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Computer-assisted English Lessons for Logistics with Task-based Language Teaching for Enhancing Receptive and Productive Vocabulary Knowledge of EFL Thai Learners

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ABSTRACT

Language Instruction, especially teaching and learning English for specific purposes (ESP) with Computer-Assisted Language Learning (CALL) has grown in popularity for over a decade. Task-based Language Teaching (TBLT) is one of the appropriate teaching approaches used to make CALL more effective. This study attempts to develop, implement, and compare Computer-Assisted English Lessons for Logistics with Task-Based Language Teaching used for enhancing learners' receptive and productive vocabulary knowledge of English for Logistics in an experimental group, and a control group. A randomized pretest and posttest design was used. The participants included 48 Thai EFL college learners, and they were placed randomly into the control group (N = 24) and the experimental group (N = 24). Then, both groups took a pretest, the experimental group received the treatment through CALL-based instruction with TBLT while the control group was

taught based on traditional approaches. Data were collected via posttest and pretest scores. The finding of one-way MANOVA indicated that the experimental group significantly outperformed the control group on both receptive and productive vocabulary posttest. This study implied that EFL Thai learners could improve their receptive and productive vocabulary knowledge through an ESP course designed for the integration between CALL and TBLT. This gave EFL practitioners a guideline for ESP course design, and it would also demonstrate the benefit of CALL implementation with TBLT in real-world teaching in the Thai EFL context.

Keywords: computer-assisted language learning, task-based language teaching, receptive vocabulary knowledge, productive vocabulary knowledge, ESP/EOP

Introduction

The higher likelihood of logistics employment in the Eastern Special Economic Zones in Thailand makes educational institutions desire to develop specialized individuals in the logistics field for future work support. Therefore, the educational institution has established an English language course for logistics as English for specific purposes (ESP) to provide students with knowledge supporting their work after graduation (Songsom et al., 2021). To promote and develop ESP learning to be successful, teachers need to design a course to achieve its objectives by focusing on technical vocabulary learning with the suitability of the teaching approach and learners' learning styles (Hutchinson & Waters, 1994; Marinov, 2013; Tsao, 2011). These important factors will enable students to achieve their learning goals.

For technical vocabulary learning, it should be known as words, which are recognizably specific to a discipline (Nation, 2013). In other words, a learner aiming to work in logistics should comprehend the definitions of English logistics terminology. Nation (1990) describes components of vocabulary knowledge that learners need regarding: form (spoken, written, and word parts), meaning (form & meaning, concepts & referents, and associations), and use (grammatical functions, collocations, and constraints of use). For the teaching approach, Task-based instruction (TBI), also known as Task-based language teaching (TBLT), is one of many modern ESL teaching methods, and it is widely used in English as FL/SL language teaching. This approach enables learners to have an opportunity to practice their English language skills through tasks or assignments. The activities learners engaged in will be designed to fulfill the communicative approach

(Bhandari, 2020). Three stages are exploited by this approach: ***pre-task, task cycle,*** and ***post-task***. In a pre-task, topics are introduced by teachers, and tasks are explained to ensure that learners understand the tasks assigned. Next, a task cycle is a step for preparing the assigned task activities, such as jigsaw, information gap, problem-solving and reasoning gap, etc. A post-task is the last stage, emphasizing language focus to analyze the learners' language use. After that, feedback is required and given to help learners practice their English again (Willis, 1996). Learners can help one another actively in learning activities with a controlled workload, and they can check one another's work, and recommend edits to their classmates to improve and complete the workload activities. Moreover, this method creates student-centered learning by allowing learners to participate in activities. Learners can help their classmates in cooperative learning, check, and complete their classmates' workload activities (Ellis, 2001).

With the rapid technological advancement today, technology plays a pivotal role in teaching and learning. The combination of technology with language teaching, especially the use of computers in EFL/ ESL learning environments (Baş & Kuzucu, 2009), is adopted worldwide to promote educational activities in a meaningful way (Blattner & Fiori, 2009). Computer Assisted Language Learning (CALL) is one of the effective approaches assisting to improve EFL/ESL learners in all language skills. Many studies have suggested that computers are an essential tool for building processes in a new and exciting way in language learning. A computer serves as a learning medium between the teacher and the learner. It helps learners interact via images, animated letters, sounds, etc., and makes learners enjoy learning in a favorable setting. CALL is based on the concept of the stimulus-response theory (Olson & Hergenhahn, 2013). The design of the program starts with giving the learners a stimulus, assessing learner responses, providing feedback to reinforce, and encouraging learners to choose their next stimulus (Garrett, 2009).

As stated above, the incorporation of CALL into TBLT enables students to have their self-learning in listening, speaking, reading, and writing skills with direct experiences. Consequently, the main purpose of this research was to develop a computer-assisted language learning program with an emphasis on task-based instruction as a learning material of English for Logistics. This program of Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT) may raise the receptive and productive vocabulary knowledge of Thai learners in the Eastern Special Economic Zones. It also provides learners with alternatives in their own learning and encourages them to have a positive attitude toward English language learning.

Literature Review

This section is based on the brief concept of teaching vocabulary and grammar with technological aids, the principle of task-based language teaching, and receptive & productive vocabulary knowledge from previous studies.

Vocabulary Learning Strategies and Teaching Vocabulary with Technological Aids

Learning vocabulary is useful in learning a new language, and a teacher should instruct learners to have vocabulary knowledge. As referred by Stahl (2005), vocabulary knowledge is knowledge; the knowledge of a word not only implies a definition but also implies how that word fits into the world. If the learner does not have enough vocabulary, it will cause problems in reading the story, listening to the news, conveying information, and even writing a message. A person who knows a lot of vocabulary will have an advantage in learning English (Ghalebi et al., 2020).

According to Nation (2001), the principle of teaching vocabulary is divided into 3 types as follows: First, content and sequencing refer to the selection of words based on the frequency of encounters with vocabulary so that learners will practice using them sufficiently. Teachers should offer learning opportunities for learners to build vocabulary in various ways. Second, in word presentation, a teacher is supposed to choose common words to present, and a learner should be aware of guessing the meanings of unfamiliar words from the context clues which is supported by many scholars regarding the use of clues for guessing the meanings. Some scholars believe that even a slight increase in context clue usage has the potential to result in significant long-term vocabulary gain (Nagy et al.,1987; Swanborn & de Glopper, 1999). In terms of linguistic competence, vocabulary learning strategies were chosen to employ by a learner, and a teacher encourages a learner to use vocabulary with drills and repetition. They should create the environment and render support for the learner to increase knowledge of an enormous number of words, which is consistent with Bishop et al., (2009) discussion on how to teach vocabulary to a learner properly. A teacher should allow learners to use vocabulary regularly and encourage them to link a word and meaning with their visualization. Third, during monitoring and assessment, a learner' quality of vocabulary use will be improved by teachers' feedback, and learners' self-assessment should be made by themselves to improve their skills.

The role of technology as a teaching resource for foreign language instruction is increasing because teachers believe in its ability to create both an independent and collaborative learning atmosphere in which students can acquire and practice a new language. Even though the application of technology in the language classroom, such as the use of film, radio, television, and language labs with audio tapes and computers was adopted by the 1980s (Cunningham, 1998), there have been more challenges in the 21st century for teachers all over the world because their teaching skills with technology should be innovatively, creatively extended in the classroom. Empirical studies have demonstrated that CALL may serve as a tool for facilitating learners' vocabulary learning. For example, Stockwell (2013) investigated an intelligent system for vocabulary learning through reading. He asserted that Computer Assisted Vocabulary Learning (CAVL) is the vocabulary application helping to learn to understand the meaning of unknown words. Fithriani (2021) investigated Mobile-assisted Gamification (MAG) for Vocabulary Learning. The benefit of MAG improved learners in three dimensions: vocabulary learning outcome, motivation, and enjoyment. Both studies revealed that CAVL and MAG can be used to draw the attention of L2 learners to unfamiliar words.

The amount of literature exploring Moodle-based E-learning with social constructivism theory (Bataineh & Mayyas, 2017), online flashcard website (McLean et al., 2013), Specific English Academic Vocabularies (ESAP) through the use of mobile-assisted language learning (MALL) (Simanjuntak, 2020), online medium in Polish schools during a COVID-19 pandemic (Krajka, 2021), indicates an increase of vocabulary and grammar knowledge in an experimental group treated by computer-mediated collaborative learning.

Task-based Language Teaching (TBLT)

The concept of TBLT was first brought by Prabhu's Bangalore project which began in the 1970s. Prabhu (1987), the first proponent of TBLT, started to use the approach in teaching a middle school class in India, and he focused on communicative purposes rather than explicit grammar teaching. The primary purpose of TBLT is to engage learners in authentic language use through doing tasks while interacting with others. Later, the term "task" has been defined by many linguists. For example, Nunan (1989) states that a task is a piece of classroom work in which learners are engaged to comprehend, produce, or introduce the target language while their attention is chiefly paid to meaning rather than form. Skehan (1998), one of the earlier proponents of TBLT, explained four features of a task as: meaning is primary, there is some type of relation to real-world activities, task

completion is the priority, and task assessment results in achieving the outcome.

Task components are taken into prior consideration when a task used in the TBLT framework is designed to meet communicative competence. If task components are not applied appropriately, the task will not be meaningful for learners to engage. Task components have been explored by many researchers. Tasks require six key elements: goals, input, activities, teacher's role, learner's role, and settings (Candlin, 1987; Nunan, 2004; Richards & Rodgers, 2001; Willis & Willis, 2007). All elements are required to design the pre-task, task cycle, and post-task which are the structural frameworks of TBLT. Furthermore, various types of tasks were classified by many scholars. For instance, listing task, ordering and sorting task, comparing task, problem-solving task, sharing personal experience task, and the creative task were introduced by Willis (1996). Pattison (1987) suggested 7 activity types: questions and answers, dialogues and role-plays, matching, communication strategies, pictures and stories, puzzles and problems, discussion, and making decisions. Prabhu (1987) also summarized 3 main task types which were information-gap activities, reasoning-gap activities, and opinion gap activities. Therefore, all types of tasks described earlier are necessary for teachers to take into consideration when designing the activities. The methodology section of this research provides a more specific and detailed model of how task-based lessons can be designed in the classroom.

The Implementation of TBLT in the Thai EFL Context

TBLT adopted to use for enhancing Thai learners' performance in four skills can be found in many research studies, such as listening (Promruang, 2012), speaking (Hasan, 2014; Pongsawang, 2012; Sae-Ong, 2010; Vega, 2010), reading (Saiyod, 2009) and writing (Ariyatanet, 2018; Kaikaew & Lornklang, 2015). The results showed that learners' writing performance significantly improved after learning through TBLT. The learners' ability in listening and speaking was significantly higher after using this approach. In term of learners' reading competence, the result indicated that doing tasks enable learners to interact with classmates and teachers, and it also provided an opportunity to gain new vocabulary and grammar knowledge. However, incorporating TBLT in the real classroom resulted in time management problems (Bunmak, 2017). Tasks were not accomplished in time. Previous studies have investigated the adoption of TBLT, with a particular focus on motivation (Pietri, 2015) and teachers' and learners' reactions (McDonough & Chaikitmonkol, 2007). A case study was conducted to investigate teachers' and learners' reactions to TBLT implementation in EFL classrooms at a Thai University. Participants' reactions to the TBLT course were elicited by

observation, interviews, students' notebooks, and course evaluations. This approach motivated and encouraged them to work in the group very well.

Moreover, some studies have reported on the practical impact of TBLT on learners' FL/SL acquisition in the context of ESP/ EOP (English for Specific/ Occupational Purposes) specifically for the Thai EFL context. Umapun and Chalermsri (2012) studied the effect of task-based learning on agricultural mechanical engineering students' English speaking ability in a crop production course at Rajamangala University of Technology Isan. After the study, it was found that learners' speaking abilities were improved, according to the posttest score increase. TBLT was advantageous for teaching speaking to FL learners and the learners also have a positive attitude toward TBLT. Another study was done by Saeheng and Prammanee (2012) on the impact of employing a task-based interactive learning tool on higher vocational certificate accounting students' English reading skills. The results showed that participants who engaged in activity tasks outperformed the other group.

Advantages of TBLT on Receptive and Productive Vocabulary Acquisition

Vocabulary knowledge can be categorized into two types: Receptive knowledge refers to the capacity to comprehend a word when learners hear or see it, and this knowledge is the first step in vocabulary learning. In contrast, productive knowledge means the knowledge developed from passive vocabulary knowledge to produce a word when learners are able to use vocabulary in their writing or speaking (Schmitt, 2010). Melka (1997) further states both types of vocabulary knowledge as a continuum, as the vocabulary knowledge the learner acquires will gradually change from passive knowledge to constructive knowledge later. Regarding the applicability of TBLT on learners' vocabulary acquisition, Newton (2001) studied the option for vocabulary learning through communicative tasks. He asserted that the TBLT approach helps learners to gain the productive knowledge through the communicative tasks, and also facilitates them to achieve two areas (vocabulary and grammar) of linguistic knowledges (Gardner & Miller, 1996). Therefore, when the vocabulary is taught in TBLT, tasks should be designed to activate learners' receptive and productive vocabulary knowledge. Seemingly, vocabulary tests should be made by adopting techniques that can measure not only learners' receptive but productive vocabulary knowledge as well (Ellis, 2001; Faraj, 2015). As a result, the posttest in this study measured both receptive and productive knowledge to obtain the highest benefit of the result.

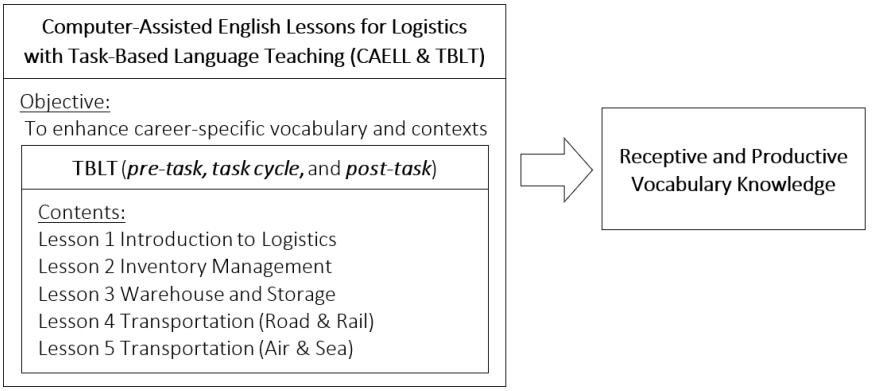
Methodology

The Study

This study was to develop Computer-Assisted English Lessons for Logistics (CAELL) with Task-Based Language Teaching (TBLT) for enhancing the learners' receptive and productive knowledge of English for Logistics. In addition to CAELL development, the experiment was designed to investigate the effect of CAELL implementation in teaching English for Logistics with TBLT on learners' ability to increase receptive and productive vocabulary knowledge of English for Logistics. The experimental framework is shown in Figure 1.

Figure 1

The Conceptual Framework of the Study



As a result, the current study aims to answer the following research questions:

1) Does Computer-Assisted English Lessons for Logistics with Task-Based Language Teaching (CAELL & TBLT) enhance students' receptive and productive vocabulary knowledge?

2) Are there any significant differences between the group treated by CAELL & TBLT and the group with no treatment on the receptive and productive vocabulary posttest?

Research Design

As an experimental study, it was designed utilizing a Randomized pretest and posttest control group design, (McMillan & Schumacher, 2010, p. 274) with two groups of participants: the experimental group and the control group. The study lasted about 5 weeks. The pretest was given to ensure their equivalence before the treatment, and the posttest serves the purpose of assessing in treatment's effectiveness. As for the variables, Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT) constituted the independent variable, and learners' receptive and productive vocabulary knowledge of English for Logistics were dependent variables.

Participants

The participants were 48 undergraduate students (38 Females and 10 Males; M = 20 years) studying in the second year of majoring in Logistics Digital at Rajamangala University of Technology Tawan-ok. Most of them obtained grade B or above in their English for Logistics course, and they were interested in working in the logistics industry located in the Eastern region of Thailand. All participants were selected by Simple Random Sampling in Random Assignment with Matching (Christensen et al., 2014). They were assigned to an experimental group (n=24) and a control group (n=24).

Instruments

The main instruments included Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT) and Receptive and Productive vocabulary tests of English for Logistics. The detailed account is demonstrated as follows:

Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT)

Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT) was utilized as the instrument for assessing the learners' abilities in receptive and productive vocabulary knowledge, and it was applied by the ADDIE model which is composed of analysis, design, development, implementation, and evaluation. Firstly, a study of Logistics management's curriculum was made, and a needs analysis questionnaire of Logistics topics was used to choose appropriate and

interesting topics for preparing the lesson plan design. Five interesting topics and essential vocabulary were selected to write a lesson plan from fifteen lessons consisting of 1) Introduction to Logistics 2) Inventory Management 3) Production Logistics 4) Warehouse & Storage 5) Reverse Logistics 6) Supply Chain 7) Distribution Centers 8) Cargo Insurance 9) Road Freight Transportation 10) Rail Freight Transportation 11) Air Freight Transportation 12) Sea Freight Transportation 13) Customs 14) Shipping Document 15) Logistics Problems in the Career Paths Logistics textbook (Evan et al., 2018) and English for Logistics textbooks (Grussendorf, 2009) with content validity testing with an IOC index at 0.86 checked by 6 English language teaching experts. Five lessons, with a unique topic for each lesson, were Introduction to Logistics, Inventory Management, Warehouse & Storage, Transportation (Road & Rail), and Transportation (Air & Sea). Each 180-minute lesson plan was designed by the integration of the theory of Task-based Language Teaching (TBLT) proposed by Willis (1996) and Ellis (2003), which was composed of 45-minute activity in pre-task, 45-minute in the task cycle, and 90-minute in post-task (see Appendix A for examples of a lesson plan), theory of interactive of multimedia (Mayer, 2009), and the concept of communicative approach (Criado, 2013).

CAELL is exclusively used in the pre-task only, with forty-five-minute time duration practice. Details of CAELL were created using Google Site in English Lessons for Logistics and program manuals were made. Many parts such as the Home page, Introduction page, Objective and, Content page, etc. were displayed on the program screen (see Appendix B for CAELL screen). Before actual implementation, the CAELL was assessed by the Content Validity Index which is not less than 0.80 (Di lorio, 2005, p. 218). The result showed that there was a strong index of content validity (CVI = 1) rated by 3 experts, and the preliminary version of CAELL & TBLT was the pilot test with an initial sample of twenty-five learners. Consequently, CAELL & TBLT was reliable enough to be used, and it was implemented in the experimental group to check the effectiveness of the program used.

Receptive and Productive Vocabulary Knowledge Measures

Two types of English for Logistics vocabulary tests were employed to assess the learners' receptive and productive vocabulary knowledge of English for Logistics. First, the receptive vocabulary test was adapted from Vocabulary Level Test: Test B (Nation, 2001). This test comprised 60 multiple-choice vocabulary items that learners were asked to choose for matching a word meaning which appeared in a pre-task step. Learners were given 20 minutes to complete the test. Second, a productive vocabulary test was developed by the adaptation of Vocabulary Level Test: Test C (Nation,

2001). The test contained 50 words which were assigned for learners to fill in the blanks. The test time was 30 minutes. The target words used in both tests were randomly obtained by word lists of English for Logistics taken from Career Paths Logistics (Evan et al., 2018) and English for Logistics (Grussendorf, 2009). The target words that existed in the receptive and productive vocabulary test were from the words learned by CAELL & TBLT from Lessons 1-5.

To estimate the content validity and reliability, the tests were given to a pilot group of 50 learners as a representative sample. The content validity was rated by 6 experts in the field of English language teaching and assessment. The tests met a high degree of content validity, The CVI of receptive and productive vocabulary tests turned out to be 0.89 and 1.00, respectively, which indicated an acceptable standard to use.

Procedure

Before conducting the research, forty-eight learners were asked to finish the pretest of receptive and productive vocabulary knowledge. In the intervention period, CAELL & TBLT was used in the experimental group, and none of the programs were used in the control group. The study lasted for 5 weeks with two sessions per week, and each session lasted for 90 minutes. During 5 weeks, learners were engaged in five task-based lessons. CAELL was applied in a forty-five-minute pre-task in each lesson with other task-based activities provided. After the treatment of CAELL & TBLT had been completed, the posttests of receptive and productive vocabulary knowledge were tested in both the control and the experimental group without prior notification to see how much the effectiveness of the implementation of the program with TBLT affects learners' receptive and productive vocabulary knowledge in English for Logistics.

Scoring and Data Analysis

Scores on receptive and productive vocabulary knowledge were calculated based on the tests. The learners' pretests and posttests were marked, with a correct answer scoring 1 point, and an incorrect answer scoring 0 points. The participants' scores on two knowledge tests were analyzed by descriptive statistics calculated by SPSS version 23. Mean, percentage, and standard deviation of the learners' gained scores were performed. A paired-sample t-test was used to analyze and compare the pretests' and posttests' scores in each group. MANOVA was used to

investigate the ability of learners' receptive and productive vocabulary knowledge between the experimental and the control groups.

Results

The research questions in this study concerned the effectiveness of using CAELL & TBLT on learners' receptive and productive vocabulary knowledge enhancement. As the pretest and posttest were given to participants, gained scores of differences in the post and pretest receptive and productive vocabulary knowledge were calculated in two groups, which were the experimental and the control group. First, descriptive statistics of receptive and productive scores obtained by the participants in the experimental group are shown in Table 1, and a paired-sample t-test was conducted to compare the learners' receptive and productive scores before and after treatment. The results are mapped out in Table 2. For the control group, descriptive statistics of test scores and the comparison of variable dependents were presented in Table 3 and Table 4 respectively.

Differences between the Pretest's and Posttest's scores of the Experimental Group and the Control Group

The group practiced by Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT)

Table 1

Descriptive Statistics for Test Scores in the Experimental Group

Dependent Variable	pretest *(n = 24)*		posttest *(n = 24)*	
	M	*SD*	*M*	*SD*
The score obtained by the Receptive Vocabulary Knowledge Test	19.79 (Min = 7, Max = 33)	6.61	37.38 (Min = 25, Max = 50)	5.67
The score obtained by the Productive Vocabulary Knowledge Test	7.92 (Min = 1, Max = 14)	3.41	13.58 (Min = 3, Max = 19)	3.94

As illustrated in Table 1, the results of the receptive and productive vocabulary knowledge of learners before using CAELL & TBLT and after using the program in the posttest are presented. There is an increase in the mean scores of the pretest (19.79) to the posttest (37.38) received on the receptive test. The mean scores clearly show a considerable increase difference (17.59) after the intervention applied by the program. The mean

scores' differences between the pretest and posttest of the productive vocabulary knowledge test are 5.66.

Table 2

The Comparison of Variable Dependents in the Group Practiced by Computer-Assisted English Lessons for Logistics before and after the Experiment

Dependent Variable	*n*	pretest		posttest		*t*	*p*
		M	*SD*	*M*	*SD*		
The score obtained by the Receptive Vocabulary Knowledge Test	24	19.79	6.61	37.38	5.67	-16.78*	.00
The score obtained by the Productive Vocabulary Knowledge Test	24	7.92	3.41	13.58	3.94	-9.29*	.00

*$p < .01$

The mean score of the pretest measured by the receptive vocabulary knowledge test was 19.79 and the posttest was 37.38. The posttest was outstandingly higher than the pretest, with a statistical significance level of 0.01. Likewise, for the productive vocabulary knowledge test, the posttest scored higher compared to the pretest. The comparison of learners' ability in learning English for Logistics obtained by the scores of two tests before and after treatment is shown in Table 2.

The Control Group with No Treatment

Table 3

The Comparison of Two Different Score Types between the Pretest and the Posttest in the Control Group

Dependent Variable	*n*	pretest		posttest		*t*	*p*
		M	*SD*	*M*	*SD*		
The score obtained by Receptive Vocabulary Knowledge Test	24	18	7.71	19.75	8.03	-1.97*	.06
The score obtained by Productive Vocabulary Knowledge Test	24	7.75	3.40	8.17	3.37	-2.00*	.06

*$p < .01$

Table 3 indicated that in the receptive vocabulary knowledge test, the scores of the posttest and pretest are quite similar in the control group. There were no outstanding differences between the mean score of the posttest

(19.75) and the pretest (18), For the productive vocabulary knowledge test, the pretest score (M = 7.75) is not different from the posttest (M = 8.17). Both dependent variables have quite a similarity, so no statistically significant difference was shown between the pretest and posttest.

The Results of the MANOVA Analysis of Dependent Variables between the Experimental and the Control Group

Table 4

MANOVA Analysis with Two Statistical Tests

Statistical Tests	*Value*	*F*	*Hypothesis df*	*Error df*	*p*	(η^2)	**Observed Power[d]**
Pillai's Criterion	.63	37.91	2.00	45.00	.00	.63	1.00
Wilks' Lambda	.37	37.91	2.00	45.00	.00	.63	1.00

[d]Computed using alpha = .05
*$p < .01$

As shown in Table 4, a one-way multivariate analysis of variance (MANOVA) was conducted to discover whether there were significant differences between the two vocabulary knowledge tests and the program used. The MANOVA analysis used Wilk's Lambda test, and Pillai's Trace value [Pillai's trace =0.63, F=31.91, p= .00]. This means that CAELL & TBLT significantly contributed to the groups' performance on receptive and productive vocabulary knowledge.

The Wilk's Lambda test using an alpha level of .05 was used to check whether this test was significant or not. The results showed the existence of differences between two groups on the dependent variables [Wilks = .37, degree of freedom= 2, p-value = .00] with the effect size, calculated using eta squared (η^2), of dependent variables in the experimental group after intervention and the control group was .63, which was perceived as a high level (Cohen, 1992, p. 157; Tabachnick & Fidell, 2013, p. 55), and observed Power is 1.00, implying that adequate sample and effect size affect statistical significance (Hair et al., 2010, p. 466)

The Parameters' Estimates of the MANOVA Model of Dependent Variables

Table 5

The Parameters' Estimates of the Learners' Ability in Learning English for Logistics Scored by Receptive and Productive Vocabulary Knowledge Test between the Experimental Group and the Control Group.

Dependent Variables	Parameter	*B*	Std. Error	t	*p*	(η^2)	*Observed Power*
Score obtained by Receptive Vocabulary Knowledge Test	Intercept	19.75	1.42	13.92**	0.00	.81	1.00
	An Experimental group	17.63	2.01	8.78**	0.00	.63	1.00
	A Control group	0[a]					
Score obtained by Productive Vocabulary Knowledge Test	Intercept	8.17	.749	10.91**	0.00	.78	1.00
	An Experimental group	5.42	1.06	5.11**	0.00	.71	1.00
	A Control group	0[a]					

** $p < .01$; a = comparing group

As shown in Table 5, the result of parameter estimation indicated that the ability in learning English for Logistics was measured by test scores of receptive and productive vocabulary knowledge tests through the use of CAELL & TBLT. It was found that the learners have greater ability in learning English for Logistics, based on the receptive and productive vocabulary knowledge test scores, when they were exposed to the CAELL & TBLT (the experimental group) than the time they were not exposed to (the control group). The participants show statistically significant differences in both receptive and productive posttest scores between the experimental and the control group. In that, a group treated by the lesson program was higher than the control group with a statistically significant difference at 0.01 level. This was expected to ensure that all participants in the experimental group outperformed the control group in terms of their ability in learning English for Logistics.

Discussion

This current study bears a number of vital pedagogical implications. Firstly, Computer-Assisted English Lessons for Logistics with Task-based Language Teaching can be virtually used to increase learners' level of receptive and productive English vocabulary knowledge because the CAELL & TBLT was systematically developed by the combination of interactive

multimedia learning (ML) theory (Mayer, 2009) and Task-based Language Teaching (TBLT) (Willis & Willis, 2007). Initially, literature was reviewed and essential knowledge of ML theory was explored. TBLT is a key teaching approach providing opportunities for learners to practice their English language skills through assignments in three-phase procedures (pre-task, task cycle, and post-task) activities that enable learners to achieve their communicative purposes (Bhandari, 2020). It might be noteworthy that a CAELL & TBLT is an effective tool which is able to promote receptive and productive vocabulary knowledge of FL learners.

This TBLT shifts the emphasis from teaching to learning and creates a student-centered learning environment. While the learners are engaged in task completion with individual or group work, they will be actively encouraged to control their workload and cooperate with one another to complete their learning results. Furthermore, one another's tasks are checked and edits are recommended by peers to improve and complete the workload activities (Ellis, 2003). Currently, technology is being used in teaching and learning in various areas of study, especially foreign language teaching. The use of CAELL is as a learning medium between the teacher and the learner which consists of letters, images, animation, and sounds. (Garrett, 2009). This is consistent with the idea of Sandberg et al., (2011) that computer-assisted instruction may help promote low-achieving learners to have a strong motivation in language learning through enjoyable activities in a favorable atmosphere. Besides, technology may reduce learners' anxiety by giving learners the opportunity to practice the language without one-on-one practice (face-to-face) with others.

However, it should be cautioned that the incorporation of the applicable contents based on TBLT into multimedia teaching materials should be carefully prepared and well-planed. For example, in this study, CAELL was developed by the synthesis of related studies of TBLT conducted by world-renowned scholars (García, 2007; Long, 2015; Ziegler, 2016). The lesson was checked for suitability and correctness of contents before actual implementation, which is in line with Mackenzie and Cusworth (2007). If possible, professional logisticians should be asked to be involved in identifying lesson topics. This will result in lessons that are representative of the real-life Logistics workforce, reflecting the actual needs of the Logistics industry. Later, an important element of the early developing method is to bring the method to conduct a pilot study as a feasible check before actual implementation. The results of a small-scale trial will help assess the smoothness of the experiment during the actual study on a larger scale. The lessons can facilitate learners to practice English not only by memorizing English vocabulary but by developing their grammatical competence as well. Hence, this program is handy since a well-equipped lesson program can be

accessed anytime anywhere via computer, iPad, or even smartphone. This program lesson is a way to help learners learn more English vocabulary in Logistics. This is in line with the previous studies (Cavus & Ibrahim, 2009; Milrad & Spikol, 2007), which explained that the development of technology for devices such as mobile phones and tablet computers helps promote the convenience of learning both in the classroom and outside of the classroom. The combination of mobile devices and related software may promote individual and collaborative learning in the classroom. Mobile technologies may also promote adaptive learning, which provides learners with individually-customized content and gives learners the highest benefits in priority. The potential of the learners will be fully developed and this can also help promote digital learning outside the classroom.

Confirming the usefulness of teaching with multimedia for improving the language abilities of learners, the findings of this study generally concur with those earlier concerning multimedia use in language teaching. For instance, using technology and multimedia in language learning may assist learners in learning more vocabulary in the target language (Mayer & Moreno, 2002; Rezaee, 2011). In addition, Tsou et al. (2006) showed multimedia computers make teaching or language learning more effective. The advancement of networks and Internet use is so popular among teachers and learners that computer technology is commonly used in the classrooms as one of the effective teaching aids.

Secondly, according to the receptive and productive vocabulary knowledge test result, the test scores of learners taught by CAELL are statistically significantly higher than the test scores of learners in the control group. It indicated that the use of CAELL & TBLT affects vocabulary memorization and reorganization of learners. This result supports the findings of another study in the use of multimedia, images, and movies in helping learners to learn vocabulary in a reading comprehension text (Rezaee, 2011). The result revealed that participants in the group who read the text along with viewing pictures and video clips are able to learn and remember words better than those who only use text-based learning methods, which is in line with the theory of multimedia learning (Mayer, 2009). To elaborate, interestingly, creating a learning environment with Computer-based multimedia gives learners the opportunity to learn both visual and verbal representations of complicated information more easily.

The substantial supports identified in the correlation between learning English vocabulary in Logistics with multimedia and vocabulary memorization reported in this study are congruent with those from previous studies conducted by Kalyuga et al. (2013), and Tran (2008) in the context of social networking and online. To clarify, deliberately, both studies focus on online activities used to emphasize vocabulary learning which comprised

various vocabulary exercises for learners to learn pronunciation, meaning, and rhetoric of writing style. Teaching with online activities helps learners remember new words and encourage them to practice using new words well. Learners can choose exercises to suit their background knowledge, and they can adjust the vocabulary practice's content as they need through online vocabulary learning activities.

Third, concerning the MANOVA analysis's result, it can be perceived that the ability in learning the vocabulary of English for Logistics through tasks, as determined by the receptive and productive vocabulary test scores, was higher using CAELL than the control group. This appears to indicate that learners in the group who use computer-assisted instruction with task-oriented teaching exploit the learning principle through activities in the pre-task phase designed to activate their vocabulary schema at the preliminary level. In addition, when learners choose to study tasks with guided self-study, they have a positive attitude, strong motivation, and interest, and get better learning outcomes (Cordova & Lepper 1996; Morrison et al., 1992). This finding is also in agreement with similar findings in the related literature (Kalyuga, et al., 2013). They claimed that using online lessons saves time for teachers because online lessons allow other learners to join the lesson, give peers' feedback, and check peers' correctness. This gives learners the opportunity to practice learning new words with minimal guidance from teachers. Online lessons encourage learners to develop themselves. In other words, rather than having worksheets done by learners, online lessons encourage learners to develop themselves supposing that they practice playing a game. Learners can choose the level of words' difficulty and decide whether or not they choose to study on their own. Vocabulary exercises are designed for learners to choose a word by selecting new words from the glossary or words that they have already learned randomly.

Overall, the use of CAELL & TBLT can enhance learners' ability in learning vocabulary. This can be compared to a regular classroom setting without using CAELL & TBLT (the control group). The observation of both receptive and productive vocabulary knowledge test results was made, and the learners' scores of the experimental group were higher than the control group who did not use any methods. Therefore, Computer-Assisted English Lessons for Logistics with Task-based Language Teaching (CAELL & TBLT) is a means to help learners improve their receptive and productive vocabulary knowledge in English for Logistics. When learners practice learning the words through the computer-assisted lesson with tasks, they might be able to memorize the words and use them accurately.

Conclusion and Implications

Using CAELL & TBLT as supplemental material for English language teaching in Thailand has been challenged. One of the concerns arises from the applicability of CALL in the context of teaching English for Specific Purposes (ESP). In order to respond to the needs of using CALL for ESP teaching, further research was required. The present study was set up to design and create a computer-assisted lessons program in English for Logistics to enhance learners' receptive and productive vocabulary knowledge of essential English for Logistics and implement the lesson program for the learners. The program is designed on the integration of the interactive multimedia learning theory and Task-based Language Teaching. The program consists of five lessons that include three stages of task (pre-task, task cycle, and post-task) in each lesson. Each lesson comprises task activities to encourage learners to acquire vocabulary and grammar through English for Logistics contents. The pictures of learned words are clear, and the tasks are relevant and easy to follow step-by-step without being vague. The features of lessons are understandable enough for learners to learn independently. Therefore, after the learners had learned English through activities with the use of computer-assisted lessons, both learners' receptive and productive English vocabulary knowledge had increased when compared to learners in the control group. As a result, it can be seen that computer-assisted teaching lessons may be used to improve learners' abilities to learn English vocabulary in Logistics.

Besides the contributions and implications for the field of foreign and second language acquisition, especially, in the area of multimedia use in ESP teaching, this study provides pedagogical implications. First of all, for the educational policy maker, the program can be used as a model of CALL material design for teaching specific purposes in other languages, and it may facilitate the learners who seem to have difficulties in learning ESP or learning foreign languages for specific purposes. In CALL material design, this finding could be taken into consideration when making a decision to select the CALL material for teaching in the English program for specific purposes (ESP). For the adoption of Second Language Acquisition theories and methods, the lessons might also enhance EFL/ESL learners' focused skills, especially speaking skills, when the lessons are used in concert with the implementation of the Communicative Language Teaching Approach. This could also inform EFL/ESL teachers in making a decision to choose the appropriate material to enhance both learners' receptive and productive vocabulary knowledge in the ESP program.

In addition, it is recommended that the finding of this study should be reassessed after the completion of program implementation, in three and six months, to explore how much of learners' vocabulary knowledge could be maintained in a longer time span based on the program used. Also, due to some limitations: first, the language proficiency level of participants was limited, and the major of the target group was the learners in the logistics field. The participants of further study may focus on different groups of study fields to investigate how much the effectiveness of the implementation of lesson program affects the learners' learning competency. Second, learners appeared to be able to comprehend and memorize the meaning of the vocabulary exposed in the lessons. However, some performance assessments have been conducted to determine whether they can actually use the words learned for active communicative purposes. The given ultimate goal of any language learning is communicative competence. Additional studies are needed to make sure that they can use the words learned communicatively. Controlled and uncontrolled oral communicative tasks could be an activity to assess whether these learners can express their idea with the words learned communicatively.

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References

Ariyatanet, O. (2018). *The development of secondary school students' English narrative writing skills through picture story description tasks* [Unpublished master's thesis]. University of Phayao.

Baş, G., & Kuzucu, O. (2009). Effects of CALL method and Dyned language programme on students' achievement levels and attitudes towards the lesson in English classes. *International Journal of Instructional Technology and Distance Learning, 6*(7), 31-44. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.592.4490&rep=rep1&type=pdf#page=35

Bataineh, R. F., & Mayyas, M. B. (2017). The utility of blended learning in EFL reading and grammar: A case for Moodle. *Teaching English with Technology, 17*(3), 35–49. http://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.deskligh-7e1de866-5aea-4fe8-a7f0-5310d665d1fb

Bhandari, P.L. (2020). Intercultural communicative competence in English language classrooms. *Journal for Research Scholars and Professionals of English Language Teaching, 18*(4), 1-10. https://doi.org/10.37899/journallaedusci.v1i4.211

Bishop, A., Yopp, R. H., & Yopp, H. K. (2009). *Vocabulary instruction for academic success.* Shell Education.

Blattner, G., & Fiori, M. (2009). Facebook in the language classroom: Promises and possibilities. *International Journal of Instructional Technology and Distance Learning, 6*(1), 17 – 28. http://www.itdl.org/Journal/Jan_09/Jan_09.pdf#page=21

Bunmak, N. (2017). The Influence of task-based Learning on ELT in ASEAN Context. *LEARN Journal: Language Education and Acquisition Research Network, 10*(1), 201-209.

Candlin, C. N. (1987). Towards task-based learning. In C. Candlin & D. Murphy (Eds.), *Lancaster practical papers in English language education* (pp. 5-22). Prentice Hall.

Cavus, N., & Ibrahim, D. (2009). M-Learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology, 40*, 78-91. http://dx.doi.org/10.1111/j.1467-8535.2007.00801.x

Christensen, L. B., Johnson, R. B., & Turner, L. A. (2014). *Research methods, design, and analysis* (11th ed.). Pearson.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159. https://www2.psych.ubc.ca/~schaller/528Readings/Cohen1992.pdf

Cordova, D. I., & Lepper, M. R. (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. *Journal of Educational Psychology, 88*(4), 715–730. https://doi.org/10.1037/0022-0663.88.4.715

Criado, R. (2013). A critical review of the presentation-practice-production model (PPP) in foreign language teaching. In R. Monroy (Ed.), *Homenaje a francisco gutiérrez díez* (pp. 97-115). Edit.um.

Cunningham, D. (1998). 25 years of technology in language teaching: *A personal experience. Babel, 33*(1), 4-7, 35. https://search.informit.org/doi/abs/10.3316/ielapa.981111362

Di lorio, C. K. (2005). *Measurement in health behavior.* Jossey-Bass A Wiley Imprint.

Ellis, R. (2001). Introduction: Investigating Form-Focused instruction. *Language Learning, 51*, 1-46. https://doi.org/10.1111/j.1467-1770.2001.tb00013.x

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford University Press.

Evan, V., Dooley, J., & Buchannan, D. (2018). *Career paths: Logistics*. Express Publishing.

Faraj, A. K. (2015). Effective strategies for turning receptive vocabulary into productive vocabulary in EFL context. *Journal of Education and Practice, 6*, 10-19. https://files.eric.ed.gov/fulltext/EJ1077387.pdf

Fithriani, R. (2021). The utilization of mobile-assisted gamification for vocabulary learning: Its efficacy and perceived benefits. *Computer Assisted Language Learning Electronic Journal (CALL-EJ), 22*(3), 146-163. http://callej.org/journal/22-3/Fithriani2021.pdf

García, M. (2007). *Investigating tasks in formal language learning*. Multilingual Matters.

Gardner, D. & Miller, L. (1996). Tasks for independent language learning. *TESOL*. https://eric.ed.gov/?id=ED421006

Garrett, N. (2009). Computer-assisted language learning trends and issues revisited integrating innovation. *The Modern Language Journal, 93*, 719-740. https://doi.org/10.1111/j.1540-4781.2009.00969.x

Ghalebi, R., Sadighi, F., & Bagheri, M. S. (2020). Vocabulary learning strategies: A comparative study of EFL learners. *Cogent Psychology, 7*, 1-12. https://doi.org/10.1080/23311908.2020.1824306

Grussendorf, M. (2009). *English for logistics*. Oxford University Press.

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Prentice Hall.

Hasan, A. A. (2014). The effect of using task-based learning in teaching English on the oral performance of the secondary school students. *International Interdisciplinary Journal of Education, 3*(2), 250-264. https://platform.almanhal.com/Files/Articles/42855

Hutchinson, T., & Water, A. (1994). *English for specific purpose: A learning-centre approach.* Cambridge University Press.

Kaikaew, M., & Lornklang, T. (2015). *Using task-based learning focusing on Thai culture to promote English writing ability of tenth grade students* [Unpublished master's thesis]. Nakhon Ratchasima Rajabhat University.

Kalyuga, M., Mantai, L., & Marrone, M. (2013). Efficient vocabulary learning through online activities. *Procedia-Social and Behavioral Sciences, 83*, 35-38.

Krajka, J. (2021). Teaching grammar and vocabulary in COVID-19 times: approaches used in online teaching in Polish schools during a pandemic. *JALT CALL Journal, 17*(2), 112-134. https://doi.org/10.29140/jaltcall.v17n2.379

Long, M. (2015). *Second language acquisition and task-based language teaching.* Wiley-Blackwell.

Mackenzie, W., & Cusworth, N. (2007, June 19-20). *The use and abuse of feasibility studies*. Project Evaluation Conference, Melbourne, Vic, Australia.

Marinov, S. (2013). Training ESP students in corpus use-challenges of using corpus-based exercises with students of non-philological studies. *Teaching English with Technology, 13*(4), 49-76.

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

Mayer, R. E., & Moreno, R. (2002). Aids to computer-based multimedia learning. *Learning and Instruction, 12*, 107-119. https://doi.org/10.1016/S0959-4752(01)00018-4

McDonough, K., & Chaikitmongkol, W. (2007). Teachers' and learners' reactions to a task-based EFL course in Thailand. *TESOL Quarterly, 41*(1), 107-132. https://doi.org/10.1002/j.1545-7249.2007.tb00042.x

McLean, S., Hogg, N., & Rush, T. W. (2013). Vocabulary learning through an online computerized flashcard site. *JALT CALL Journal, 9*(1), 79–98. https://files.eric.ed.gov/fulltext/EJ1108008.pdf

McMillan, J. H., & Schumacher, S. (2010). *Research in education: Evidence-based inquiry.* Pearson Higher Ed.

Melka, F. (1997). Receptive versus productive aspects of vocabulary. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 84–102). Cambridge University Press.

Milrad, M., & Spikol, D. (2007). Anytime, anywhere learning supported by smartphones: Experiences and results from the MUSIS Project. *Journal of Educational Technology & Society, 10*(4), 62-70. https://www.jstor.org/stable/jeductechsoci.10.4.62

Morrison, G.R., Ross, S.M., & Baldwin, W. (1992). Learner control of context and instructional support in learning elementary school mathematics. *Educational Technology Research and Development, 40*(1), 5-13. https://link.springer.com/article/10.1007/BF02296701

Nagy, W. E., Anderson, R. C., & Herman, P. A. (1987). Learning word meanings from context during normal reading. *American Educational Research Journal, 24*(2), 237-270. https://doi.org/10.3102/00028312024002237

Nation, I. S. P. (1990). *Teaching and learning vocabulary*. Newbury House/Harper & Row.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.

Nation, I. S. P. (2013). *Learning vocabulary in another language*. Cambridge University Press.

Newton, J. (2001) Options for vocabulary learning through communication tasks. *ELT Journal, 55*(1), 30-37. https://doi.org/10.1093/elt/55.1.30

Nunan, D. (1989). *Designing tasks for the communicative classroom.* Cambridge University Press.

Nunan, D. (2004). *Task-based language teaching.* Cambridge University Press.

Olson, M. H., & Hergenhahn, B. R. (2013). *An introduction to theories of learning* (9th ed.). Routledge.

Pattison, P. (1987). *Developing communication activities*. Cambridge University Press.

Pietri, N. J. M. (2015). The effects of task-based learning on Thai students' skills and motivation. *Asean Journal of Management and Evaluation, 2*(1), 72-80. http://dx.doi.org/10.14456/ajmi.2015.3

Pongsawang, G. (2012). *Using task-based language learning activities to enhance speaking abilities of Prathomsuksa 5 students* [Unpublished master's thesis]. Srinakharinwirot University.

Prabhu, N. S. (1987). *Second language pedagogy*. Oxford University Press.

Promruang, J. (2012). *The use of task-based learning to improve English listening and speaking abilities of Muttayomsuksa 1 students at Piboonprachasan school* [Unpublished master's thesis]. Srinakharin University.

Rezaee, A. A. (2011). Investigating the effect of using multiple sensory modes of glossing vocabulary items in a reading text with multimedia annotations. *English Language Teaching, 4*(2), 25-34. http://dx.doi.org/10.5539/elt. v4n2p25

Richards, J., & Rodgers, T. (2001). *Approaches and methods in language teaching*. Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511667305.021

Saeheng, P., & Prammanee, N. (2012). The effect of using a task-based interactive learning program on English reading ability of higher vocational certificate accounting student. *HRD Journal, 3*(1), 63-70.

Sae-Ong, U. (2010). *The use of task-based learning and group work incorporating to develop English speaking of MatthayomSuksa 4 students* [Unpublished master's thesis]. Srinakharinwirot University.

Saiyod, P. (2009). *Effects of task-based English reading instruction on reading comprehension ability of elementary school students* [Unpublished master's thesis]. Chulalongkorn University.

Sandberg, J., Maris, M., & de Geus, K. (2011). Mobile English learning: An evidence-based study with fifth graders. *Computers & Education, 57*, 1334-1347. http://dx.doi.org/10.1016/j.compedu.2011.01.015

Schmitt, N. (2010). *Researching vocabulary: A vocabulary research manual*. Palgrave Macmillan. http://dx.doi.org/10.1057/9780230293977

Simanjuntak, R. R. (2020). Learning specific academic vocabulary using MALL: Experience from computer science students. *Teaching English with Technology, 20*(5), 87–107.

Skehan, P. (1998). *A cognitive approach to language learning*. Oxford University Press.

Songsom, A., Leela Prasertsri, W., Ketetapan, K., Pengman, H., Saithanoo, S., Wethasart, & Bunsakan, N. (2021). The development of Bachelor of Technology Program in Logistics Management based on stakeholders requirements. *Princess of Naradhiwas University Journal of Humanities and Social Sciences, 8*(2), 147–163.

Stahl, S. A. (2005). Four problems with teaching word meanings (And what to do to make vocabulary an integral part of instruction). In E. H. Hiebert & M. L. Kamil. (Eds.), *Teaching and learning vocabulary: Bringing research to practice* (pp. 95-116). Lawrence Erlbaum Associates.

Stockwell, G. (2013). Investigating an intelligent system for vocabulary learning through reading. *JALT CALL Journal, 9*(3), 259-274. https://files.eric.ed.gov/fulltext/EJ1107981.pdf

Swanborn, M. S., & de Glopper, K. (1999). Incidental word learning while reading: A meta-analysis. *Review of Educational Research, 69*, 261-285. https://doi.org/10.3102%2F00346543069003261

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Tran, P. (2018). Enhancing online language learning task engagement through social interaction. *Australian Journal of Applied Linguistics, 1*(2), 88-101. https://dx.doi.org/10.29140/ajal.vln2.78

Tsao, C. H. (2011). English for specific purposes in the EFL context: A survey of student and faculty perception. *Asian ESP Journal, 7*(2), 126-149.

Tsou, W., Wang, W., & Tzeng, Y. (2006). Applying a multimedia storytelling website in foreign language learning. *Computers & Education, 47*(1), 17-28. https://doi.org/10.1016/j.compedu.2004.08.013

Umapun, C., & Chalermsri, J. (2012). Effect of task-based learning on agricultural machinery engineering students' English speaking ability at Rajamangala University of Technology Isan, Nakhonratchasima. *RMUTP Research Journal Special Issue*, 162-166. http://www.journal.rmutp.ac.th/ wp content/.../06/Special-Liberal_Arts-Inter-18.pdf

Vega, P. (2010). *Effect of team teaching of Thai and foreign teachers of English in task-based instruction on English oral communication ability and opinions about team teaching of upper secondary school students* [Unpublished master's thesis]. Chulalongkorn University.

Willis, D., & Willis, J. (2007). *Doing task-based teaching*. Oxford University Press.

Willis, J. (1996). *A Framework for task-based learning*. Longman.

Ziegler, N. (2016). Taking technology to task: Technology-mediated TBLT, performance, and production. *Annual Review of Applied Linguistic, 36*, 136–63. https://doi.org/10.1017/S0267190516000039

Appendix A

Example of the Lesson Plan in Lesson 1

English for Logistics with Task-Based Language Teaching (Lesson 1)	
Session 1	**Lesson 1: Introduction to Logistics**
45 Min.	**Stage 1 : (pre-task)**
	Procedures ▪ Ask the students to study lesson 1 (Introduction to Logistics) in the computer-assisted English lesson for Logistics. (30 minutes) ▪ Encourage the students to make a self-study time and recognize the meaning of Introduction to Logistics correctly. ▪ Activate the students to practice the vocabulary knowledge of introduction to logistics and part of grammar points by doing the exercises for vocabulary practice and grammar point practice in the computer-assisted English lessons for Logistics.
45 Min.	**Stage 2: (task cycle)**
	Procedures ▪ Ask the students to make a sentence completion with the words which the students studied in the pre-task. The students need to choose an appropriate word to complete the sentences ▪ The teacher walks around the class and monitors students' performance to check if the students are using the vocabulary accurately. ▪ Have students read the text about "Introduction to Logistics.". Ask the students to write the Thai meaning of the bold words in the text and have them answer the question in the reading exercises. After the students are asked to finish the exercises. The teachers summarize the main idea and the detailed information of the text.
Session 2	**Lesson 1: Introduction to Logistics (Continue)**
90 Min.	**Stage 3: (post-task)**
	Procedures ▪ Ask the students to use 5 vocabularies and grammar from the pre-task and task cycle with a dictionary to make a sentence with a proper tense in the form of negative, positive statement, and question forms. Write them down on the provided paper. ▪ Make a student in pairs. Students are paired and instructed to bring prepared questions. Each student makes at least 3 questions that their partner must try to answer. The questions can be close-ended or open-ended question. The answer can be negative or positive form. ▪ The teacher walks around and tries to encourage the students to elicit their answers. Note-taking is necessarily made by the teacher to see the strengths and weaknesses of the eliciting performance of students' responses. ▪ The teacher will instruct the students in pairs to list down their questions together with a summary of their answers and collect these from every pair at the end. This method will help facilitates summarization, critical thinking, and learning of the material taught.

Appendix B

Example of CAELL Screen