

Blended Learning and its Impact on English Reading Comprehension among Thai Vocational Students

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Article information	Abstract
<p>Article history: Received: 22 Jul 2023 Accepted: 8 Oct 2023 Available online: 17 Apr 2024</p> <p>Keywords: Blended learning Community of inquiry EFL learners English reading comprehension Thai vocational students</p>	<p><i>This research aimed to assess the impact of blended learning on the English reading comprehension abilities of second-year Thai vocational students. It also examined how these students perceived their satisfaction regarding their blended learning experience using the Community of Inquiry (CoI) framework. Thirty students enrolled in a Thai vocational college in the southern part of Thailand during the second semester of the Academic Year 2022-2023 participated in the study. These students attended a six-week blended learning (BL) program in which they took a one-group pretest and posttest experimental design. The BL program comprised nine lesson plans, English reading comprehension tests, and online satisfaction items. Data analysis involved paired sample t-tests, mean, and standard deviations. The findings revealed that the posttest scores for English reading comprehension were significantly higher than the pretest scores at a significance level of 0.05. Furthermore, students reported a high mean score of 4.73 (very satisfied) with their blended learning experience after their improved English reading comprehension tests. Implications were discussed, and recommendations were also offered.</i></p>

INTRODUCTION

In the contemporary global landscape, where the paramount significance of English as a lingua franca in today's interconnected world cannot be overstated, Thai vocational students are confronted with the pressing need to enhance their English reading comprehension skills to navigate rapid technological advancements. However, Thailand's proficiency in English has persistently remained at suboptimal levels over an extended period. As evidenced by

the Education First English Proficiency Index (EF EPI, 2023), Thailand scored 416 points on the English test in 2023, positioning it at the 101st rank among 113 countries. Furthermore, within Asia, Thailand occupies the 21st position out of 23 countries, exhibiting an enduring trend of low English proficiency since 2023 (EF EPI, 2023).

The deficiency in reading comprehension among Thai students may present a significant concern in English language learning in the country. The World Bank and UNESCO (2021) assert that reading is a gateway to learning, and difficulties hinder opportunities for further education. The gravity of the situation is further underscored by the Learning Poverty in Thailand report, which reveals that 23 percent of children in late primary school lack proficiency in reading, even when accounting for out-of-school children. The OECD's Education GPS report (2022) also highlights that Thailand ranked 68th out of 79 PISA-participating countries and economies in reading performance in 2018. Notably, most Thai students (60 percent) performed below the Level 2 proficiency threshold. This starkly contrasts other countries in the East Asia and Pacific (EAP) region, with Thailand's average student reading proficiency of 393 score points considerably lower than the OECD average of 487.

As English evolved into a universal communication tool, making it an essential requirement for vocational students aiming to thrive in the international job market, failing to develop proficiency in English reading comprehension can leave students at a disadvantage compared to their English-proficient counterparts. English reading comprehension is a dynamic concept that entails using various cognitive abilities, such as syntactic, semantic, and rhetorical knowledge, alongside prior knowledge by readers to critically examine, interpret, and comprehend the writer's expressed thoughts and ideas as presented in written text (Pimsarn, 2009). Pimsarn (2009) maintains that since reading comprehension involves understanding written English and grasping the intended message, readers must utilize various reading strategies to comprehend the textual material.

Furthermore, acquiring reading skills is regarded as an essential skill for individuals. However, in Thailand, it appears that acquiring English language skills, particularly in the reading domain, presents a significant challenge for students as most students encounter difficulties in comprehending English texts and exhibit a notable lack of motivation when engaging in reading activities (Banditvilai, 2020; Khamkhong, 2018; Pongsatornpiat, 2021). Although the Thai government and the schools in the country may have emphasized the need to address the issue regarding reading proficiency among students, current efforts may not be effective. As language teachers in the country who observed how our students faced this dilemma, we believe that introducing a technological innovation to improve Thai students' reading comprehension skills may help address this perennial problem.

Existing studies (see Boonmoh et al., 2022; Pinphet & Wasanasomsithi, 2022; Ulla et al., 2021) showed that integrating digital devices and technologies in Thailand's education system may positively impact students' engagement in language learning and teachers' instructional methods. One of these technological innovations is blended learning (BL). Moreover, studies show that BL enhances collaborative learning, creative thinking, independent study, and personalized learning experiences (Cleveland-Innes et al., 2018) and allows flexible learning, access to

materials, and communication through Internet networks (Watanapokakul, 2022). Thus, building on previous studies, the present study explores using BL to improve Thai EFL undergraduate students' English reading skills by examining the impact of BL on Thai vocational students' English reading comprehension and their satisfaction with the BL modality toward their English language learning. It utilized innovative English reading comprehension strategies through blended learning methods, combining online, online tutorials and face-to-face learning sessions.

The findings of this research can assist teachers in designing e-learning programs incorporating blended learning techniques, including online activities and assignments, to assess students' understanding and foster their critical reading abilities. Therefore, this study aims to compare the second-year Thai vocational certificate students' English reading comprehension ability before and after implementing blended learning and to investigate their satisfaction level through the blended learning experience. In pursuit of these objectives, the following research questions were addressed:

1. What is the difference between second-year Thai vocational students' English reading comprehension pretest and posttest scores?
2. What is the satisfaction level of second-year Thai vocational students after learning through a blended learning experience?

English reading comprehension strategies

During the process of engaging with written material, proficient readers employ a multitude of strategies to enhance their comprehension and actively construct meaning (Habók & Magyar, 2019). Thus, using specific reading strategies, such as note-taking and highlighting pivotal phrases within the text, is a characteristic feature of highly proficient readers. In addition, Habók and Magyar (2019) also acknowledged that constructing meaning after reading is equally significant to the pre-reading and during-reading phases. To cultivate a more profound comprehension of the text, students are encouraged to employ a series of post-reading strategies, including summarization, review, monitoring, elaboration, and evaluation. By engaging in these cognitive processes, readers can enhance their ability to extract meaning from the text and develop a more comprehensive understanding of its content (Habók & Magyar, 2019).

In their study, Habók and Magyar (2019) explored the impact of EFL reading comprehension and other learning-related factors on 3912 lower secondary school students in 65 schools in Hungary, as well as their reading strategy use. By doing this study, the researchers wanted to construct and authenticate a framework for utilizing reading strategies in EFL. Additionally, they aimed to assess the reading proficiency of FL/L2 learners across various age cohorts while considering two pertinent factors related to learning: general English proficiency and English language attitude. The findings of the study indicated that students in the early stages of language learning exhibited a higher frequency of utilizing reading strategies. In addition, by conducting rigorous testing on the hypothesized model, substantiating its validity across all observed years, the study revealed a statistically significant relationship between the variables, specifically highlighting that EFL reading strategies are predominantly influenced by students' attitudes towards the English language.

In another study, Yapp et al. (2021) mentioned that reading instruction incorporating reading strategies and promoting strategic reading behavior is conducive to developing a student's academic reading ability. Thus, the acquisition of reading comprehension skills is an essential competency that demands the attention and awareness of teachers across all academic disciplines (Yapp et al., 2021). In their study, Yapp et al. (2021) examined the impact of reading strategy instruction on ESL students' academic reading comprehension among 801 first-year polytechnic students at the university of applied sciences in The Netherlands.

Yapp et al.'s. (2021) study involved the collection of data pertaining to the reading skills of students over a single academic year. This data was obtained by implementing a regression discontinuity design, which consisted of three distinct treatment waves. The study involved administering three tests of equivalent difficulty to the participants. In each successive wave of the study, the students were administered reading tests at multiple time points. These time points included several weeks before the implementation of the intervention, at the commencement of the intervention, and immediately following the conclusion of the intervention. The findings of this study indicate that across all three waves of data collection, there was a notable enhancement in reading comprehension scores observed between the second and third measurement instances, which can be attributed to the implementation of the experimental course. Importantly, this improvement was significantly greater than the increase observed between the initial two measurement occasions. The efficacy of the intervention was demonstrated; however, it is noteworthy that the participants' prior educational attainment partially influenced the impact of the intervention.

Both studies conducted by Habók and Magyar (2019) and Yapp et al. (2021) demonstrated that students' attitudes toward reading and how reading is implemented can greatly shape how these students perform in reading. In other words, their studies suggest that students should be provided with a conducive learning environment where they would be motivated to learn and improve their reading skills. Thus, Brevik (2019) recognized other methods to enhance students' reading comprehension skills. For example, previewing a text before reading is a valuable strategy that may activate prior knowledge, establish reading goals, and improve comprehension. It is particularly effective for vocational students, enabling them to utilize prior knowledge, contextualize new information, and deepen their understanding (Brevik, 2019). By skimming the text, starting with the title, and scanning for visual aids, students connect with the text and grasp its theme. Focusing on the introduction or first paragraph also helps comprehend the organizational structure and key points. In addition, the while-reading strategy encourages students to ask and answer text-related questions, promoting comprehension and engagement (Brevik, 2019).

In her study, Brevik (2019) delved into investigations concerning the factors influencing teachers' choice to employ explicit teaching strategies instead of relying on students' spontaneous use of strategies in their daily activities. Moreover, Brevik (2019) explored the potential growth of students' strategic reading abilities over time through conventional approaches in the second language (L2) classroom. Brevik's (2019) study examined 60 video-recorded sessions of English as a second language (L2) instruction in seven lower secondary schools across Norway. The observations spanned two school years, specifically concentrating on 9th and 10th-grade students.

The analysis employed The Protocol for Language Arts Teaching Observation, investigating the various forms of text-based reading comprehension education and the application of strategies within diverse classroom environments. Findings revealed that teachers frequently engage their students in reading comprehension instruction for narrative and expository texts, constituting more than 50% of instructional time. This involvement entailed offering tailored guided practice in strategies according to each student's needs and promoting the consistent use of familiar reading comprehension techniques rather than explicitly introducing new ones.

However, while the studies by Brevik (2019), Habók and Magyar (2019), and Yapp et al. (2021) highlighted the various reading comprehension methods that have implications for language teachers in their reading classroom, Smith et al. (2021) argued that the different reading comprehension strategies only suggest that there is not always a single, consistent interpretation found in research on what it means to grasp a material truly and what classroom teachers may and should not expect as reading comprehension outcomes. In other words, there is a lack of agreement across research about the knowledge and skills students acquire from reading and the most effective ways to assess these results. According to Smith et al. (2021), although the significance of prior knowledge has been widely acknowledged and extensively investigated within reading comprehension, it should be noted that teachers need to incorporate knowledge into reading instruction. Implementing effective strategies to activate prior knowledge, generate questions, and encourage summarization is crucial for enhancing students' reading comprehension and engagement, teachers should use these techniques to support students' growth in reading comprehension, resulting in improved critical thinking skills.

Blended learning

One of the most important technological innovations in language pedagogy regarding technology integration is the employment of BL in language teaching and learning, as technology integration in education has revolutionized learning, making it more engaging and accessible (Ulla et al., 2020). BL has become increasingly popular in many schools and universities, especially during and post-pandemic (Pinphet & Wasanasomsithi, 2022; Watanapokakul, 2022), combining face-to-face instruction and technology, maximizing the benefits of both approaches.

BL, as highlighted by Cleveland-Innes and Wilton (2018), offers numerous benefits to students, including increased learning skills, expanded access to information, improved satisfaction and learning outcomes, and collaborative learning and teaching opportunities. Since BL combines traditional classroom teaching with online learning, it provides students with a diverse learning experience (Garrison & Vaughan, 2008; Praditsorn & Ulla, 2022) and reduces contact hours (Watanapokakul, 2022). It also redefines the roles of teachers and students, with teachers acting as facilitators and students actively participating in classroom and online activities (Zainuddin & Keumala, 2008). In addition, BL aligns with the needs and attitudes of 21st century students, making it widely accepted and effective in modern education (Pinphet & Wasanasomsithi, 2022).

In language education, BL has also been employed by language teachers to improve the learning experience and develop English language skills among learners. For instance, Moradimokhles

and Hwang (2022) investigated the impact of online learning as compared to blended learning on the enhancement of English language proficiency among 60 nursing students at the Medical University of Asadabad, Hamadan. The participants were divided into three groups using a randomization procedure. The control group was provided with general English instruction utilizing the communicative approach, which involved engaging in exercises designed to enhance their overall proficiency in the English language. The online group received comprehensive English instruction utilizing the Learning Management System (LMS) instructional model. The experimental group received general English instruction utilizing a blended learning instructional model. Following the completion of the instructional intervention, the students were administered a posttest evaluating their proficiency in standard general English, specifically the Test of English as a Foreign Language (TOEFL). The study's findings indicate that the implementation of blended learning yielded noteworthy improvements in the overall proficiency of nursing students in general English skills compared to the utilization of online learning exclusively.

In another study, Wang et al. (2021) explored Chinese university EFL learners' perceptions of BL. The researchers presented a BL course design in an English class, integrating a Small Private Online Course (SPOC) within a flipped classroom. Their primary objective was to explore the BL classroom environment and how students perceive it. By surveying 1603 students about their experiences with blended EFL learning, the study suggested that blended learning showed potential for creating a good environment for learning English. The study also revealed that BL allowed students to learn at their own pace, giving them a sense of autonomy and control over their learning journey. Students could engage in real-time interactions with their classmates and teachers, fostering community and collaboration.

Within the Thai context, some studies (see Chanthap & Wasanasomsithi, 2019; Saeheng, 2017; Yudhana, 2021) have also confirmed the benefits of blended learning in enhancing students' English language proficiency, particularly in improving Thai EFL undergraduate students' English reading skills, overall development, learner autonomy, and motivation for practicing English reading comprehension. In other words, those studies argued that blended learning, compared to traditional teaching methods, was found to be effective in enhancing students' ability to plan, monitor, and evaluate their reading skills (Chanthap & Wasanasomsithi, 2019; Saeheng, 2017; Yudhana, 2021). However, while these studies explored the effects of BL on Thai students' English language proficiency, studies that examined students' reading comprehension skills in BL modality, particularly vocational students in Thailand, using the community of inquiry framework, have been limited.

The theoretical framework of Community of Inquiry (CoI) in blended learning

Garrison et al. (2001) introduced the Community of Inquiry (CoI) framework, which offers a structure for understanding and directing purposeful blended and online learning activities. Additionally, a number of recent studies (Choo et al., 2020; Sun & Yang, 2023; Zhang & Lin, 2021) have reported its positive impact as regards students' learning experience in online or BL environments, as it creates an environment that promotes social presence, stimulates critical thinking, and facilitates meaningful online discussions. Thus, employing CoI could facilitate the pedagogical efforts of teachers by enabling the development of instructional strategies

that encompass cognitive, social, and teaching presence, guaranteeing the provision of prompt feedback and assistance (Praditsorn & Ulla, 2022). The CoI could also be instrumental in the assessment and enhancement of course designs, fostering a more immersive and well-rounded learning experience through the careful examination of the interrelationships among cognitive, teaching, and social presence (Ulla & Nguyen, 2022).

The CoI model emphasizes three key elements in the learning process: cognitive, teaching, and social. Firstly, cognitive presence involves learners constructing understanding through critical thinking, including exploring new ideas, asking probing questions, analyzing information, and making meaningful connections (Garrison & Arbaugh, 2007; Garrison & Cleveland-Innes, 2005). In other words, cognitive presence fosters deep comprehension and problem-solving skills. It also involves constructing meaning through discourse and reflection, driving significant learning experiences (Garrison et al., 2001).

Secondly, social presence enables personal and emotional connections among learners, even in online or blended settings, by building trust and promoting collaboration (Lowenthal & Dunlap, 2018). Thus, it creates an engaging learning environment where students comfortably express their thoughts. It also positively influences student satisfaction and learning outcomes (Swan et al., 2008).

Lastly, teaching presence is essential, involving course design, clear expectations, facilitating discussions, timely feedback, and learner support. It guides teachers to optimize their teaching practices effectively, enhancing students' learning experiences (Praditsorn & Ulla, 2022). It involves instructional design, facilitation, and guidance, supporting learners throughout the learning process (Anderson et al., 2001), and correlating with student engagement and perceived learning (Shea & Bidjerano, 2009).

These elements in the CoI framework form a comprehensive approach to online and blended learning. Ulla and Nguyen (2022) recognize that the efficacy of the CoI framework in online or BL pedagogy is contingent upon the intersection of cognitive, teaching, and social presence. In other words, CoI underscores the notion that the learning process occurs within a communal framework, wherein teachers and students are recognized as the primary participants (Praditsorn & Ulla, 2022).

METHODOLOGY

The present study employed a pre-experimental research design using a descriptive-quantitative approach. It was conducted using the One-Group Pretest-Posttest method at one of the vocational schools in the southern part of Thailand in the second semester of 2022. Privitera (2019) mentioned that "a one-group pretest-posttest design is a quasi-experimental research design in which the same dependent variable is measured in one group of participants before (pretest) and after (posttest) treatment is administered" (p. 337). In the context of the present study, it examines whether reading comprehension among Thai vocational students is improved in a blended learning environment.

The study population comprised 270 second-year Thai vocational certificate students aged 19 to 22, distributed across ten classes. Since the study used the One-Group Pretest-Posttest method, a cluster sampling technique was employed. Berndt (2020) mentioned that cluster sampling is a practical and cost-effective method for handling huge populations, and it involves the selection of naturally existing groupings to serve as sample clusters. Thus, group 1, consisting of students majoring in Logistics and Supply Chain Management, was selected as the study group. This group included thirty second-year Thai vocational certificate students, with two males and 28 females. Their English proficiency level based on CEFR was between A1 and B1.

Tools

This study incorporates three key instruments within its experimental design. These instruments encompass the development of nine lesson plans based on the blended learning method, English reading comprehension tests, and students' satisfaction with the blended learning experience.

1. Nine lesson plans based on the blended learning method, specifically "English for Business" lesson plans identified by the course code 20000-1210, were used. The first author used a blended learning methodology comprising three distinct methods: online learning sessions, tutorial sessions, and face-to-face presentations.
2. English reading comprehension tests comprised 18 test items developed by the first author to assess various reading comprehension components. These components included recognizing the basic information indicating the pre-reading strategy, identifying the main idea and details indicating the while-reading strategy, and making inferences indicating the post-reading strategy. Although the pre-and post-tests had different sets of questions, they were carefully organized into three units, which were incorporated as part of the intervention in this research study. The lessons were centered on topics related to logistics.
3. Students' satisfaction with the blended learning experience (see appendix A), which consists of a comprehensive online satisfaction survey of 20 items meticulously designed according to the CoI conceptual framework created by Garrison et al. (2001). The survey prioritized the evaluation of three crucial elements: cognitive presence, social presence, and teaching presence. The first author created five-point Likert scale survey questions to assess students' satisfaction with the blended learning experience and presented simple answers using five-point Likert scales using Google Forms.

Furthermore, in the descriptive aspect of the current study, the first author employed his own classroom reflection based on his observation of his students during the blended learning implementation to support the study's quantitative findings. The first author's own reflection and observation allowed for a more in-depth exploration of the impact of BL on students' learning experiences and achievements.

To ensure the reliability and validity of the three research instruments, they were all checked and validated by three experts in teaching innovation and English language lecturers. One expert has a master's degree in Curriculum and Instructional Education, while the other two have Doctorates in Applied Linguistics and Communication, respectively. The experts used the five-level rating rubrics to provide scores, measuring the quality of its content and structure. The nine lesson plans were checked for topic consistency. For the pre-test and post-test, the researchers collected the validity form to compute the test's Item Objective Congruence (IOC) Index. The said index verified the content validity after the expert's views and suggestions. After calculating the three experts' scores, the thirty items of the English reading comprehension test are "valid," yielding a score of 0.67 to 1.00. The tests also obtained a reliability coefficient of 0.61, indicating that the test was highly reliable or "good."

Three experts also checked the validity and reliability of the student's satisfaction with the blended learning experiences questionnaire. After calculating the three experts' scores, the researcher classified the validity score by interpreting the IOC index. Based on their validation, the twenty survey items are "*sufficiently accepted and can be utilized,*" obtaining a score ranging from 0.67 to 1.00.

Data collection

Before the study was conducted, the first author sought the school's approval regarding ethical standards in conducting research. After it was approved, designing and developing the research instruments followed, as well as inviting experts to check for the instruments' validity.

Next, the first author administered the English reading comprehension pre-test to the selected sampling group on December 21, 2022. The pre-test was conducted for one hour in a face-to-face classroom setting. This instrument was administered to Thai vocational students before receiving any intervention.

The first author implemented a thorough nine-lesson plan, utilizing the blended learning method as the intervention for the selected sampling group. This intervention lasted six weeks and thirty instructional hours, commencing on December 26, 2022, and concluding on February 2, 2023.

After that, the English reading comprehension post-test was conducted on February 2, 2023, after the students had completed their last face-to-face presentation activities. They were allocated one hour to complete the assessment. The said instruments were implemented after the intervention.

Upon the student's completion of the English reading comprehension post-test, the survey items were distributed online to evaluate their satisfaction with the blended learning experience. The survey was administered through a shared Google Forms link, which was made accessible to Thai vocational students via online platforms. The students were allotted 20 minutes to complete the survey items and provide their responses.

Data analysis

The analysis involved comparing pre-test and post-test scores to identify any significant differences. Descriptive statistics, including means and standard deviations, were used to examine the scores. The data were then subjected to a paired sample t-test to compare the means and determine if there was a statistically significant difference following the intervention. The findings of the paired sample t-tests were also relevant to the hypothesis testing of the study.

The student satisfaction with the blended learning experience was assessed through an online survey, and the collected data were analyzed using the Statistical Package for Social Science (SPSS). Descriptive statistics, including means and standard deviations, were utilized to examine the satisfaction levels represented by each variable.

RESULTS

English reading comprehension pre-test and post-test

Table 1
English reading comprehension pre-test and post-test

Score	Total Score	N	Mean	S.D.	t
Pre	18	30	15.00	1.26	11.298*
Post	18	30	17.47	.78	

*Significant at level of 0.05**

The results revealed that the Thai vocational students' post-test scores were higher than their pretest scores. While the initial assessment scores were predominantly gathered at 15.00, the subsequent assessment scores rose to 17.47, yielding a progress score of 2.47. This increase was statistically significant, as evidenced by a t-value of 11.298. The analysis of the scores before and after the intervention revealed significant improvements, confirming the accuracy of the hypothesis testing at the statistical significance level of 0.05.

Table 2
English reading comprehension components score

Reading comprehension components	Pre-test		Post-test		t
	Mean	S.D.	Mean	S.D.	
Recognizing the basic information	5.23	.43	6.00	.00	9.76*
Identifying the main idea	2.80	.48	3.00	.00	2.26*
Identifying the details	2.73	.45	2.93	.25	2.70*
Making inferences	4.23	.77	5.53	.68	6.96*
Overall Pretest – Posttest	15.00	1.26	17.47	.78	11.298*

*Significant at level of 0.05**

The results showed that the component of *Recognizing basic information* garnered a significant increase in post-test scores compared to pre-test scores. In addition, this component had the highest score among the four reading comprehension components, while *Making inferences* had the second-highest score. In making inferences, post-test scores obtained a significant increase compared to pre-test scores, indicating that the English reading comprehension intervention positively impacted students' ability to make inferences from their reading materials. Lastly, *Identifying the main idea* ranked third, with *Identifying details* bringing up the last, according to the results of English reading comprehension before and after the intervention. For these two components, their respective post-test scores garnered a significant increase compared to their pre-test scores.

Student satisfaction with blended learning

Table 3
 Survey results of student's satisfaction with the blended learning experience

Survey Item	N	Mean	S.D.	Rating Scale
Cognitive Presence				
Q1	30	4.76	.43	Very Satisfied
Q2	30	4.60	.49	Very Satisfied
Q3	30	4.76	.43	Very Satisfied
Q4	30	4.56	.50	Very Satisfied
Q5	30	4.70	.46	Very Satisfied
Q6	30	4.63	.49	Very Satisfied
Q7	30	4.70	.46	Very Satisfied
Total		4.67	.29	Very Satisfied
Social Presence				
Q8	30	4.80	.40	Very Satisfied
Q9	30	4.76	.43	Very Satisfied
Q10	30	4.63	.49	Very Satisfied
Q11	30	4.80	.40	Very Satisfied
Q12	30	4.70	.46	Very Satisfied
Q13	30	4.80	.40	Very Satisfied
Q14	30	4.76	.40	Very Satisfied
Total		4.75	.26	Very Satisfied
Teaching Presence				
Q15	30	4.83	.37	Very Satisfied
Q16	30	4.80	.40	Very Satisfied
Q17	30	4.80	.40	Very Satisfied
Q18	30	4.73	.44	Very Satisfied
Q19	30	4.80	.40	Very Satisfied
Q20	30	4.76	.43	Very Satisfied
Total		4.78	.23	Very Satisfied
OVERALL		4.73	.23	Very Satisfied

Table 3 reveals that the overall mean score of 4.73 and standard deviation of 0.23 indicated a high level of satisfaction, consistent with the high levels of “very satisfied” reported in the individual domains of cognitive presence, social presence, and teaching presence. The findings revealed that Thai vocational students reported high satisfaction with all aspects of the survey. teaching presence received the highest mean score of the three aspects evaluated, implying that the students were “very satisfied” with this aspect. social presence gained the second-highest mean score, suggesting a slightly higher satisfaction level than cognitive presence. Finally, the cognitive presence aspect garnered the third-highest mean score, demonstrating that the students were “very satisfied” with this aspect.

Students’ experience in blended learning

The researcher observed that Thai vocational students showed interest, curiosity, and strong attention during class discussions and other online and face-to-face classroom activities. After accessing their teachers’ online teaching materials, students could understand the lessons better and successfully engage in group collaborations and class presentations.

Furthermore, students enjoyed paired or group assignments and classroom activities more than individual tasks, suggesting that collaborative learning opportunities are essential to successful blended learning experiences. In addition, the first author observed that blended learning environments can promote engagement, collaboration, and, ultimately, academic success by fostering a sense of community and providing opportunities for peer-to-peer interaction.

The first author also observed a positive result regarding students’ satisfaction with the cognitive presence aspect. It was observed that students demonstrated positive cognitive behavior by actively participating in class discussions, sharing their thoughts and ideas, asking questions, and responding to their peers’ comments. The students were also motivated to comprehend their reading materials, which enhanced their skills for identifying details. The students were willing to seek feedback from their teachers or classmates, demonstrating their eagerness to learn and improve their understanding of the material. Specifically, students significantly improved their ability to *identify details*. The teacher-guided them during reading sessions to identify essential phrases and keywords that would assist in answering Wh-questions. Class observations showed that when asked, “Who scheduled the staff training,” Student 28 initially responded with “The National Sales Manager.” However, the teacher questioned this answer, suggesting it might be the Regional Sales Manager instead. In response, a group of students (17, 2, 23, and 28) collaboratively provided specific examples from the text to support their assertion: “It was the National Sales Manager who had scheduled the seminar. The Regional Sales Manager only disseminated the seminar via memorandum to the sales and accounting department.” This scenario highlighted the students’ ability to identify details and provide evidence to support their answers during class discussions. The first author also noted that modeling this skill and fostering student collaboration enhanced their capacity to identify relevant details. Therefore, it is crucial to emphasize the importance of identifying keywords and phrases while reading and encouraging peer collaboration to substantiate and defend answers.

Finally, in blended learning, the students demonstrated an excellent grasp of making inferences and identifying main ideas strategies, significantly enhancing their reading comprehension skills. They were most satisfied with their teacher's instructional materials utilizing the blended learning method, as they expressed high satisfaction with interacting with their peers and teachers throughout their blended learning experience. They demonstrated high proficiency in using technology to access learning resources, communicate with peers and teachers, and complete assignments.

DISCUSSION

The present study examined the impact of blended learning on Thai vocational students' reading comprehension scores on the pretest and post-test and their satisfaction with the blended learning approach. Using the One-Group Pretest-Posttest method, results revealed that the blended learning approach had a significant impact on the students' English reading comprehension scores, as evidenced in the improvement of their post-test scores. This finding supports the research hypothesis that students taught through blended learning achieve higher post-test performance.

Additionally, the first author's observations further illuminate the students' positive engagement and learning outcomes within the blended learning framework. Thai vocational students displayed a keen interest, active participation, and focused attention during class discussions and various classroom activities, both online and face-to-face. As a result, accessing online teaching materials facilitated their understanding of lessons and enhanced their ability to collaborate effectively in groups and present their ideas in class. The preference for collaborative assignments over individual tasks underscores the importance of peer interaction and collaborative learning in fostering successful blended learning experiences.

It is also worth noting that this present study's blended learning approach employed interactive multimedia content, engaging class discussions, and collaborative tasks to enhance students' comprehension and promote a more collaborative and engaging learning environment. Using such online platforms allowed students to connect with their peers, participate in class discussions, and receive immediate feedback on their progress, which improved their motivation to learn. In addition, the implementation of group collaboration, pairing knowledgeable students with struggling students who acted as group leaders and provided support during English reading activities, also contributed to the positive learning experience among students. Collaborative learning in pairs and groups was observed, with students actively participating during class presentations and demonstrating their commitment to the assignments and activities.

These findings, supported by prior research (Bakeer, 2018; Banyen et al., 2016; Kilis & Yildirim, 2019; Saeheng, 2017), demonstrate high satisfaction levels among undergraduates with blended learning approaches, collectively supporting blended learning's positive impact on student outcomes.

However, it is also important to consider some of the challenges in implementing blended learning to enhance reading comprehension skills among students. Some of these issues include students' low intermediate level of English language proficiency, self-regulation, and technology use. To address these challenges, the blended learning method employed in this study incorporated effective reading comprehension strategies shown to enhance students' English language skills. It can be suggested that effective reading comprehension instruction is critical in improving students' English language skills and enhancing their future job prospects, providing students with a creative and engaging learning experience that effectively integrates different English reading comprehension strategies.

The present study also examined three key conceptual frameworks of blended learning that help to promote engagement and interaction among students, instructors, and course content. By analyzing the findings through the lens of these three frameworks, a more comprehensive understanding of how blended learning can enhance student learning outcomes and promote successful academic experiences can be achieved.

Teaching presence

The study results indicate that Thai vocational students expressed high satisfaction with their teachers' instructional materials in blended learning, particularly regarding teaching presence. This finding aligns with Chen's (2022) survey, which showed that teaching presence can predict perceived learning. The good instructional design and efforts of instructors to create a sense of belonging among students likely contributed to these results. Additionally, Chen's (2022) study supports the importance of extensive online deliberate practice in blended learning to improve the learning process's effectiveness.

The first author observed that Thai vocational students demonstrated interest, curiosity, and strong attention during class discussions and online and face-to-face activities. They showed an improved understanding of lessons and engaged more effectively in group collaborations and class presentations after accessing online teaching materials. Law et al. (2019) demonstrated that teaching presence has direct positive effects on cognitive and social presence and indirect positive effects on learning performance. Similarly, Saeheng's (2017) study showed that Thai students expressed high satisfaction with e-learning and BL as they felt motivated to practice English reading comprehension using these methods.

This study suggests that blended learning can effectively enhance Thai vocational students' English reading comprehension, particularly when a teaching presence is available. Designing blended learning activities that promote teaching presence is crucial for improving students' learning experience.

Social presence

Based on the results, it can be noted that students were highly satisfied with their interactions with peers and teachers in the blended learning environment. They expressed satisfaction with feedback and felt well-supported throughout the process. In addition, the results also

showed that students demonstrated high proficiency in using technology for learning purposes, including accessing resources, communicating, and completing assignments. This finding aligns with Law et al.'s (2019) study, which demonstrated that students engaged in blended learning displayed higher social presence scores, indicating a cohesive community and facilitating group collaborations. Student responses to the social presence survey revealed their proficiency in navigating online and face-to-face classrooms through collaborative activities. Their satisfaction with cognitive presence-related tasks highlighted the importance of social presence in blended learning environments. Zhang's (2020) research further supports this claim by establishing the significance of social presence in promoting cognitive presence.

The first author also noted that students generally enjoyed paired or group assignments and classroom activities more than individual tasks, indicating the importance of collaborative learning in blended learning experiences. Blended learning environments can enhance engagement, collaboration, and academic success by fostering a sense of community and providing opportunities for peer-to-peer interaction.

Cognitive presence

The survey results of cognitive presence indicated a high level of satisfaction among students, with previous studies by Almasi and Zhu (2020) and Akyol and Garrison (2008) also supporting these findings. Almasi and Zhu (2020) demonstrated that blended learning could facilitate cognitive Presence in Tanzanian universities, leading to improved academic performance. Similarly, Akyol and Garrison (2008) found that higher levels of cognitive presence result in increased awareness, meaningful learning, and construct-based learning. However, Law et al.'s (2019) study showed that while there was a slight difference in cognitive presence between blended and non-blended learning groups, it was not statistically significant.

Moreover, in the present study, students actively participated in class discussions, shared their thoughts and ideas, asked questions, and responded to their peers' comments, demonstrating positive cognitive behavior. They also exhibited motivation in comprehending reading materials and improving their skills in identifying details. Seeking feedback from teachers or classmates showcased their eagerness to learn and enhance their understanding. Additionally, the students displayed excellent skills in making inferences and identifying main ideas, significantly improving their reading comprehension.

CONCLUSION

The present research shows that blended learning can be an effective approach to improving second-year Thai vocational students' English reading comprehension skills. Based on the findings, it is evident that by incorporating innovative strategies and leveraging technology, blended learning can create an engaging and interactive learning environment that fosters collaboration, motivation, and critical thinking skills among students. Additionally, the study underscores the significance of teaching presence, social presence, and cognitive presence in ensuring high levels of student satisfaction in blended learning environments. The study findings

offer valuable insights for educators and researchers seeking to enhance English language learning outcomes in the vocational education sector in Thailand.

Although the study sheds light on the importance of blended learning in students' reading comprehension skills, it has its limitations. First, the study was conducted only in Thailand with Thai vocational students as participants. Future studies may extend the context to different learning institutions, which may involve different groups of students to support or argue with the current findings. Second, the study relied on a quantitative design of the One-Group Pretest-Posttest method, which may be limiting and does not explore the lived experiences of the students in a blended learning environment. A qualitative study exploring students' experiences of blended learning would shed new perspectives on this approach to teaching reading.

Furthermore, future studies can build upon these findings by exploring additional aspects of blended learning and investigating its long-term effects on students' language proficiency and academic achievement. This research contributes to understanding the benefits of blended learning approaches and holds important implications for instructional design and practice in vocational education settings.

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Appendix A

Students' satisfaction with the blended learning experience

Definition:

Students' satisfaction with the blended learning experience refers to the personal experiences of vocational students with the blended learning method, which manifests in their academic experience at the combination of cognitive, social, and teaching presences. This experience provides opportunities to enhance their comprehension, collaboration in each lesson, and a peer-teaching environment. The researcher designs ten online survey questionnaires based on 5-point Likert scales to measure students' satisfaction with the given intervention.

Students' satisfaction with the blended learning experience Blueprint		
Community of Inquiry (Col) Framework	Criteria	Number of questionnaires
Cognitive Presence	Comprehension in every lesson and digital literacy.	7
Social Presence	Collaboration in every lesson and engagement in each task.	7
Teaching presence	Teaching method and peer-teaching environment.	6
Total number of questionnaires		20

The following five-point Likert rankings recognize the levels of satisfaction:

5.00 - 4.51 = "Very Satisfied"

4.50 - 3.51 = "Satisfied"

3.50 - 2.51 = "Neutral"

2.50 - 1.51 = "Dissatisfied" and

1.50 - 1.00 = "Very Dissatisfied."

Students' satisfaction with the blended learning experience

A. Cognitive Presence

I am satisfied that the blended learning session is simple and clear for me to understand.

I am satisfied that blended learning helped me enhance my ability to search the internet world and have unlimited access to e-books, articles, and other online reading materials.

I am satisfied learning the strategy of recognizing basic information in English written text.

I am satisfied learning the strategy of identifying the main idea in English written text.

I am satisfied learning the strategy of identifying the details in English written text.

I am satisfied learning the strategy of making inferences from English written text.

I am satisfied learning the strategy of understanding English academic text.

B. Social Presence

I am satisfied that studying through blended learning improves my communication with my teacher and classmates.

I am satisfied that blended learning facilitated us to complete our activities and assignments more quickly, with my peer's and groupmates' effective communication.

I am satisfied with collaborating and brainstorming among my group members in recognizing the basic information in English written text.

I am satisfied with collaborating and brainstorming among my group members in identifying the main idea of the English written text.

I am satisfied with collaborating and brainstorming among my group members in identifying the details in the English written text.

I am satisfied with collaborating and brainstorming among my group members in making inferences from the English written text.

I am satisfied learning the strategy of understanding English academic text through collaboration and brainstorming among group members.

C. Teaching presence

I am satisfied with my teacher's approach to facilitating our own learning through group discussions and collaboration on our tasks.

I am satisfied with our blended learning method (one day of online learning sessions with online tutorials on another day and face-to-face presentations the following week), which will allow me to spend more time on my self-study.

I am satisfied with the improvement of my ability to recognize the basic information in an English written text through the blended learning teaching method.

I am satisfied with the improvement of my ability to identify the main idea in an English written text through the blended learning teaching method.

I am satisfied with the improvement of my ability to identify the details in an English written text through the blended learning teaching method.

I am satisfied with the improvement of my ability to make inferences in an English written text through the blended learning teaching method.