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## Developing E-Module in Blended Learning to Promote Students' Critical Thinking Skills for EFL Student Teachers

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### Abstract

*English student-teachers must have critical thinking skills to create creative and innovative learning plans. However, their critical thinking is still low due to a teacher-centred learning process. The study aims to develop an e-module that encourages students' critical thinking skills in blended learning. It was research and development design according to ADDIE model including analysis, design, development, implementation, and evaluation. The subjects were 36 students enrolled in English Language Teaching Methods course in one of public universities in Surabaya, Indonesia. The instruments included questionnaires, validation sheets, multiple-choice and essay tests. Pair sample t-test based on SPSS 20 analysed numerical data, while descriptive statistics analysed textual data. The findings indicate that e-module's quality falls within the "good" category (4.3). The result of pre-test score was 67.08 and a post-test was 78.80. The results of paired sample t-test indicate that the average score is 11.72 with a 2-tailed significance level is .000. The t- value is less than 0.05, therefore the null hypothesis (Ho) is rejected and the alternative hypothesis (H1) can be accepted. It is concluded e-modules in blended learning can significantly improve English student-teachers' critical thinking skills since they can learn anywhere and anytime. It is advised to use many strategies to motivate students to be critical thinkers.*

**Keywords:** *Blended learning, critical thinking, learning materials.*

### INTRODUCTION

Critical thinking is one of the 21<sup>st</sup> century skills that must be developed in tertiary institutions (Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System, 2003), and future English teachers must possess it. When English student teachers possess critical thinking skills, they can engage in a learning process that

motivates them to always think critically, creatively, and innovatively in order to solve a variety of problems from various perspectives (Haghparast et al., 2014). In addition, English student teachers who are capable of critical thought can produce generations of well-prepared citizens. For this reason, all courses in the English Language Education Study Program, including the English Language Teaching Methods course, require critical thinking skills so that students can analyze, plan, and evaluate various methods/strategies for teaching and learning English. Ultimately, they can deliver creative and innovative instructional materials to produce high-quality graduates. Implementing a student-centered learning process is one strategy for developing critical thinking skills in university (Osborne et al., 2018) since students are given the opportunity to debate or make decisions regarding an instructor-presented problem.

Critical thinking is defined by Ricci (2013) as the capacity to identify information sources, evaluate their credibility, determine whether the information is consistent with prior knowledge, and draw conclusions. Developing critical thinking skills involves five steps: identifying and defining the problem, pursuing inferential information, generating arguments, assessing situations, and making decisions (Facione, 2011; Gummineni, 2020). Critical thinking is a higher-order cognitive process consistent with Bloom's taxonomy, consisting of the ability to analyze, evaluate, and synthesize. Thus, Ennis (2018) categorizes indicators of critical thinking as focus, reason, inference, situation, clarity, and overview (FRISCO). Focus is used to make a decision based on what is believed to clarify the available issues involved in the decision. In order to draw conclusions, reason explains the justifications for or against decisions based on the situation and pertinent facts. Inference is the process of drawing the correct conclusion from logical and reasonable premises. When students are answering questions, you must comprehend the situation and keep it in mind at all times. Clarity explains the meaning or terms used in the opinion, whereas overview thoroughly examines and analyzes the decisions (Facione, 2011; Marin & Halpern, 2011). In this study, the indicators of critical thinking are therefore the ability to analyze evidence (interpretation), communicate reasons, make inferences, draw conclusions, generate new ideas, and present them in accordance with 21st-century skills.

The fact, however, has demonstrated that English student teachers' critical thinking skills are still inadequate. Students experienced difficulty arguing their points or solving the issue, when students confronted with a specific case or problem. As a result, they are less able to analyze, express opinions, provide reasons, and solve problems (He & Lin, 2013; Pratiwi et al., 2020). Next, students are less able to design and implement the teaching process correctly and optimally during field teaching practicums (Alharbi, 2022; Lunenburg, 2011). This is due to the fact that English teachers continue to be teacher-centered, and their evaluations demonstrate a lack of critical thinking. As a consequence, students lacked critical thinking skills.

Therefore, a student-centered learning model is required to facilitate a variety of activities that foster students' critical thinking skills. Blended learning is an effective way to promote critical thinking skills because it emphasizes the use of technology that reflects the characteristics of the current generation. Blended learning can make the learning process more engaging and effective (Krismadinata et al., 2020) because its implementation allows students to establish learning communities to discuss, analyze, and solve problems (Anderson et al., 2001). Moreover, blended learning enables students to solve problems, make decisions, and generate ideas that benefit others regardless of

their position (Kettanun, 2015). All activities in blended learning support the development of students' critical thinking skills. This blended learning is integrated with the VINESA Learning Management System (LMS), a web-based learning environment that permits instructors and students to post modules, share video links, PowerPoint presentations, assignments, online exams, create discussion rooms, announce grades, and conduct virtual meetings. The VINESA LMS enables students to study from anywhere and at any time to attain competency.

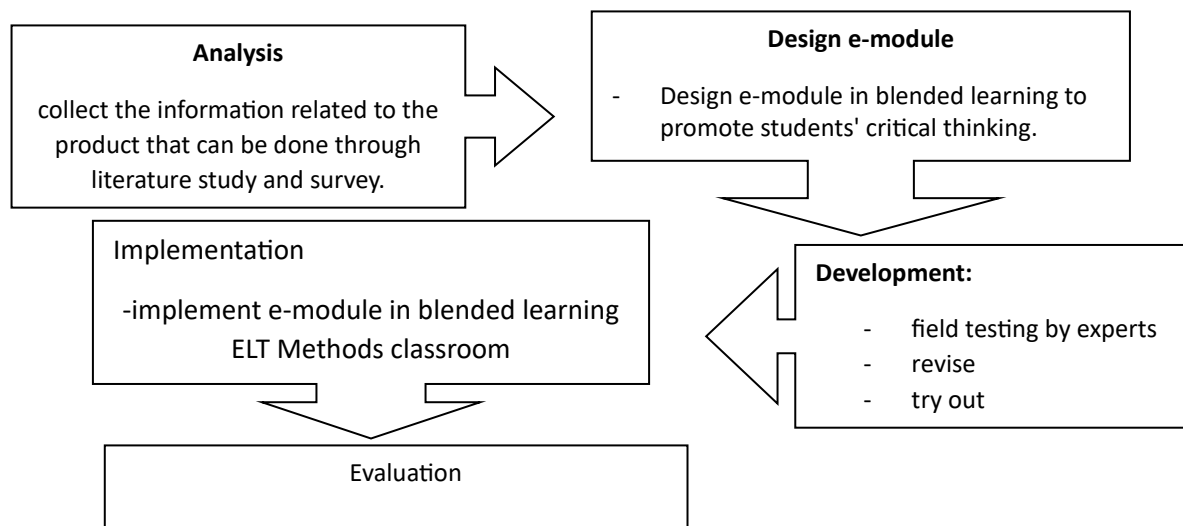
Students also require learning materials that instruct them on how to complete each activity to make the blended learning and teaching process more effective and efficient. E-module is one of the instructional materials that can facilitate blended learning since it can aid in the development of English student teachers' critical thinking skills in pedagogy courses. E-module provides clear activities and instructions on how to effectively complete their activities. It can also help students develop their abilities to analyze and evaluate information, as well as make evidence-based judgments and decisions, because it provides students with adaptable, collaborative, participatory, and reflective experiences. The incorporation of an e-module into blended learning could provide English student instructors with greater opportunities to develop their critical thinking across the curriculum because it incorporates active learning strategies.

Recognizing the significance of critical thinking skills in education, a number of studies have examined techniques or strategies for cultivating these skills. This is due to the fact that critical thinking skills cannot be acquired quickly (Wang & Zheng, 2016). Therefore, inquiry learning techniques or task-based cooperative learning improve critical thinking skills and the ability to compose essays or arguments writing (Fahim et al., 2014; Miri & Azizi, 2018; Shirkhani & Fahim, 2011). Next, collaborative strategy reading, metacognitive strategies, narrative structure, and literature circles could increase students' critical thinking skills and reading comprehension (Danaye Tous et al., 2015; Khonamri & Karimabadi, 2015; Mohseni, 2020; Samadi & Ghaemi, 2016; Susanti et al., 2020; Sutrisno, 2020). Besides, the reasoning gap and TBLT could improve students' arguments in speaking skills (Yaparak & Kaya, 2020). Singh et al. (2018) also supports that the utilization of modules in writing courses can enhance students' higher order thinking skills in writing composition. According to the research cited above, the use of multiple strategies can enhance critical thinking in language courses.

In pedagogy courses, however, no one has discussed how to improve English student teachers' critical thinking skills. In order to fill the aforementioned research gap, this study examines how to design electronic English Language Teaching Methods module integrated in blended to enhance critical thinking skills. English teachers can use research to plan and implement effective and innovative English instruction for the twenty-first century's workforce-ready generation.

## **METHODS**

The research design was Research and Development (R & D) by Borg et al. (2003), as it seeks to develop English Language Teaching Methods (ELT Methods) e-module in blended learning to cultivate students' critical thinking skills. The development of ELT Methods e-module in blended learning refers to ADDIE Models (Bernardez, 2007) covering analysis, design, develop, implement and evaluation. Figure 1 depicts the procedure of the investigation.



**Figure 1.** Research procedure

Figure 1 depicted the method:

1. Analysis

Analysis was used to compile all information and research findings related to the product. In order to collect the research's need analysis, interviews and questionnaires would be administered. First, interviews would be conducted with EFL instructors who have taught ELT Methods in order to investigate their perceptions of critical thinking and strategies used in the process of teaching and learning English. In addition, the questionnaires would be disseminated to students who have taken or studied ELT Methods course. In addition, documents such as the RPS (semester's lesson plan), ELT Methods textbooks or handouts or student worksheets would be examined for information regarding critical thinking. This step's results would be analyzed and concluded, and it would serve as a crucial foundation for the development of the materials.

2. Design English Language Teaching Methods e-module integrated blended learning

ELT Methods course is offered to third-year EFL student teachers for one public university in Indonesia. This course is required for all students seeking certification as an English instructor. The objective of the program is to prepare candidates to teach English at various educational levels. This course is designed to familiarize student teachers with theories and knowledge related to English teaching and learning. Additionally, student teachers are educated on the methods of teaching English and the necessary skills for each method. This course consists of weekly four-hour lectures.

ELT Methods e-module would be designed based on Tomlinson's Theory and Laurillard's Conversational Framework. There are six stages involved in the design of ELT Methods e-module:

- a. Learning objectives
- b. Understanding the concept(s)
- c. Individual assignment(s)
- d. Discussion
- e. Case Analysis/Project

f. Reflective Session

This was the topic in the English Language Teaching Methods e-module.

**Table 1.** ELT Methods e-module

<i>Module</i>	<i>Topic</i>
1	Innovative English Teaching Methods
2	How to teach Vocabulary
3	How to teach Grammar
4	How to teach Reading
5	How to teach Listening
6	How to teach Writing
7	How to teach Speaking

3. Developing English Language Teaching Methods e-module integrated blended learning

The purpose of this phase was to develop ELT Methods e-module for blended learning to enhance student-teachers' critical thinking skills based on design product. After ELT Methods e-module has been completed, some evaluators assess the module to determine its suitability. According to Borg and Gall (2006), the designer of an educational product needs specific experts' feedback to develop and enhance the product. It was anticipated to generate numerous specific criticisms and recommendations for the educational product (p.783).

The evaluators were two professionals in English materials development with minimum ten years of experience in teaching pedagogical aspects and familiarity with technology and one lecturer who has been teaching design to validate the layout and presentation of ELT e-module. To increase the reliability of the data, field notes and interviews would be used to collect the information and modify e-module. To facilitate the analysis of errors in the materials, the suggestions and feedback would be divided into several categories. Then, revision would be based on the suggestions and comments of the evaluators.

4. Implementation

After the researcher has revised ELT Methods e-module, it would be implemented for all students enrolled in the English Language Education study program at one public university in Surabaya, Indonesia, who are taking ELT Methods course. The model test design will employ a one-group pre-test and post-test design on a single group, without a control class. Treatment would be administered to evaluate the efficacy of ELT Methods e module integrated in blended learning. The following were the specifics of the activities performed during the model examination:

- (1) The instructor administered a pre-test students' critical thinking skills
- (2) The instructor implemented ELT Methods e module integrated in blended learning
- (3) The learning process would be observed to ascertain student performance during learning, and the challenges encountered when implementing blended learning.
- (4) The teacher conducted a post-test

The research setting was at one of Indonesia's public universities in Surabaya. The English Language Teaching Methods course was selected primarily for a reason. First, this course falls within the scope of my expertise, and I have previously taught it. The ELT Methods course concludes with five classes taught by various instructors who run concurrently. Consequently, student teachers who did not wish to participate in the study would be able to attend the other class without having their schedule compromised.

Three variables included validity, practicability, and effectiveness. The validity variable evaluated the ELT Methods e-module's content, language, and pedagogical variables. The evaluation would be conducted through a Group Discussion Forum with four rating scales: 1 (poor), 2 (acceptable), 3 (good), and 4 (outstanding). The validity of ELT e-module was contingent upon a minimal score of 3 with valid criteria from three experts. The practical variable has assessed the implementation of ELT Methods e-module integrated in blended learning. It would assess students' challenges in blended learning. The effectiveness was used to evaluate students' critical thinking skills.

The research instruments consist of questionnaires, validity sheets, observation sheet, and pre-posttests. A questionnaire was used to collect data related to the requirements analysis of students' critical thinking skills level. Then, validity documents included (1) content, (2) language, and (3) construct to measure ELT Methods e-module. Next, an observation sheet determined whether blended teaching-learning process could operate smoothly, and pre-post multiple-choice tests and essay tests to measure students' critical thinking skills.

Data collection procedure would be described in term of the following steps: (1) students who have learned ELT Methods course would be provided with questionnaires to analyze their level of critical thinking skills, (2) ELT Methods textbooks or handout used would be analyzed and summarized their critical thinking assessment. All the data would be analyzed and used to design ELT Methods e-module. (3) Module validation was used to evaluate the quality of ELT Methods e-module, (4) Pre-test and post-test determined whether their critical thinking has improved or not.

The data from three experts would be analyzed using qualitative descriptive indicators, namely 1. Poor, 2. Acceptable, 3. Good, and 4. Excellent. For implementing blended learning could be successful if student achievement was at a reasonable or effective level. The last, students' critical thinking skills would be analyzed using the Statistical Package for the Social Sciences, version 20 (SPSS). Before analyzing the independent t-test, two parametric statistical analyses were conducted, such normality and homogeneity. Normality determines whether or not the distribution of the research data is normal to decide that the data were parametric or non-parametric. The homogeneity would then be evaluated using Levene statistics in SPSS 20. If the p-value (Sig.) is greater than 0.05, homogeneity criteria would be applied. If normality and homogeneity are satisfied, the difference between two independent samples would be determined using the independent sample t-test. The following hypotheses were tested.  $H_0$  said that there is no difference in the mean score of students' critical thinking between the pre-test and post-test but  $H_1$  said that the mean score on the pre-test and post-test regarding students' critical thinking differs. If P value was less than 0.05,  $H_0$  was rejected. The increase would be determined by a t-test with a significance level of 0.05.

## RESULTS AND DISCUSSION

The results have shown that level of EFL student teachers' critical thinking skills at sufficient level.

**Table 2.** Students' level of critical thinking skills

<i>Aspects of critical thinking skills</i>	<i>Mean</i>	<i>Category</i>
Interpretations skills	3.2	Good
Inference skills	3.0	Good
Evaluating arguments	2.9	Good
Problem solving	2.7	Fair
Creating	2.5	Fair
Presenting	2.4	Fair
Average	2.7	

According to the survey results (table 2), students' critical thinking skills in the ELT Methods course are adequate (fair), indicating that they are unable to evaluate and identify problem-solving strategies for certain cases. This has an effect on creative abilities, particularly the ability to design instructional plans and present them in peer teaching activities.

The results of an analysis of ELT textbooks revealed that the text did not support students' critical thinking skills. The findings demonstrate that materials continue to utilize multiple texts to elucidate specific materials. They had no images or videos that would encourage students to study more. Finally, it failed to motivate students to read the textbooks and engage in active learning since these text books did provide collaborative activities to create team work. Next, assessment continued to emphasize memorization and did not allow for the implementation of collaborative learning. Thus, students' critical thinking skills were not developed through case study or project-based learning in the ELT Methods textbook's assessment. Rarely did student teachers study how to articulate an argument, determine a project or problem, and present a solution. In conclusion, they lack critical thinking abilities. It was supported by the sustained dominance of English instructors in the teaching and learning process. They offered fewer opportunities for students to complete their assignments, and the ELT Methods textbooks did not address the use of technology or digital tools that could encourage students to study independently and at any time. This circumstance has deprived students of critical thinking abilities.

It is known that learning materials play an integral role in the teaching and learning process to foster students' critical thinking abilities. Students enrolled in an ELT methods course did not utilize e-learning, which can promote independent learning and critical thinking, according to questionnaire and textbook analysis findings. Thus, we have designed a blended learning e-module for ELT Methods. VINESA LMS was utilized because it enables pupils to study whenever they desire. It is inexpensive and easy for students and instructors to access. After the integrated learning-based ELT Methods e-module has been designed, it would be reviewed from three perspectives: pedagogical, content, and presentation. Validation of ELT Methods e-modules is shown in Table 3.

**Table 3.** The result of e-module validation

<i>No</i>	<i>Criteria</i>	<i>Mean score</i>	<i>Category</i>
1	Pedagogical features	3.88	Good
2	Content	3.78	Good
3	Presentation/Layout	3.66	Good

In accordance with the results of the validator team's evaluation, the average score for all criteria was approximately 3.77. Before ELT Methods e-module would be implemented in blended learning activities, a number of revisions must be made. ELT Methods e-module must include a video link to accommodate the audiovisual learning styles of students. In addition, the format of ELT Methods e-module must be revised to make it more readable, specifically the section on writing headings, subheadings, and graphics. Then, it is presently unclear instruction how students learn when they are studying independently. Next, the use of images and typography must be revised, so students easily understand ELT Methods e-module.

After the ELT Methods e module has been revised in response to the validator's comments, a test is administered on the LMS VINESA to determine whether the ELT Methods e module is effective at fostering critical thinking skills. The results of the pre- and post-tests for the ELT Methods e-module in the VINESA LMS are presented in Table 4.

**Table 4.** Demonstrates the critical reasoning skills of EFL student teachers

<i>Critical thinking aspects</i>	<i>Percentage of pre test</i>	<i>Percentage of post test</i>
Explaining the concepts of English language teaching methods	83%	100%
Comparing some concepts of English language teaching methods	78%	100%
Giving arguments	80%	96%
Giving evaluation	76%	93%
Solving problems	50%	89%
Summarizing	46%	80%
Designing learning activities	43%	79%
Designing learning materials	30%	81%
Designing learning media	59%	85%

Table 4 indicates that pre-test scores for explaining, comparing, and evaluate English language methods were greater than 76%. This demonstrates that English student teachers already possess strong critical reasoning abilities. With ELT Methods e-module integrated in blended learning, there was a nearly 17% improvement. However, the results of the pre-test concerning problem-solving skills, summary writing, and the ability to design learning activities, learning materials, and media are still below 60%. When students were taught using ELT Methods e-module in LMS VINESA, there was a significant improvement in their average performance, which rises to 80%.

The researchers used paired sample t-tests conducted with SPSS 20 to explain the improvement in critical thinking skills. The results of calculating the increase in critical thinking proficiency are presented in Tables 5 and 6.

**Table 5.** Paired samples statistics

		<i>Paired Samples Statistics</i>			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE_TEST	67.0833	36	14.88695	2.48116
	POST_TEST	78.8056	36	12.05184	2.00864



Table 5 reveals that the average pre-test score is 67.08, while the average post-test score is 78.80, with N equal to 36 students. The fact that the average post-test score (78.80) is higher than the average pre-test score (67.08) demonstrates that critical thinking skills improve substantially.

**Table 6. Paired sample t-test**

		Paired Samples Test								
		Paired Differences							Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference		t	df		
					Lower	Upper				
Pair 1	PRE_TEST - POST_TEST	-11.72222	4.84981	.80830	-13.36316	-10.08128	-14.502	35	.000	

The calculation results of the paired sample t-test are shown in table 6. The average score is 11.722 and the 2-tailed result is significant at 0.000. If the calculated t value is less than 0.05, it is possible to conclude that the null hypothesis (Ho) is rejected and the alternative hypothesis (H1) can be accepted. In contrast, if  $t > 0.05$ , the null hypothesis is accepted and the alternative hypothesis is rejected. On the basis of the preceding data, it can be concluded that the value of t is 0.000, which is less than 0.05, and therefore the alternative hypothesis can be accepted. It can be said that the ELT Methods e-module using VINESA can enhance English student teachers' critical thinking skills.

The study's findings indicate that the ELT Methods e-module incorporated into the blended learning VINESA LMS has positive outcomes. It could be implemented as instructional material to cultivate critical thinking skills. This is in accordance with Shin (2015), Sari et al. (2019), and Voss (2019), who state that e-module as learning materials should be accessible to all students. It provides students with access to diverse information, interactive and engaging content, personalized learning experiences, collaborative opportunities, real-world problem-solving activities, immediate feedback, and continuous learning opportunities. E-module allows students to access a vast array of information from various sources, including articles, videos, podcasts, and research papers that encourages students to think critically about the information (Cortázar et al., 2021). So, it enables the creation of interactive and multimedia-rich learning materials. Students teachers actively engage in learning process, such as quizzes, google form and interactive simulations (Ramdhani & Ahmad, 2017; Ting, 2015). Interactivity stimulates students' autonomy since students have flexibility to study (Bower et al., 2015) since they can access online content from virtually anywhere and at any time with an internet connection. Thus, it could prompt students to analyze information, solve problems, and make decisions based on their understanding of the content (Howard-Jones et al., 2015).

Next, ELT Methods e-module integrated in blended learning could promote students' collaboration and communication. There is evidence that discussion forums and virtual classrooms in blended learning facilitate student collaboration (Alharbi, 2022). As students engage in meaningful discussions, challenge one another's ideas, and work collaboratively to solve problems or complete projects, collaborative learning also fosters their critical thinking abilities (Gradaleva & Polukhina, 2020). Students can discuss and exchange ideas, perspectives, and interpretations of the subject matter when they collaborate with their peers. As they learn from each other's insights and experiences,

they acquire a deeper and more comprehensive understanding of the topic through this interactive process (Hughes & Morrison, 2020). Students have learned how to analyze information critically, think creatively, and discover collective solutions (Facione, 2011, Halpern, 1998). Thus, it broadens their horizons and encourages them to consider multiple perspectives, enriching their educational experience. Collaborative learning also teaches students to articulate their ideas clearly, attend actively to others, and negotiate differences constructively. This support system fosters self-assurance, reduces anxiety, and improves overall academic performance. These interpersonal abilities are essential for academic and professional success.

Incorporating the ELT Methods e-module into blended learning also enables English instructors to provide prompt feedback on quizzes and assignments. This feedback assists students in comprehending their strengths and weaknesses. It also permits students to reflect their performance and adjust their learning strategies consequently since regular feedback fosters students' critical thinking skills by encouraging them to identify areas for improvement and devise strategies to overcome challenges (Cortázar et al., 2021; Saadat et al., 2016).

The integration of ELT Methods e-module into VINESA blended learning has prompted students to engage in metacognitive activities and reflect on their learning process. Metacognition entails reflecting on one's own learning and reasoning processes, as stated by Kupriyanov (2021). Reflective thinking and metacognition are essential components in blended learning because they encourage students to consider what they have learned, how they have acquired it, and what they can do to improve their learning (Yang, 2012). When students engage in metacognitive practices, they are able to plan and select appropriate learning strategies, such as organizing information, making conceptual connections, and employing prior knowledge, all of which are essential for the development of critical thinking skills.

Furthermore, metacognition has involved self-regulation that refers to the ability to control one's learning process and adjust strategies accordingly. Students who practice self-regulation can identify when they are struggling with a task or need additional information (Nakata, 2020).

They then take appropriate actions to address these challenges, such as seeking help, conducting further research, or reviewing their work critically. It encourages students to continuously improve their understanding and performance. Through thoughtful examination of their successes and mistakes, students identify areas for growth and actively work towards enhancing their critical thinking capabilities.

It is implied that integrating the ELT Methods e-module into VINESA's blended learning can improve students' critical thinking abilities. Blended learning activities provide the ability to analyze, form conclusions, generate new ideas, and present them. Students learn to interpret a concept by explaining, comparing, or classifying it; analyzing a problem by providing arguments; evaluating, solving problems, and writing conclusions; and designing learning activities, learning materials, and learning media. Students are also capable of engaging in self-regulation (self-evaluation and self-correction). Blended learning requires internet quota, which allows students to retrieve uploaded materials, as one of its prerequisites. Students without adequate Internet access are unable to participate in blended learning.

## CONCLUSION

This study reveals that ELT Methods e-module integrated in blended learning were in good category, so it can enhance students' critical thinking skills. E-module provides interactive and engaging content, personalized learning experiences, collaborative opportunities, real-world problem-solving activities, immediate feedback, and continuous learning opportunities. Students can learn how to solve a problem or create something new in collaborative team, so they actively participate in classroom activities to achieve improved outcomes and enhance the critical thinking skills. It is recommended that English instructors should be more innovative in their use of various learning materials and strategies to enhance learning outcomes, performance skills, and life skills. These skills will be utilized in the actual world in the future.

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