Predicting social presence in videoconference-supported LMS courses: Mediation through L2 writing and speaking strategies

Daniel Bailey
Konkuk University's Glocal Campus, South Korea

Norah Almusharraf
Prince Sultan University, Kingdom of Saudi Arabia

Asma Almusharraf
Imam Mohammad Ibn Saud Islamic University, Kingdom of Saudi Arabia

Abstract

The issue addressed here concerns how second language (L2) speaking strategies mediate the relationship between L2 writing strategies and the social presence component of the community of inquiry (CoI) framework within the context of fully online courses that combined learning management system (LMS) for writing tasks and videoconferencing for live classroom discussion. L2 writing strategies related to planning and reviewing contribute to composing tests that students want to upload, present, and discuss, and this sharing is expected to foster classroom social behaviors and consequent language gains. For the current study, a cross-sectional survey of 256 university students was initiated to investigate the mediating effect L2 speaking strategies have on the relationship between L2 writing strategies and social presence. The results indicated positive path coefficients between review strategies and speaking strategies, review strategies and social presence, planning strategies and speaking strategies, and speaking strategies and social presence. Further, speaking strategies explain the relationship between planning strategies and social presence, indicating full mediation. Partial mediation was found for the path between review strategies and social presence. Recognizing how L2 writing and speaking strategies relate to one another and how that relationship influences a CoI illustrates the interconnectivity between language skills. Evidently, increased attention to planning and reviewing strategies results in a final composition worth sharing and discussing, and such sharing and discussion are building blocks to a vibrant social presence.

Keywords: Community of Inquiry, L2 writing strategies, L2 speaking strategies, online learning, social presence, higher education, COVID-19

Transferring courses online during the COVID-19 pandemic meant videosynchronous speaking tasks such as group discussions, presentations, and read-aloud exercises were conducted online alongside writing tasks like journaling, composition, and short answer essay questions. Rarely does so much overlap between writing and speaking occur in online circumstances. Studies of language learning have well-acknowledged the aids of pre-task planning on L2 learning development in speaking and writing tasks (Abrams & Byrd, 2016; Ellis & Yuan, 2004; Seyyedi, Ismail, Orang, & Nejad, 2013). Planning embraces the preparation of task objectives, along with the creation and association of ideas (Chamot & O'Malley, 1994), and finally, reviewing includes the evaluation and altering of ideas, either written or spoken (Beauvais, Olive, & Passerault, 2011). However, despite decades of research investigating issues associated with the community of inquiry (CoI) in online learning environments (e.g., Arbaugh et al., 2008; Kim & Ketenci, 2019), the complexities surrounding students' connectivity emanate from L2 strategy use remains unexplored.

Since the early 1980s, research on writing development has shifted from the overall writing performance to the detailed writing process, focusing primarily on the cognitive processes involved in writing to disentangle complexities facing the writer's cognizance during the composition process (Flower & Hayes, 1981; Limpo & Alves, 2013). Most reviewed cognitive models of writing approve that accomplished writing involves three cognitive processes: planning, monitoring, and reviewing (e.g., Berninger & Winn, 2006; Hayes, 2000).

Conceptual Framing

Writing and Speaking Strategies

Few studies have scrutinized how L2 speaking strategies mediate the relationship between L2 writing strategies and the social presence component of a fully online course's CoI. The bulk of language learning strategy (LLS) research focuses on speaking (Lapkin, Swain, & Smith, 2002; McDonough, 2004; Oxford, 2011; Storch, 2004), with less explicitly focused on writing (Kao & Reynolds, 2017; Maarof & Murat, 2013; Wenden & Rubin, 1987; Zhang & Qin, 2018), and a scarcity of studies collectively investigating the connections between speaking and writing strategies (Veracruzana, 2011). Previous research can be considered the first step towards a more profound understanding of L2 writing and speaking strategies' roles to a CoI and how those roles can guide teaching practices in blended and fully online courses (Zenouzagh, 2020). Therefore, an essential issue in the literature is related to further exploration toward the teaching presence design, which might support and sustain the online virtual community's cognitive and social presence. Through planning strategies, learners develop content worth sharing and discussing, setting into motion the initial triggering stage of a CoI by providing students an object (i.e., written composition) to converse upon in future settings (Anderson, 2016; Garrison, 2017). In other words, the willingness to engage in speaking strategies in online learning is expected to mediate the relationship between L2 planning and reviewing strategies when writing because willingness, ability, and techniques to communicate in the L2 influence how energy exerted on writing strategies manifest in person-to-person communication. For example, students can use speaking strategies to share their writing during class presentations or group conversations, contributing to increased connectivity and social presence. Moreover, the student will be interested in the sharing process when writing results from appropriate levels of planning and reviewing.

CoI and English as a Foreigin Language
The CoI framework not only has the potential for developing teacher learning (Zenouzagh, 2020), it guides the development of principles of valuable written feedback through collective efforts (Garrison, 2017). In addition, a CoI can positively aid second language classrooms by reinforcing knowledge construction through socialization (i.e., Fathi, Ahmadnejad, & Yousofi, 2019). In distance learning, asynchronously written communication common in online courses (e.g., discussion forums) can moderately compensate for the forfeiture of body language, live observation, and natural and planned partner and group activities associated with offline learning considered critical in fostering a CoI. Established findings from CoI research clearly illustrates a positive relationship between teacher, social, and cognitive presence and course satisfaction (e.g., Kucuk & Richardson, 2019), as well as an intention for future use (e.g., Traver, Volchok, Bidjerano, & Shea, 2014), and critical thinking (e.g., Yang & Mohd, 2020).

The issue addressed here concerns how planning and review strategies influence the social presence and how speaking strategies help explain the relationship between L2 writing strategies and social presence. In online courses, writing and speaking are two modes of communication that contribute to interactions; therefore, this study addresses how writing and speaking strategies influence the social presence and, consequently, knowledge construction. The following are the proposed hypotheses that guided our study in an attempt to understand better how L2 writing and speaking strategies relate with one another and how that relationship influences the social presence component of a CoI:

H1: Increasing levels of planning strategies with L2 writing are associated with increasing levels of L2 speaking strategies.

H2: Increasing levels of review strategies with L2 writing are associated with increasing levels of L2 speaking strategies.

H3: Increasing levels of L2 speaking strategies are associated with increasing levels of social presence.

H4: Increasing levels of planning strategies with L2 writing are associated with increasing levels of social presence.

H5: Increasing levels of review strategies with L2 writing are associated with increasing levels of social presence.

H6: The relationship between planning strategies with L2 writing and social presence is mediated by increasing levels of L2 speaking strategies.

H7: The relationship between review strategies with L2 writing and social presence is mediated by increasing levels of L2 speaking strategies.
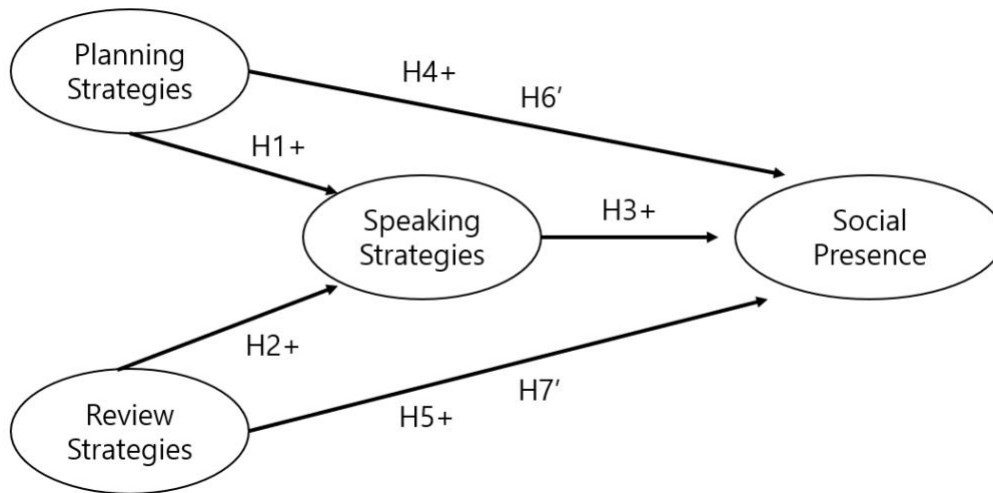
Figure 1. Proposed Model

Literature Review

Research has provided evidence that promulgating learners' collaboration aids in second language acquisition (SLA; Lapkin et al., 2002; McDonough, 2004; Storch, 1998, 2004; Swain & Lapkin, 1998). Online learning collaboration plays a critical role in higher education practice, especially in the context of English as a foreign language (EFL) (Kim & Ketenci, 2019). Studies have conveyed that online collaborative learning enables a sense of community (Chatterjee & Correia, 2020), multimodal approachability (Ching & Hsu, 2013), and social networking connectivity (McDonough, Vleeschauwer, & Crawford, 2019), which influences participants' positive attitudes and performances. EFL online collaborative activities also promote learners' affective and metacognitive skills, such as self-awareness and self-regulation (Chatterjee & Correia, 2020). Moreover, previous findings highlight a central argument that instructors' contribution to planning an effective instructional design is required when supporting learner participation in a collaborative EFL classroom (Aelterman, Vansteenkiste, Haerens, Soenens, Fontaine, & Reeve, 2019).

Theoretical Framework
The theoretical framework for this study is grounded in the early works by Garrison, Anderson, & Archer (2000), who established the connection between the CoI framework to speculate online, blended learning, and distance education (Anderson, 2016). Strategies and techniques in learning engage trigger, representing the actions responsible for shared communication, which is essential to a CoI. The CoI Framework upholds that social knowledge construction is allied when a course meets three unified components: teaching presence, social presence, and cognitive presence. These three CoI subcomponents are considered preconditions for constructing an enduring and meaningful learning community (Garrison, Cleveland-Innes, & Fung, 2010). The success behind integrating the CoI framework is related to a critical component within higher education: social examination (Garrison & Vaughan, 2008). The CoI is concerned with the nature of knowledge formation and the process of scientific inquiry and is broadly defined as any group of individuals working together to attain a shared goal. In the academic context, this applies to a merging social, cognitive, and teaching presence. To this end, educational setting,

learning content, and interlocutor discourse influence the learning experience. Hence, the relationship among the three CoI presences produces a model for and description of collaborative learning—involving knowledge co-construction within a learning environment that intentionally supports interactions that entail collaborative inquiry (Garrison, 2017).

Garrison et al.'s (2000) CoI framework is grounded on learners' capacity to build their social presence (i.e., dynamically participate and trust each other in social activities), cognitive presence (i.e., inquiry, analysis, co-construct meaning collaboratively), and teaching presence (i.e., plan, assist, and direct) within face-to-face or online environments. Cognitive presence refers to knowledge construction through communication with others or learning when communicating with others. However, teaching presence is principally responsible for the functioning quality of both social and cognitive presences related to the instructional strategies and organization of the course and the behaviors in which teachers facilitate discussion and provide feedback that elucidates ideas and stimulates learning (Garrison, 2017). Teaching presence helps set the parameters, affordances, and limitations of a CoI. Cognitive presence is possible through reflection and dialogue and consequently requiring some degree of social presence. The teacher creates the learning environment, and social presence emanates from reflection and dialogue with that environment (Anderson, 2016). However, the literature pertaining to these three components' significance suggests further examination is needed pertaining to the CoI's facilitation of identifying characteristics concerning elements of online learning communities (Kaul, Aksela, & Wu, 2018; Rubin, Fernandes, & Avgerinou, 2013). Further exploration is also required to ensure the framework captures the more nuanced components of specific educational practices, including the effects of course planning and the degree of engagement of course participants (Stewart et al., 2021).

L2 Writing Strategies and Social Presence

Writing strategy research continues to stay relevant because strategy training programs must adapt to evolving L2 writing environments. In line with past research (Kao & Reynolds, 2017; Maarof & Murat, 2013; Wenden & Rubin, 1987; Zhang & Qin, 2018), L2 writing strategies conceptually factor chronologically into planning (e.g., setting aside time to write, organizing thoughts, and outlining), monitoring (e.g., use a dictionary, read aloud, and simplify vocabulary), and review (e.g., ask others for feedback, compare writing with others, and ask the instructor for feedback) strategies. Strategies are useful tools for active, conscious, and purposeful self-regulation, which students rely on to cope with the challenge of writing in a second language (Payne, 2020). Review strategies often entail corrective feedback, asking a peer or instructor for comments to improve second drafts or future writing pieces. These strategies entail communicating with classmates and the instructor to make meaning out of composition emanating from the planning and monitoring writing strategy processes. A CoI is developed and sustained through communication-based on feedback-seeking behavior (Sewart, 2019). Metacognitive and cognitive writing strategies play a part in planning, monitoring, and evaluating and help students complete compositions accordingly (Payne, 2020). In the context of L2 writing, metacognitive strategies help students achieve learning goals. Similarly, cognitive strategies serve the purpose of regulations and goal achievement and are driven by metacognitive planning and organization processes (Aelterman et al., 2019). Examples of cognitive strategies with L2 writing include using a dictionary, translation tools, read-aloud techniques, and other explicit actions focused on completing a writing piece. These monitoring strategies hold an

adjacent position with metacognitive writing strategies that set the foundation for the organization and content to be written first, and possibly, discussed (or presented) second, in what can be described as a strategy-chain (Oxford, 2011). When writing, a strategy-chain encapsulates planning, monitoring, and reflecting on one's writing for the ultimate purpose of sharing ideas through discussion, presentation, posting, or publication with an audience. The reflection stage is a bridge to more social speaking strategies because it entails seeking help from others, including asking peers or teachers to improve future writing based on current writing quality. Writing can then be shared on class forums or presentations; such indirect sharing results in synchronous replies at the end of a class presentation or asynchronous replies to an online class forum. In either case, a classroom CoI emanates from the feedback and sharing stages of writing.

Online writing tasks like forums and blogs support writing strategy use and heighten levels of connectivity. The effect blog-mediated instruction had on learner characteristics was reported in the literature and found students experienced heightened levels of motivation and self-regulated learning and that their positive attitude to the online course had encouraged students to practice other writing in English (Blake, 2016). Mainly, students spent more time planning their writing because they knew it would be read by others publicly on the online class platform. While not directly related to social-seeking behavior, planning and monitoring strategies produced a more delicate writing quality worth discussing with others upon completion (Fathi et al., 2019). To understand how planning and review strategies relate to student characteristics, Bailey (2019) modeled the structural relationship of planning, monitoring, and corrective feedback strategies with English/non-English majors, L2 writing anxiety, and L2 writing skill. In general, students who employed more L2 writing strategies reported higher L2 proficiency and less apprehension to writing (Bailey, 2019).

L2 Speaking Strategies and Social Presence
In the wake of COVID-19, EFL learners across the world adapted quickly by attending the live portion of their courses online through videoconference platforms. Speaking with one another on videoconference platforms has an immediate effect on social presence. In contrast, connectivity among students may be delayed and limited when communicating asynchronously on LMS discussion forums. Speaking a second language involves a certain amount of planning, monitoring, reflection, instantaneous nature, and dependency on turn-taking, making such a chronological ordering impractical (Blake, Wilson, Cetto, & Pardo-Ballester, 2008). With L2 writing, even in public forums where a form of turn-taking occurs, it involves a significant amount of time for brainstorming and other planning strategies before monitoring (Payne, 2020). Likewise, monitoring is a distinctly separate stage from planning and after-writing review strategies.

The overwhelming amount of strategy research in SLA has been focused on speaking and learning based on Oxford's strategy inventory for language learning (SILL) (Oxford, 1990), while L2 writing strategy research has drawn less attention. The popularity of the SILL springs from the psychometric properties dividing strategies into direct and indirect sections. The classroom setting is detrimental in establishing strategies that meet learner needs (Huang, 2016). The progressively extensive use of social and technological tools (e.g., Wikis, Google Docs) in the second language (L2) settings has conveyed transformed responsiveness to collaborative

writing. While the current methodological methods to investigate collaborative writing are appreciated to comprehend L2 students' interactional forms or perceived experiences, they can be inadequate to deliver an authentic result of the learners' quantity and quality of writing within online environments (Yim & Warschauer, 2017).

Recognizing when strategies are used and how they relate to student characteristics (e.g., academic outcome) within a CoI framework provides educators with actionable intelligence of what training is needed, when needed, and why. For instance, heightened brainstorming and planning practices should not be overlooked for more direct social behavior but instead nurtured and brought to fruition as a reference point of social interaction (Payne, 2020). When learners spend time and energy planning strategies, they will produce a better-quality composition, which can be a source of value, praise, and inquiry during classroom discussions.

Methods

A quantitative research design using a cross-sectional survey was initiated to investigate the associations among L2 writing strategies, L2 speaking strategies, and the social presence component of the CoI. A cross-sectional study is an observational study that analyzes data from a representative population segment at a specific point in time. In this case, students were in their second semester of attending fully online EFL courses due to the COVID-19 pandemic. Instructors used their school's LMS to deliver L2 writing activities and Zoom videoconferencing for speaking practice.

Participants

A convenience sampling technique was used to recruit the students of two EFL professors with over 10 years of EFL teaching experience in South Korea. In all, the sample consisted of eight English communication skills classes totaling 256 (117 females and 139 males) freshman (n = 129), sophomore (n = 101), and junior (n = 26) university students with majors including architecture, trade, public administration, engineering, education, and accounting. The survey was administered to students on their sixth week attending their second semester of fully online videoconfrence courses using Zoom.

Second language proficiency was triangulated through standardized Test of English for International Communication (TOEIC) test scores, self-rated speaking scores, and self-rated writing scores (Cron alpha = .802). English proficiency skewed towards the upper intermediate range. TOEIC levels predominately ranged between 500 and 850. Self-rated speaking and writing skills were within similar ranges, approximately 5.5 out of 10 for males and 5.0 out of 10 for females (1 = low and 10 = high). High standard deviation values indicate mixed levels and, therefore, an accurate representation of L2 proficiency for South Korean university students (see Table 1).

Table 1
L2 Proficiency Ranked by Gender

	TOEIC (n = 254)		SR Writing (n = 256)		SR Speaking (n = 256)	
	M	SD	M	SD	M	SD
Male	2.64	0.93	5.54	1.99	5.43	2.12
Female	2.16	0.84	5.01	1.87	4.93	2.00
All	2.43	0.92	5.31	1.96	5.20	2.02

Note. TOEIC score 1=200-500, 2 = 500-700, 3=700-850, 4=850+; SR, self-reported; TOEIC, n = 254 (2 unreported); Self-reported writing and speaking, n = 256.

Class Environment

The 90-minute classes met once a week on Zoom to practice speaking, writing, listening, and reading. Figure 2 shows a Zoom class and Figure 3 displays students hosting a Zoom presentation. Both the recruited instructors used a variety of activities to help students practice authentic conversational English. Examples of writing and speaking activities are displayed in Table 2 and include composing paragraphs or journaling for writing and participating in partner or group speaking activities for conversational English practice.

Table 2
List of Writing and Speaking Activities

Writing Activities	Speaking Activities
Paragraph and essay structure	Partner or group speaking pairs
Online discussion forums	Webinar class with open discussion
Cooperative writing (e.g., group blog, wiki)	Video or audio recordings
Social media messaging (e.g., Kakao or Facebook groups)	Read aloud or alternate reading
Business writing (e.g., email, cover letter, or resume)	Self-disclosure
Creative writing (e.g., picture prompts or narratives)	Roleplay
Presentation scripts	Presentations

LMS activities were delivered through discussion forums (*see* Figure 4) or assignment submissions. Forums are a typical messaging board that allows file sharing and multimodal communication (i.e., images, links, video, and audio). Other platforms for text-based asynchronous communication included the social media platform Kakao, Zoom messaging, and smartphone text messaging.

Figure 2
Sample of Zoom EFL class (Bailey, Almusharraf, & Hatcher 2020).

Figure 3
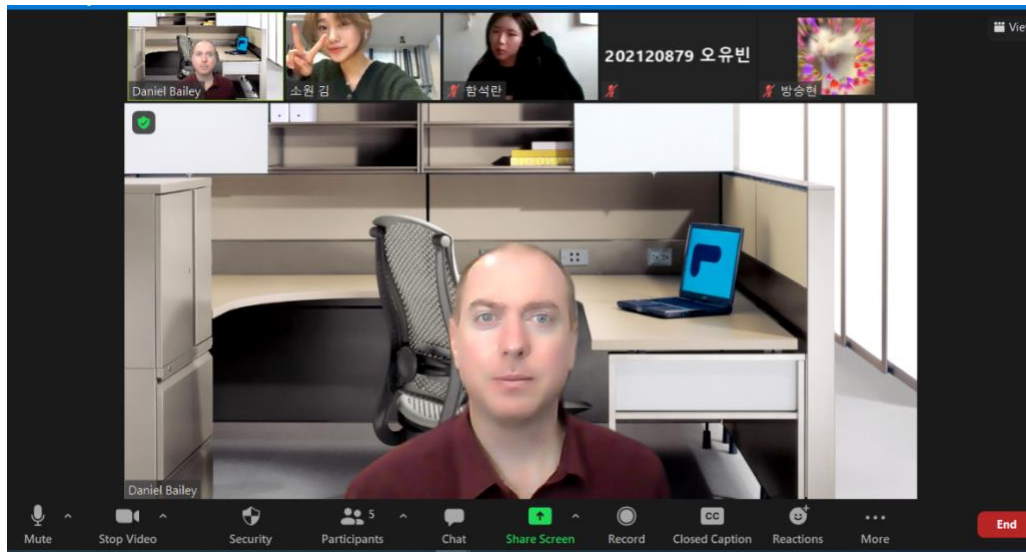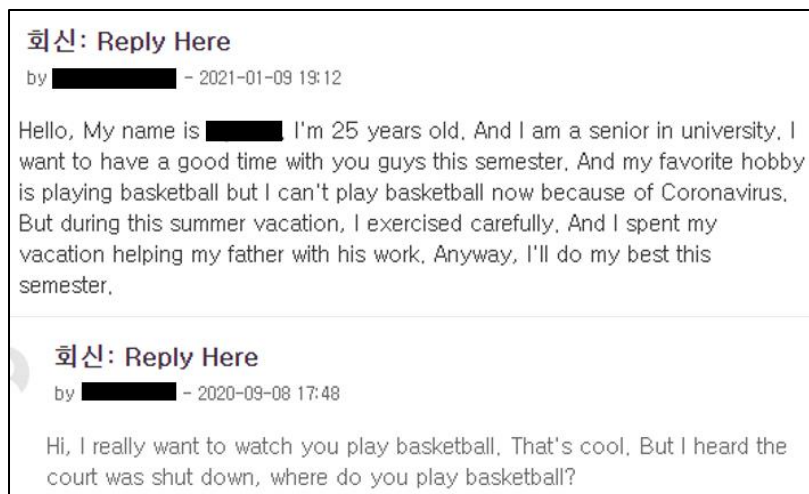Sample of Zoom EFL class (Almusharraf & Bailey, 2021).

Figure 4
Sample of asynchronous LMS online discussion forum activity.

Approximately 50% of class activities were allocated to writing, 30% to speaking, and 20% to listening. Conversational English and other speaking practice activities occurred during the videoconferencing sessions, while writing practice occurred through the course LMS.

Materials
Instrument

        The study administered a four-scale questionnaire, measuring planning strategies, review strategies, speaking strategies, and the social presence component of the CoI. Planning and Review strategy items were taken from Bailey's (2019) and Kao and Reynolds' (2017) writing strategy surveys. Planning items included *I set aside time in advance when writing in English*, *I organize my thoughts (e.g., brainstorm) before I begin writing in English*, *I plan my schedule so I will have enough time to write in English*, and *I look at writing examples (e.g., models) to help my writing*.

        Review strategies included *I ask for help with my English writing, I compare my English writing to my friends' English writing, I ask others for feedback on my English writing, I use peer comments to improve my English writing,* and *I make changes to my English writing after receiving feedback*.

        Speaking strategy items were taken from Lopez's (2011) speaking strategy survey and included *I ask the other person to repeat a word or phrase if it doesn't sound clear, I read aloud to improve my speaking skills, If I don't understand something, I ask my speaking partner to paraphrase what they said, If I don't understand what something means, I talk to my speaking partner for help,* and *I don't think much about what I'm going to say, I just talk so that my ideas flow naturally in English*.

        Finally, the items for the social presence component of CoI were taken from (Rovai, 2002) and included *I feel that it is hard to get help when I have a question, I feel connected to*

others in this course, I feel that I am encouraged to ask questions, I feel that students in this course care about each other, I trust others in this course, and *I feel that I can rely on others in this course*. Cronbach alpha scores for scales ranged between .80 and .85 (see Table 4). All items were rated on a five-point Likert scale from 1 (never true of me) to 5 (always true of me). Items were translated from English to Korean by a professional translator with a degree in translation studies and 10 years of experience. A second translator reviewed translations, and discrepancies in translations were discussed and resolved. Reliability coefficients and factor loading scores are listed in Table 4.

Data Analysis

Quantitative data analysis was carried out using the statistical software packages IBM-SPSS-AMOS 25. Initially, descriptive statistics were performed to examine mean scores and bivariate Pearson correlations among the study variables. Linear regression was used to generate Mahalanobis and Cook's distance values to look for outliers in which nine existed and were consequently removed, leaving 256 total respondents. Normal distributions were observed for the indicators of the latent factors concerning kurtosis and skewness. No kurtosis values ranged outside -1 to +1, indicating acceptable levels of normal univariate distribution (George & Mallery, 2010). Exploratory factor analysis with SPSS followed by confirmatory factor analysis (CFA) with AMOS was used to validate the latent constructs. Once validated, variables were placed into the structural model to execute the structural equation modeling (SEM) procedure.

Results

Table 3 presents the results from the mean score and Pearson correlation analysis. Overall, students reported a strong social presence when fully online LMS courses with a videoconference component. Regarding strategies, students seem to perceive themselves as having a substantial language learning strategy repertoire for speaking and writing. On a 5-point scale, mean scores were in the medium to medium-high range between 3.44 and 3.69, with older students reporting to use review strategies less frequently when writing in a second language. Gender, L2 proficiency level, and age were added to give a broader view of the relationships among the variables of interest. Results show that male students reported higher levels of L2 proficiency; however, this did not equate to a more robust use of speaking or planning strategies. L2 proficiency revealed a statistically significant relationship with all of the observed variables, indicating that self-concept of ability is highly predictive of learner characteristics. Females reported higher use of speaking and review strategies than males; however, this difference was not significant.

Table 3
Correlation and Mean Score Analyses

		1	2	3	4	5	6	7
1	Gender							
2	L2 Prof	-.200**						
3	Age	-.079	-.143*					
4	Social Pres.	.012	.190**	.058				
5	Speaking	.114	.195**	.061	.525**			
6	Planning	.117	.218**	-.081	.475**	.440**		
7	Review	.083	.284**	-.158*	.454**	.432**	.504**	
	Mean	1.45	N/A	21.5	3.77	3.44	3.69	3.43
	SD	.499	N/A	2.16	.684	.615	.699	.631
	Skew.	.188	N/A	1.290	-.118	-.013	-.117	.010
	Kurt.	-1.98	N/A	1.128	-.307	.186	-.292	.274

Note. $p < .05^*$, $p < .01^{**}$; Male = 1, Female = 2; L2; see Table 1 for L2 proficiency values.

Study Model

We now explore direct and indirect effects within a structural model containing planning strategies, review strategies, speaking strategies, and the social presence component of the CoI. Exploratory Factor Analysis (EFA) was used to strengthen the internal reliability of the tested structural model. Factors for each of the four variables of interest were extracted through the maximum-likelihood method with Varimax rotation. Several well-recognized criteria for the factor analysis were used. The Kaiser-Meyer-Olkin (KMO) measure of sampling was .866, well above the adequacy level of .60, and Bartlett's Test of Sphericity was significant ($\chi2$ (171) = 1935.87, $p < .001$). One item showed double loading above the .40 level on the planning and reviewing strategy scales. From a conceptual perspective, this item was deemed appropriate by the acting researchers to be on the planning scale. Table 4 displays the pattern matrix.

Table 4
Pattern Matrix of Study Variable

Cron. Alpha	.841	.850	.802	.828
Planning 1	.801			
Planning 2	.797			
Planning 3	.787			
Planning 4	.740			
Planning 5	.423	.415		
Reviewing 1		.789		
Reviewing 2		.704		
Reviewing 3		.699		
Reviewing 4		.633		
Speaking 1			.711	
Speaking 2			.687	
Speaking 3			.675	
Speaking 4			.605	
Speaking 5			.531	

Social Presence 1	.825
Social Presence 2	.811
Social Presence 3	.638
Social Presence 4	.570
Social Presence 5	.568

The next step entailed using AMOS to carry out the CFA. A four-factor correlated model was used to validate the four variables of interest. The results of the first round of CFA ($\chi2 = 445.47$, df = 164, p < .001, $\chi2$ /df = 2.72, RMSEA = .081, TLI = .829, CFI = .852, PCLOSE < .001), indicating poor model fit. Upon checking modification indices, it was suggested to allow items 4 and 5 on the social presence scale to covary (M.I. = 77.2), and items 2 and 3 on the review scale to covary (M.I. = 44.6). Adequate model fit was achieved after running the model again ($\chi2 = 275.28$, df = 160, $p < .001$, $\chi2$ /df = 1.72, RMSEA = .053, TLI = .928, CFI = .940, PCLOSE < .329), indicating planning, reviewing, speaking strategies, and social presence were conceptually unique.

The next step in addressing the proposed hypotheses was to investigate the path coefficients among the study's variables and the mediating effect of speaking strategies between the writing strategies and social presence. For hypotheses one to five, structural equation modeling was used to measure the direct effects of planning, reviewing, and speaking strategies on reported levels of social presence. For hypotheses six and seven, a 5,000-bootstrap sample was used to test the indirect effect of L2 speaking strategies on the relationship between reported levels of writing strategies and social presence. Figure 5 illustrates the resulting path coefficients for the tested model.
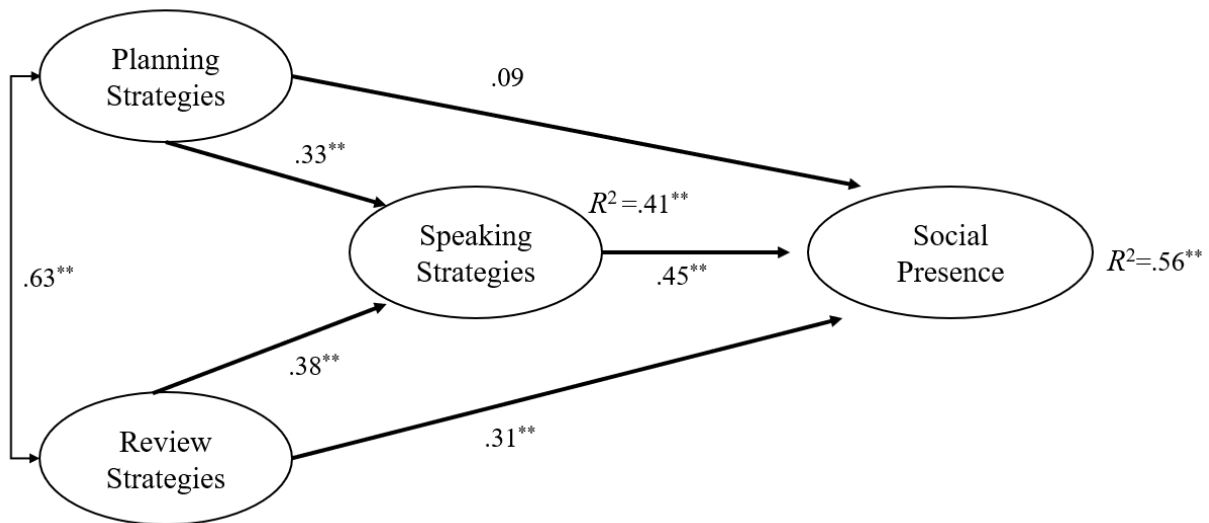
Figure 5
Tested Model

Table 5 displays model information related to path coefficients and regression weights. In all, the structural model with the strategy components explains 56% of the variance for social presence, indicating that L2 writing and speaking strategies highly influence connectivity among students. L2 writing strategies explain 41% of the variance with L2 writing strategy use, confirming the premise that planning and review strategies influence the frequency of speaking strategy use.

Table 5

Path Coefficients and Regression Weights of the Tested Model

			$ß$	**Beta**	*P*	R^2
H1	Planning strategies → Speaking strategies		.345	.330	.004[**]	
H2	Review strategies → Speaking strategies		.327	.312	.003[**]	.41
H3	Speaking strategies → Social Presence		.449	.448	.001[**]	
H4	Planning strategies → Social Presence		.103	.094	.360	
H5	Review strategies → Social Presence		.268	.483	.004[**]	
H6	Review Strategies X Speaking Strategies X Social Presence		.147	.171	.003[**]	
H7	Planning Strategies X Speaking Strategies X Social Presence		.155	.148	.002[**]	.56

Note. $p < .01$[**]

Overall, the tested model confirmed all the proposed hypotheses in the affirmative except for hypothesis four, which pertained to the relationship between planning strategies and social presence. While in the positive direction, the path between planning strategies and social presence was not statistically significant. The positive correlation identified prior with Pierson correlation between planning strategies and social presence was removed when social presence was added to the model, indicating full mediation. In other words, increasing levels of speaking strategies explained the relationship between planning strategies and social presence. It should be noted that levels of mediation for hypotheses six and seven were similar; however, the initial path between review strategies and social presence prior to adding the mediating variable (i.e., speaking strategies) was more significant, so there was more distance to cover before full mediation could occur. A further explanation for these paths and their relevance to extant literature is explained in the following section.

Discussion

The current cross-sectional survey investigated how L2 writing and speaking strategies relate with one another and how that relationship influences the social presence component of a CoI. The researchers specifically examined how writing and speaking strategies influence social presence, and consequently, knowledge construction in fully online EFL courses that combine LMS for writing tasks (e.g., online discussion forums) and videoconferencing for speaking activities (e.g., partner and group discussion). Initially, the results of the study showed that all variables indicated a positive relationship with one another at the bivariate correlation level. In other words, prior to testing the mediation model, all three strategy components contributed to social presence. Once the model was constructed, the study's results confirmed positive path coefficients between review strategies and speaking strategies, planning strategies and speaking strategies, and speaking strategies and social presence. Further, speaking strategies fully mediated the relationship between planning strategies and social presence and partial mediation between review strategies and social presence.

Hypotheses One and Two

By testing our proposed model, L2 planning and reviewing writing strategies showed a positive relationship with L2 speaking strategies. Thus, as illustrated in Table 5, the first and second hypotheses were confirmed, showing that increasing levels of planning strategies and review strategies with writing are associated with increasing levels of L2 speaking strategies. This finding is consistent with research showing a relationship between writing and speaking skills (Brown, 2001; Nation & Newton, 2009; Zhu, 2007). The results here are in line with research showing that although writing and speaking are two different communication modes, they can share similar underlying cognitive processes (Payne, 2020). Both include a process for planning for production, accessing one's lexicon, formulating expressions, and a mechanism for articulation (Payne, 2020). This study confirmed that the willingness to engage in speaking strategies in online learning mediates the relationship between L2 planning and reviewing writing strategies. Similarly, other studies have found evidence that texting in the target language can positively influence oral performance (Blake et al., 2008; Blake, 2016; Payne, 2020).

Hypotheses Three to Five

The third hypothesis was answered in the affirmative and confirmed that increasing levels of L2 speaking strategies are associated with increasing levels of social presence. This means second language speaking strategies help predict the quality of a CoI. At the bivariate level, L2 planning strategies produced a strong positive correlation with social presence, confirming hypothesis four. However, this relationship vanished with the inclusion of speaking strategies as a mediator. Regarding hypothesis five, the positive relationship between review strategies and social presence was evident in both the correlation analysis and the tested structural equation model, indicating review strategies have both direct and indirect influences on social presence. As mentioned earlier, the CoI framework contains the teaching, social, and cognitive presences that overlap and create a meaningful learning experience (Garrison et al., 2010). Each presence has particular functions that enrich the learning experience (Anderson, 2016). Specifically, the social presence opens the door to the cognitive presence and teaching presence, allowing for communication, collaboration, relationship-building, and, eventually, the formation of learning. In other words, research has suggested that social presence, including both written and verbal communication, is an important mediating variable between teaching and cognitive presence and a predictor of course satisfaction (Kucuk & Richardson, 2019). Therefore, findings from answering hypothesis three tie well with research indicating that speaking strategies are a powerful tool that influences social presence, allowing active involvement and interaction that can lead to rich language learning (Lapkin et al., 2002; McDonough, 2004; Storch, 2004).

Hypotheses Six and Seven

This study's results have also confirmed hypothesis six by showing that increasing levels of speaking strategies explain the relationship between planning strategies and social presence. When learners spend time and effort on planning strategies, they will produce better texts that will lead to better oral discussions and, more generally, better involvement and achievement of the learning goals (Abrams & Byrd, 2016; Ellis & Yuan, 2004; Payne, 2020; Seyyedi et al., 2013). More specifically, learners will spend more time planning their writing if they know that others will read their contributions. This result is consistent with Fathi et al. (2019), who argued that while not directly related to social-seeking behavior, planning strategies could produce a more delicate writing quality worth discussing.

In regards to hypothesis seven, the findings revealed that speaking strategies partly explained the relationship between review strategies and social presence. While mediation existed, it was not full mediation, as seen with the planning strategy path. This could be because reviewing strategies often involve feedback-seeking behavior, contributing to the social presence in a classroom. After-writing review strategies often require asking a peer or instructor for comments to improve second drafts or future writing pieces. These strategies entail communicating with classmates and the instructor to make meaning out of a composition. Results for partial mediation between review social strategies and social presence are consistent with research indicating that a CoI is developed and sustained through communication-based or feedback-seeking behavior (Rubin et al., 2013; Sewart, 2019). It is important to note here that reviewing strategies are a link between metacognitive processes and CoI. Learners can become aware of their mental processes by recognizing which kinds of learning tasks cause difficulty, how to recall information, and how to solve learning problems by reviewing strategies. This result is in line with research indicating that it is more likely that learners will develop abilities to evaluate and self-regulate their learning through constructive feedback (Bailey, 2019; Garrison, 2017) and reflection (Anderson, 2016).

A CoI is a powerful pedagogical tool that fosters student engagement and collaboration, and according to these findings, writing and speaking strategies represent the actions partly responsible for the shared communication essential for the CoI's establishment (Garrison, 2017). Therefore, these findings align with research indicating that communicating and collaborating in online communities can develop a productive online learning environment through which knowledge is constructed (Fathi et al., 2019; Garrison et al., 2000; Garrison, 2017). Second language writing and speaking strategies are thus seen as building on each other to create an environment that supports knowledge construction.

Pedagogical Implication

This study illustrated how writing and speaking strategies influence social presence, and consequently, knowledge construction. Recognizing how L2 writing and speaking strategies relate to one another and how that relationship influences the social presence of a CoI enables instructors and educators to understand better the benefits of such strategies on developing and sustaining the community. Educators and instructors may need to rethink their online courses' design to incorporate tasks and activities that encourage cognitive and metacognitive strategies that can raise learners' awareness of the learning process and enhance their control over their own learning. Autonomous planning strategies produce content that can be shared or improved upon through feedback-seeking behavior then used in presentations or as conversation pieces during class discussion.

Findings here propagate the proposition that instructors are responsible for providing their learners with both technical and pedagogic support. As mentioned earlier, direct and indirect feedback from instructors is essential to learners' achievement in developing both speaking skills (i.e., Mehr, Zoghi & Assadi, 2013) and writing skills (i.e., Rashid, Yunus, & Wahi, 2019; Yeh & Chen, 2019). Therefore, it is advised that instructors allow learners to receive meaningful feedback that enables them to reflect on their outcomes and make improvements that can help develop target knowledge. Such meaningful feedback that allowed personal reflection and shared discourse would also improve higher-order thinking skills, potentially resulting in higher achievements (Garrison, 2017) and higher levels of self-awareness and self-regulation (Chatterjee & Correia, 2020). Thus, we must keep our sights set on those strategies to allow opportunities to improve engagement and foster the trust-building necessary

for effective collaboration. The extent to which instructors regulate and structure online discussions, whether written or spoken, can affect student interaction levels, leading to better language learning (Blake, 2016; Huang, 2016; Yim & Warschauer, 2017).

Conclusion

Understanding the interrelations between writing and speaking strategies that influence the social presence and, consequently, contributing positively to a CoI may enrich theoretical insights and online education practice informed by the CoI Framework. To serve this purpose, a quantitative research design using a cross-sectional survey was initiated to investigate the mediating effect L2 speaking strategies have on the relationship between L2 writing strategies and CoI. This study's main result indicated positive path coefficients between review strategies and speaking strategies, review strategies and CoI, planning strategies and speaking strategies, and speaking strategies and CoI. This study's findings will benefit instructors, instructional designers, and administrators interested in enhancing online course engagement.

There are several limitations to this study. First, this sample of university EFL students in South Korea may not be representative enough to generalize the case. Therefore, similar studies are recommended to be replicated with different types of EFL learners from different educational contexts. Additionally, quantitative instruments were only applied in this research; therefore, qualitative research instruments (i.e., interviews, focus groups, and class observation) that examine the nature of writing and reading strategies in online courses can be implemented in future research to enrich and validate the given results.

This study's findings open pathways to future research investigating how feedback-seeking strategies mediate the relationship between language construction strategies and the social presence component in a CoI. There is a particular need for further work on the nature, role, and function of metacognitive processes related to planning and reviewing and their influence on speaking strategies and, consequently, enhancing social presence in online learning environments. Further research is also required in examining larger multicultural samples and different online platforms before any definitive conclusion can be made regarding the relationship between writing strategies, speaking strategies, and a CoI. Lastly, this paper calls for future research to identify different pedagogical approaches that incorporate learning strategies to develop learners' social presence and promote online learning.

References

Abrams, Z. I., & Byrd, D. R. (2016). The effects of pre-task planning on L2 writing: Mind-mapping and chronological sequencing in a 1st-year German class. *System*, *63*, 1–12. https://doi.org/10.1016/j.system.2016.08.011

Aelterman, N., Vansteenkiste, M., Haerens, L., Soenens, B., Fontaine, J. R., & Reeve, J. (2019). Toward an integrative and fine-grained insight in motivating and demotivating teaching styles: The merits of a circumplex approach. *Journal of Educational Psychology*, *111*(3), 497–521. https://doi.org/10.1037/edu0000293

Almusharraf, N., & Bailey, D. R. (2021). Online engagement during COVID-19: Role of agency on collaborative learning orientation and learning expectations. *Journal of Computer Assisted Learning, 37*(5), 1285–1295. https://doi.org/10.1111/jcal.12569

Anderson, T. (2016, 4 January). *A fourth presence for the Community of Inquiry model*. Virtual Canuck. https://virtualcanuck.ca/2016/01/04/a-fourth-presence-for-the-community-of-inquiry-model/

Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D. R., Ice, P., Richardson, & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and Higher Education*, *11*(3–4), 133–136. https://doi.org/10.1016/j.iheduc.2008.06.003

Bailey (2019). Conceptualization of second language writing strategies and their relation to student characteristics. *Journal of TEFL Asia, 16*(1), 135–148. https://doi.org/10.18823/asiatefl.2019.11.1.9.135

Bailey, D. R., Almusharraf, N. & Hatcher, R. (2021). Finding satisfaction: Intrinsic motivation for synchronous and asynchronous communication in the online language learning context. *Education and Information Technologies, 26*, 2563–2583. https://doi.org/10.1007/s10639-020-10369-z

Beauvais, C., Olive, T., & Passerault, J. M. (2011). Why are some texts good and others not? Relationship between text quality and management of the writing processes. *Journal of Educational Psychology*, *103*(2), 415–428. https://doi.org/10.1037/a0022545

Berninger, V., & Winn, W. (2006). Implications of advancements in brain research and technology for writing development, writing instruction, and educational evolution. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 96 – 114). Guilford.

Blake, R. (2016). Technology and the four skills. *Language Learning & Technology*, *20*(2), 129–142. http://llt.msu.edu/issues/june2016/blake.pdf

Blake, R., Wilson, N. L., Cetto, M., & Pardo-Ballester, C. (2008). Measuring oral proficiency in distance, face-to-face, and blended classrooms. *Language Learning & Technology*, *12*(3), 114. http://llt.msu.edu/ Blake ol12num3/blakeetal/

Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy* (2nd ed.). Pearson.

Chamot, A. U., & O'Malley, J. M. (1994). *The CALLA handbook: Implementing the cognitive academic language learning approach.* Addison-Wesley Publishing Company.

Chatterjee, R., & Correia, A. P. (2020). Online students' attitudes toward collaborative learning and sense of community. *American Journal of Distance Education*, *34*(1), 53–68. https://doi.org/10.1080/08923647.2020.1703479

Ching, Y. H. & Hsu, Y. C. (2013). Collaborative learning using VoiceThread in an online graduate course. *Knowledge Management & E-Learning: An International Journal*, *5*(3), 298–314. https://doi.org/10.34105/j.kmel.2013.05.021

Ellis, R., & Yuan, F. (2004). The effects of planning on fluency, complexity, and accuracy in second language narrative writing. *Studies in Second Language Acquisition*, *26*(1), 59–84. https://doi.org/10.1017/S0272263104026130

Fathi, J., Ahmadnejad, M., & Yousofi, N. (2019). Effects of blog-mediated instruction on L2 writing motivation, self-efficacy, and self-regulation: A mixed methods study. *Journal of Research in Applied Linguistics*, *10*(2), 159–181. https//:doi. 10.22055/RALS.2019.14722

Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. *College Composition and Communication*, *32*(4), 365–387. https://doi.org/10.2307/356600

Garrison, D. R. (2017). *E-learning in the 21st century: A community of inquiry framework for research and practice*. Taylor & Francis.

Garrison, D. R., & Vaughan, N. D. (2008). *Blended learning in higher education: Framework, principles, and guidelines*. John Wiley & Sons.

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

Garrison, D. R., Cleveland-Innes, M., & Fung, T. S. (2010). Exploring causal relationships among teaching, cognitive and social presence: Student perceptions of the community of inquiry framework. *The Internet and Higher Education*, *13*(1–2), 31–36. https://doi.org/10.1016/j.iheduc.2009.10.002

George, D., & Mallery, M. (2010). *SPSS for Windows step by step: A simple guide and reference, 17.0 update* (10th ed.). Pearson.

Hayes, J. R. (2000). A new framework for understanding cognition and affect in writing. In R. Indrisano & J. R. Squire (Eds.), *Perspectives on writing: Research, theory and practice* (pp. 6–44). International Reading Association.

Huang, S. (2016). Language learning strategies in context. *The Language Learning Journal: Language Learning Strategies*, *46*(5), 647–659. https://doi.org/10.1080/09571736.2016.1186723

Kao, C.-W., & Reynolds, B. L. (2017). A study on the relationship among Taiwanese college students' EFL writing strategy use, writing ability and writing difficulty. *English Teaching & Learning*, *41*(4), 31–67. https://doi.org/10.6330/ETL.2017.41.4.02

Kaul, M., Aksela, M., & Wu, X. (2018). Dynamics of the community of inquiry (CoI) within a massive open online course (MOOC) for in-service teachers in environmental education. *Education Sciences*, *8*(2), 40. https://doi.org/10.3390/educsci8020040

Kim, M. K., & Ketenci, T. (2019). Learner participation profiles in an asynchronous online collaboration context. *The Internet and Higher Education*, *41*, 62–76. https://doi.org/10.1016/j.iheduc.2019.02.002

Kucuk, S., & Richardson, J. C. (2019). A structural equation model of predictors of online learners' engagement and satisfaction. *Online Learning*, *23*(2), 196–216. https://doi.org//10.24059/olj.v23i2.1455

Lapkin, S., Swain, M., & Smith, M. (2002). Reformulation and the learning of French pronominal verbs in a Canadian French immersion context. *Modern Language Journal*, *86*(4), 485–507. https://doi.org/10.1111/1540-4781.00157

Limpo, T., & Alves, R. A. (2013). Teaching planning or sentence-combining strategies: Effective SRSD interventions at different levels of written composition. *Contemporary Educational Psychology*, *38*(4), 328–341. https://doi.org/10.1016/j.cedpsych.2013.07.004

Lopez, M. M. (2011). Speaking strategies used by BA ELT students in public universities in Mexico. *MEXTESO Journal*, *35*(1), 203–216.

Maarof, N., & Murat, M. (2013). Writing strategies used by ESL upper secondary school students. *International Education Studies*, *6*(4), 47–55. http://dx.doi.org/10.5539/ies.v6n4p47

McDonough, K. (2004). Learner–learner interaction during pair and small group activities in a Thai EFL context. *System*, *32*(2), 207–224. https://doi.org/10.1016/j.system.2004.01.003

McDonough, K., De Vleeschauwer, J., & Crawford, W. J. (2019). Exploring the benefits of collaborative prewriting in a Thai EFL context. *Language Teaching Research*, *23*(6), 685–701. https://doi.org/10.1177/1362168818773525

Mehr, H. S., Zoghi, M., & Assadi, N. (2013). Effects of synchronous computer-mediated communication and face-to-face interaction on speaking skill development of Iranian EFL learners. *International Journal of Applied Linguistics and English Literature*, *2*(5), 36–41. http://dx.doi.org/10.7575/aiac.ijalel.v.2n.5p.36

Nation, I. S. P., & Newton, J. (2009). *Teaching ESL/EFL listening and speaking*. Routledge.

Oxford, R. (1990). *Language learning strategies: What every teacher should know*. Heinle and Heinle.

Oxford, R. (2011). *Teaching & researching language learning strategies*. Routledge.

Payne, J. S. (2020). Developing L2 productive language skills online and the strategic use of instructional tools. *Foreign Language Annals*. *53*, 243–249. https://doi.org/10.1111/flan.12457

Rashid, A. A., Yunus, M. M., & Wahi, W. (2019). Using Padlet for collaborative writing among ESL learners. *Creative Education*, *10*(3), 610–620. https://doi.org/10.4236/ce.2019.103044

Rovai, A. P. (2002). Development of an instrument to measure classroom community. Internet and Higher Education, *5*(3), 197–211. https://doi.org/10.1016/S1096-7516(02)00102-1

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

Sewart, M. K. (2019). The community of inquiry survey: An assessment instrument for online writing courses. *Computers and Composition*, *52*, 37–52. https://doi.org/10.1016/j.compcom.2019.01.001

Seyyedi, K., Ismail, S. A. M. M., Orang, M., & Nejad, M. S. (2013). The effect of pre-task planning time on L2 learners' narrative writing performance. *English Language Teaching*, *6*(12), 1–10.http://dx.doi.org/10.5539/elt.v6n12p1

Stewart, M. K., Hilliard, L., Stillman-Webb, N., & Cunningham, J. M. (2021). The Community of Inquiry in writing studies survey: Interpreting social presence in disciplinary contexts. *Online Learning*, *25*(2), 73–94. http://dx.doi.org/10.24059/olj.v25i2.2275

Storch, N. (1998). A classroom-based study: Insights from a collaborative text reconstruction task. *ELT Journal*, *52*(4), 291–300. https://doi.org/10.1093/elt/52.4.291

Storch, N. (2004). Using activity theory to explain differences in patterns of dyadic interactions in an ESL class. *The Canadian Modern Language Review*, *60*(4), 457–480. https://doi.org/10.3138/cmlr.60.4.457

Swain, M., & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *Modern Language Journal*, *82*(3), 320–337. https://doi.org/10.1111/j.1540-4781.1998.tb01209.x

Traver A. E., Volchok, E., Bidjerano, T. & Shea, P. (2014). Correlating community college students' perceptions of community of inquiry presences with their completion of blended courses. *The Internet and Higher Education*, *20*, 1–19. https://doi.org/10.1016/j.iheduc.2013.09.001

Veracruzana, M. G. (2011). Speaking strategies used BA ELT students in public universities in Mexico. *MEXTESOL Journal*, *35*(1), 1–22.

Wenden, A., & Rubin, J. (1987). *Learner strategies in language learning*. Prentice Hall International.

Yang, L., & Mohd, R. B. S. (2020). The relationship between critical thinking and the community of inquiry model: a quantitative study among EFL university students in China. *International Journal of Adolescence and Youth*, *25*(1), 965–973.

Yeh, S. W., & Chen, C. T. (2019). EFL learners' peer negotiations and attitudes in mobile-assisted collaborative writing. *Language Education & Assessment*, *2*(1), 41–56. https://doi.org/10.29140/lea.v2n1.100

Yim, S., & Warschauer, M. (2017). Web-based collaborative writing in L2 contexts: Methodological insights from text mining. *Language Learning & Technology*, *21*(1), 146–165. http://hdl.handle.net/10125/44599

Zenouzagh, Z. M. (2020). Syntactic complexity in individual, collaborative and E-collaborative EFL writing: mediating role of writing modality, L1 and sustained development in focus. *Educational Technology Research and Development*, *68*(6), 2939–2970. https://link.springer.com/article/10.1007/s11423-020-09818-w

Zhang, L. J., & Qin, T. L. (2018). Validating a questionnaire on EFL writers' metacognitive awareness of writing strategies in multimedia environment. In A. Haukas & M. Dypedahl (Eds.), *Metacognition in language learning and teaching* (pp. 157–177). Routledge.

Zhu, X.-h. (2007). What do we know about the relationship between speaking and writing in college-level ESL students? *US-China Foreign Language*, *5*(3), 31–40.