

The effectiveness of task-based language teaching to improve cadets' critical thinking skills in comprehending ESP English text

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Abstract: Reading is crucial for English learners to enhance their fluency, vocabulary, and overall academic success, especially in terms of reading comprehension. In the context of English for Specific Purposes (ESP), critical thinking is particularly important for cadets as it enables them to engage with specialized content, such as maritime studies. This study examines the effectiveness of Task-Based Language Teaching (TBLT) in improving cadets' critical thinking skills and reading comprehension of ESP reading texts. This study used quantitative research design. The subjects were 64 cadets and two lecturers at a Merchant Marine Polytechnic in Surabaya. Data were collected using observations, interviews, and pretest-posttest results and analyzed using descriptive statistics, t-tests, and MANOVA to assess cadets' critical thinking and reading comprehension before and after implementing TBLT. The results of MANOVA showed a significant improvement in critical thinking skills and reading comprehension among cadets using the TBLT model compared to those who did not. The TBLT improved cadets' abilities to analyze, evaluate, and apply ESP content to practical maritime contexts. The significance value of the Hotelling's Trace test ($p < 0.05$) confirmed the positive impact of TBLT on both skills. In conclusion, TBLT effectively improves critical thinking and reading comprehension skills in ESP learning for cadets. These findings emphasize use of TBLT to develop critical academic skills, providing a strong foundation for learners in specialized areas such as maritime studies.

Keywords: Cadets, Critical thinking, ESP, Reading comprehension, Task-Based language teaching.

1. Introduction

Reading is very important for people learning English because it helps them understand the language better and use it correctly. When students read often, they get better at understanding of the context [1], and using local stories and materials in teaching also helps students improve their reading skills [2]. Reading helps students think about what they read and connect it to what they already know [3] and it is also important for learning new things in school [4]. Therefore, reading is crucial for English language learners, as regular practice with contextually relevant material improves fluency, comprehension, vocabulary, and overall academic success.

Students need advanced skills, like knowledge, abilities, and personal traits, to succeed in today's world [5]. These skills are important because of changes in the economy, technology, and society [6]. Using technology in education helps students think critically and solve problems [7], [8]. Mulyani et al., (2023) stated that learning through projects helps students become more creative and think critically. Therefore, technology helps to support critical thinking and problem-solving, while project-based learning further fosters creativity and critical thinking skills.

Critical thinking skills can be categorized into six areas, as defined by Facione (2011): interpretation, analysis, evaluation, inference, explanation, and self-regulation. These categories can be used to assess students' critical thinking during reading. Many studies have shown the benefits of incorporating critical thinking in reading classes. Sumarni & Salsabila, (2023) stated the integration of critical thinking indicators in English reading materials, particularly analysis and evaluation skills.

Rodionova & Titova (2023) stated developing critical reading skills through foreign periodicals. In addition, critical thinking is a significant predictor of reading comprehension among seventh-grade students [13], [14]. Finally, Pratama et al. (2024) demonstrated the positive impact of contextual reading materials on enhancing students' critical thinking and reading comprehension skills. Thus, it is necessary to develop critical thinking skills to improve students' reading abilities and academic performance.

Task-Based Language Teaching (TBLT) is highly effective in teaching English, especially in English for Specific Purposes (ESP) programs [16]. By focusing on tasks that mirror real-life situations, TBLT helps learners engage more meaningfully with the language. In ESP settings, such as aviation, maritime studies, or hospitality, this approach allows students to practice language through tasks directly relevant to their intended professions. As learners participate in tasks that require practical language use, they not only build language skills but also enhance their analytical and problem-solving abilities, both of which are critical in professional environments [17].

Contextualized learning materials have become essential in ESP as they help students connect language learning with real-world applications [18]. Students show increased motivation and comprehension when the materials reflect the language and situations they will encounter in their careers [19]. For example, cadets studying maritime English benefit from texts on navigation and ship communication, which prepare them for future responsibilities. Such materials deepen students' understanding of industry-specific language, while also helping them develop critical thinking skills, making their language learning directly relevant to their professional aspirations.

Critical thinking skills are fundamental to reading comprehension and professional competence, as they prepare students for real-world challenges [20]. For students in specialized programs, developing critical thinking through reading is crucial because it enables them to interpret, analyze, and respond to information accurately [21]. In professional fields like maritime or aviation, quick and accurate information processing is often necessary for safety and success. By building these skills in an academic setting, students are better equipped to handle the demands of their future careers, where critical reading and decision-making are frequently required.

The success of TBLT in ESP is based on pedagogical theories that support active and experiential learning [22]. This approach helps students to construct knowledge through engagement in tasks that replicate real-life challenges. In ESP classrooms, teachers can design tasks that simulate professional scenarios, requiring students to use language for problem-solving in practical situations [23]. This immersive learning environment not only strengthens language proficiency but also helps students develop creativity, adaptability, and critical thinking, which are essential for succeeding in any specialized field.

In the context of English for Specific Purposes (ESP), critical thinking and TBLT are particularly beneficial. ESP focuses on teaching language relevant to specific fields such as business, science, or technology, requiring learners to acquire language proficiency and the ability to critically engage with field-specific content. Pratama et al. (2024) showed that contextual reading materials, central to ESP, significantly enhance students' critical thinking and reading comprehension skills. Spirovska (2022) highlighted the importance of critical reading and thinking skills in advanced English courses, noting these are crucial for understanding and engaging with complex texts. Based on the background above, this research investigated the effectiveness of TBLT in improving cadets' critical thinking skills in comprehending ESP Reading text.

2. Theoretical Background

2.1. Characteristics of Critical Thinking

To achieve in a constantly changing environment, students must understand essential skills taught within a 21st-century skill set. These skills are necessary for students to succeed in today's job market [25]. Teachers must teach critical thinking while students are responsible for their learning. Students must be able to seek, analyze, and evaluate new material while organizing and planning its use [26]. To begin critical thinking, students need to understand its qualities.

To summarize the previous features of critical thinking, the researcher states that someone with

critical thinking would not readily accept what they hear from others rather than questioning and ask for confirmation. He further explains that people with critical thinking are more engaged, accepting things based on evidence, assessing what they hear, and constantly speaking with proof and accountability.

2.2. The Benefits of Critical Thinking

Critical thinking may help students distinguish between useful and irrelevant information [27]. A student's ability to identify the key points in a text or other message rather of being distracted by less important materials is improved. A student's ability to respond to the appropriate points in a text or other message is improved. To summarize, critical thinkers are frequently more attentive while reading. They are also better at detecting the root of issues and can react appropriately in specific situations.

Most studies on critical thinking have focused on students from middle to higher education levels [28]. Some researchers have found positive results when integrating critical thinking into teaching listening and speaking at a large university in southern Taiwan. However, critical thinking skills among third-year university English students in Indonesia lag behind those of secondary and university students in America. In conclusion, despite being required in the curriculum, critical thinking remains a challenge for English teachers in Indonesia.

2.3. Teaching ESP Reading

Reading is the primary means by which students will improve their English in your course. An effective reading program provides instruction in the skills required at various levels and ample practice in these skills. Fluent reading depends primarily on knowledge of vocabulary and subject matter, and secondarily on understanding grammatical structures and the ways writers organize texts in English [29].

Reading comprehension can be improved through language training focusing on structure and language function. According to [30], Reading comprehension is necessary in our society. Reading is almost always done to understand the text's meaning or message. Content is kept as low as possible in ESP courses to prevent disturbing language training. It also retrieves particular grammar structures or language functions.

3. Research Methods

The study uses a quantitative approach [31]. Data collection included pretest-posttest results. The study was conducted at Maritime Polytechnique in Surabaya, strategically located near numerous shipping companies and Tanjung Perak port. This geographical advantage aligns well with the department's specialization in the shipping industry. The design used was a pretest-posttest control group design. The following is a picture of this research design:

Table 1.
Experimental design.

Class	Pretest	Treatment	Posttest
Control	O_1	X_C	O_2
Experiment	O_3	X_R	O_4

A pretest was conducted on the experimental and control groups. Then a difference test was conducted to obtain the same initial conditions. At the end of the treatment, the difference in pretest and posttest achievement of the experimental group ($O_3 - O_4$) and the difference in pretest and posttest of the control group ($O_2 - O_1$) were seen. Then the posttest of the experimental group using TBLT was compared with the posttest of the control group using the conventional model ($O_4 - O_2$).

Tests were used to show students' critical thinking skills before and after treatment. Learning outcome tests included objective and subjective tests [32]. Objective tests were divided into two, namely true-false tests and multiple-choice tests. Subjective tests are divided into four, namely free description, structured and limited description, short answer, and complementary (filling). The test used

in this study was a description test. The test was given at the beginning of learning (pretest) and after the cadets followed the learning process (posttest).

Multivariate analysis of variance (MANOVA) was conducted to determine the effect of the TBLT model on critical thinking and reading comprehension skills together. MANOVA hypothesis testing can be done if the assumption test has been met. This test serves for the effect of the TBLT learning model on cadets' critical thinking and reading comprehension skills.

The decision criteria for acceptance and rejection of H_0 at the 5% significance level were if the significance > 0.05 then H_0 was accepted, otherwise if the significance < 0.05 then H_0 is rejected. The formulation of the hypothesis test provisions in the study was as follows.

H_0 = There is no significant difference in critical thinking skills and reading comprehension between cadets who follow learning using the TBLT learning model and those who do not follow learning using the TBLT learning model.

H_1 = There is a significant difference in critical thinking skills and reading comprehension between cadets who follow learning using the TBLT learning model and those who do not follow learning using the TBLT learning model.

3.1. Results

3.1.1. Evaluation of Critical Thinking and Reading Comprehension Skills of Cadets to Answer Third Research Question

The data for this study consisted of pre-test and post-test scores assessing critical thinking ability and reading comprehension. Tests were conducted in both experimental and control classes. In the experimental class, the TBLT learning model was used, while the control class employed a conventional learning model. Pre-test data provided an initial assessment of the cadets' critical thinking abilities before any intervention, whereas post-test data reflected their abilities after the intervention.

Indicators on critical thinking skills in experimental and control classes are the same, namely making basic clarifications, assessing the basic support of information, drawing conclusions, making advanced clarifications, and applying strategies and tactics in solving problems. Critical thinking ability data were obtained from pre-survey test results (pretest) and test results during learning (posttest), using the same critical thinking ability instrument grids. The pretest data represent cadets' critical thinking abilities before the learning intervention, while the posttest data reflect their abilities during the learning process. In summary, the pretest and posttest critical thinking skills data for the experimental and control groups are presented in the table below.

Table 2.

Results of statistical description of critical thinking ability of experimental and control classes.

Description	Pretest		Final ability (Posttest)	
	Experiment class	Control class	Experiment class	Control class
Number of cadets	32	32	32	32
Mean	54.53	54.69	80.47	70.62
Median	55.00	55.00	80.00	70.00
Standard deviation	9.012	8.126	9.277	12.362
Variance	81.225	66.028	86.064	152.823
Minimum score	40	40	60	50
Maximum score	75	75	100	100

Table 2 shows that there is an average difference in critical thinking skills between the experimental and control classes. The experimental class pretest showed an average of 54.53, while the control class showed an average of 54.69. After participating in the learning, there was an increase in the average score of critical thinking skills in both classes. The experimental class increased to 80.47 with the TBLT learning model, while the control class with the conventional learning model increased to 70.62.

Reading comprehension ability data is obtained from the results of the pre-survey test (as a pretest) and the test results during learning (as a posttest) with the same instrument grids. The pretest reading

comprehension data is the result of the pre-survey test taken before the learning takes place, while the post-test reading comprehension data is the test result data taken during the learning takes place. In summary, the data on the results of pretest and posttest critical thinking skills in the experimental and control groups are presented in the table below.

Table 3.

Results of statistical description of reading comprehension ability of experimental and control classes.

Description	Pretest		Final ability (Posttest)	
	Experiment class	Control class	Experiment class	Control class
Number of cadets	32	32	32	32
Mean	70.44	69.38	86.28	76.97
Median	71.00	70.00	88.00	78.00
Standard deviation	6.589	8.951	8.169	9.191
Variance	43.415	80.113	66.725	84.483
Minimum score	54	51	66	56
Maximum score	82	90	100	94

Table 3 shows that there is a difference in the average reading comprehension between the experimental and control classes. The experimental class pretest showed an average of 70.44, while the control class showed an average of 69.38. After the learning process, there was an increase in the average reading comprehension scores in both classes. The experimental class, using the TBLT learning model, increased to 86.28, while the control class, using the conventional learning model, increased to 76.97.

3.1.2. Multivariate Test

The analysis for the multivariate difference test was conducted using MANOVA which was calculated with the help of SPSS 16 for Windows software. This test was conducted to determine whether PBL had an effect on cadets' critical thinking skills and scientific attitudes together. Before the MANOVA hypothesis test was conducted, the assumption test was first conducted. The assumption test is in the form of a homogeneity test and normality test, and then the correlation test is conducted.

The multivariate normality test is used to fulfill the assumption that the data comes from a population with a multivariate normality distribution. The normality test is an absolute requirement in MANOVA testing. The decision criteria are based on if the significance value (p) >0.05 then H_0 is accepted. Conversely, if the significance value (p) <0.05 then H_0 is rejected. Test results Multivariate normality can be summarized in Table 4.

Table 4.

Multivariate normality test results.

Variables	Class	Shapiro-Wilk P value	Asymp.	Decision
Critical Thinking ability	Control	0,069	$P > 0.05$	Normal
	Experiment	0,647	$P > 0.05$	Normal
Reading Comprehension	Control	0,623	$P > 0.05$	Normal
	Experiment	0,178	$P > 0.05$	Normal

Table 4 shows that based on the results of the multivariate normality test, the $P > 0.05$ value was obtained. This indicates that the data comes from a multivariate normally distributed population. The complete analysis results can be found in the appendix. After meeting this requirement, the next step is the homogeneity test, which determines whether the data comes from a homogeneous population.

The Covariance Variance Matrix Equality Test is used to test the homogeneity of the variance-covariance matrix between populations. The covariance matrix homogeneity test uses Box's M test.

Table 5.
Covariance matrix homogeneity test results.

Box's test of equality of covariance Matrices^a	
Box's M	3.059
F	0.984
df1	3
df2	6.919E5
Sig.	0.399

Based on Table 5, it can be seen that the significance value is 0.399 which is greater than 0.05 so it can be said that the variance-covariance matrix of the critical thinking ability and reading comprehension variables is homogeneous.

MANOVA hypothesis test is conducted to determine the effect of the TBLT learning model on the critical thinking and reading comprehension skills of cadets. The formulation of the hypothesis test provisions in the study is as follows.

H_0 = There is no significant difference in critical thinking skills and reading comprehension between cadets who take part in learning using the TBLT learning model and those who do not take part in learning using the TBLT learning model.

H_1 = There is a significant difference in critical thinking skills and reading comprehension between cadets who take part in learning using the TBLT learning model and those who do not take part in learning using the TBLT learning model.

The criteria for acceptance and rejection of H_0 at the 5% significance level is based on the significance obtained. If the significance > 0.05 then H_0 is accepted, otherwise if the significance < 0.05 then H_0 is rejected. The MANOVA test results can be displayed in the following table.

Table 6.
MANOVA test results.

Effect	Value	F	Hypothesis df	Error df	Sig.
Factor_group_class <i>hotelling's trace</i>	0.417	12.721 ^a	2.000	61.000	0.000

Table 6 shows that the significance value of the Hotelling's Trace test is 0.000, which is less than 0.05. This indicates that H_0 is rejected and H_1 is accepted, meaning there is a significant difference in critical thinking skills and reading comprehension between those who use the TBLT learning model and those who do not. Therefore, it can be concluded that the TBLT learning model positively impacts cadets' critical thinking and reading comprehension skills.

The hypothesis testing results further confirm that the Task-Based Language Teaching (TBLT) model significantly improves cadets' critical thinking and reading comprehension. The independent t-test analysis showed a significant difference between the groups using TBLT and those not using it, in both critical thinking and reading comprehension skills. This was demonstrated by the rejection of the null hypothesis in the posttest, indicating a significant difference between the two groups after the learning. Furthermore, the paired t-test results confirmed the improvement in these skills before and after using TBLT. Overall, these findings strongly support the effectiveness of TBLT in enhancing both critical thinking and reading comprehension in a language-learning context.

3.2. Discussion

The implementation of Task-Based Language Teaching (TBLT) in English for Specific Purposes (ESP) learning has made a significant positive impact on improving cadets' critical thinking and reading comprehension skills, forming a solid foundation for their holistic development [33].

In terms of critical thinking, cadets demonstrated significant improvement after engaging in situation-based tasks. This aligns with Aylward's [34] research, where cadets were able to evaluate information in greater depth, understanding concepts like maritime navigation and time management. Cadets could analyze argument structures, identify premises and conclusions, and evaluate the reliability

of sources [35]. They successfully applied learning concepts in practical settings, showing that they could not only understand concepts theoretically but also relate them to real-life situations in the maritime industry [36], [37]. Moreover, cadets showed the ability to compare and analyze concepts, demonstrating a deep understanding of their nuances [38]. Their metacognitive reflection indicated that they managed their thought processes and strategies effectively during analysis tasks [39].

Regarding reading comprehension, TBLT significantly improved cadets' ability to identify key information, develop deeper contextual understanding, and analyze text structures [40], [41]. Specially designed tasks helped cadets extract relevant information and relate it to practical maritime situations. Their ability to analyze text structure improved, providing a solid foundation for efficient reading [42]. Overall, TBLT fostered holistic reading comprehension by engaging cadets in purposeful reading linked to real-life maritime contexts [43].

In addition to enhancing critical thinking and reading comprehension skills, the use of Task-Based Language Teaching (TBLT) has been instrumental in developing cadets' collaborative and communicative skills. During TBLT activities, cadets worked in groups to solve complex problems, simulating real-life professional scenarios that required cooperation and effective communication [44]. This collaborative element of TBLT promoted mutual learning, where cadets learned from each other's perspectives and strategies. Such group interactions not only helped them develop critical perspectives but also improved their ability to articulate thoughts, listen actively, and build upon peers' ideas. These are essential skills for future roles in the maritime industry, where teamwork and clear communication are crucial for operational success.

Furthermore, TBLT's contextualized learning approach provided cadets with a deeper connection between language skills and their specific field of study. By involving tasks that closely resemble maritime situations, TBLT allowed cadets to see the direct relevance of their learning, which significantly boosted their motivation and engagement. The contextualized tasks required cadets to use domain-specific vocabulary and apply reading skills in ways that mimic real-life demands, thus creating an immersive experience [45]. This connection between language learning and professional relevance fosters a greater sense of purpose in their studies, encouraging cadets to be more proactive in acquiring language skills that will serve them in their future maritime careers.

Another key aspect of TBLT is its impact on cadets' self-regulation and metacognitive skills. By engaging in tasks that require planning, executing, and reflecting on their actions, cadets developed greater awareness of their cognitive processes [46]. This aspect of TBLT promotes self-monitoring and evaluation skills, as cadets must assess their performance throughout the tasks. Developing these skills in a structured learning environment allows cadets to adapt their strategies and approaches to problem-solving, equipping them with valuable tools to face unexpected challenges in real-world maritime situations. Self-regulated learning fosters autonomy, an essential attribute for individuals working in dynamic and often isolated settings, such as those encountered in maritime occupations [47].

Finally, TBLT facilitated a shift from a passive to an active learning model, where cadets became the primary agents of their learning journey. Traditional language learning methods often position learners in passive roles, but TBLT requires active involvement, encouraging cadets to take initiative, make decisions, and solve problems independently [48]. This active engagement not only builds confidence but also reinforces their commitment to lifelong learning [49]. By empowering cadets to take charge of their learning, TBLT prepares them for the self-directed learning and adaptability required in maritime careers, where conditions often demand immediate action and informed judgment. Moreover, the TBLT approach has contributed to enhancing cadets' cultural and situational awareness, which are critical in a globalized field like the maritime industry. Through tasks that incorporate real-world scenarios, cadets were exposed to diverse perspectives and problem-solving approaches, reflecting the international context of maritime operations. This exposure helps cadets understand and respect different cultural practices and communication styles, which is essential in a field where collaboration often occurs across diverse nationalities [50]. Cultivating this cultural sensitivity early on enables cadets to navigate cross-cultural communication challenges effectively, a skill that is increasingly vital in today's interconnected maritime industry.

In addition, TBLT has proven to be an effective tool for bridging theoretical knowledge with

practical application. By simulating real-life challenges, cadets practiced applying language and critical thinking skills in situations that mirror their future job roles. This hands-on approach not only reinforced their understanding of maritime-specific terminology but also taught them how to transfer academic knowledge to real-world contexts. This connection between classroom learning and on-the-job expectations prepares cadets for a smoother transition from training to professional environments. Consequently, TBLT provides cadets with a holistic learning experience that combines language acquisition, critical thinking, and professional readiness—qualities that position them for success in their maritime careers. In conclusion, the implementation of TBLT in ESP learning has positively impacted both critical thinking and reading comprehension among cadets, preparing them for the complexities of the maritime industry.

4. Conclusion

This study highlights the effectiveness of the implementation of the Task-Based Language Teaching (TBLT) model in improving cadets' critical thinking and reading comprehension in the context of English for Specific Purposes (ESP). The results of the statistical analysis showed that the use of TBLT significantly improved critical thinking and reading comprehension compared to conventional learning methods. Cadets who participated in learning with the TBLT model showed significant improvements in various aspects of critical thinking, including clarification, evaluation, and application of strategies in solving problems. Likewise, their reading comprehension skills improved, as seen from their ability to identify important information, understand context, and analyze text structures.

The TBLT model provides a more contextual and relevant learning experience to their field of study, motivating cadets to be more active in the learning process. In addition, TBLT helps develop collaboration and communication skills, which are essential in a career in the maritime industry. In conclusion, the TBLT approach has proven effective not only in developing language skills but also in preparing cadets for future professional challenges, making it a superior method for ESP education.

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