

Exploring Online Group Work Interaction Using the Social Cognitive Theory

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ABSTRACT

This research explores the students' perceptions of online group work applying Bandura's Social Cognitive Theory as a framework, focusing on the inter-relationship between personal, behavioural, and environmental factors. Respondents participating in this study were 250 undergraduates from two Malaysian universities, responding to a 23-item Likert-scale survey adapted from Aderibigbe (2021), with good reliability ($\alpha = .891$). Results depict that students reported high cognitive presence in terms of disseminating and using new information, strong social presence in collaborative chances, and high teaching presence in instructional clarity and resources. From the correlation analyses, it is revealed that all three factors showed moderate positive relationships, indicating mutual inter-dependencies that influence online group work dynamics. The findings on the importance of trust, clarity, and active engagement resonate with past studies in collaborative learning. The study also provides insights on how group work can be enhanced by adapting cognitive, social and teaching presence.

Keywords: Online group work, Social Cognitive Theory, cognitive presence, social presence, teaching presence, collaborative learning.

INTRODUCTION

Nowadays, the world has witnessed an increasing leap from traditional physical classroom learning to online and blended learning. This has made online group work a central feature of modern education. Therefore, in order to complete tasks, solve problems and share knowledge, students need to collaborate virtually. While online group work offers access and flexibility, it still has drawbacks. Sometimes online group work can lead to miscommunication, uneven participation and difficulties in establishing social connections (Systematic Review, 2023). Therefore, it is important to comprehend how students perceive and engage in online group work in order to increase their efficacy.

Online group work actually refers to collaborative tasks conducted by students using internet-based platforms. There are a few examples of online platforms such as video conferencing, discussion forums, and shared documents. According to Hrastinski (2019), technology alone is insufficient for online collaboration, students need to be active while interacting with their group members, build trust and be a role model among group members. Meanwhile, blended learning is no longer viewed as a mix of online and in-person methods, but as an integration of pedagogical thoughtfulness and purposeful in order to enhance flexibility, engagement and learning outcomes.(Bozkurt, 2022).

Over the past two decades, even though extensive research on online learning has been conducted, the relevance of studying group work in online learning remains high. This happened after a huge pandemic that attacked us in 2020, COVID-19, where many institutions opted for online or hybrid learning as a norm (Bond et al., 2021). Furthermore, a few challenges have emerged due to online group work, such as digital fatigue, unequal digital

literacy and the importance of creating online group environments that can make individuals feel safe to express themselves without fear of judgment, ridicule or punishment (Robinson & Held, 2024)

This study aims to explore how students perceive personal factors, behaviour and the environment in online group work. Furthermore, this study also aims to determine whether a relationship exists between these three factors. Therefore, by examining students' perceptions across these three factors, it is hoped that this can contribute to a deeper understanding of the mechanisms that facilitate or hinder effective collaboration in online learning environments.

Statement of Problem

In recent years, online learning has become a significant mode of education delivery, with group work as one of the essential components of collaborative learning strategies. According to Robinson and Held (2024), digital platforms can help students facilitate learning through flexible group interactions. However, these researchers also highlighted that students often face issues such as a lack of motivation, digital fatigue, and unequal participation. Another study also revealed that students find it difficult to build trust and understand when working through online platforms (Van der Toorn, Van der Wijst, & Damen, 2015).

Therefore, these issues raise several questions on how students perceive their role in online group work (personal factors), how students behave during online group work (behavioural factors), and how the online environment itself (medium, tools, and group structure) influences collaboration. Hence, there are lots of studies that focus on these factors separately, however, only a few studies have looked at how all factors work together using Bandura's Social Cognitive Theory (SCT).

A recent study conducted by Bach and Thiel (2024) mentioned that more research is needed to explore how students' personal and environmental factors work together in order to ensure students actively participate in online groups. This study also found that relationships between group members, such as trust and respect, and thinking-based activities like decision-making have helped improve group results. However, the researchers also stated that more thorough studies focusing on how personal, behavioural and environmental factors are connected or influence each other in online group work need to be conducted. This aligns with the current study, which aims to investigate three factors, which are personal, behavioural and environmental factors as interrelated components influencing online group work interaction. It is hoped that by addressing this gap, this study will not only explain how students experience online group work, but it will also help educators in designing collaborative tasks.

Objective of the Study and Research Questions

This study is conducted to investigate online group work. Specifically, this study is done to answer the following questions;

- How do learners perceive personal factors in online group work?
- How do learners perceive behaviour in online group work?
- How do learners perceive the environment in online group work?
- Is there a relationship between all factors in online group work?

Theoretical Framework: Social Cognitive Theory

This study is grounded in Bandura's Social Cognitive Theory in which one of the key aspects is the emphasis on the role of self-efficacy which is the belief in one's ability to be successful in specific situations or in accomplishing tasks. Bandura (1997) determined self-efficacy as an essential factor in how people approach goals, tasks and challenges (Schunk & DiBenedetto, 2020). A greater motivation and persistence could be the result of having higher self-efficacy, whereas lower self-efficacy can lead to avoidance and a lack of effort.

In relation to the concept of self-efficacy is another key aspect of the social cognitive theory which is the concept of observational learning. This concept suggests that learners improve or learn from one another through

observation, imitation and modelling. In such cases, effective models will bring trust, admiration and respect towards the other learners or observers and this may result in the learners visualising attaining for themselves (Mimiaga et al., 2009). They further added that learners are more motivated in practicing behaviours that are perceived as having positive consequences or ones that are associated with a sense of self-efficacy such as self-perceived competence. This shows that group work may contribute to positive outcomes especially when effective models are present as indirect motivators for the other learners. Learners will tend to develop confidence and replicate behaviours when involved in group forums, peer evaluations and collaborative projects which have direct impacts on their academic achievement.

Types of Presence in Online Group Work

Group work is a common arrangement that is carried out in learning institutions. According to Rahmat (2020), group work, regardless of it being physical or online, promotes collaborative communication as well as encourages critical thinking skills. In order for group work to function well, the members of the group have to interact effectively. This is even more so when online group work is conducted as learners are physically distanced from one another which could lead them to be disengaged. Garrison et. al (2000) came up with the Community of Inquiry (CoI) framework where it emphasised the importance of three interdependent elements in making online learning experiences effective namely social presence, cognitive presence, and teaching presence.

According to Garrison et al. (2000), social presence is the ability of learners to make themselves perceived socially and emotionally in a community. This promotes learners to be able to communicate purposefully in an environment while at the same time able to develop relationships by projecting their respective personalities. The ability to do this will ensure effective collaboration between the learners as good rapport and open communication have been established.

Cognitive presence is related to the ability of learners in constructing meaning through reflection and discussion. Where group work is concerned, cognitive presence occurs when the learners solve problems, discuss topics critically and co-construct knowledge among themselves. According to Garrison et al. (2000), cognitive presence involves four phases which are (1) a triggering event, where an issue is recognised for further inquiry; (2) exploration, where a learner explores the issue; (3) integration, where learners concept meaning from ideas formed in the previous phase and (4) resolution, where learners can apply the newly-learnt skills and knowledge into a real-world application.

The facilitation and direction of the cognitive and social processes is called teaching presence where learners are guided in achieving learning outcomes. According to Anderson et al. (2001), teaching presence involves instructional design and organisation (focuses on planning and structuring the course), facilitating discourse (guiding interactions among learners) and direct instruction (offering subject matter expertise and explaining errors). They also emphasised that when it comes to online group work, teaching presence can also be shared among the learners and is not solely dependent on the instructor.

Past Studies

A lot of studies were conducted to examine various facets of online group work, with a particular focus on understanding the dynamics of interaction, presence, and their impact on learning outcomes (Barberà et al., 2011; Anyau et al., 2023). Researchers have examined how different types of presence that relate to social, cognitive, and teaching contribute to the effectiveness of collaborative online learning environments (Donelan & Kear, 2023; Thomas & Thorpe, 2018; Watson et al., 2023; Singh et al., 2022). Strong social presence, characterised by open communication and perceived connection among participants, has been found to significantly enhance learner engagement and satisfaction in online group activities (Bentley et al., 2015). This is particularly critical in asynchronous contexts, where a robust teaching presence has been linked to higher engagement, satisfaction, and overall learning effectiveness (Watson et al., 2023).

In light of this, Wang et al. (2025) investigated cognitive and social presence in asynchronous online learning through their Generative Co-Learners (GCL) system, which simulated peer learners using multimodal

communication, shared notes, and real-time feedback. Twelve university students, all with basic Python skills but no prior knowledge of data structures and algorithms, participated in the study. Using pre- and post-quizzes, Likert-scale surveys, usage logs, and interviews, the researchers found that GCL significantly enhanced perceived cognitive and social presence compared to a non-interactive baseline. Although short-term learning gains did not differ significantly, the study illustrates how AI-mediated peer modelling can foster collaboration, self-efficacy, and social reinforcement in line with Social Cognitive Theory (SCT).

In a related study, Borup et al. (2025) examined ways to strengthen social presence in AI-augmented asynchronous learning. They proposed a hybrid model combining AI-generated text with instructor- and student-created asynchronous videos. Drawing from prior empirical work, reflection, and design heuristics, they found that pairing AI with human-generated video content humanises online interactions, strengthens perceived connections, and clarifies the boundaries between human and AI contributions. This aligns with SCT's emphasis on purposeful environmental design and social reinforcement.

Similarly, Anyau et al. (2023) explored students' perceptions of cognitive, social, and teaching presence in online group work. Surveying 200 undergraduates at a Malaysian public university, they measured these presences using a validated instrument adapted from Aderibigbe (2021). Results revealed strong interrelationships among all three presences, indicating that higher levels of each dimension positively influence the quality of group work. The findings underscore the interconnected nature of the CoI framework and support SCT's proposition that environmental structure, social engagement, and cognitive integration mutually shape collaborative learning outcomes.

Adding another perspective, Presley et al. (2023) compared cognitive and social presence across synchronous and asynchronous online instruction. Their survey of 233 university students found that synchronous environments promote stronger real-time social connections, while asynchronous formats benefit from structured prompts that sustain cognitive engagement. This highlights the importance of aligning environmental design with the learning modality to optimise both social and cognitive presence.

In addition, earlier research done by Kear et al. (2014) examined whether simple design features could reduce the impersonality often associated with asynchronous, text-based communication. In an experimental study involving 124 distance-learning students from The Open University (UK), they compared online forums with and without enhanced profile features such as personal photos. Findings showed that personal profiles encouraged more personal exchanges and fostered a stronger sense of community, offering a low-tech but effective strategy for enhancing social presence.

Other than that, Shea and Bidjerano (2010) expanded the CoI framework by introducing "learning presence," defined as learners' self-efficacy and self-regulation. Using data from 3,165 online and hybrid learners across 42 institutions, they applied structural equation modelling and found that teaching and social presence significantly predicted cognitive presence, with self-efficacy and effort regulation mediating the relationship. This reinforces SCT's principle of reciprocal determinism and highlights the central role of personal agency in shaping online group work outcomes.

Collectively, these studies demonstrate that personal, behavioural, and environmental factors work in concert to shape effective online group work. Across the literature, social, cognitive, and teaching presence emerge as mutually reinforcing elements, while student agency and self-regulation consistently drive positive outcomes. Effective learning design should therefore integrate environmental structure, technological affordances, and the cultivation of learner self-efficacy and engagement. As online education evolves—especially with the rise of AI-enhanced platforms—the key challenge lies in balancing innovation with the human dimensions of learning.

For the present study, this means that integrating AI tools into online collaborative writing should not be limited to technical enhancement; it must actively foster all three presences and empower learners to take ownership of their contributions. By doing so, AI can function not only as a support tool but also as a catalyst for deeper engagement, stronger peer connections, and more meaningful writing outcomes within the digital academic environment.

Conceptual Framework

Figure 1 below exhibits the study’s conceptual framework. This study combines the social cognitive theory (Bandura, 2012) and Aderibigbe’s (2021) categories of presence to understand interactions in online group work. This study explores the relationship of different types of presence in online group work. One of the challenges of online learning is that learners' attention is divided between the learning task and other non-learning tasks (Rahmat, et.al., 2021) . It may seem that students are more independent in an online learning environment, the teaching presence needs to be sufficient to provide an initial push into independent learning with ample learning prompts and materials. This study is anchored from the Bandura’s (2012) social cognitive theory which claims that in learning, there is a dynamic interaction between personal factors, behaviour and the environment. Personal factors refer to the learners’ beliefs and thoughts of a situation. This is in accordance with the concept of cognitive presence where it refers to the learners’ thought processes. Next, Bandura(2012) posits that behaviour refers to the learners’ social world and how the social world influences their learning. This is similar to social presence by Aderibigbe (2021) where it refers to the learners’ feelings of being connected to the online social community. Finally, the environment is a crucial factor for learning. A conducive learning environment allows learners to learn through observation and modelling. The concept of learning environment is similar to teaching presence by Aderibigbe (2021) as the instructor is responsible to provide a learning environment for learners; be it face-to-face or traditional classroom. The learning environment is a “place” where learners can learn by observing, imitate, and model good learning behaviour from the instructor and from their peers.

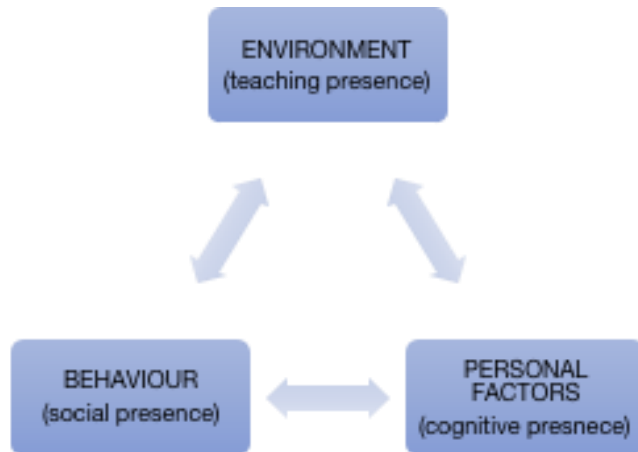


Figure 1 Conceptual framework

Relationship between all factors in online group work.

METHODOLOGY

This quantitative study is conducted to examine students’ perceptions of online group work. A convenient sample of 250 participants responded to the survey. The instrument used is a 5 Likert-scale survey. Table 1 below shows the categories used for the Likert scale; 1 is for Never, 2 is for Rarely, 3 is for Sometimes, 4 is for Very Often and 5 is for Always.

Table 1 Likert Scale Use

1	Never
2	Rarely
3	Sometimes
4	Very Often
5	Always

Table 2 Distribution of Items in the Survey

SECTION	SOCIAL COGNITIVE THEORY (Bandura, 2012)	ELEMENTS (Aderibigbe, 2021)	NO. OF ITEMS	CRONBACH ALPHA
B	PERSONAL FACTORS	COGNITIVE PRESENCE	7	.769
C	BEHAVIOUR	SOCIAL PRESENCE	8	.789
D	ENVIRONMENT	TEACHING PRESENCE	8	.908
		TOTAL ITEMS	23	.891

Table 2 shows the distribution of items in the survey. The instrument is anchored from social cognitive theory by Bandura (2012) and replicated from Aderibigbe (2021) to reveal the variables in table 3 below. Section B has 7 items on Personal factors. Section C has 8 items on Behavioural factors and section D has 8 items on Environmental factors.

Table 2 also shows the survey’s reliability results. The analysis indicates a Cronbach alpha of .769 for Personal factors, .789 for Behavioural factors and .908 for Environmental factors. The total Cronbach alpha for all 23 items is .891 and this signals a good reliability of the instrument chosen (Jackson, 2015). Further SPSS analysis is conducted to present findings to fulfil the research questions for this study

RESULTS AND DISCUSSION

Demographic Analysis

Table 3 - Percentage for Demographic Analysis

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	26%
		Female	74%
2	Semester	1-3	62%
		4-6	27%
		7 and above	11%
3	University	Local public university	94%
		Local international university	6%
4	Online Learning Experience	Less than one year	35%
		One year and above	65%
5	Duration of online learning per week	2-4 hours per week	42%
		5-8 hours per week	40%
		More than 8 hours per week	18%

6	Class type	Mostly lectures	56%
		more activities than lectures	11%
		More lectures than activities	29%
		Mostly activities	4%

The table shows the demographic profile. The data shows that the greater part (74%) of the respondents were female and the remaining (26%) samples were male. The data also showed that most of the respondents (62%) were in their semester 1 to 3, followed by 27% from semester 4 to 6 and the remaining 11% were from semester 7 and above. The largest proportion of the sample were from a local public university with 94% respondents and the rest were from a local international university with only 6% respondents. From the data, we can see that 65% of the respondents had been engaged in online learning for one year or more, while the 35% stated that they had not even a year of online learning experience. In terms of the duration of online learning spent per week, 42% responded that they spent 2 to 4 hours, while 40% spent 5 to 8 hours, and 18% of the respondents stated that they engaged in online learning more than 8 hours weekly. Finally, for class type, most respondents were involved in sessions that were mostly lectures (56%), followed by 29% who had more lectures than activities, 11% who experienced more activities than lectures, and only 4% whose classes were mostly activity-based.

Findings for Personal Factors

This section presents data to answer research question 1- How do learners perceive personal factors in online group work? In the context of this study, this is measured by cognitive presence.

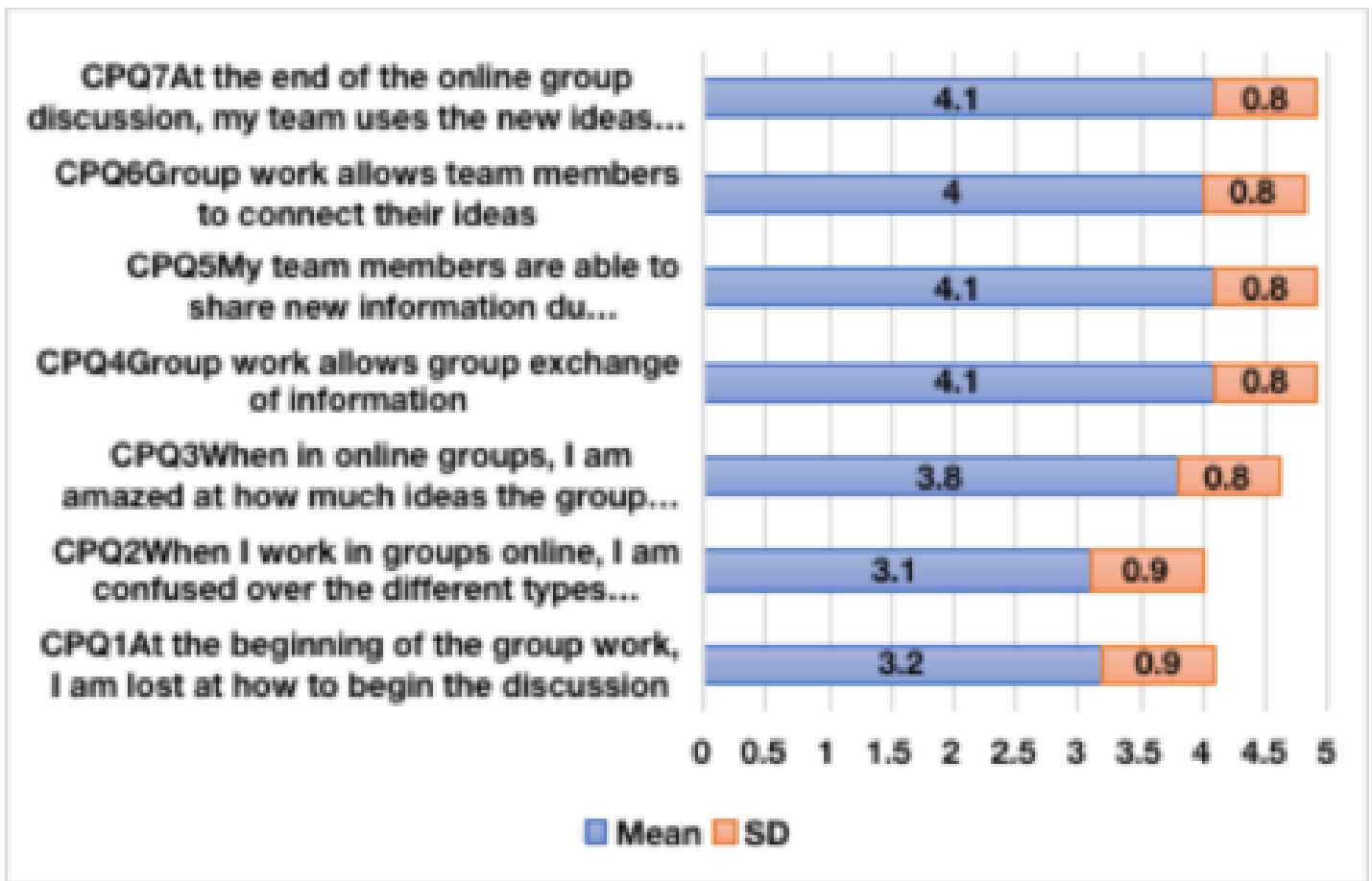


Figure 2 Mean for Personal Factors/ Cognitive Presence

Figure 2 presents the mean for personal factors. Three items share the same mean of 4.1 The first is item 4 (mean=4.1,SD=0.8) which states that group work facilitates exchange of information. Next, item 5 (man=4.1,

SD=8) reports that the team members are able to share new information. Item 7 (mean=4.1, SD=0.8) states that the team members used new ideas from the discussions. The lowest mean is item 2 (mean=3.1, SD=0.9) which reports that team members are confused with the ideas discussed within the online group.

Findings for Behaviour

This section presents data to answer research question 2- How do learners perceive behaviour in online group work? In the context of this study, this is measured by social presence.

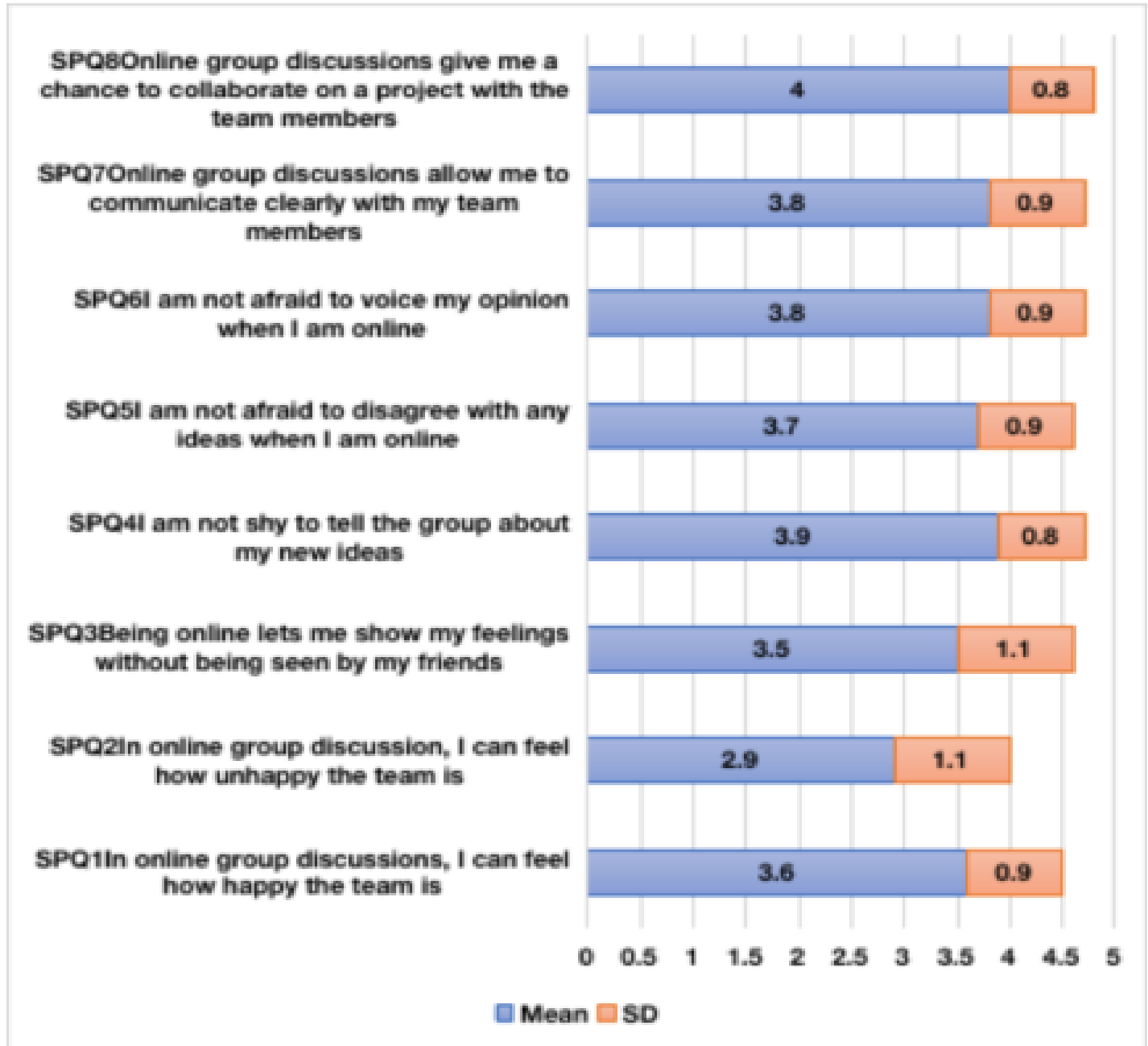


Figure 3 Mean for Behavioural Factors/ Social Presence

Figure 3 shows the mean for behavioural factors. Item SPQ8 shares the highest mean, which is 4 (SD=0.8), which states that online group discussions offer an opportunity for students to collaborate on a task with their team mates. Items SPQ6 and SPQ7 share the same mean of 3.8. Item SPQ6 reports that students were not hesitant to express their opinion when online (mean=3.8, SD=0.9). Meanwhile, item SPQ7 shows that online group discussions allow students to communicate clearly with their team members (mean=3.8, SD=0.9). The lowest mean is item SPQ2, which is 2.9 (SD=1.1). This item reveals that students can sense the team’s unhappiness when conducting an online group discussion.

Findings for Environment

This section presents data to answer research question 3- How do learners perceive the environment in online group work? In the context of this study, it is measured by teaching presence.

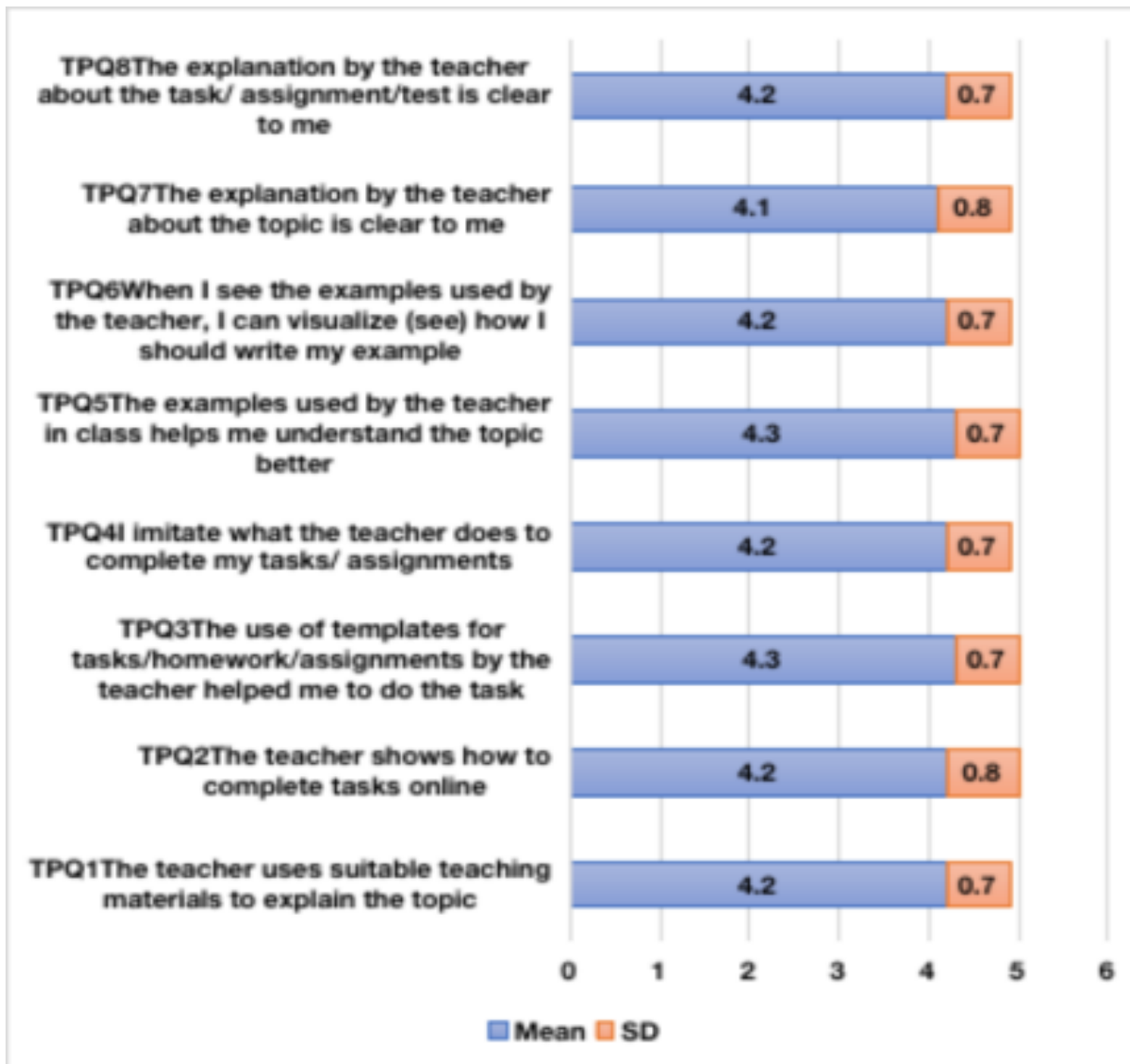


Figure 4 Mean for Environmental Factors/ Teaching Presence

The findings indicate that in general, learners perceived the online group work environment positively, as reflected in consistently high mean scores for teaching presence. All items scored above 4.0, suggesting strong agreement that the teacher’s practices supported their learning. The highest-rated aspects were the use of templates for tasks (M = 4.3, SD = 0.7) and the use of relevant examples to aid topic understanding (M = 4.3, SD = 0.7), highlighting the value of clear, structured guidance and concrete illustrations. Similarly, learners reported benefiting from the teacher’s demonstrations (M = 4.2, SD = 0.7) and the clarity of task instructions (M = 4.2, SD = 0.7). Even the slightly lower mean for topic explanation clarity (M = 4.1, SD = 0.8) still indicates a high level of satisfaction. Overall, the results suggest that well-prepared materials, explicit demonstrations, and structured resources significantly enhance the perceived quality of the online learning environment.

Findings for Relationship between all factors in online group work

This section presents data to answer research question 4-Is there a relationship between all factors in online group work? To determine if there is a significant association in the mean scores between all factors in online group work, data is analysed using SPSS for correlations. Results are presented separately in table 4, 5 and 6 below.

Table 4 Correlation between Environment and Personal Factor

		ENVIRONMENT	PERSONAL
ENVIRONMENT	Pearson (Correlation)	1	.407**
	Sig (2-tailed)		.000
	N	250	250
PERSONAL	Pearson (Correlation)	.407**	1
	Sig (2-tailed)	.000	
	N	250	250

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

Table 4 shows there is an association between environmental and personal factors. Correlation analysis shows that there is a moderate significant association between environmental and personal factors ($r=.407^{**}$) 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 environmental and personal factors.

Table 5 Correlation between Personal and Behavioural Factor

		PERSONAL	BEHAVIOURAL
PERSONAL	Pearson (Correlation)	1	.482**
	Sig (2-tailed)		.000
	N	250	250
BEHAVIOURAL	Pearson (Correlation)	.482**	1
	Sig (2-tailed)	.000	
	N	250	250

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

Table 5 shows there is an association between personal and behavioural factors. Correlation analysis shows that there is a moderate significant association between personal and behavioural factors ($r=.482^{**}$) 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 personal and behavioural factors.

Table 6 Correlation between Behavioural and Environment Factor

		ENVIRONMENT	PERSONAL
BEHAVIOURAL	Pearson (Correlation)	1	.468**
	Sig (2-tailed)		.000
	N	250	250
ENVIRONMENTAL	Pearson (Correlation)	.468**	1
	Sig (2-tailed)	.000	
	N	250	250

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



Table 6 shows there is an association between behavioural and environmental factors. Correlation analysis shows that there is a moderate significant association between behavioural and environmental factors ($r=.468^{**}$) 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 behavioural and environmental factors.

CONCLUSION

Summary of Findings and Discussions

Four research questions on how learners perceive personal, behavioural and environmental factors in online group work were addressed in this study. It also examines whether relationships exist among these factors. Students are shown to highly value the exchange and application of new knowledge, while confusion about discussed ideas scored lowest for personal factors (cognitive presence). This observation is consistent with Hrastinski (2019), who remarked that active engagement and information exchange are important for effective collaboration.

Meanwhile, for the behavioural factors (social presence), the students scored opportunities to collaborate the highest and this is aligned with Bach and Thiel's (2024) findings that collaborated projects promotes participation. However, the students scored perception of team unhappiness the lowest ratings indicating that emotional condition is less visible or less openly exhibited in online settings. This echoes Van der Toorn et al.'s (2015) findings on reduced interpersonal signals in online communication.

Finally, the environmental factors (Teaching presence) that receive high scores from the students to clear instructions, relevant materials and illustrative examples, aligns with Aderibigbe (2021) and Robinson & Held (2024), who highlight structured guidance for maintaining group productivity. Correlation analyses affirmed moderate positive relationships between all factor pairs, reflecting the relationship between cognitive, social, and teaching presence and this data supports Bandura's (2012) hypothesis of reciprocal determinism between personal, behavioural and environmental facets in learning.

Implications and Suggestions for Future Research

The study validates the relevance of Bandura's Social Cognitive Theory in online collaborative contexts, showing that personal, behavioural and environmental factors do not operate independently but mutually strengthen each other. The framework is enhanced with the integration of Aderibigbe's (2021) cognitive, social, and teaching presence factors within it, thus, provides strong conceptual insights for understanding group work dynamics in online learning. This relationship suggests that treatment to boost one factor may implicitly boost others.

Pedagogical Implications

The findings of this study suggest several important implications for teaching and learning. Firstly, instructors should conduct more online group work or collaborative activities as these motivate knowledge sharing among learners. This aligns with the findings of this study which found that learners shared and used new information from the discussions. This shows that such activities encourage engagement which promotes social presence as well as cognitive presence. At the same time, having more online group work and collaborations allows for teaching presence among the learners as the role can be shared among the learners and they will not be dependent on the instructor. On another note, instructors should take into consideration the amount of content covered and the group size when conducting online group work to ensure learners are able to participate productively in the activities. Doing this too will help in enhancing the social and cognitive presence of the learners.

Suggestions for Future Research

Although this study provides valuable insights into learners' perceptions towards online group work, future research could further explore other issues on similar topic. Future research could include a larger sample size

across different institutions so that the generalizability of the results could be enhanced. In addition, comparative studies could also be carried out to examine the learners' academic performance when conducting physical group work versus online group work. This is important to see which mode of learning benefits learners the most.

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