= 3.5). The average mean which is 3.4 when learners feel happy with the team, allow learners to communicate clearly with the team and not afraid to oppose any ideas when working in online group. The learners are also free to show the feelings without being seen by team member (M= 3.3). The lowest mean is 2.6 when learners feel unhappy towards the team during online group discussion.

Findings for Teaching Presence

This section presents data to answer research question 3- How do learners perceive teaching presence in online group work? There are 8 criteria for teaching presence as shown in Table 9.

Table 9

Mean for Teaching Presence

Criteria	Mean, M
TPQ1 The teacher uses suitable teaching materials to explain the topic	4
TPQ2 The teacher shows how to complete tasks online	3.7
TPQ3 The use of templates for tasks/homework/assignments by the teacher helped me to do the task	4
TPQ4 I imitate what the teacher does to complete my tasks/ assignments	3.9
TPQ5 The examples used by the teacher in class helps me understand the topic better	4.1
TPQ6 When I see the examples used by the teacher, I can visualize (see) how I should write my example	3.9
TPQ7 The explanation by the teacher about the topic is clear to me	3.8
TPQ8 The explanation by the teacher about the task/ assignment/test is clear to me	3.9

Figure 2.4 shows the result of mean for teaching presence used by the learners in Electrical Engineering. Most of the learners agreed that the examples given by the teacher could help them to understand the topic better (M= 4.1). The mean of 4 is when learners agreed that the used of the suitable teaching materials in order to explain the topic, the given templates by the teacher could help the learners to complete the task, homework, assignments. The mean of 3.9 contributed when the learners imitate what have been taught by the teacher to complete the tasks/assignments, the learners also can easily visualise and know how to write the examples used by the teacher and also learners get clear picture about the tasks/assignments/tests that have been explained by the teacher. The mean of 3.8 indicated that the learners have a good understanding and clear about the topic that have been explained. The lowest mean which is 3.7 when the teachers how to complete the tasks in online mode.

Findings for Relationship between (Social and Cognitive Presence), (Cognitive and Teaching Presence) and (Teaching and Social Presence)

This section presents data to answer research question 4- Is there a relationship between all types of presence in online group work? To determine if there is a significant association in the mean scores between all types of presence in online group work, data is analysed using SPSS for correlations. Results are presented separately in Table 10, Table 11 and Table 12 respectively.

Table 10
Correlation between Social and Cognitive Presence

Correlations		SOCIAL	COGNITIVE
SOCIAL	Pearson Correlation	1	.486**
	Sig. (2–tailed)		.000
	N	122	122
COGNITIVE	Pearson Correlation	.486**	1
	Sig. (2–tailed)	.000	
	N	122	122

**. Correlation is significant at the 0.01 level (2–tailed).

Table 11
Correlation between Cognitive and Teaching Presence

Correlations		COGNITIVE	TEACHING
COGNITIVE	Pearson Correlation	1	.405**
	Sig. (2–tailed)		.000
	N	122	122
TEACHING	Pearson Correlation	.405**	1
	Sig. (2–tailed)	.000	
	N	122	122

**. Correlation is significant at the 0.01 level (2–tailed).

Table 11 shows there is an association between cognitive and teaching presence. Correlation analysis shows that there is a moderate significant association between cognitive and teaching presence (r=.405**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a moderate positive relationship between cognitive and teaching presence.

Table 12
Correlation between Teaching and Social Presence

Correlations

		TEACHING	SOCIAL
TEACHING	Pearson Correlation	1	.446**
	Sig. (2–tailed)		.000
	N	122	122
SOCIAL	Pearson Correlation	.446**	1
	Sig. (2–tailed)	.000	
	N	122	122

**. Correlation is significant at the 0.01 level (2–tailed).

Table 12 shows there is an association between teaching and social presence. Correlation analysis shows that there is a moderate significant association between teaching and social presence (r=.446**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a moderate positive relationship between teaching and social presence.

Conclusion

Summary of Findings and Discussions

Social presence is a critical element in the effectiveness and satisfaction of online group work. It refers to the ability of participants to project themselves socially and emotionally, creating a sense of realness and connection within a virtual environment. The finding on the correlation analysis shows a moderate significant association between social and cognitive presence. It can be concluded that when social presence is strong, it enhances cognitive presence by encouraging active participation, critical thinking, and deeper engagement with the content. The emotional and interpersonal bonds formed through social presence provide the trust and safety needed for learners to freely express ideas, ask questions, and challenge assumptions, thereby enriching the collective learning experience. In addition, the findings of the correlation analysis revealed that the cognitive and teaching presence have a moderate significant. It can be addressed that a strong teaching presence sets clear expectations, provides timely feedback, and scaffolds learning activities, creating a structured and supportive environment. This, in turn, enhances cognitive presence by fostering an atmosphere where students feel guided and encouraged to engage deeply with the content, think critically, and participate actively in discussions. In other hands, the findings of correlation analysis between teaching and social presence indicated a moderate positive relationship between them. It can be concluded that the teaching presence and social presence are closely linked in creating a successful online learning environment. When instructors effectively establish their presence through clear communication, timely feedback, and active facilitation, they create a supportive space where learners feel connected and valued. This sense of connection promotes trust and open dialogue, essential components of

social presence. As a result, students are more likely to engage collaboratively, share ideas freely, and support one another, leading to a richer, more cohesive learning experience.

Pedagogical Implications and Suggestions for Future Research

The pedagogical implications of social presence in online learning environments highlight the need for instructors to intentionally design and facilitate activities that foster interpersonal connections and a sense of community. Educators should incorporate strategies such as collaborative projects, discussion forums, and synchronous meetings to enhance social interactions among students. Emphasizing the development of a welcoming and inclusive virtual environment can help build trust and encourage active participation. Additionally, training instructors in techniques to enhance their own social presence, such as personalized feedback and active engagement in discussions, can further support student connections. For future research, it is essential to explore the specific elements of social presence that most significantly impact learning outcomes and to examine the long-term effects of social presence on student retention and satisfaction. Investigating the role of emerging technologies, such as virtual reality and AI-driven communication tools, in enhancing social presence can also provide valuable insights for improving online education.

References

Afzal, M. T., & Fardous, N. (2016). Students Preferences of Technology Usage for Their Learning Engagement. *American Journal of Educational Research*, *4*(10), 749–751. https://doi.org/10.12691/education-4-10-7

Akcaoglu, M., & Lee, E. (2016). Increasing social presence in online learning through small group discussions. *The International Review of Research in Open and Distributed Learning*, *17*(3).

Alakrash, H., Razak, N. A., & Krish, P. (2021). Social network sites in learning English; An investigation on attitudes, digital literacy and usage. *Linguistica Antverpiensia*, *1*, 26–43.

Aluko, R., Hendrikz, J., & Fraser, W. (2011). Transactional distance theory and total quality management in open and distance learning. *Africa Education Review*, *8*, 115–132. https://doi.org/10.1080/18146627.2011.586155

Arbaugh, J. B. (2000). Virtual Classroom Characteristics and Student Satisfaction with Internet-Based MBA Courses. *Journal of Management Education*, *24*(1), 32–54. https://doi.org/10.1177/105256290002400104

Armellini, A., & De Stefani, M. (2016). Social presence in the 21st century: An adjustment to the C ommunity of I nquiry framework. *British Journal of Educational Technology*, *47*(6), 1202–1216.

Debacq, M., Almeida, G., Lachin, K., Lameloise, M.-L., Lee, J., Pagliaro, S., Romdhana, H., & Roux, S. (2021). Delivering remote food engineering labs in COVID-19 time. *Education for Chemical Engineers*, *34*, 9–20.

Hewitt, J., & Brett, C. (2007). The relationship between class size and online activity patterns in asynchronous computer conferencing environments. *Computers & Education*, *49*(4), 1258–1271.

Hrastinski, S. (2008). The potential of synchronous communication to enhance participation in online discussions: A case study of two e-learning courses. *Information & Management*, *45*, 499–506. https://doi.org/10.1016/j.im.2008.07.005

Jarvenpaa, S., & Leidner, D. (1998). Communication and Trust in Global Virtual Teams. *J. Computer-Mediated Communication*, *3*. https://doi.org/10.1111/j.1083-6101.1998.tb00080.x

Kreijns, K., Kirschner, P. A., & Jochems, W. (2003a). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: A review of the research. *Computers in Human Behavior*, *19*(3), 335–353. https://doi.org/10.1016/S0747-5632(02)00057-2

Kreijns, K., Kirschner, P. A., & Jochems, W. (2003b). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in Human Behavior*, *19*(3), 335–353.

Kreijns, K., Xu, K., & Weidlich, J. (2022). Social Presence: Conceptualization and Measurement. *Educational Psychology Review*, *34*(1), 139–170. https://doi.org/10.1007/s10648-021-09623-8

Kreijns, K., Yau, J., Weidlich, J., & Weinberger, A. (2024). Towards a comprehensive framework of social presence for online, hybrid, and blended learning. *Frontiers in Education*, *8*. https://doi.org/10.3389/feduc.2023.1286594

Lee, B., & Kim, J. (2023). Managing Social Presence in Collaborative Learning with Agent Facilitation. *Sustainability*, *15*(7). https://doi.org/10.3390/su15076185

Lin, W.-S., & Wang, C.-H. (2012). Antecedences to continued intentions of adopting e-learning system in blended learning instruction: A contingency framework based on models of information system success and task-technology fit. *Computers & Education*, *58*, 88–99. https://doi.org/10.1016/j.compedu.2011.07.008

Lowenthal, P. R., & Dunlap, J. C. (2020). Social presence and online discussions: a mixed method investigation. *Distance Education*, *41*(4), 490–514. https://doi.org/10.1080/01587919.2020.1821603

Remesal, A., & Colomina, R. (2013). Social presence and online collaborative small group work: A socioconstructivist account. *Computers & Education*, *60*(1), 357–367.

Richardson, J., & Swan, K. (2003). An Examination of Social Presence in Online Courses in Relation to Students' Perceived Learning and Satisfaction. *JALN Volume*, *7*. https://doi.org/10.24059/olj.v7i1.1864

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

Swan, K., Garrison, D., & Richardson, J. (2009). A Constructivist Approach to Online Learning: The Community of Inquiry Framework. *Information Technology and Constructivism in Higher Education: Progressive Learning Frameworks*, 43–57. https://doi.org/10.4018/978-1-60566-654-9.ch004

Whiteside, A. (2015). Introducing the Social Presence Model to Explore Online and Blended Learning Experiences. *Journal of Asynchronous Learning Network*, *19*. https://doi.org/10.24059/olj.v19i2.453

Yoon, P., & Leem, J. (2021a). The Influence of Social Presence in Online Classes Using Virtual Conferencing: Relationships between Group Cohesion, Group Efficacy, and Academic Performance. *Sustainability*, *13*(4). https://doi.org/10.3390/su13041988

Yoon, P., & Leem, J. (2021b). The Influence of Social Presence in Online Classes Using Virtual Conferencing: Relationships between Group Cohesion, Group Efficacy, and Academic Performance. *Sustainability*, *13*(4). https://doi.org/10.3390/su13041988

Aderibigbe, S. A. (2021) Can Online Discussions Facilitate deep learning for students in General Education? Heliyon, Vol 7(3), pp 1-6. Retrieved from https://doi.org/10.1016/j.heliyon.2021.e06414

Jackson, S. L. (2015) Research methods and Statistics-A Critical Thinking Approach (5TH Edition) Boston, USA:: Cengage Learning.

Rahmat, N. H., Sukimin, I.S., Sim,M.S, Anuar,M. and Mohandas, E.S. (2021) Online Learning Motivation and Satisfaction: A Case Study of Undergraduates Vs Postgraduates. International Journal of Asian Social Science, 11(2), 88-97. http://dx.doi.org/10.18488/journal.1.2021.112.88.97