Factors affecting perceived learning in asynchronous online foreign language courses

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Abstract

As the world becomes increasingly interconnected, the demand for asynchronous online language learning has surged, highlighting the need for engaging and effective instructional design in this area. Online educators are challenged to meet diverse learner needs and optimize learning outcomes in asynchronous environments. Learners face various challenges, such as limited real-time interaction, which can lead to feelings of isolation and delays in feedback. Additionally, learners must develop strong self-discipline and time management skills. Other complicating factors include technology accessibility, cultural and linguistic barriers, and maintaining motivation throughout the learning process.

To address these issues, it is essential to examine factors like online learner motivation and other determinants of learning outcomes. This study, drawing on Garrison, Anderson, and Archer's Community of Inquiry (CoI) framework and Deci and Ryan's intrinsic motivation theory, proposed and tested a model of perceived learning in online language courses. Data were collected from 140 learners with prior experience in asynchronous courses through an online questionnaire and analyzed using Structural Equation Modeling to test hypotheses and assess model fit. The results demonstrated that the model had an excellent fit (p-value = 1.000, SRMR = 0.0680, CFI = 1.0000, GFI = 0.977, RMSEA = 0.00004).

The findings supported the mediating effect of the CoI framework's three interactions -- social presence, cognitive presence, and teaching presence -- on perceived learning through intrinsic motivation. These interactions, when mediated by intrinsic motivation, positively influenced perceived learning, though they did not directly predict learning outcomes. This study suggests a new model for developing effective asynchronous online language courses and recommends further research to explore additional constructs and refine this model.

Keywords: asynchronous online language learning, a community of inquiry framework, interactions in asynchronous class, intrinsic motivation, social presence, cognitive presence, teaching presence

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1. Research Background

In recent years, online courses have emerged as one of the primary channels for education, widely recognized as practical and useful due to their low cost and accessibility to a vast number of students, regardless of time and location (Armstrong & Thornton, 2012). The benefits of asynchronous online courses further enhance these advantages, offering cost-effectiveness through economies of scale, self-paced learning features, and increased flexibility and convenience for learners (Delahunty, 2018). The COVID-19 pandemic and the ensuing social distancing measures have significantly accelerated the demand for asynchronous online courses, as educational institutions worldwide pivoted to online learning to maintain continuity (Hodges et al., 2020). Moreover, the growing emphasis on lifelong learning (LLL) supports this trend, suggesting that the future of education is increasingly oriented towards asynchronous online courses (Milana, 2012; Lockee, 2021).

Language courses are significantly impacted by online learning trends. Various technological tools have been integrated into successful courses, such as using social networks in pedagogical approaches to increase instructors' presence (Aubry, 2013; Kilis & Yıldırım, 2019), and establishing class discussions via asynchronous online discussion forums (AODF) (Bakar, Latiff, & Hamat, 2013; Wei & Chou, 2020). However, major education platforms like Udemy™ and Coursera™ currently offer only a limited number of asynchronous online language courses, most of which are targeted at beginners.

Online asynchronous language learners encounter numerous challenges that can significantly impact their learning experience. These challenges often stem from difficulties in developing productive language skills, maintaining motivation and self-regulation, limited peer interaction, and a lack of strong social presence (Bernard & Rubalcava, 2000; Sun, 2014; Martin, Wang, & Sadaf, 2020). The absence of real-time interaction and communication can lead to feelings of isolation and reduce opportunities for practicing language skills (Wei, 2020). Additionally, the asynchronous nature of online courses often results in delayed feedback, further hindering the learning process (Li & Lalani, 2020). Learners may also struggle with motivation and self-regulation, as the lack of a structured classroom environment makes it challenging to stay engaged and manage time effectively (Hartnett, 2016; Barnard-Brak et al., 2010). Furthermore, the technical skills required to effectively engage in asynchronous learning add another layer of complexity to the implementation of these courses (Song, Murphy, & Fisher, 2020). These factors collectively create challenges for educational institutions, students, and instructors in fully embracing asynchronous online content for foreign language teaching. A lack of understanding of these limitations by both students and instructors could potentially undermine the effectiveness of language education. Therefore, analyzing the success factors in this field is crucial, as it could significantly benefit language academia and expand opportunities for individuals interested in learning a language for educational, career, entertainment, or multicultural study purposes (Osborn, 2006; Rolim et al., 2019).

The focus of most research is on the effectiveness of asynchronous online courses, students' motivation, satisfaction, effectiveness, and perceived learning, or on the language courses via online synchronous channels. Nevertheless, researchers have conducted only a small number of studies on this particular subject area in an asynchronous format. Given the limited research on asynchronous online language courses, this paper seeks to fill this gap by exploring the factors affecting perceived learning in this context.

To guide the reader through the structure of this study, the following sections are organized as follows: the literature review covers key theoretical frameworks and methodologies relevant to the study. A detailed methodology section follows, outlining the research design, data collection, and analytical approach. The results section presents the findings, emphasizing the study's key outcomes. The discussion interprets these results in the context of existing literature and the study's implications for online language learning. The paper concludes with a limitations and recommendations section, offering insights for future research.

2. Literature review

Asynchronous online language courses have transformed the educational landscape, offering flexibility and convenience for learners to engage with course materials. In this context, the Community of Inquiry (CoI) framework, proposed by Garrison, Anderson, and Archer, has gained prominence by emphasizing the importance of social presence, cognitive presence, and teaching presence. These interactions within asynchronous online courses play a vital role in shaping perceived learning outcomes. Additionally, exploring motivation theories, such as self-determination theory and intrinsic motivation, deepens our understanding of learners' engagement and progress. Language pedagogy, particularly language acquisition theories and the use of discussion to enhance productive skills, further improves the design and delivery of effective online language courses.

2.1 Asynchronous online courses

The Community of Inquiry Framework

The Community of Inquiry (CoI) framework is conceptually grounded in theories of teaching and learning in higher education and is philosophically consistent with John Dewey's work on community and inquiry (Shelton, Hung, & Lowenthal, 2017). The main goal of the framework is to provide a heuristic understanding and methodology for studying the effectiveness of ‘computer conferencing’ in educational settings. Originally developed to describe and measure elements of collaborative and educational experiences, the model has since been adapted to various educational contexts, including asynchronous online learning (Garrison, Anderson, & Archer, 2001; Rourke, 2001).

In the context of asynchronous online learning, the model was refined into three constituent elements (Garrison, Anderson, & Archer, 2001) to describe interactions in computer-mediated education. These elements were later interpreted and validated by Swan (2001) as follows:

Social Presence (SP): This element refers to the interaction among students and is rooted in Mehrabian’s (1969) concept of immediacy, which emphasizes the importance of communication behaviors in enhancing psychological closeness and peer interaction. In asynchronous online courses, particularly in Thailand, peer interaction is predominantly text-based. Despite the absence of physical interaction, studies such as Lowenthal (2010a) have shown that social presence can still foster strong relationships among students. For instance, Lowenthal found that using Twitter as a platform for class interaction helped students feel more connected, allowing for deeper personal connections through textual communication. In this study, social presence is defined as virtual interactions among students, including texting, commenting, and chatting.

Cognitive Presence (CP): Cognitive presence is defined as "the extent to which participants in a community of inquiry are able to construct meaning through sustained communication" (Garrison, Anderson, & Archer, 2000, p. 89). In asynchronous online courses, cognitive presence represents the interaction with content necessary to achieve effective collaboration and deep learning (Rourke, 2001). Recent studies have continued to emphasize the importance of cognitive presence in facilitating meaningful learning experiences in online environments (Garrison, 2017; Kilis & Yıldırım, 2019).

Teaching Presence (TP): This element refers to the interaction between instructors and students. Teaching presence involves the design, facilitation, and direction of cognitive and social processes to achieve meaningful learning outcomes. In the context of asynchronous online language courses, teaching presence is assessed through course quality and students' perceived learning, as in Swan’s (2001) study. In Thailand, cultural factors often lead to a higher teaching presence, as personal tutors and educational providers frequently use humor, storytelling, and distinct personal characteristics to engage students and maintain their attention (Kilis & Yıldırım, 2019).

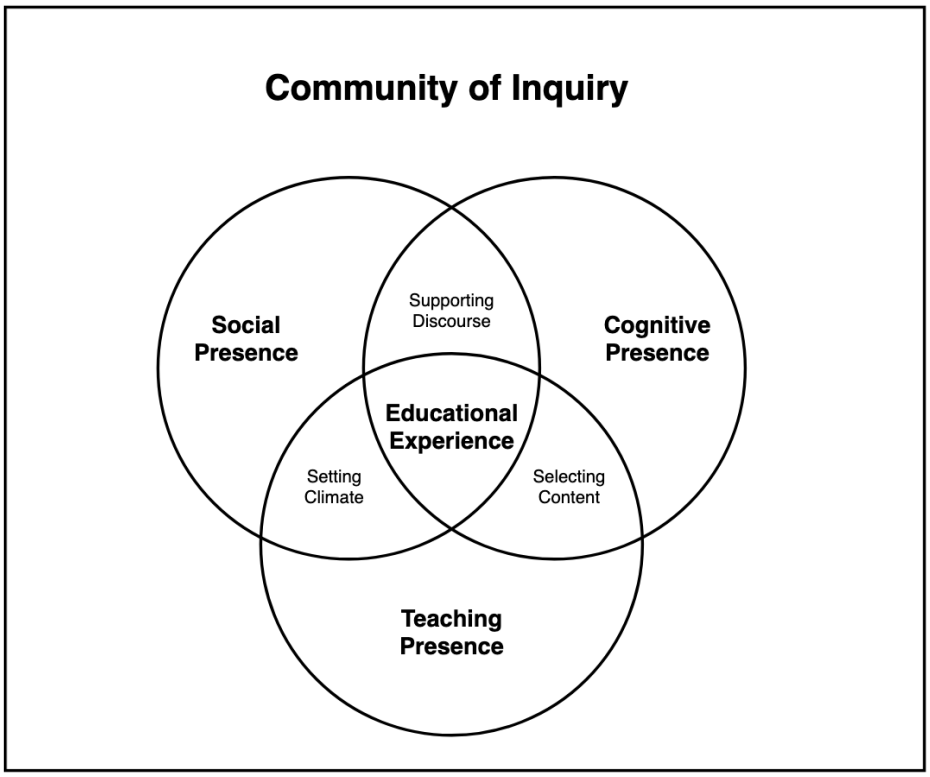

Figure 1 CoI Framework (Garrison, Terry & Archer 2010)

Interaction in asynchronous online courses

The primary focus of academia in online education is to address the challenges of interaction and collaboration in online classrooms. As Swan (2002) noted, the main concern revolves around the quality of interactions within the classroom, which significantly impacts learning outcomes. Interactions among peers, instructors, and content are crucial as they positively influence learners' perceived learning and enjoyment. This aligns with findings by Wu and Hiltz (2004), who reported that interaction with instructors, along with instructor-generated videos, is positively correlated with students' motivation and enjoyment, enhancing their perceptions of learning in an asynchronous context. Similarly, Draus, Curran, and Trempus (2014) demonstrated that the style and content of instructor-generated videos can significantly affect students' motivation and perceived learning.

Further research has explored how different forms of interaction contribute to learner satisfaction and performance. Choe et al. (2019) found that the style of video content significantly impacts learners' satisfaction with the course and their overall learning performance. This finding underscores the importance of carefully designing video materials to enhance engagement in asynchronous courses. Additionally, the issue of loneliness and lack of belonging in online courses has been examined, with Shelton, Hung, et al. (2017) highlighting that interaction—whether between students or between students and instructors—along with commitment and engagement levels, can predict student success in online learning environments.

The role of interaction with Learning Management Systems (LMS) has also been a subject of study. Researchers have identified key variables related to platform interaction that affect learning outcomes. For instance, Chiu and Hew (2018) analyzed cognitive processing activities like viewing, commenting, and voting in asynchronous online discussions in MOOCs. They found that viewing and commenting significantly impact learning outcomes. Similarly, DeNeui and Dodge (2006) observed that the frequency of LMS usage positively correlates with academic performance, emphasizing the importance of active engagement with the learning platform.

Perceived Learning

One way to assess the success of online courses is through perceived learning. As elaborated by Caspi & Blau (2008), “Perceived learning is the set of beliefs and feelings one has regarding the learning that has occurred. Perceived learning is a retrospective evaluation of the learning experience. 'Perceived learning' may emerge from two sources: cognitive and socio-emotional” (p. 327). It is the sense of knowledge acquired that the student

perceives. Cognitive perceived learning involves the new understanding and knowledge that students have achieved, whereas socio-emotional perceived learning relates to experiences and feelings.

2.2 Motivation theories

Motivation is one of the major factors affecting the success of learning outcomes (Taurina, 2015). It can predict behavioral intentions to learn, participate, and collaborate in class, which in turn contributes to satisfaction and success in learning (Bailey, Almusharraf, & Hatcher, 2021). In the context of adult foreign language learners, intrinsic motivation also plays an important role in learner outcomes (O'Reilly, 2014). It provides students with insights into the underlying reasons for their goals to participate and complete the course (Howarth, D'Alessandro, Johnson, & White, 2016).

Self-determination theory and intrinsic motivation

Self-determination motivation theory focuses on the type of motivation and its quality, impacting various aspects of learners (Deci & Ryan, 2008). In the context of the asynchronous learning environment, the preference to study asynchronously, considered intrinsic motivation, was found to have a significant influence on students' satisfaction in online courses, which in turn results in the behavioral intention to engage in language learning technology (LLT) or continue using asynchronous online language courses (Bailey, Almusharraf, & Hatcher, 2021). Self-determination theory has been proven to have a positive correlation with learning outcomes and behavior in class. This was assessed in the study through various constructs and ultimately evaluated using observed variables: engagement, achievement, learning, and satisfaction (Chen & Jang, 2010). Furthermore, as explored by Eom and Ashill (2016), intrinsic motivation has positive correlations with learning outcomes (Path Coefficient = +.10, p-value < .01, and t-value = 2.68) but shows no correlation with students' satisfaction. They also found that extrinsic motivation does not have a significant impact on either students' satisfaction or learning outcomes. Thus, incorporating only intrinsic motivation into the framework could be a feasible approach to assess whether motivation has a critical impact on students' perceived learning or even their overall satisfaction.

2.3 Language pedagogy

This section explores key theories and practices in language pedagogy, particularly within online and asynchronous learning environments. It examines foundational language acquisition theories and the role of discussion in enhancing productive language skills.

Language acquisition theories

Existing research focuses on exploring the most effective pedagogy to motivate students to learn foreign languages with satisfaction and ease while retaining the learned content. Socio-cultural Theory (SCT), which integrates cognitive and socio-cognitive psychology, dominates language pedagogy and is intended to provide learners with more personalized content, a non-monolingual view of languages, and a more globalized context in the learning material. Long-held traditions in language classes, such as the resistance to translanguaging and non-inclusive interactions, are being questioned (Larsen-Freeman, 2018). Nevertheless, due to the limited interaction permitted by asynchronous online language courses, this pedagogy is mostly investigated in terms of course content. On the other hand, Learning Theory has been researched primarily for its practicality in online foreign language courses. Popular language gaming applications like Duolingo have also conducted research to study the learning strategies adopted by players and to measure the effectiveness of each strategy (Settles, Brust, Gustafson, Hagiwara, & Madnani, 2018).

Discussion as a way to improve productive skills

Teaching and practicing productive skills in an asynchronous environment is one of the significant challenges that many researchers have been examining (Sun, 2014). Many studies suggest a need for discussion in developing oral and written communication skills to promote collaboration and interaction among students. Asynchronous online discussion forums (AODFs) have proven to be useful tools for establishing communication channels for students. Due to their anonymity and the extended time period provided for preparing responses compared to face-to-face classes, many students deemed them great channels to practice their English with higher confidence (Bakar, Latiff, & Hamat, 2013). Experimental research has shown that incorporating social networks can enhance instructors' presence and interactions. As reported by Aubry (2013), the presence of course instructors on Facebook, including profile pictures and the use of walls and other platform features, led to a higher level of intrinsic motivation in learners.

Data gathered on foreign language pedagogy and peer interactions indicates that these approaches can significantly boost learners' productive language skills.

Research questions

This study seeks to address two key research questions:

I) Can the CoI framework, which has been shown to significantly correlate with perceived learning and student satisfaction in the context of asynchronous online courses, be applied to language teaching?

II) Which factor is the most significant component for developing a successful asynchronous online language course, as assessed through perceived learning?

By examining these questions, this research aims to contribute to the understanding of effective approaches in asynchronous online language education and inform the development of successful language teaching practices.

3. Methodology

In this section, the methodology employed in this study is outlined, including the research framework and hypotheses. The chosen methodology serves as a guide for rigorously addressing the research questions and testing the hypotheses. This systematic methodology facilitates a comprehensive approach to data collection, analysis, and interpretation. Outlining the research methodology, framework, and hypotheses in this section establishes the foundation for ensuring the study's credibility and dependability. Additionally, details about the research method, survey instrument, and participant proportion are provided to offer a comprehensive understanding of the study's methodology.

3.1 Research Framework

In accordance with the literature review, the research framework hypothesized in this study is based on the conceptual framework of the CoI model of online learning (Garrison, Anderson, & Archer, 2001; Rourke, 2001). As previously explored and examined by Swan (2001) in the context of asynchronous online courses, the three interactions are: 1) Interaction among students, or Social Presence (SP); 2) Interaction with content, or Cognitive Presence (CP); and 3) Interaction with instructors, or Teaching Presence (TP). Swan's research demonstrated that satisfaction resulting from sufficient interaction in class can positively influence perceived learning. When an asynchronous online class includes all these elements of interaction, it is likely to lead to higher levels of student satisfaction (Swan, 2001).

In addition to the mentioned framework, motivation also has a significant impact on student performance and satisfaction (Bailey, Almusharraf, & Hatcher, 2021). As demonstrated by Ryan & Deci (2000) in self-determination theory, intrinsic motivation is one of the most influential positive factors that stimulate students to find strategies to overcome challenges such as learning difficulties. The idea of incorporating intrinsic motivation into the CoI framework has been previously investigated. Kilis & Yıldırım (2018) studied the impact of interactions in the CoI framework along with motivation and autonomy components (Agency Presence – AP) and found that motivation is one of the most impactful elements that can positively predict students' learning outcomes. Thus, it is feasible and valid to hypothesize that intrinsic motivation will positively influence learning outcomes in this study's framework.

As a way to measure the learning outcome of foreign language learning students, “perceived learning” could be one of the most reasonable and practical options considering the limited resources at hand.

The following figure illustrates the hypothetical framework of this study.

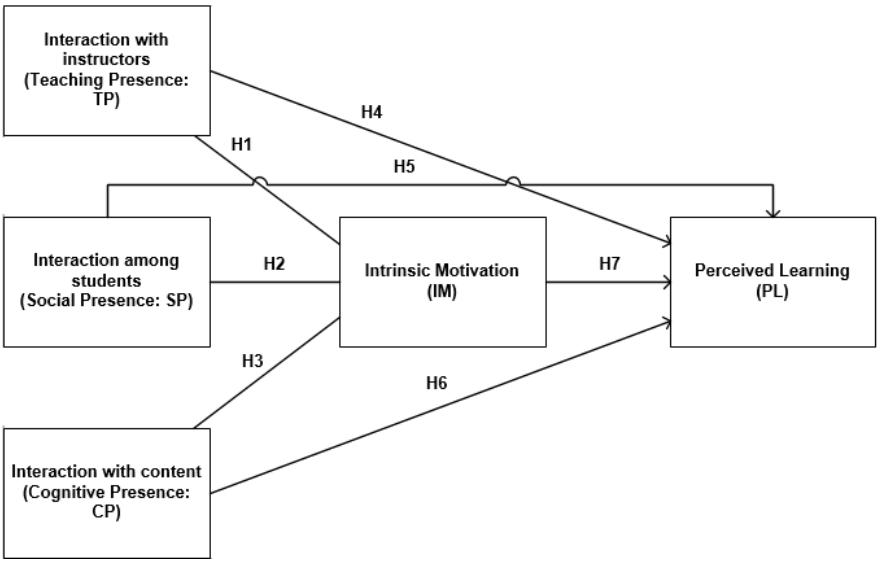

Figure 2 Hypothesis framework

3.2 Research Hypothesis

This section presents a set of hypotheses to investigate the relationships and effects of various factors on perceived learning in the context of asynchronous online language courses.

Hypothesis 1: Students with a high level of interaction with peers will have higher intrinsic motivation, leading to an indirect effect on perceived learning.

Hypothesis 2: Students with a high level of interaction with class content and materials will have higher intrinsic motivation, leading to an indirect effect on perceived learning.

Hypothesis 3: Students with a high level of interaction with instructors will have higher intrinsic motivation, leading to an indirect effect on perceived learning.

Hypothesis 4: The level of social presence has a direct impact on perceived learning.

Hypothesis 5: The level of cognitive presence has a direct impact on perceived learning.

Hypothesis 6: The level of teaching presence has a direct impact on perceived learning.

Hypothesis 7: Students with a higher level of intrinsic motivation will learn more in class.

These hypotheses lay the foundation for examining the complex dynamics among interaction, presence, intrinsic motivation, and perceived learning, providing insights into the factors that contribute to effective online language education.

3.3 Research method

This research utilized a quantitative, cross-sectional design through a self-report survey to study the impact of classroom interactions -- including social, cognitive, and teaching presence according to the CoI framework -- and intrinsic motivation on perceived learning, based on students' past learning experiences with asynchronous online language courses.

3.4 Survey Instrument

After conducting an extensive literature review, the impact of the three components of the CoI framework (developed by Garrison, Anderson, and Archer in 2000) and intrinsic motivation on perceived learning was assessed using a set of survey questions (Appendix A). The self-report questionnaire was adapted from previous research papers, including: 1) the CoI measure developed by Shea and Bidjerano (2012), which aimed to assess the effect of Teaching Presence (TP), Social Presence (SP), and Cognitive Presence (CP) through learning

presence, and 2) the Intrinsic Motivation (IM) questionnaire from research on motivation in different academic fields conducted by Glynn, Brickman, Armstrong, and Taasoobshirazi (2011).

The survey contained a total of 61 questions. The first six questions aimed to screen participants and collect demographic details, including the language courses they had taken in the past. Questions twenty to sixty-one were designed to assess students' experiences and perceptions related to each component of the hypothetical framework, using a 5-level Likert scale. Questions seven to nineteen measured participants' perceptions and experiences of teaching presence in the asynchronous language courses they attended. Questions twenty to twenty-nine focused on observing social interactions that occurred during the online class, particularly through social media platforms, such as getting to know other students, commenting, or discussing with classmates. Cognitive presence was measured through questions thirty to forty-two, which assessed the level of interaction with content and activities during the class in relation to a positive learning experience. Next, the intrinsic motivation of participants was observed through questions forty-three to fifty-one, with satisfaction and willingness to participate in class being key criteria. Finally, perceived learning, the endogenous variable in the hypothetical framework, was studied through questions fifty-two to sixty-one, where perceived learning was interpreted as the positive learning outcomes that students subjectively perceived.

To ensure the quality of the questionnaire beyond the pilot test, we assessed its validity. This process involved having three experts review the questionnaire. They evaluated the alignment between the questions and the objectives or content using the Index of Item Objective Congruence (IOC) technique, selecting only questions with an IOC value between 0.5 and 1.0. Before finalizing the survey, pilot testing was conducted to ensure internal reliability. A total of 30 participants took this test. Analysis of the pilot datasets showed that Cronbach's alpha for each construct exceeded 0.9, indicating high reliability of the survey items.

3.5 Participants and data collection

The 61 survey questions in Thai were created using Google Forms™. The survey URL was shared on social media platforms, specifically Facebook™ groups and Line™ groups. Data collection occurred from December 2021 to January 2022.

This method was chosen because most asynchronous online language courses in Thailand are conducted via social media. For instance, some private tutors charge a subscription fee and post asynchronous videos in Facebook™ and Line™ groups. The targeted participants were those in Thailand who had experience with asynchronous online language courses. Due to limited resources, probability sampling and access to a large pool of participants with specific experiences were not feasible. Therefore, voluntary sampling was used to collect survey data. Nevertheless, this method suffices for data analysis purposes according to the pre-analysis in G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), given that the statistical power (1-β) is 0.95, alpha is 0.05, two tails, and the correlation p H1 parameter is 0.3 for the exact test family, bivariate normal model: correlation statistical test. Furthermore, according to the sample size required for SEM analysis, which is the method employed in this research, obtaining a sample size exceeding 50 is beneficial for the CFI, which is one of the four fit indices (as cited in Iacobucci, 2010, p. 91).

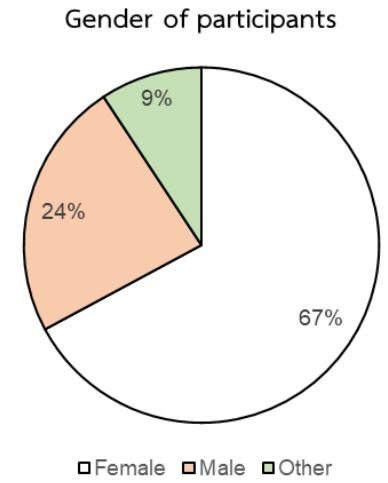

Figure 3 Distribution of participants by gender.

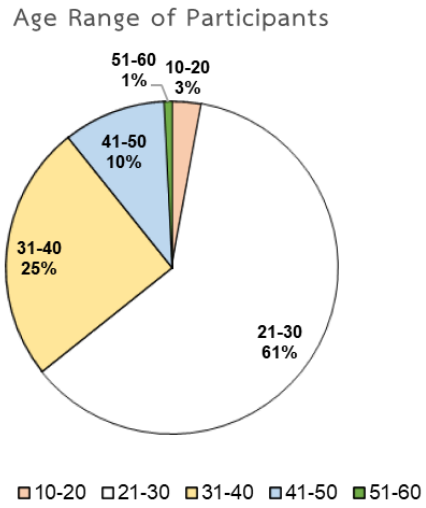

Figure 4 Distribution of participants by age range.

Ultimately, 140 valid responses were received, including 30 from the pilot test. The majority of participants were aged 21-30 years old (61% of the total sample), and 67.14% were female. The top three languages studied by participants were English (76.43%), German (13.57%), and Chinese (12.14%).

As seen in Figures 3 and 4, there is heterogeneity in gender, age range, and language courses attended, which contributes to the generalizability of the study.

3.6 Data analysis

The collected data underwent thorough analysis using JASP software version 0.16.0.0, employing Structural Equation Modeling (SEM) to ascertain correlations between the dependent variables (TP, SP, CP, and IM) and perceived learning (PL). To gauge the appropriateness of the hypothesized model against the empirical data, $\chi 2$ statistics were employed along with four indices recommended by Hu and Bentler (1998): p-value > 0.05, SRMR close to 0.09 or lower, CFI close to 0.95 or higher, and RMSEA < 0.05.

The analysis results indicated that the model is a good fit for the data, considering the following indices: a p-value of 1.000, an SRMR (Standardized Root Mean Square Residual) of 0.0680, a CFI (Comparative Fit Index) of 1.0000, and an RMSEA (Root Mean Square Error of Approximation) of 0.00004.

4. Results

This section presents the findings of the study in accordance with the two research questions and the hypothetical framework. In response to the first research question -- whether any of the three elements in the CoI framework could predict perceived learning -- Fig. 5 shows that the three interactions in the CoI framework do not have a direct statistically significant impact on perceived learning. Specifically, the p-values for each interaction are not significant: teaching presence (TP) = 0.464, social presence (SP) = 0.117, and cognitive presence (CP) = 0.365. The regression coefficient estimates for these interactions on perceived learning (PL) are also relatively small: teaching presence = 0.129, social presence = 0.089, and cognitive presence = 0.130.

Regarding the second research question, which investigated the most significant component for achieving a successful asynchronous online language learning experience, intrinsic motivation (IM) appears to be the key factor. As indicated in Table 2, intrinsic motivation is the only predictor of perceived learning. Its impact is notably large (regression coefficient = 0.784) and statistically significant (p-value < 0.001).

When considering the direct effects of the three interactions (TP, CP, and SP) on intrinsic motivation (IM), the data suggests that cognitive presence (CP) has the strongest correlation with intrinsic motivation, with a coefficient of 0.654 and a p-value < 0.001. Teaching presence (TP) is the second strongest predictor of intrinsic motivation (IM), with a direct effect coefficient of 0.361. However, teaching presence has the lowest statistical significance (p-value = 0.039) among the interactions. Social presence (SP), on the other hand, has a mild impact on intrinsic motivation, with a coefficient of 0.196 and a p-value < 0.001.

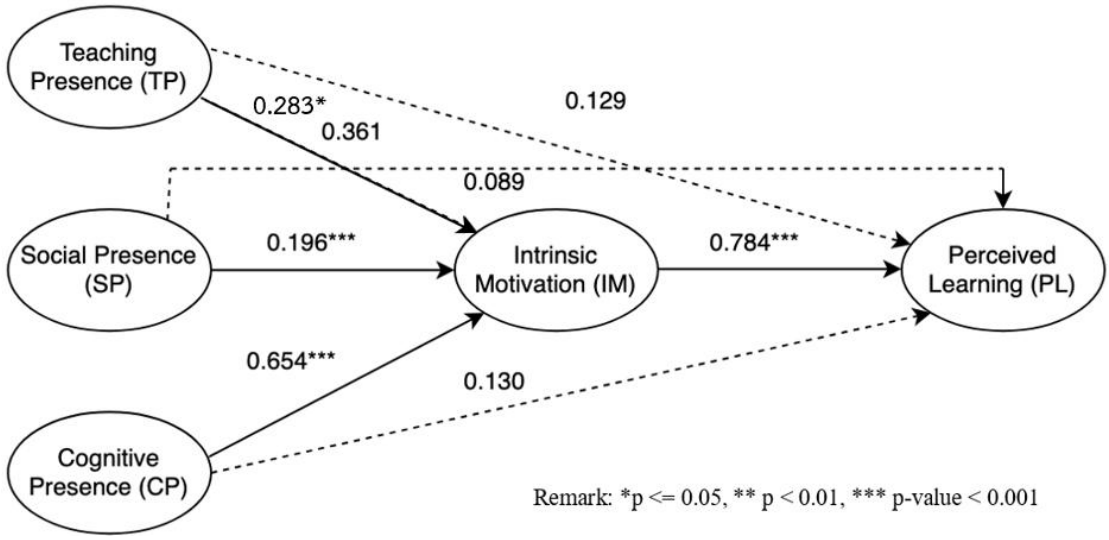

Figure 5 Path diagram and parameter estimate of each variable.

Although this study revealed that the three interactions (TP, SP, and CP) do not directly predict perceived learning (PL), the analysis shows that all three interactions have a mediated effect on perceived learning through intrinsic motivation (IM). As indicated in Fig. 5 and Table 1, cognitive presence (CP) has the strongest impact on perceived learning through intrinsic motivation, with a coefficient of 0.513 and a p-value < 0.001. Similarly, social presence (SP) has a mild effect on perceived learning when mediated through intrinsic motivation (IM), with a coefficient of 0.154 and a p-value < 0.001. Although teaching presence (TP) has the second strongest mediating effect among the interactions in the CoI framework, it is not a strong predictor of perceived learning due to its lower statistical significance (p-value ≤ 0.05).

Table 1 Parameter estimates of direct and indirect effects of independent variables on dependent variables.

Dependent Variable	Effect type	Independent Variables			
		TP	SP	CP	IM
IM	Direct	0.361	0.196***	0.654***	-
	Indirect	-	-	-	-
PL	Direct	0.129	0.089	0.130	0.784***
	Indirect	0.283*	0.154***	0.513***	-

Remark: *p <= 0.05, ** p < 0.01, *** p-value < 0.001

To conclude, as shown in Table 2, the results indicated that the direct effects of teaching presence (TP), social presence (SP), and cognitive presence (CP) on perceived learning (PL) (H4, H5, and H6) were not statistically significant. However, when analyzing the mediating effects of these three interactions (TP, SP, and CP) on perceived learning (PL), a significant influence of CoI interactions through intrinsic motivation (H1, H2, and H3) was observed. Additionally, intrinsic motivation (IM) emerged as the strongest predictor of perceived learning compared to the other components of the study framework (H7).

Table 2 Hypothesis test summary.

Hypothesis	Description	Coefficient	p-value	Testing result
H1	Students with high level of interaction with instructors will have higher intrinsic motivation, which has an indirect effect on perceived learning.	0.283	0.02	True
H2	Students with high level of interaction with peers will have higher intrinsic motivation, which has an indirect effect on perceived learning.	0.154	< 0.001	True
H3	Students with high level of interaction with class contents and materials will have higher intrinsic motivation, which has an indirect effect on perceived learning.	0.513	< 0.001	True
H4	Level of teaching presence has a direct impact on perceived learning.	0.129	0.464	False
H5	Level of social presence has a direct impact on perceived learning.	0.089	0.117	False
H6	Level of cognitive presence has a direct impact on perceived learning.	0.130	0.365	False
H7	Students with a higher level of intrinsic motivation will learn more in class.	0.784	< 0.001	True

5. Discussion

This study investigates the Community of Inquiry (CoI) framework and its three components -- social presence (SP), cognitive presence (CP), and teaching presence (TP) -- along with intrinsic motivation (IM), in relation to perceived learning. To achieve this aim, data from 140 valid responses were analyzed using structural equation modeling and path diagrams. The findings are discussed and concluded separately for each predictor variable.

The three CoI interactions were included in the framework and tested to assess their practicality. Previous research has consistently identified these interactions as critical predictors of student learning outcomes (Garrison, Anderson, & Archer, 2001). Furthermore, later studies indicated that these interactions contribute significantly to perceived learning in asynchronous learning environments (Swan, 2001; Eom & Ashill, 2016; Shelton, Hung, & Lowenthal, 2017).

However, contrary to expectations based on the literature, social presence (SP), cognitive presence (CP), and teaching presence (TP) failed to directly predict perceived learning (PL) in this study. The analysis revealed that none of the three CoI components had significant correlations or statistical significance in predicting perceived learning. This outcome suggests that the CoI framework's interactions alone may not be the strongest predictors of perceived learning in the specific context of asynchronous online foreign language learning.

Several possible explanations could account for these findings. One explanation could be that the CoI interactions serve more as mediators of other influential factors, such as self-regulation, motivation, or metacognition, which have been shown to directly affect learning outcomes (Rourke, 2001; Kilis & Yıldırım, 2018). Another possibility is related to the complexity of learning processes and the diversity of learner preferences. Learning, particularly in asynchronous online environments, is a complex and multifaceted process. It involves not just interaction with content, peers, or instructors but also how learners process and internalize this information. The CoI framework focuses heavily on interaction, which, while important, may not capture the full spectrum of cognitive activities necessary for perceived learning. Moreover, the diversity in learner preferences may also contribute to the lack of a direct correlation between CoI components and perceived learning. Learners in asynchronous environments often come from diverse backgrounds with varying learning styles, preferences, and prior experiences. Some students may rely more on internal motivation and self-directed learning strategies, making them less dependent on social or teaching presence. For example, introverted learners might engage less in peer interactions but still achieve high perceived learning through deep engagement with content (Boekaerts, 2016). Consequently, the CoI components may not uniformly impact all learners, leading to weaker direct correlations with perceived learning.

Another possibility is that while these interactions do not directly influence perceived learning, they contribute to increased levels of intrinsic motivation or satisfaction, which in turn lead to better learning outcomes in asynchronous environments (Aubry, 2013; Wu & Hiltz, 2004). These findings align with studies that highlight the importance of intrinsic motivation as a key driver of successful learning experiences in online settings (Deci & Ryan, 2008; Choe et al., 2019).

Considering teaching presence (TP), the lack of a direct impact on perceived learning in asynchronous online foreign language courses may be attributed to the concept of learner autonomy. As Fotiadou, Angelaki, and Mavroidis (2017) suggest, self-paced online learning, particularly among adult learners, requires students to rely more heavily on their own abilities, take increased responsibility for their learning, and maintain heightened awareness of their learning goals. This autonomy might diminish the perceived influence of teaching presence because learners are navigating the course content independently and engaging with materials at their own pace. This aligns with the findings of Ng & Przybylek (2021) in the context of foreign language vocabulary learning, where individual differences and motivation were found to have a more substantial impact on learning outcomes than the presence of an instructor in asynchronous videos. Additionally, their study concluded that teaching presence did not significantly affect learning outcomes or learners' scores, further supporting the idea that autonomy might play a more crucial role.

Regarding social presence (SP), the limited direct impact on perceived learning may be influenced by the diverse backgrounds and motivations of learners in online foreign language courses. Alsadoon (2018) found that while social presence is a significant predictor of learner satisfaction in mobile learning, variables such as gender and the number of previous courses taken also impacted learner satisfaction. Female learners, for example, exhibited higher satisfaction with mobile courses than their male counterparts, indicating varying expectations between genders. Additionally, learners' prior experience with mobile courses was a significant predictor of their

satisfaction. These findings suggest that individual perceptions of learning, shaped by factors like background and demographics, might explain why social presence alone does not strongly predict perceived learning. Moreover, Kreijns, Xu, and Weidlich (2022) argue that social presence lacks precision in measurement due to its ambiguous and difficult-to-operationalize definition, tracing this issue back to the original social presence theory by Short et al. (1976).

The absence of a direct influence of cognitive presence (CP) on perceived learning might be linked to the inherent complexity of foreign language acquisition in asynchronous online courses. Henrikson (2014) found no significant association between the design of instructor presentations and the levels of cognitive presence demonstrated in online discussion forums. The study did not provide evidence that instructor presentation design influenced cognitive presence in these settings. Additionally, empirical research by Dimitrova and Todorova (2020) on students' experiences in online foreign language classes during the COVID-19 pandemic revealed that while a high percentage of students were motivated to engage in online learning, they still preferred traditional classroom settings. This preference could impact the perceived learning experience, as online foreign language courses might not be as favored as traditional classes. Furthermore, Garrison et al. (2001) argue that cognitive presence requires sustained and iterative inquiry, including prompt feedback, which is often constrained in online foreign language courses due to time limitations and reduced opportunities for real-time interaction.

When considering the indirect effects of the three interactions—social presence (SP), cognitive presence (CP), and teaching presence (TP)—through intrinsic motivation (IM) on perceived learning, the data suggest that all three interactions are crucial in shaping students' learning perceptions. This strongly implies that, in line with the CoI framework, higher levels of these interactions in class significantly enhance students' enjoyment and positive impressions of the course, which, in turn, boosts their intrinsic motivation towards the learning experience. This finding is consistent with previous research conducted in asynchronous learning environments (Aubry, 2013; Wu & Hiltz, 2004; Richardson, Maeda, & Swan, 2019).

As demonstrated by the results of this study, intrinsic motivation (IM) is the strongest direct predictor of students' perceived learning. The findings also emphasize the critical role of intrinsic motivation in influencing students' learning performance (Deci & Ryan, 2008; Ryan & Deci, 2020). This suggests that education providers should focus more on fostering intrinsic motivation in asynchronous online language courses, which can be achieved by increasing and intensifying interactions in such settings. For instance, increasing teaching presence (TP) by making instructors' social media profiles more visible, as suggested by Aubry (2013), has been shown to boost motivation, which in turn mediates learning outcomes. Additionally, satisfaction and engagement—key components of intrinsic motivation—were found to help prevent students from failing courses, as indicated by the predictive model developed by Shelton et al. (2017).

In addressing the research questions, the first question—whether the CoI framework could be applied to language pedagogy in an asynchronous setting—is partially rejected by the empirical data. The analysis shows that the CoI interactions (social presence, cognitive presence, and teaching presence) do not directly impact perceived learning in this context. However, the alternative hypothesis is not entirely dismissed. As discussed earlier, when intrinsic motivation (IM) acts as a mediator, these interactions have a significant indirect impact on language learning in asynchronous online settings. Regarding the second research question, which seeks to identify the most critical factor predicting perceived learning -- a construct used to define a successful asynchronous language course -- intrinsic motivation (IM) is clearly the key factor, as indicated by the data analysis. The data align with previous research suggesting that other factors may mediate the learning experience via intrinsic motivation and satisfaction (Choe et al., 2019; Wu & Hiltz, 2004).

Given these findings, educational providers, policy planners, and academics involved in foreign language pedagogy should prioritize incorporating intrinsic motivation into course design and implementation. This study highlights that one effective strategy to enhance intrinsic motivation is by increasing social presence, cognitive presence, and teaching presence in asynchronous classes. By maximizing these interactions, educators can promote student satisfaction, engagement, and intrinsic motivation, which are crucial for successful learning outcomes.

To increase social presence, educational providers can implement peer collaboration projects such as group assignments or peer-review activities, which require students to work together, fostering a sense of community and belonging. Additionally, offering live sessions or office hours where students can interact with instructors and classmates in real-time through platforms like Zoom or Microsoft Teams can further enhance social presence by providing opportunities for synchronous communication.

To enhance cognitive presence, providers might use critical thinking assignments that demand deep analysis, reflection, and the application of concepts to real-world scenarios. These tasks encourage sustained engagement with the content and foster a higher level of cognitive presence.

To strengthen teaching presence, online educators can develop multimedia content such as high-quality video lectures, interactive modules, and podcasts that are closely aligned with course objectives. This approach not only helps maintain student engagement but also reinforces the instructor's presence throughout the course.

Moreover, this approach aligns with modern second language acquisition (SLA) research and pedagogy, which emphasize the development of language competencies and communication skills through socio-cognitive or social-constructivist methods that focus on individual experiences and classroom interactions (Larsen-Freeman, 2018; Chang & Windeatt, 2016).

In addition to enhancing interactions, incorporating other engaging activities, such as games and edutainment, into courses can further boost intrinsic motivation. As Gamlo (2019) found, mobile game-based language learning apps have a strong positive correlation with learner motivation. Similarly, Cam and Tran (2017) reported that a majority of students at a Vietnamese university agreed that games contribute to more interesting and interactive lessons. Thus, integrating interactive and engaging activities into language courses can significantly improve students' intrinsic motivation and overall learning experience.

The hypothetical framework proposed in this study could serve as a valuable educational tool for establishing successful asynchronous online foreign language learning programs.

6. Limitations and recommendations

Despite efforts to increase rigor, this study has its limitations. First, this study involved only Thai native participants using Thai survey instruments. Second, due to resource constraints and the specificity of the research topic, voluntary sampling was employed to recruit as many participants as possible. Consequently, the samples may not be statistically representative of the entire population. As shown in Figs. 3 and 4, the unequal gender ratios and varied language course experiences among participants may act as confounders and critically impact their perceived learning. Third, although the sample size was sufficient for analysis, it remains relatively small compared to the total population. This may limit the ability to fully capture the diversity of the broader population, thereby affecting the generalizability of the findings. Future studies could extend this research by surveying across programs, regions, or even cultures and could adopt different participant selection strategies, such as stratified sampling.

Given the limitations of the correlational research design employed in this study, which was chosen due to practical constraints, the evidence gathered -- though validated through structural equation modeling -- was insufficient to draw definitive causal conclusions. The three interactions within the Community of Inquiry (CoI) framework, along with intrinsic motivation, demonstrated important relationships with perceived learning. However, to comprehensively understand these dynamics, future research could benefit from employing experimental designs. Such designs would allow for more rigorous testing of the individual tenets of the CoI framework within the context of asynchronous online language learning environments.

Moreover, this study's focus on perceived learning as the sole predictive variable may have restricted the depth of insights gained. Future studies should consider integrating additional variables, such as learner engagement, satisfaction, and the specific learning strategies employed by students. These variables could provide a more nuanced understanding of the factors that influence perceived learning in asynchronous settings. Additionally, cultural and contextual factors, which could impact the effectiveness of CoI elements, warrant further exploration. Incorporating diverse measurement tools and methodologies, including experimental approaches, will not only enhance the validity of future findings but also contribute to the development of more effective online learning environments.

To enhance future studies on the impact of perceived learning in asynchronous online courses, several additional variables could be considered:

- **Learner Engagement:** Engagement levels can significantly affect perceived learning. Measuring how actively students participate in asynchronous discussions, complete tasks, and interact with course materials can provide deeper insights (Richardson et al., 2019).
- **Satisfaction and Enjoyment:** Satisfaction with course content and enjoyment of learning activities are closely tied to intrinsic motivation and can influence perceived learning outcomes. These

emotional aspects can be crucial for predicting successful learning experiences (Martin, Wang, & Sadaf, 2018).

- **Learning Strategies:** Understanding the types of learning strategies employed by students (e.g., self-regulation techniques, time management, or peer collaboration) could reveal which strategies correlate with higher perceived learning in an asynchronous environment (Kilis & Yıldırım, 2018).
- **Cultural Context:** Cultural differences in learning preferences and interaction styles might impact the effectiveness of asynchronous online courses. Investigating cultural context can help tailor educational approaches to better suit diverse learner groups (Richardson & Ice, 2010).
- **Technological Accessibility and Competence:** Variations in access to and proficiency with online learning platforms can affect student outcomes. Including these factors could identify gaps and inform strategies to support all learners effectively (Means et al., 2010).

To refine the survey instrument and capture more nuanced aspects of student interactions and intrinsic motivation, several enhancements are recommended. First, incorporating more granular measures of interaction types -- such as peer collaboration, instructor engagement, and content interaction -- could provide a clearer picture of their distinct impacts on learning outcomes. Additionally, incorporating dimensions of intrinsic motivation beyond general interest -- such as mastery, curiosity, and enjoyment -- could offer deeper insights into the motivational factors driving perceived learning. Furthermore, including open-ended questions in the survey could capture qualitative data, allowing for the exploration of unanticipated factors that structured questions might overlook. Future studies should consider longitudinal designs to observe how these variables evolve over time, providing a more dynamic understanding of the learning process.

Finally, future research should account for cultural differences by tailoring survey items to reflect cultural contexts, which can significantly influence interactions and intrinsic motivation. This could involve using culturally relevant examples, language nuances, and context-specific scenarios to ensure that the survey accurately captures the diversity of learners' experiences across different cultural backgrounds. Cultural factors can significantly influence perceived learning and interactions in asynchronous online language courses. For instance, students from collectivist cultures may place a higher value on group harmony and may prefer collaborative learning environments, while students from individualist cultures might prioritize personal achievement and independent learning. This can affect how students interact with peers and instructors, potentially impacting their engagement and perceived learning outcomes. Additionally, the language of instruction and cultural relevance of course content can also influence how effectively students process and retain information, affecting their cognitive presence. These cultural nuances highlight the importance of designing online language courses that are culturally responsive and inclusive, ensuring they meet the diverse needs of a global learner population.

Despite the aforementioned limitations, this study is one of the earliest to apply the CoI framework and intrinsic motivation in an asynchronous online foreign language learning context. Knowledge gained from this study has important implications for online learner support. It also expands the knowledge base concerning the complex nature of online learner motivation and its dynamic relationships with various influencing factors. It is hoped that this study will inspire more research focused on interaction, motivation, and contextual support, which could lead to vibrant, motivating asynchronous online language learning environments.

Despite the aforementioned limitations, this study presents several significant merits. It is one of the earliest to apply the CoI framework and intrinsic motivation theory within the context of asynchronous online foreign language learning. By doing so, the study provides valuable insights into the complex interactions between motivation, learning environment, and perceived learning outcomes. Additionally, the findings contribute to the broader understanding of how to support online learners, particularly in language courses where the asynchronous format presents unique challenges. The knowledge gained from this research has important implications for enhancing online language learning environments and could serve as a foundation for future studies that seek to build on these findings. It is hoped that this study will inspire more research focused on interaction, motivation, and contextual support, leading to the development of vibrant and motivating asynchronous online language learning environments.

References

Alsadoon, E. (2018). **The Impact of Social Presence on Learners' Satisfaction in Mobile Learning**. The Turkish Online Journal of Educational Technology, 17(1), 226-235.

Armstrong, A. & Thornton, N. (2012). **Incorporating Brookfield's discussion techniques synchronously into asynchronous online courses**. Quarterly Review of Distance Education 13(1), 1-9.

Aubry, J. (2013). Facebook-induced motivation shifts in a French online course. TechTrends, 57(6): 81-87.

Bailey, D., 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(3): 2563-2583.

Bakar, N. A., Latiff, H., & Hamat, A. (2013). **Enhancing ESL Learners Speaking Skills through Asynchronous Online Discussion Forum**. Asian Social Science, 9(9): 224.

Barnard-Brak, L., Paton, V., & Lan, W. Y. (2010). **Profiles in self-regulated learning in the online learning environment**. The International Review of Research in Open and Distributed Learning, 11(1), 61-80.

Bernard, R. M., & Rubalcava, B. R. (2000). **Collaborative Online Distance Learning: Issues for Future Practice and Research**. Distance Education, 21(2), 233-247.

Boekaerts, M. (2016). Understanding students' affective processes in the classroom. In L. Corno & E. M. Anderman (Eds.), **Handbook of educational psychology** (3rd ed., pp. 76-92). Routledge.

Cam, L., & Tran, T. M. T. (2017). **An Evaluation Of Using Games in Teaching English Grammar for First Year English-majored Students at Dong Nai Technology University**. International Journal of Learning, Teaching and Educational Research, 16(7), 55-71.

Caspi, A., & Blau, I. (2008). **Social presence in oNline Discussion Groups: Testing Three Conceptions and Their Relations to Perceived Learning**. Social Psychology of Education, 11(3), 323-346.

Chang, H., & Windeatt, S. (2016). **Developing Collaborative Learning Practices in an Online Language Course**. Computer Assisted Language Learning, 29(8), 1271-1286.

Chen, K., & Jang, S. (2010). **Motivation in Online Learning: Testing a Model of Self-determination Theory**. Computers in Human Behavior, 26(4), 741-752.

Chiu, M. M., & Hew, K. F. (2018). **Factors influencing peer learning and performance in MOOCs: Cognitive processing and interaction**. Computers & Education, 122, 59-70.

Choe R. C., Scuric, Z., Eshkol, E., Cruser, S., Arndt, A., Cox, R., Toma, S. P., Shapiro, C., Levis-Fitzgerald, M., Barnes, G., & Crosbie, R. H. (2019). **Student Satisfaction and Learning Outcomes in Asynchronous Online Lecture Videos**. CBE—Life Sciences Education, 18(4): ar55.

Czar, M. L., & Engler, M. M. (1997). **Perceived learning needs of patients with coronary artery disease using a questionnaire assessment tool**. Heart & Lung, 26(2), 109-117.

Deci, E. L., & Ryan, R. M. (2008). **Self-determination theory: A macro theory of human motivation, development, and health**. Canadian psychology/Psychologie canadienne, 49(3): 182.

Delahunty, J. (2018). **Connecting to Learn, Learning to Connect: Thinking Together in Asynchronous Forum Discussion**. Linguistics And Education, 46, 12-22.

DeNeui, D. L. & Dodge, T. L. (2006). **Asynchronous Learning Networks and Student Outcomes: The Utility of Online Learning Components in Hybrid Courses**. Journal of Instructional Psychology, 33(4).

Dimitrova, B., & Todorova, M. (2020). **Online Foreign Language Teaching During the COVID-19 Pandemic: Students' Experience**. Journal of Language and Cultural Education, 8(4), 1-16.

Draus, P. J., Curran, M. J., & Trempus, M. S. (2014). **The Influence of Instructor-generated Video Content on Student Satisfaction with And Engagement in Asynchronous Online Classes**. Journal of Online Learning and Teaching, 10(2), 240-254.

Eom, S. B., & Ashill, N. (2016). **The Determinants of Students' Perceived Learning Outcomes and Satisfaction in University Online Education: An update**. Decision Sciences Journal of Innovative Education, 14(2), 185-215.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). **G* Power 3: A Flexible Statistical Power Analysis Program for the Social, Behavioral, and Biomedical Sciences**. Behavior research methods, 39(2), 175-191.

Fotiadou, A., Angelaki, C., & Mavroidis, I. (2017). **Learner Autonomy as a Factor of the Learning Process In Distance Education**. European Journal of Open, Distance and E-Learning, 20(1), 96-111.

Gamlo, N. (2019). **The Impact of Mobile Game-Based Language Learning Apps on EFL Learners' Motivation**. English Language Teaching, 12(4), 49-56.

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(2-3), 87-105.

Garrison, D. R., Anderson, T., & Archer, W. (2010). **The First Decade of The Community of Inquiry Framework: A Retrospective**. The Internet and Higher Education, 13(1-2), 5-9.

Garrison, D. R. (2017). **E-learning in the 21st century: A Community of Inquiry framework for research and practice**. (3rd ed.). Routledge.

Glynn, S. M., Brickman, P., Armstrong, N., & Taasoobshirazi, G. (2011). **Science motivation Questionnaire II: Validation with Science Majors And Nonscience Majors**. Journal of research in science teaching, 48(10), 1159-1176.

Hartnett, M. (2016). **Motivation in online education**. Springer. https://doi.org/10.1007/978-981-10-0700-2

Henrikson, R. (2014). **Using Online Lectures to Promote Engagement: Recognising the Self-Directed Learner as Critical for Practical Inquiry**. Journal of Online Learning and Teaching, 10(1), 1-11.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). **The difference between emergency remote teaching and online learning**. Retrieved 12 May 2024 from https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning.

Howarth, J. P., D'Alessandro, S., Johnson, L., & White, L. (2016). **Learner motivation for MOOC Registration and the Role of MOOCs as a University 'Taster'**. International Journal of Lifelong Education, 35(1), 74-85.

Hu, L. T., & Bentler, P. M. (1998). **Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification**. Psychological Methods, 3(4), 424.

Iacobucci, D. (2010). **Structural Equations Modeling: Fit Indices, Sample Size, and Advanced Topics**. Journal of Consumer Psychology, 20(1), 90-98.

Lockee, B. B. (2021). **Online education in the post-COVID era**. Nature Electronics, 4(1), 5-6. https://doi.org/10.1038/s41928-020-00534-0

Kilis, S., & Yıldırım Z. (2018). **Investigation of a Community of Inquiry Framework in Regard to Self-regulation, Metacognition, and Motivation**. Computers & Education, 126, 53-64.

Kilis, S., & Yıldırım, Z. (2019). **Posting patterns of students' social presence, cognitive presence, and teaching presence in online learning**. Online Learning, 23(2), 179-195.

Kreijns, K., Xu, K., & Weidlich, J. (2022). **Social Presence: Conceptualization and Measurement**. Educational Psychology Review, 34(1), 139-170.

Larsen-Freeman, D. (2018). **Looking Ahead: Future directions in, and Future Research into**, Second Language Acquisition. Foreign language annals, 51(1), 55-72.

Li, C., & Lalani, F. (2020). **The COVID-19 pandemic has changed education forever. This is how**. Retrieved 12 May 2024 from https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/

Lowenthal, P. R. (2010). **Social presence and online discussions: A mixed-methods investigation of online learning**. Journal of Asynchronous Learning Networks, 14(2), 77-94.

Martin, F., Wang, C., & Sadaf, A. (2020). **Student perception of helpfulness of facilitation strategies that enhance instructor presence, connectedness, engagement, and learning in online courses**. The Internet and Higher Education, 37, 52-65.

Mehrabian, A. (1969). **Some Referents and Measures of Nonverbal Behavior**. Behavior Research Methods and Instrumentation, 1(6), 205–207.

Milana, M. (2012). **Political Globalization and the Shift From Adult Education to Lifelong Learning**. European Journal for Research on the Education and Learning of Adults, 3(2): 103-117.

Ng, Y., & Przybyłek, A. (2021). **Instructor Presence in Video Lectures: Preliminary Findings From an Online Experiment**. Journal of Educational Technology & Society, 23(3), 1-13.

O'Reilly, E. N. (2014). **Correlations among Perceived Autonomy Support, Intrinsic Motivation, and Learning Outcomes in an Intensive Foreign Language Program**. Theory and Practice in Language Studies, 4(7), 1313.

Osborn, T. A. (2006). **Teaching World Languages for Social Justice: A Sourcebook of Principles and Practices**, Routledge.

Richardson, J. C., Maeda, Y., & Swan, K. (2019). **Social presence in online learning: A meta-analysis of research**. Educational Research Review, 29, 22-42.

Rolim, V., Ferreira, R., Lins, R. D., & Găsević, D. (2019). **A network-based analytic approach to uncovering the relationship between social and cognitive presences in communities of inquiry**. The Internet and Higher Education, 43, 100-115.

Rourke, L. (2001). **Assessing Social Presence in asynchronous Text-based Computer Conferencing**. Journal of Distance Education 14(2), 51-70.

Ryan, R. M., & Deci, E. L. (2000). **Self-determination Theory and the facilitation of intrinsic motivation, social development, and well-being**. American psychologist, 55(1), 68.

Ryan, R. M., & Deci, E. L. (2020). **Intrinsic and extrinsic motivations: Classic definitions and new directions**. Contemporary Educational Psychology, 25(1), 54-67.

Settles, B., Brust, C., Gustafson, E., Hagiwara, M., & Madnani, N. (2018). **Second language acquisition modeling**. Proceedings of the thirteenth workshop on innovative use of NLP for building educational applications.

Shea, P., & Bidjerano, T. (2012). **Learning Presence as a Moderator in the Community of Inquiry Model**. Computers & Education, 59(2), 316-326.

Shelton, B. E., Hung, J. L., & Lowenthal, P. R. (2017). **Predicting Student Success by Modeling Student Interaction in Asynchronous Online Courses**. Distance education, 38(1), 59-69.

Short, J., Williams, E., & Christie, B. (1976). **The Social Psychology of Telecommunications**. London: John Wiley & Sons.

Song, L., Murphy, K. L., & Fisher, M. H. (2020). **Assessing the relationship between self-regulated learning strategies and perceived learning outcomes in online asynchronous discussions**. International Journal of Educational Technology in Higher Education, 17(1), 1-14.

Sun, S. Y. (2014). **Learner Perspectives On Fully Online Language Learning**, Distance Education, 35(1), 18-42.

Swan, K. (2001). **Virtual interaction: Design Factors Affecting Student Satisfaction and Perceived Learning in Asynchronous Online Courses**. Distance Education, 22(2), 306-331.

Taurina, Z. (2015). **Students' Motivation and Learning Outcomes: Significant Factors in Internal Study Quality Assurance System**. International Journal for Cross-Disciplinary Subjects in Education (IJCDSE), 5(4), 2625-2630.

Wei, H.-C., & Chou, C. (2020). **Online Learning Performance and Satisfaction: Do Perceptions and Readiness of Online Learning Competence Matter?**. Journal of Educational Technology Development and Exchange (JETDE), 13(1), 99-118.