

Examining Online Group Interactions Through the Lens of Social Cognitive Theory

^{*1}Zahari Abu Bakar, ²Siti Nurul'Ain Hj Zaiton, ³Ahmad Khudzairi Khalid, ¹Siti Musliha Ajmal Mokhtar, ⁴Ahmad Idzwan Yusuf, ⁵Aidil Azli Alias, ⁶Sri Suningsih

¹Faculty of Electrical Engineering, Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus. 81750 Masai Johor.

²Faculty of Applied Sciences, Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus. 81750 Masai Johor.

³Faculty of Computer Science and Mathematics, Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus. 81750 Masai Johor.

⁴Faculty of Civil Engineering, Universiti Teknologi MARA Johor Branch, Pasir Gudang Campus. 81750 Masai Johor.

⁵Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, Malaysia.

⁶Department of Accounting, University of Lampung, Jln. Prof. Soemantri Brojonegoro No. 1, Rajabasa, Bandar Lampung, Lampung, Indonesia, 35145

***Corresponding Author**

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ABSTRACT

The expansion of online learning has made virtual group work integral to higher education, yet communication gaps, uneven participation, cognitive uncertainty, and limited instructional support continue to affect collaborative effectiveness. Grounded in Bandura's Social Cognitive Theory, this study examined how environmental, personal, and behavioral factors interact to shape students' online group experiences. Environmental factors were represented by teaching presence, personal factors by cognitive presence, and behavioral factors by social presence. A quantitative survey was conducted with a convenience sample of 286 university students from various faculties and levels. Data were collected using a 23-item, five-point Likert-scale questionnaire comprising eight items on teaching presence, seven on cognitive presence, and eight on social presence. The instrument demonstrated internal consistency, with a Cronbach's alpha of .850. Descriptive findings showed that students perceived teaching presence positively, particularly when instructors provided clear examples, suitable materials, structured templates, and explanations. Although some students experienced confusion at the beginning of online discussions, cognitive engagement improved as they exchanged information, connected ideas, and applied new understanding. Social presence supported collaboration by enabling students to express opinions, share ideas, and participate confidently. Pearson correlation analysis revealed significant moderate positive relationships between environmental and personal factors ($r = .408, p < .001$), personal and behavioral factors ($r = .394, p < .001$), and behavioral and environmental factors ($r = .438, p < .001$). These findings support Social Cognitive Theory's reciprocal determinism and highlight the importance of structured guidance, scaffolded activities, peer feedback, and psychologically supportive environments in strengthening online collaborative learning.

Keywords: Online Group Work, Social Cognitive Theory, Teaching Presence, Cognitive Engagement, Virtual Learning Environment

INTRODUCTION

Background of Study

In recent years, the widespread integration of online platforms has significantly altered the way group collaboration occurs in both academic and professional environments. This transformation accelerated notably with the global shift toward remote learning and work, compelling educators and organizations to adapt rapidly to virtual group settings (Kwon et al., 2014). Unlike traditional face-to-face interactions, virtual collaboration introduces new layers of complexity, such as reduced non-verbal cues and fragmented communication, which can impact group cohesion and productivity (Antoci et al., 2012; Stewart & Shamdasani, 2016).

Despite the convenience of online collaboration, numerous challenges persist. Communication breakdowns, lack of engagement, unequal participation, and difficulties in coordinating tasks often hinder effective teamwork in virtual spaces (Pang et al., 2018). These issues suggest that successful online group work requires more than just digital tools; it demands a deeper understanding of how group dynamics unfold in mediated environments. Therefore, a theoretical framework is essential to systematically investigate how various factors influence online group interaction and performance (Engel et al., 2014).

Albert Bandura's Social Cognitive Theory (SCT) offers a powerful lens for understanding these intricacies. The idea highlights reciprocal determinism, which is a constant interaction among personal variables, behaviors, and environmental influences that affect human functioning (Bakhtiar et al., 2017). This means that in online learning, individual beliefs and cognitive processes are co-constructed with group behaviors and digital environments, thereby influencing collaborative outcomes.

SCT's relevance lies in its focus on key elements such as self-efficacy, observational learning, and social reinforcement. These concepts help explain how individuals navigate online group settings, adapt to challenges, and contribute to shared goals (Goldstone et al., 2008; Barberà et al., 2011). For instance, learners may build self-confidence by observing peer successes or withdraw from collaboration due to perceived lack of support or unclear goals (Ilie, 2023; Pennington, 2008).

By applying SCT, researchers can better understand how individuals develop effective collaboration strategies and how digital environments either support or hinder these processes. Ultimately, such a framework is crucial for designing instructional interventions and digital platforms that go beyond functionality to foster engagement, equity, and psychological safety in online group work (Donelan & Kear, 2023; McKay & Sridharan, 2023).

Statement of Problem

Although online group work has become increasingly prevalent in educational and professional settings, there remains a lack of theoretical depth in understanding the factors that contribute to its effectiveness. The shift toward digital collaboration has exposed participants to a range of issues, including varying levels of motivation, digital literacy, and ambiguity in role distribution. These factors often result in disengagement, miscommunication, and reduced collaboration quality, especially in asynchronous or text-heavy platforms where social interaction cues are limited (Woods & Baker, 2005; Hartford, 2005).

Current literature reveals a fragmented understanding of how personal, behavioral, and environmental factors collectively influence online group dynamics. This fragmentation limits the development of effective pedagogical strategies that address underlying causes rather than surface-level symptoms (Bernsmann & Croll, 2013). Moreover, existing research has yet to provide a cohesive explanation for how technological tools, social presence, and individual psychological constructs interact to shape collaboration outcomes in virtual environments (Ding, 2018).

The absence of a comprehensive framework complicates the implementation of meaningful interventions. Without a clear understanding of how self-efficacy, group efficacy, and communication behaviors relate to

platform design and group norms, many solutions remain superficial. As a result, virtual teams continue to struggle with low cohesion, misaligned expectations, and inconsistent performance, often despite having access to robust technological tools (Gibson & Earley, 2007; Kundu, 2020).

This gap is especially pronounced in the underexplored domain of self-efficacy within online group contexts. Although self-efficacy is widely recognized as a determinant of motivation and academic performance (Pajares, 1996), its role in mitigating communication challenges, enhancing coordination, and fostering group cohesion is still inadequately understood (Ahola et al., 2023; Herrera et al., 2022). Further, how self-efficacy influences or is influenced by digital tools, peer interactions, and the overall collaborative process remains unclear.

To address these concerns, there is a compelling need to apply Albert Bandura's Social Cognitive Theory as an interpretative lens for analyzing online group interactions. This theory's emphasis on the interplay among personal beliefs, environmental stimuli, and behavior makes it particularly well-suited to unpacking the nuanced challenges faced in virtual group settings. A theoretically grounded analysis is necessary to produce practical recommendations for improving collaborative processes and outcomes in online education and professional development (Yoon & Leem, 2021; Alqurashi, 2016).

Objective of the Study and Research Questions

The main purpose of this work is to investigate the dynamics of online group interaction from the perspective of Albert Bandura's Social Cognitive Theory (SCT). With the rise of virtual collaboration, it is important to understand how people communicate, behave, and adapt in digital group environments. This research aims to identify the complex mechanisms that shape online collaborative experiences and outcomes, based on the triadic model of SCT, which includes personal, contextual, and behavioral aspects (Freire et al., 2020; Pajares, 2003).

One of the main objectives is to examine how personal factors, such as self-efficacy, motivation, and prior experiences, affect individuals' participation in online group work. The study aims to determine the extent to which belief in one's capabilities influences task engagement, problem-solving approaches, and peer collaboration. Understanding this aspect is crucial in designing strategies that promote proactive behaviors and reduce psychological disengagement in virtual teamwork settings (Horwitz et al., 2006).

Another important goal is to explore how environmental factors, such as the design of digital platforms, the availability of supporting tools, and perceived social presence, affect the quality of group collaboration. These factors may often be either facilitators or barriers to effective communication and group cohesion. The research aims to understand the relationship between such external factors and perceptions at the individual and group levels, thereby influencing the overall effectiveness of online group tasks (Pekkala & Zoonen, 2021).

Additionally, the research will analyze behavioral indicators, including communication frequency, collaboration strategies, and role distribution. These behaviors mediate the interaction between internal beliefs and external conditions, reflecting how participants translate cognitive and emotional factors into actionable outcomes. By identifying behavioral patterns, the study hopes to reveal best practices and potential pitfalls in sustaining active and balanced group engagement.

In line with these objectives, the study is guided by the following research questions:

- How do environmental factors influence online group work?
- How do personal factors influence online group work?
- How do behavioral factors influence online group work?
- Is there a relationship between environmental factors and all factors in online group work?

LITERATURE REVIEW

Theoretical Framework of the Study

Bandura's foundational work (1986) laid the groundwork for understanding how individuals learn through social contexts, emphasizing that cognition, behavior, and environmental influences are deeply intertwined. He introduced the concept of triadic reciprocal determinism to explain how personal agency is exercised in social environments, a concept that is central to analyzing online group interactions.

Later, Bandura (2001) expanded this perspective by emphasizing human agency and the proactive role individuals play in shaping their learning experiences and environments. In this view, learners are not passive recipients of information but are capable of self-reflection, self-regulation, and active participation in the learning process. This view is particularly relevant in online group settings where autonomous learning, peer influence, and digital context continuously shape group performance.

Albert Bandura's Social Cognitive Theory (SCT) offers a comprehensive explanation of human learning and behavior by emphasizing the triadic reciprocal interaction among personal, behavioral, and environmental factors (Hodges, 2018). Within this framework, personal factors include beliefs, self-efficacy, and motivation; behavioral factors encompass actions such as participation and collaboration strategies; and environmental factors encompass external influences such as technological platforms, group dynamics, and feedback mechanisms (Schunk & DiBenedetto, 2020; Ashford, 2014).

This relationship, known as reciprocal determinism, implies that people are not passive recipients of their environment. They are shaped by their context, but also shape their context. For instance, a student's self-efficacy that they may make a meaningful contribution to an online group may lead them to interact more. This, in turn, generates a more supportive group atmosphere, which further reinforces positive behavior (Hoddinott et al., 2010; Wang et al., 2023).

In online collaborative environments, SCT provides a fine-grained view of how learners adapt, self-regulate, and interact with peers. Its relevance is particularly clear when thinking about how observational learning is facilitated by virtual tools. Through seeing the behaviors of others in digital places such as discussion boards or collaborative papers, learners internalize methods that can influence their future performance and self-efficacy (Joksimović et al., 2017; Schneider et al., 2021).

Furthermore, the theory's emphasis on self-efficacy and collective efficacy highlights the psychological mechanisms underlying group success. When individuals believe in their own capabilities (self-efficacy) and in the group's collective capacity (collective efficacy), they are more likely to persist, contribute actively, and overcome challenges (Byars-Winston et al., 2010; Lent et al., 1994). These beliefs strongly influence goal setting, effort levels, and emotional responses during group work.

Ultimately, SCT provides a robust lens for analyzing online collaboration not just through technological efficiency but also through psychological and social perspectives. This positions the theory as particularly valuable in designing educational strategies that support motivation, engagement, and meaningful learning within online groups (Mayer, 2006; Hamzah et al., 2022).

Benefits of Online Group Work

Research across various fields has demonstrated numerous advantages associated with online group collaboration. One of the most prominent benefits is the development of critical thinking and problem-solving skills, as students are often required to engage in meaningful dialogue, analyze diverse perspectives, and co-construct knowledge (Sudrajat et al., 2022; Karagkounis et al., 2020).

In addition to cognitive benefits, online group work fosters communication and leadership skills. Asynchronous and synchronous communication tools encourage learners to express their ideas clearly, manage time efficiently, and assume leadership roles within group tasks. These interactions also enhance digital literacy, a key skill in today's professional environments (Cherian & Jacob, 2013; Sitinjak et al., 2023).

Self-efficacy also plays a mediating role in achieving these benefits. When students possess strong self-efficacy beliefs, they are more resilient, persistent, and willing to take on challenging tasks. This belief positively influences not only individual achievement but also group dynamics, as confident members often inspire and uplift others (Shakarami et al., 2013; Labrague, 2024).

Moreover, online group work offers greater flexibility in time and space. Participants from different geographic locations can collaborate effectively without the limitations of physical presence. This inclusivity allows for more diverse viewpoints, enhances learning outcomes, and fosters a sense of global awareness (Hartelt & Martens, 2024; Greenhow & Galvin, 2020).

However, for these benefits to materialize, participants must possess both the technical skills and psychological readiness to engage effectively. This underscores the importance of fostering self-efficacy and group efficacy through targeted interventions that include structured activities, social support, and digital scaffolding (Kudusheva et al., 2022; Purwandika & Ayriza, 2020).

Past Studies

Past Studies on Online Group Work

Previous studies on online group work have generally emphasized technology tools and usability issues rather than the psychosocial elements affecting team performance. Several studies have focused on functionality such as access to forums, shared documents, or video conferencing, without sufficient consideration of how personal beliefs or social structures affect involvement (Pennington, 2008; Donelan & Kear, 2023).

Over time, scholars began to shift toward examining student motivation, engagement, and peer interaction in digital settings. Research showed that while collaborative learning could enhance student outcomes, challenges such as unequal participation, lack of clarity in roles, and reduced social presence remained significant barriers (Hartford, 2005; Pang et al., 2018).

Recent research has highlighted the usefulness of theoretical frameworks such as SCT in identifying such limitations and proposing remedies. For example, Mamun and Lawrie (2023) and Ilie (2023) explain how reciprocal determinism helps us understand behaviors and settings and how they impact students' success. However, there is still a need for further integrated research that simultaneously analyzes all three SCT components.

Another key area explored by researchers concerns social presence and community building in asynchronous forums. The absence of immediate feedback often leads to a sense of isolation. However, studies show that with proper scaffolding and encouragement, students can establish strong learning communities that support academic success and emotional well-being (Peterson et al., 2018; Hew & Cheung, 2003).

Ultimately, existing research calls for a more cohesive and theory-driven approach to online group work. The application of SCT can fill this gap by offering a framework that unifies cognitive, behavioral, and environmental aspects of learning, thereby guiding the design of more effective online collaborative experiences (Chounta, 2019; Gaad, 2022).

Conceptual Framework of the Study

Figure 1 below presents the study's conceptual framework. This study is anchored on the social cognitive theory by Bandura (2012) and merged with the online group work factors from Aderibigbe (2021). According to Bandura (2012), three factors that affect learning are environmental factors, personal factors, and the learner's behavior. In the context of online group work, the environmental factor is the online mode. The person responsible for making the online environment conducive to group work is the teacher, through teaching presence. Next, the learner's personal factors facilitate the learning process, especially when they have a strong cognitive presence. This is achieved when learners are given the opportunity to interact with learning materials through tasks and activities. Finally, an important factor for learning is the learners' behavior. In online group work, the learner's social presence facilitates the learning process. Group interaction helps learners practice their negotiation and

problem-solving skills (Rahmat,2020). Since Bandura (2012) states that there is a dynamic interaction among the three factors in social cognitive theory, this study explores the relationships among all factors.

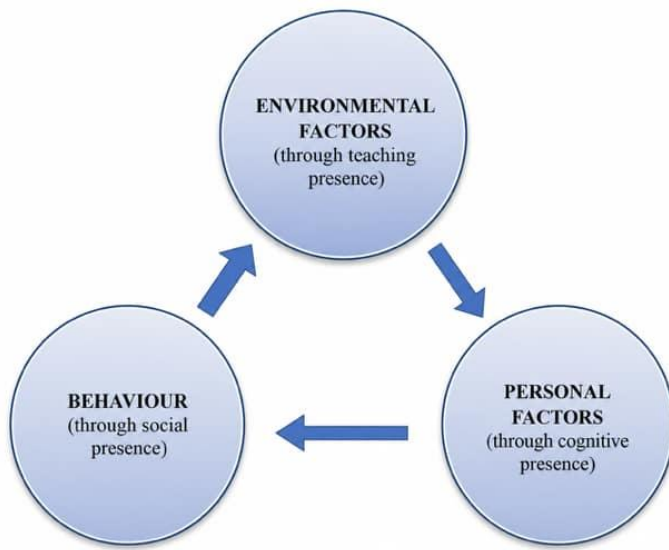


Figure 1. Conceptual Framework of the Study

(Mapping Social Cognitive Theory with Online Group Work)

METHODOLOGY

This quantitative study was conducted to explore online group work. A convenient sample of 286 participants responded to the survey. The instrument used is a 5-point Likert-scale survey. Table 1 below shows the categories used for the Likert scale: 1 is Never, 2 is Rarely, 3 is Sometimes, 4 is Very Often, and 5 is Always.

Table 1. Likert Scale Use

1	Never
2	Rarely
3	Sometimes
4	Very Often
5	Always

The instrument used is a 5-point Likert-scale survey anchored in Bandura's (2012) social cognitive theory, and the constructs were replicated from Aderibigbe (2021). Table 2 shows the distribution of items in the survey. Section B has 8 items on Teaching Presence. Section C has 7 items on Cognitive Presence, and Section D has 8 items on Social Presence.

Table 2. Distribution of Items in the Survey

SECTION	FACTORS IN SOCIAL COGNITIVE THEORY (Bandura, 2012)	ELEMENTS (Aderibigbe, 2021)	NO. OF ITEMS
B	Environmental	Teaching Presence	8
C	Personal	Cognitive Presence	7
D	Behavioural	Social Presence	8
		Total Items	23

Table 3 presents the survey's reliability. The analysis shows a Cronbach's alpha of .850, indicating good reliability of the chosen instrument (Jackson, 2015). Further analysis using SPSS is done to present findings to answer the research questions for this study.

Table 3. Reliability of the Survey

CRONBACH'S ALPHA	NO. OF ITEMS
.850	23

FINDINGS

Demographic Analysis

Based on Table 4 – Percentage for Demographic Profile, a total of 286 respondents participated in the survey. The majority were female students (67%), and most were in their early semesters (1–3), accounting for 79% of the sample. In terms of faculty distribution, the largest share came from the Faculty of Business and Management (59%), followed by Science, Engineering & Technology (38%), while only a small fraction (3%) was in the Social Sciences. Regarding the level of study, 74% were degree students and 26% were diploma students. More than half of the respondents (52%) had less than one year of online learning experience, suggesting relatively limited exposure to digital learning environments. Most students (64%) reported engaging in online learning for only 2–4 hours per week, while a small proportion (10%) dedicated more than 8 hours per week. As for class type, a combined 69% of students experienced learning that was either mostly lectures (44%) or more lectures than activities (25%), indicating that lecture-based delivery dominates the online classroom structure. This demographic profile highlights a predominantly early-year, degree-level cohort with limited experience with online learning and exposure to lecture-centric instructional approaches.

Table 4. Percentage for Demographic Profile

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	33%
		Female	67%
2	Semester	1-3	79%
		4-6	20%
		7 and above	1%
3	Faculty	Science , Engineering & Technology	38%
		Business and Management	59%
		Social Sciences	3%
4	Level of Study	Diploma	26%
		Degree	74%
5	Online Learning Experience	Less than one year	52%
		1 year and above	48%
6	Duration of online learning per week	2-4 hours per week	64%
		5-8 hours per week	26%
		More than 8 hours per week	10%
7	Class type	Mostly lectures	44%
		more activities than lectures	23%
		More lectures than activities	25%
		Mostly lectures	8%

Descriptive Statistics

Findings for Environmental Factors

Teaching Presence

Based on Table 5 – Mean for Environmental Factors/Teaching Presence, the results indicate a generally high perception of teaching presence among respondents. The highest-rated item was TPQ5 (“The examples used by

the teacher in class help me understand the topic better”) with a mean of 4.4 and standard deviation (SD) of 0.7, suggesting strong agreement and consistency. Similarly, items TPQ1 (use of suitable materials) and TPQ6 (visualizing examples) both received high ratings with means of 4.3, reflecting the importance of clear, example-based instruction. Most other items, including TPQ3, TPQ4, TPQ7, and TPQ8, scored between 4.1 and 4.2, indicating positive perceptions of teacher guidance, clarity, and instructional scaffolding. The lowest mean was for TPQ2 (“The teacher shows how to complete tasks online”), with a score of 4.0, and the highest variability (SD = 0.9), possibly indicating mixed experiences with task demonstrations during online learning. Overall, the data reveal that students strongly appreciate teachers’ instructional support, especially when it involves clear examples and structured explanations.

Table 5. Mean for Environmental Factors/Teaching Presence

ITEM	MEAN	SD
TPQ1 The teacher uses suitable teaching materials to explain the topic	4.3	0.7
TPQ2 The teacher shows how to complete tasks online	4	0.9
TPQ3 The use of templates for tasks/homework/assignments by the teacher helped me to do the task	4.2	0.8
TPQ4 Imitate what the teacher does to complete my tasks/ assignments	4.1	0.7
TPQ5 The examples used by the teacher in class help me understand the topic better	4.4	0.7
TPQ6 When I see the examples used by the teacher, I can visualize (see) how I should write my example	4.3	0.8
TPQ7 The explanation by the teacher about the topic is clear to me	4.2	0.8
TPQ8 The explanation by the teacher about the task/ assignment/test is clear to me	4.1	0.8

Findings for Personal Factors

Cognitive Presence

Based on Table 6 – Mean for Personal Factors/Cognitive Presence, the findings reveal that while students perceive cognitive engagement in online group work positively overall, there are some challenges at the beginning stages. CPQ1 and CPQ2, which relate to feeling lost or confused at the start of discussions, received the lowest mean scores of 3.0 with a standard deviation of 0.9, indicating uncertainty and variability in early participation. In contrast, the highest mean score of 4.0 was reported across five items (CPQ4 to CPQ7), reflecting strong agreement that online group work facilitates the exchange of information, the sharing of new ideas, the connecting of different thoughts, and the application of ideas at the end of discussions. CPQ3, which focuses on the variety of ideas generated, had a mean of 3.7, suggesting moderate amazement at the group’s collective thinking. Overall, the data suggest that although initial confusion may hinder some students, most respondents recognize the cognitive value of online group collaboration, particularly in developing and applying new ideas during discussions.

Table 6. Mean for Personal Factors/ Cognitive Presence

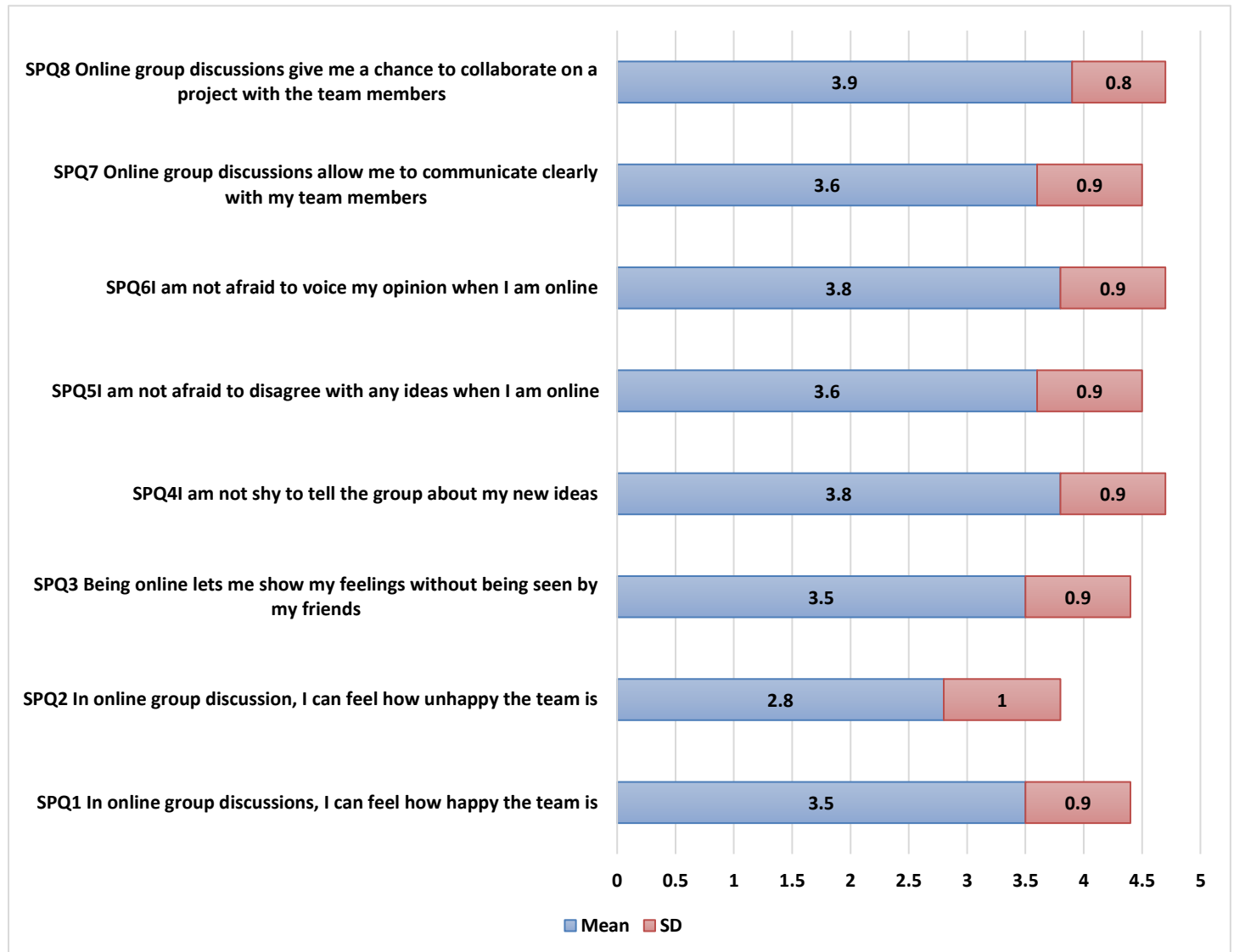
ITEM	MEAN	SD
CPQ1 At the beginning of the group work, I am lost on how to begin the discussion	3	0.9
CPQ2 When I work in groups online, I am confused about the different types of ideas discussed	3	0.9
CPQ3 When in online groups, I am amazed at how many ideas the group can come out with	3.7	0.8
CPQ4 Online group work allows the exchange of information	4	0.8
CPQ5 My team members are able to share new information during online group discussions	4	0.8
CPQ6 Group work allows team members to connect their ideas	4	0.8
CPQ7 At the end of the online group discussion, my team uses the new ideas we discussed	4	0.8

Findings for Behavioral Factors

Social Presence

Figure 2 shows the mean for behavioral factors/ social presence. The highest mean is item 9 (mean=3.9, SD=0.8), which states that online group discussions gave the learners a chance to collaborate with their team members. Next, two items share the same mean of 3.8. The first is item 4 (mean=3.8, SD=0.9), which indicates that the learners were not shy about telling their peers about their new ideas. Next, item 6 (mean=3.8, SD=0.9) indicates that students were not afraid to voice their opinions when online. The lowest mean is item 2 (mean=2.8, SD=1), which states that in online group discussions, they could feel how unhappy the team was.

Figure 2. Mean for Behavioral Factors/Social Presence



Exploratory Statistics

Findings for the Relationship Between Environmental Factors and All Factors In Online Group Work

To determine whether there is a significant association between environmental factors and all factors in online group work, the data are analyzed using SPSS to compute correlations. Results are presented separately in Tables 7, 8, and 9, respectively.

Table 7 shows there is an association between environmental and personal factors. Correlation analysis shows that there is a moderately significant association between environmental and personal factors ($r=.408^{**}$) and ($p=.000$). According to Jackson (2015), the coefficient is significant at the .05 level, and a 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 7. Correlation between Environmental and Personal Factors

		ENVIRONMENTAL	PERSONAL
ENVIRONMENTAL	Pearson (Correlation)	1	.408**
	Sig (2-tailed)		.000
	N	286	286
PERSONAL	Pearson (Correlation)	.408**	1
	Sig (2-tailed)	.000	
	N	286	286

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

Table 8 shows an association between personal and behavioral factors. Correlation analysis shows that there is a moderately significant association between personal and behavioral factors ($r=.394^{**}$) and ($p=.000$). According to Jackson (2015), the 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 behavioral factors.

Table 8. Correlation between Personal and Behavioral Factors

		BEHAVIORAL	PERSONAL
BEHAVIORAL	Pearson (Correlation)	1	.394**
	Sig (2-tailed)		.000
	N	286	286
PERSONAL	Pearson (Correlation)	.394**	1
	Sig (2-tailed)	.000	
	N	286	286

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

Table 9 shows there is an association between behavioral and environmental factors. Correlation analysis shows that there is a moderately significant association between behavioral and environmental factors ($r=.438^{**}$) and ($p=.000$). According to Jackson (2015), the coefficient is significant at the .05 level, and a 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 behavioral and environmental factors.

Table 9. Correlation between Behavioral and Environmental Factors

		BEHAVIOURAL	ENVIRONMENTAL
BEHAVIOURAL	Pearson (Correlation)	1	.438**
	Sig (2-tailed)		.000
	N	286	286
ENVIRONMENTAL	Pearson (Correlation)	.438**	1
	Sig (2-tailed)	.000	
	N	286	286

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

CONCLUSION

Summary of Findings and Discussions

This study explored the influence of environmental, personal, and behavioral factors on online group work through the lens of Social Cognitive Theory (Bandura, 2012). The findings for Research Question 1 showed that environmental factors, represented by teaching presence, significantly influence students' experiences in online group work. Students highly appreciated clear examples, visual explanations, and structured materials, indicating that teacher guidance plays a vital role in creating a conducive online learning environment. This supports past findings by Mayer (2006), who emphasized the effectiveness of structured instructional materials, and Hamzah et al. (2022), who found that strong teaching presence enhances learner engagement.

For Research Question 2, the study found that personal factors, specifically cognitive presence, influence how students engage in online group discussions. Although students initially reported feeling lost and confused, they later demonstrated increased cognitive engagement as discussions progressed. This pattern reflects Bandura's (1986) view that learning is socially constructed and improves through interaction and reinforcement. The study also echoes the work of Joksimović et al. (2017), who found that cognitive engagement improves with scaffolded group interaction, and Shakarami et al. (2013), who argued that self-efficacy grows as students engage in meaningful online exchanges.

In addressing Research Question 3, behavioral factors measured through social presence were shown to foster collaboration. Students generally felt confident expressing ideas and opinions during online group work, suggesting a psychologically safe learning environment. This finding is in line with Sudrajat et al. (2022), who emphasized the importance of social interaction in enhancing learner confidence, and also corresponds with Rahmat (2020), who argued that peer interactions strengthen negotiation and problem-solving skills in group tasks.

For Research Question 4, the correlation analyses identified significant moderate positive associations among environmental, personal, and behavioral factors. These findings are consistent with Bandura's (2012) triadic reciprocal model, suggesting that teaching presence, learner cognition, and social engagement are interrelated in students' online group experiences. However, because the study employed a cross-sectional correlational design, the results do not establish causal or directional relationships among the three factors. Rather, they provide empirical evidence of patterns of association that are compatible with the proposed conceptual framework. The findings support the relevance of Social Cognitive Theory for interpreting online group learning, particularly its emphasis on the interplay among personal, behavioral, and environmental factors. The moderate correlations among the three constructs are consistent with reciprocal determinism; however, they should not be regarded as direct confirmation of reciprocal causal effects. Establishing such effects would require longitudinal, experimental, or cross-lagged research designs.

IMPLICATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Theoretical and Conceptual Implications

The findings validate the application of Social Cognitive Theory in online learning contexts, particularly its emphasis on reciprocal determinism. The study supports Bandura's (1986, 2012) proposition that personal, behavioral, and environmental factors interact dynamically to shape learning experiences. The moderate correlations found among all three factors affirm the theoretical model that effective online group work depends not only on the learner's internal beliefs (e.g., self-efficacy) but also on external support and social interaction. The conceptual integration of SCT with online group work elements, as modeled in the framework, is thus both theoretically grounded and empirically supported.

Pedagogical Implications

The results underscore the need for educators to enhance teaching presence, particularly by providing structured guidance, clear examples, and opportunities for modeling. As students showed cognitive confusion in the initial

stages of online group work, teachers should consider integrating templates, guided prompts, or examples at the start of discussions. Fostering peer feedback and encouraging the expression of ideas can enhance students' social presence and engagement. Moreover, incorporating scaffolded tasks can help bridge early-stage confusion and support deeper cognitive engagement over time.

Suggestions for Future Research

Future research should employ probability-based sampling, where feasible, and recruit participants from multiple universities, programmes, and levels of study to improve sample representativeness and the transferability of the findings. Stratified sampling may be particularly useful for obtaining a more balanced representation across gender, semester, faculty, and study level. Researchers could also combine questionnaires with interviews, focus groups, learning analytics, or direct observation of online discussions. Such methodological triangulation would provide richer evidence of how students actually communicate, negotiate roles, and construct knowledge, while reducing exclusive reliance on self-reported perceptions. Longitudinal, cross-lagged, or experimental designs are also recommended to investigate the temporal ordering and possible causal relationships among teaching presence, cognitive presence, and social presence. Future studies should also control for potentially relevant factors such as prior online learning experience, group size, task type, digital competence, and the technological platform used.

Limitations of the Study

Several limitations should be considered when interpreting the findings. First, the study employed convenience sampling, and the sample was unevenly distributed across gender, semester, faculty, and level of study. In particular, female students, students in Semesters 1–3, and students from Business and Management programmes constituted a large proportion of the respondents. Consequently, the sample may not adequately represent the broader university student population, and the findings should be generalized with caution.

Second, the study relied exclusively on self-reported questionnaire data. Participants' responses may have been influenced by social desirability, differences in personal interpretation, recall limitations, or a tendency to provide favourable assessments of their instructors and group experiences. Although the instrument demonstrated satisfactory internal consistency, this does not eliminate the possibility of common-method and response biases.

REFERENCES

1. 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>
2. Bandura, A. (2012). Social cognitive theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 349–373). Sage Publications Ltd. <https://doi.org/10.4135/9781446249215.n18>
3. Jackson, S.L. (2015) *Research methods and Statistics-A Critical Thinking Approach* (5th Edition) Boston, USA:: Cengage Learning.
4. Rahmat, N.H. (2020) Conflict Resolutions in Class Discussions. *International Journal of Education*, 12(3), 49-66. <https://doi.org/10.5296/ije.v12i3.16914>
5. Ahola, S., Malmberg, J., & Järvenoja, H. (2023). Investigating the relation of higher education students' situational self-efficacy beliefs to participation in group level regulation of learning during a collaborative task. *Cogent Education*, 10(1). <https://doi.org/10.1080/2331186x.2022.2164241>
6. Alqurashi, E. (2016). Self-Efficacy In Online Learning Environments: A Literature Review. *Contemporary Issues in Education Research (CIER)*, 9(1), 45. <https://doi.org/10.19030/cier.v9i1.9549>
7. Antoci, A., Sabatini, F., & Sodini, M. (2012). See you on Facebook! A framework for analyzing the role of computer-mediated interaction in the evolution of social capital. *The Journal of Socio-Economics*, 41(5), 541. <https://doi.org/10.1016/j.socrec.2012.04.024>
8. Ashford, R. L. (2014). *Being Nontraditional and Learning Online: Assessing the Psychosocial Learning Environments, Self-Efficacy, and Affective Outcomes among College Student Groups* [Doctoral dissertation, University of Southern Mississippi]. ProQuest.
9. Bakhtiar, A., Webster, E. A., & Hadwin, A. F. (2017). Regulation and socio-emotional interactions in a

- positive and a negative group climate. *Metacognition and Learning*, 13(1), 57. <https://doi.org/10.1007/s11409-017-9178-x>
10. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
11. Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>
12. Barberà, E., Virgili, M. E. T., & Guasch, T. (2011). Cognitive attainment in online learning environments: Matching cognitive and technological presence. *Interactive Learning Environments*, 20(5), 467. <https://doi.org/10.1080/10494820.2010.531026>
13. Bernsmann, S., & Croll, J. (2013). Lowering the threshold to libraries with social media. *Library Review*, 62, 53. <https://doi.org/10.1108/00242531311328168>
14. Byars-Winston, A., Estrada, Y., Howard, C. J., Davis, D., & Zalapa, J. (2010). Influence of social cognitive and ethnic variables on academic goals of underrepresented students in science and engineering: A multiple-groups analysis. *Journal of Counseling Psychology*, 57(2), 205. <https://doi.org/10.1037/a0018608>
15. Cherian, J., & Jacob, J. (2013). Impact of Self Efficacy on Motivation and Performance of Employees. *International Journal of Business and Management*, 8(14). <https://doi.org/10.5539/ijbm.v8n14p80>
16. Chounta, I. (2019). Collaborative Learning and Patterns of Practice. In *Encyclopedia of Education and Information Technologies*, 1. https://doi.org/10.1007/978-3-319-60013-0_83-1
17. Ding, L. (2018). Applying gamifications to asynchronous online discussions: A mixed methods study. *Computers in Human Behavior*, 91, 1. <https://doi.org/10.1016/j.chb.2018.09.022>
18. Donelan, H., & Kear, K. (2023). Online group projects in higher education: Persistent challenges and implications for practice. *Journal of Computing in Higher Education*, 36(2), 435. <https://doi.org/10.1007/s12528-023-09360-7>
19. Engel, D., Woolley, A. W., Jing, L. X., Chabris, C. F., & Malone, T. W. (2014). Reading the Mind in the Eyes or Reading between the Lines? *PLoS ONE*, 9(12). <https://doi.org/10.1371/journal.pone.0115212>
20. Freire, C., Ferradás, M. del M., Regueiro, B., Rodríguez, S., Valle, A., & Núñez, J. C. (2020). Coping Strategies and Self-Efficacy in University Students: A Person-Centered Approach. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.00841>
21. Gaad, A. L. V. (2022). The Effects of Online Collaborative Learning (OCL) on Student Achievement and Engagement. *IAFOR Journal of Education*, 10(3), 31. <https://doi.org/10.22492/ije.10.3.02>
22. Gibson, C. B., & Earley, P. C. (2007). Collective Cognition in Action: Accumulation, Interaction, Examination, and Accommodation in the Development and Operation of Group Efficacy Beliefs in the Workplace. *Academy of Management Review*, 32(2), 438. <https://doi.org/10.5465/amr.2007.24351397>
23. Goldstone, R. L., Roberts, M. E., & Gureckis, T. M. (2008). Emergent Processes in Group Behavior. *Current Directions in Psychological Science*, 17(1), 10. <https://doi.org/10.1111/j.1467-8721.2008.00539.x>
24. Greenhow, C., & Galvin, S. (2020). Teaching with social media: Evidence-based strategies for making remote higher education less remote. *Information and Learning Sciences*, 121, 513. <https://doi.org/10.1108/ils-04-2020-0138>
25. Hamzah, S. R., Musa, S. N. S., & Mohamad, N. (2022). The mediating effect of self-efficacy on career aspiration and organizational support with subjective career success among Malaysian women managers. *Frontiers in Sociology*, 7. <https://doi.org/10.3389/fsoc.2022.802090>
26. Hartelt, T., & Martens, H. (2024). Self-regulatory and metacognitive instruction regarding student conceptions: Influence on students' self-efficacy and cognitive load. *Frontiers in Psychology*, 15. <https://doi.org/10.3389/fpsyg.2024.1450947>
27. Hartford, T. (2005). Facilitation and Assessment of Group Work using Web-based Tools. *Bioscience Education*, 5(1), 1. <https://doi.org/10.3108/beej.2005.05000006>
28. Herrera, C., Torres-Vallejos, J., & Martínez-Libano, J. (2022). Psychometric properties of the Collective Efficacy Scale Short-Form in Chilean teachers. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.935578>
29. Hew, K. F., & Cheung, W. (2003). Models to evaluate online learning communities of asynchronous discussion forums. *Australasian Journal of Educational Technology*, 19(2). <https://doi.org/10.14742/ajet.1714>

30. Hoddinott, P., Allan, K., Avenell, A., & Britten, J. (2010). Group interventions to improve health outcomes: A framework for their design and delivery. *BMC Public Health*, 10(1). <https://doi.org/10.1186/1471-2458-10-800>
31. Hodges, L. C. (2018). Contemporary Issues in Group Learning in Undergraduate Science Classrooms: A Perspective from Student Engagement. *CBE—Life Sciences Education*, 17(2). <https://doi.org/10.1187/cbe.17-11-0239>
32. Horwitz, F. M., Bravington, D., & Silvis, U. (2006). The promise of virtual teams: Identifying key factors in effectiveness and failure. *Journal of European Industrial Training*, 30(6), 472. <https://doi.org/10.1108/03090590610688843>
33. Ilie, V. (2023). The Impact of Technology on Collaborative Learning. *European Proceedings of Educational Sciences*, 5, 126. <https://doi.org/10.15405/epes.23045.13>
34. Joksimović, S., Poquet, O., Kovanović, V., Dowell, N., Mills, C., Gasević, D., Dawson, S., Graesser, A. C., & Brooks, C. (2017). How Do We Model Learning at Scale? A Systematic Review of Research on MOOCs. *Review of Educational Research*, 88(1), 43–86. <https://doi.org/10.3102/0034654317740335>
35. Karagkounis, C., Manomenidis, G., Platis, C., Minasidou, E., & Bellali, T. (2020). The Impact of Self-Efficacy and Work Engagement on Healthcare Professionals' Proactive Behavior. *Health*, 12(4), 305–318. <https://doi.org/10.4236/health.2020.124025>
36. Kudusheva, N., Amanova, I., Abisheva, E., Sabirova, Z., & Beisenova, Z. (2022). The development of individual self-efficacy among university students. *Cypriot Journal of Educational Sciences*, 17(2), 615–622. <https://doi.org/10.18844/cjes.v17i2.6857>
37. Kundu, A. (2020). Toward a framework for strengthening participants' self-efficacy in online education. *AAOU Journal*, 15(3), 351–365. <https://doi.org/10.1108/aaouj-06-2020-0039>
38. Kwon, K., Liu, Y.-H., & Johnson, L. P. (2014). Group regulation and social-emotional interactions observed in computer supported collaborative learning: Comparison between good vs. poor collaborators. *Computers & Education*, 78, 185–200. <https://doi.org/10.1016/j.compedu.2014.06.004>
39. Labrague, L. J. (2024). Examining the influence of social support and resilience on academic self-efficacy and learning outcomes in pre-licensure student nurses. *Journal of Professional Nursing*, 55, 119–126. <https://doi.org/10.1016/j.profnurs.2024.09.012>
40. Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122. <https://doi.org/10.1006/jvbe.1994.1027>
41. Mayer, R. E. (2006). *The Cambridge handbook of multimedia learning*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511816819>
42. McKay, J., & Sridharan, B. (2023). Student perceptions of collaborative group work (CGW) in higher education. *Studies in Higher Education*, 49(2), 221–234. <https://doi.org/10.1080/03075079.2023.2227677>
43. Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543–578. <https://doi.org/10.3102/00346543066004543>
44. Pajares, F. (2003). Self-efficacy beliefs, motivation, and achievement in writing: A review of the literature. *Reading & Writing Quarterly*, 19(2), 139–158. <https://doi.org/10.1080/10573560308222>
45. Pang, C., Lau, J., Seah, C., Cheong, L., & Low, A. (2018). Socially Challenged Collaborative Learning of Secondary School Students in Singapore. *Education Sciences*, 8(1), 24. <https://doi.org/10.3390/educsci8010024>
46. Pekkala, K., & van Zoonen, W. (2021). Work-related social media use: The mediating role of social media communication self-efficacy. *European Management Journal*, 40(1), 67–78. <https://doi.org/10.1016/j.emj.2021.03.004>
47. Pennington, D. (2008). Cross-disciplinary collaboration and learning. *Ecology and Society*, 13(2), 8. <https://doi.org/10.5751/ES-02520-130208>
48. Peterson, A. T., Beymer, P. N., & Putnam, R. T. (2018). Synchronous and asynchronous discussions: Effects on cooperation, belonging, and affect. *Online Learning*, 22(4), 7–20. <https://doi.org/10.24059/olj.v22i4.1517>
49. Schneider, S., Beege, M., Nebel, S., Schnaubert, L., & Rey, G. D. (2021). The Cognitive-Affective-Social Theory of Learning in Digital Environments (CASTLE). *Educational Psychology Review*, 34, 1–27. <https://doi.org/10.1007/s10648-021-09626-5>

50. Shakarami, A., Khajehei, H., & Hajhashemi, K. (2013). Digital self-efficacy and language learning enhancement in an online setting. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2637404>
51. Sitinjak, N. V., Yakub, E., Mardes, S., & Muna, Z. (2023). Enhancing student self-confidence through cognitive restructuring: A high school group guidance approach. *Jurnal Psikologi Terapan (JPT)*, 6(1), 64–74. <https://doi.org/10.29103/jpt.v6i1.11384>
52. Sudrajat, D. A., Mailani, F., Ibrahim, M., & Kumala, T. F. (2022). The effect of emotional intelligence training on self-efficacy in nursing students. *KnE Life Sciences*. <https://doi.org/10.18502/kl.v7i2.10328>
53. Wang, H., Hall, N. C., & Rahimi, S. (2015). Self-efficacy and causal attributions in teachers: Effects on burnout, job satisfaction, illness, and quitting intentions. *Teaching and Teacher Education*, 47, 120–130. <https://doi.org/10.1016/j.tate.2014.12.005>
54. Wang, M., Jiang, L., & Luo, H. (2023). Dyads or quads? Impact of group size and learning context on collaborative learning. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1168208>
55. Wang, S., & Wu, P. (2008). The role of feedback and self-efficacy on web-based learning: The social cognitive perspective. *Computers & Education*, 51(4), 1589–1598. <https://doi.org/10.1016/j.compedu.2008.03.004>
56. Woods, R. H., & Baker, J. D. (2005). The pedagogy of social development in online learning. In H. H. Adelsberger, B. Collis, & J. M. Pawlowski (Eds.), *Handbook on Information Technologies for Education and Training* (pp. 593–611). Springer. <https://doi.org/10.4018/978-1-59140-555-9.ch224>
57. Yoon, P., & Leem, J. (2021). The influence of social presence in online classes using virtual conferencing: Relationships between group cohesion, group efficacy, and academic performance. *Sustainability*, 13(4), 1988. <https://doi.org/10.3390/su13041988>
58. Zhang, Y., & Li, Z. (2021). The cultivation of self-efficacy in college English learning. *Advances in Social Science, Education and Humanities Research*. <https://doi.org/10.2991/assehr.k.211122.088>