

## **Needs Analysis of Development of Critical Thinking Skills Assessment Instruments on Vocational School English Subjects**

**Ryzka Cahyaningrum**

*Universitas Negeri Semarang*

*ryzkac@students.unnes.ac.id*

**Wahyu Lestari**

*Universitas Negeri Semarang*

*wahyupyarlestari@mail.unnes.ac.id*

**Supriyadi**

*Universitas Negeri Semarang*

*supriyadi@mail.unnes.ac.id*

### **Abstract**

*This study aimed to analyze the needs for developing critical thinking skills technology-based assessment instruments in English subjects for vocational school and find out the factors that can support and inhibit developing and implementing critical thinking skills technology-based assessment instruments. This study used the qualitative research method with a case study design. The subject of study was 5 teachers and 15 eleventh-grade vocational school students at Tangerang. Observations, interviews, and documentation were conducted to collect the data. After collecting the data, the researcher used triangulation to confirm the data. The data collected were analyzed to answer the research questions using several stages, namely condensation, display, and verification. The results showed that the development of technology-based assessment instruments of critical thinking skills on vocational school English subjects needs to be developed. The schools have facilitation for conducting a technology-based assessment. Students have never taken on critical thinking skills assessment. Teachers and schools did not have the development of assessment*

*instruments of critical thinking skills so teachers have never conducted critical thinking skills assessments on English subjects. Moreover, the students still have some obstacles in English learning such as vocabulary, pronunciation, and grammar. Therefore, the teachers should help to improve students' vocabulary, pronunciation, and grammar before conducting a critical thinking skills assessment.*

*Keywords: critical thinking skills, development of assessment instruments, English learning, needs analysis*

## 1. INTRODUCTION

Needs analysis can help teachers to know students' needs in the learning process. Needs analysis is useful for teachers when they want to develop teaching materials, methods, or syllabus (Suharti et al., 2020). Teachers can develop teaching materials according to needs analysis. Needs analysis can also be used as a preliminary study for researchers or as a first step to determine further research (Handayani et al., 2019). In addition, needs analysis is not only used for analyzing students' needs in the learning process but needs analysis can be used to determine an appropriate decision for developing an assessment instrument.

Assessment is often used in the field of education to measure students' abilities or competencies that can be used as student learning outcomes. The assessment is carried out using a tool or instrument as a media for the implementation of the assessment. The assessment instrument created has to undergo continuous development so that the assessment instrument can continue to be used properly. Needs analysis needs to be conducted to find out the development of the assessment instruments needed so that further research can be made as needed (Handayani et al., 2019). Technology-based assessment instruments can be used by adjusting students' and teachers' abilities and facilities in conducting assessments considering that the Covid-19 pandemic has turned every activity online hence technology has developed faster. In addition, technology is always used both online and offline activities. Assessments made for the development of assessment instruments have to be made based on existing standards that are made as a reference in developing assessments.

Education in Indonesia has graduate competency standards for primary and secondary levels which are used as a reference for educational assessment standards so that assessments made have to be based on graduate competency standards. Graduate competency standards for vocational school level have a graduate competency area with criteria, namely faith and devotion to God Almighty, personal and social character, physical and spiritual health, entrepreneurship, nationality and love for the homeland, creativity, technical ability, aesthetics, and literacy (Permendikbud, 2018). Students are supposed to have literacy skills as mentioned as the criteria for graduate competency standards. Currently, literacy is one aspect of learning outcomes and basic competencies that are measured in the Minimum Competency Assessment. Literacy is described as the ability to identify information, interpret and combine, as well as evaluate and reflect on texts types such as fictional texts

and informational texts in socio-cultural, personal, and scientific contexts (Pusmenjar, 2020). In addition, literacy is also tested in the international assessment program, namely Program for International Students Assessment (PISA) in the reading session (OECD, 2019).

Literacy refers to the types of reading text in English subjects. Reading texts in English subjects have topics and themes that are arranged with structures and language features that become references to distinguish each type of text. Furthermore, students are expected to enhance and hone critical thinking skills in literacy (Permendikbud, 2018). Students' critical thinking can influence students' reading comprehension (Fahim & Sa'ee pour, 2011). Having critical thinking skills can help students to learn literacy properly. In addition, critical thinking skills are part of 21<sup>st</sup>-century skills (Kim et al., 2019). Therefore, the students should have critical thinking skills considering that vocational school students are still the highest contributor to unemployment (Badan Pusat Statistik (BPS), 2021).

Critical thinking is a process or manual thinking tool to identify, analyze, and evaluate the accuracy of the information, arguments, or claims so that conclusions can be drawn (Bassham et al., 2011; Bohlin et al., 2012; Brydon & Scott, 2011; Kallet, 2014). Critical thinking is thinking in different ways. Students are supposed to be able to understand, identify, analyze and make a text according to the structure and language features of English texts type with students' critical thinking skills. One of the appropriate types of English texts to encourage students' critical thinking skills is exposition text (Rohayati, 2017), which is a text that contains the student's thoughts, views, or arguments based on facts of an issue. Students can express ideas about a phenomenon in written or oral form. The exposition text has two forms, namely analytical and hortatory. Analytical exposition text is a text that is learned in vocational school English subjects.

Furthermore, students can practice critical thinking skills by reading and discussing a lot. Students also need support from teachers in applying students' critical thinking. The teachers can use literary works, and several methods such as Discovery Learning, Problem Based Learning, Inquiry-Based Learning, Project-Based Learning, and Problem Solving in the learning process to foster students' critical thinking, especially in literacy (Abida, 2016; D. Purba et al., 2020; Rochmahwati, 2015; D. M. M. Sari & Prasetyo, 2021; Wale & Bishaw, 2020). While increasing students' critical thinking skills in a learning activity, teachers can make assessments for critical thinking skills.

Teachers can use critical thinking skills assessment to appraise students' critical thinking skills so that the teacher can adjust their teaching methods or teachers can involve critical thinking in teaching methods to increase students' learning performance (Changwong et al., 2018; Nold, 2017; Paolini, 2015; Sharadgah et al., 2019). The assessment is able to be made by referring to the graduate competency standards hence this study adapts one of the competencies in the graduate competency standards, namely literacy (Permendikbud, 2018). The needs analysis is conducted to find out the field needs before developing assessment instruments of critical thinking skills for vocational school English subjects so that it can be used by teachers for the long term. Language takes an important role in the thinking process and English language skills can be viewed and enhanced from critical thinking skills (Gandimathi & Zarei, 2018; Haerazi et al., 2020; Imai et al., 2016). Therefore, the researchers attempt to analyze and answer the following research questions:

1. How is the needs analysis of the development of technology-based assessment instruments of critical thinking skills on vocational school English subjects?
2. What are the factors that are supporting the development and implementation of technology-based assessment instruments of critical thinking skills on vocational school English subjects?
3. What are the factors that are inhibiting the development and implementation of technology-based assessment instruments of critical thinking skills on vocational school English subjects?

## **2. LITERATURE REVIEW**

### **2.1 Assessment**

Assessment is a way for making decisions regarding student learning performance (Black & Wiliam, 2018). Assessments are also used to investigate knowledge and skills that students have and learn (Baird et al., 2017). Assessment can be used to evaluate students' abilities. Teachers can know whether or not the materials and teaching methods are appropriate (Arikunto, 2018). Assessment has several types, namely formative assessment and summative assessment (Berry & Adamsaon, 2011). Formative assessment is carried out to assess what students have learned during the learning process while summative assessment is used to assess the final performance of students (Fleer, 2015). Formative and summative assessments use tests to investigate students' knowledge and ability. Assessment can be carried out through tests and non-test. Non-test assessment techniques use questionnaires, interviews, and observation to obtain the data (Arikunto, 2018).

### **2.2 Critical Thinking Skills**

Critical thinking skills are thoughtful reasoning about what to do and what to accept as true (Tittle, 2011). Critical thinking is thinking prudently about something in order to estimate and determine whether or not it is something you have to accept. Critical thinking is not something that you can memorize. Critical thinking is a skill that you get better at, progressively, with practice. Critical thinking uses several interrelated elements of thinking from lower to higher-order thinking skills.

Critical thinking skills have several standards of critical thinking, namely clarity, accuracy, logic, completeness, significance, fairness, depth, breadth, relevance, and precision (Elder & Paul, 2013; Li et al., 2020). The standards have to be applied to make sure that the conclusion made based on critical thinking skills is valid and understandable. Critical thinking has some basic activities as well, namely investigation, interpretation, and judgment (Ruggiero, 2012). An investigation is conducted to identify relevant evidence or find relevant evidence that is sufficient to answer the key questions of an issue. Investigation helps to recognize the main evidence of an issue if someone wants to make a decision. Furthermore, basic activity in critical thinking is interpretation. Interpretation is defined as deciding what the evidence obtained means. The interpretation described have to be sensible. After investigation and interpretation, the relevant evidence obtained has to be concluded. The conclusion has to be logical. Critical thinker reaches the conclusion based on investigation and interpretation because they are interrelated. A critical thinker should

understand the problem or issue and its risks, solutions, or resolutions as a whole before concluding. If someone does investigation, interpretation, and judgment, then they are using basic activities in critical thinking.

### **2.3 English Learning**

A language is a communication device used to share thoughts or information with others (Dewi & Zuniati, 2021). Information sharing involves skills such as speaking, listening, writing, and reading. These skills can also be referred to as receptive and productive skills (Golkova & Hubackova, 2014). As a language, English is studied in terms of language so students need to enrich their English skills as well. It is like vocabulary, pronunciation, part of speech, grammar, text, etc. Students' English learning has to be made as effective as possible so that students can apply appropriately. Therefore, the teachers use several interesting learning methods and activities to improve students' English skills such as communicative language teaching or playing game (Hidayat, 2016; Natsir & Sanjaya, 2014). Students can also develop their English skills independently outside of school.

## **3. RESEARCH METHODS**

This study used qualitative research methods with a case study design. The qualitative research method with case study design was used because the researchers described the results of the present study based on data collected. This study also used triangulation to ensure the data was obtained. Three vocational schools at Tangerang City were involved in this study. This study involved one to two English teachers and five eleventh-grade students from each vocational school as the subjects thus the total of subjects were 5 English teachers and 15 eleventh-grade students. The researchers chose the eleventh-grade students as the research subjects because the analytical exposition text material was taught in the eleventh grade. Critical thinking skills were able to be found in analytical exposition text writing (Affandi, 2021).

The data was collected using observation sheets, interview sheets, and smartphones as the instruments. The researchers conducted the observation first. Then, the researchers interviewed the teachers and students while documenting the data needed. Due to Covid-19, interviews with teachers were conducted by appointment and a teacher was interviewed accidentally. Interviews with students were conducted when students got the face-to-face learning schedules at school. The interviews were conducted using health protocols. After compiling the data, the data was analyzed using some procedures by Miles, Huberman, and Saldaña (Miles et al., 2014). The data would be condensed and classified to simplify the data obtained. Then, the data would be displayed to interpret the data. Lastly, the data would be verified or concluded to answer the research questions.

## **4. FINDINGS AND DISCUSSION**

The findings of this study were referred to the observation, interview, and documentation. During the Covid-19 pandemic, a school was still carrying out online learning but some schools have implemented offline and hybrid learning. The teachers taught material from textbooks as usual and used several other sources such as YouTube or material platforms provided by the government. The teachers used the school's Learning

Management System (LMS), google classroom, google meet, zoom, LiveBoard, and quizizz as teaching and learning media during the Covid-19 pandemic.

Students enjoy learning through the school's LMS, google classroom, google meet, and zoom. LMS can connect teachers, materials, and students in learning (Holmes & Prieto-Rodriguez, 2018). Some studies also showed that English learning and students' achievement were increased by using google classroom as a learning media (Albashtawi & Al Bataineh, 2020; Syakur et al., 2020). Students could improve their English speaking skills by discussing through video using google meet and zoom (Baron, 2020). A teacher revealed that the teacher used LiveBoard as an online whiteboard media and students felt like the teacher explains directly in class. In addition, a teacher used quizizz to conduct a quiz game in English learning. Students can improve their vocabulary mastery through quizizz (Pavita & Nirmala, 2021). The schools facilitated students who did not have the internet to take part in the online teaching and learning process, but most students already had facilities such as smartphones, laptops, and the internet. The teachers are able to operate technology in teaching and learning activity and the students could use the learning media provided by teachers as well. Furthermore, in order to reply the research questions, the researchers did some stages by Miles and Huberman (Miles et al., 2014) thus the data described and discussed had been simplified without omitting the important points.

### ***Students***

The results of students' interviews were classified into students' comprehension or knowledge on critical thinking skills, students' awareness of the substance of critical thinking skills, students' ways to increase their critical thinking skills, the existence of critical thinking skills assessment instruments at school, students' obstacles in English, and students' ways to improve their English skills.

#### ***What are critical thinking skills?***

Based on students' views on critical thinking skills, some students (3) knew about critical thinking skills and some students (12) were not sure about critical thinking skills but they have heard the term of critical thinking skills. Saleh also found that some participants indicated a lack of understanding of critical thinking skills definition or concept (Saleh, 2019). Then, the researchers tried to describe the critical thinking skills and the students who were not sure about critical thinking skills could catch the point. The student who knew what the critical thinking skills said that critical thinking is thinking critically so that we did not take the information for granted. The other student stated that critical thinking is looking for other opinions or facts to make sure that the information is true. Another student said that critical thinking skills made us always question something that is not clear enough.

Students' comprehension or knowledge about critical thinking skills was in accordance with how critical thinking skills work. A critical thinker should be warned and investigate, adjudicate, and estimate all information sources critically (Wale & Bishaw, 2020). Critical thinking uses evidence, reasons, and attempts to overcome individual biases (Halpern, 2014). In addition, critical thinking is an activity of deliberation and skill for investigating matters and conditions from different perceptions (K. Fountzoulas et al., 2019). Students'

comprehension or knowledge of critical thinking skills was a good first step for students to foster their critical thinking skills.

*Are critical thinking skills important? Why?*

The researchers investigated students' perceptions of the importance of having critical thinking skills. Students' responses indicated similarity. Students (5) opined that it is important for everyone to have critical thinking skills in order to think before doing. Reflective thinking that aims to decide what to trust or what to act is called critical thinking (Hunter, 2014). Students can control their actions based on their thoughts. It will make students more careful in doing and saying something. The other students (10) stated that having critical thinking skills is important to avoid misunderstandings, fake news, or hoaxes. Critical thinking skills are useful for investigating and evaluating fake news, hoaxes news, and misinformation (Haryati & Hidayati, 2017; Machete & Turpin, 2020; Tseng, 2018). It means that by critical thinking skills, students can be more careful in sharing or resharing information. Moreover, critical thinking can be implemented in the learning activities in order to explore the material given by teachers. Critical thinking skills can help students to have well analyzing and evaluating skills (van der Zanden et al., 2020).

*How do you improve your critical thinking skills? Have you ever taken on a critical thinking skills assessment?*

Students shared their views to improve critical thinking skills considering the importance of having critical thinking skills. Students (15) opined that reading several books and having discussions can enhance critical thinking skills. This was in accordance with studies that found that reading several books and having discussions could enhance critical thinking skills (Husna, 2019; Hysaj & Hamam, 2021). The other study found that reading activities were effective to increase students' critical thinking skills and reading skills (YILDIRIM & SÖYLEMEZ, 2018). Students are able to get many points of view by reading and discussions. Some students (5) added that they also listened to podcasts to get another insight so it can help to establish their critical thinking skills. The podcast could influence students' listening comprehension (Widodo & Gunawan, 2019). Critical thinking skills were found to have an association and influence students' listening comprehension (Elekaei et al., 2016; Zare et al., 2013). Critical thinking skills need to evaluate other references to avoid thinking bias and logical fallacy so the conclusion made based on information was valid. Furthermore, students have never taken on a critical thinking skills assessment before so students have not known how the form of critical thinking skills assessment is.

*What is your problem with English learning?*

Students had some obstacles in English learning (Table 1.). Students (15) mentioned vocabulary, pronunciation, and grammar as their obstacles in English. The researchers took the first or main problem that students mentioned. Therefore, some students (8) mentioned vocabulary as their main English problem. Some students (5) mentioned pronunciation as their main English problem. The other students (2) mentioned grammar as their main English problem.

**Table 1. Students' obstacles in English**

<b>Responds</b>	<b>Frequency</b>	<b>Percentage</b>
Vocabulary	8	53%
Pronunciation	5	33%
Grammar	2	13%
Total	15	100%

Some students (8) revealed that they had problems with vocabulary. This was in accordance with a study that found that vocabulary was students' main problem in English followed by pronunciation and grammar (Menggo et al., 2019). Students had limited vocabulary so students have to take time for thinking about the vocabulary. Students also tried to translate the vocabulary in their minds when they wanted to have a conversation in English. Vocabulary plays an important role in English subjects so that students can comprehend the subject. Vocabulary was a basic thing in English which was also used in language use so that others can understand what was meant (Sitorus et al., 2021). Limited vocabulary could give an impact on the success of communication (Alqahtani, 2015).

Moreover, students (5) had an obstacle with pronunciation. Students (3) stated that they did not know how to pronounce some words. They sometimes have pronunciation errors when they speak in English. This result was in accordance with studies that found that students still have problems or errors in English pronunciation (C. N. Purba, 2018; Silalahi, 2016; Yusriati & Hasibuan, 2019). The other students (2) were not confident with their English pronunciation. Another study found that students' self-confidence was an impact on their pronunciation performance and indicated a correlation between students' self-confidence and their pronunciation (Pham et al., 2021; Rumapea & Wennyta, 2020).

Meanwhile, students (2) also had grammatical problem in English. The student stated that she sometimes has errors when she writes a text because English grammar is difficult. The other student mentioned that she always thinks about grammar when she wants to speak English. Previous studies found that grammar was being a problem in English learning especially in writing (Banditvilai & Cullen, 2018; Royani & Sadijah, 2019). Some studies found that students made grammatical errors in speaking (W. Lestari et al., 2020; R. A. Sari, 2018). Grammar is useful for English in order to describe different situations (Feng, 2013). Using correct grammar in speaking and writing will make someone who listens and reads can understand meanings and when an event occurs. In addition, grammar indicated how the use of words and structures in a correct way.

#### *How do you deal with your English problem?*

Students were aware that they were lack of vocabulary. Therefore, students shared their ways to improve their vocabulary in English. Students (8) uttered that they read a book, listened to music, and watched a movie or YouTube video to improve their English vocabulary. Those activities were found could help students to improve their vocabulary.



Listening to music could improve students' vocabulary and also improve listening skills (C. Setiawan, 2019; Solihat & Utami, 2014). Watching a movie have an association with the development of students' vocabulary mastery so students can watch a movie with or without English subtitle to improve their English vocabulary (Badrudin & Zainuddin, 2016; R. C. Lestari, 2018). Then, reading books was found could improve students' vocabulary (Liu & Zhang, 2018). Students could also read a novel or any kind of book to improve their reading skills. In addition, students could improve their English using social media (Al Arif, 2019). Students could use social media as an online discussion forum so that students could interact with their friends or other people using English. In other words, students could practice English through social media. Due to the Covid-19 pandemic, teaching and learning activities were transferred to the online form. Thus, the use of technology can be helpful and beneficial in English learning (Mohammad, 2018).

Meanwhile, students also had a problem with pronunciation and grammar. Students (5) mentioned their ways to improve their pronunciation. Students watched English movie, listened to English songs, wrote down the words, and checked it in a dictionary. Students' answers were in accordance with studies that found that watching a movie, listening to songs, and using a dictionary will help students to increase their English pronunciation (Akmalun & Suciati, 2018; Hidayatullah, 2018; Sadilah & Gaol, 2021). Besides that, students can watch a lyric video while listening to the songs to decrease their pronunciation problem (Rohmawati & Suwartono, 2019). Moreover, students that mentioned grammar as their problem in English learning revealed that they just studied from the internet, books, or asked the teachers to decrease their grammar problem.

### ***Teachers***

The results of teachers' interviews were classified into teachers' knowledge or awareness on critical thinking skills, teachers' ways to know or measure students' critical thinking skills, teachers' ways to increase students' critical thinking skills in English learning activity, and teachers' opinion on students' obstacles in English.

#### *Are critical thinking skills important especially in English subjects? Why?*

Teachers' responses indicated the similarity. Teachers stated that critical thinking skills are an important skill that students should have, not only in English subjects, but also in all subjects, in life, and careers. Some studies found that critical thinking was important in English learning especially in reading and writing but teachers did not apply it much yet in their teaching and learning activities (Khonamri et al., 2021; Rashtchi & Khoshnevisan, 2020). Critical thinking skills were being part of 21<sup>st</sup>-century skills and teachers have to develop critical thinking in learning to increase students' critical thinking skills (Pratama et al., 2019). Teachers added that critical thinking skills are important for students because critical thinking skills are useful skills that are needed to make a decision or solve a problem in the workplace considering that vocational school students are formed to be ready to work when they graduate. Teachers' opinion was in accordance with a study that found that critical thinking skills were used to make decisions and solve problems by identifying, analyzing, and evaluating probability, assumptions, arguments, or other relevant information

(Lau, 2011). Moreover, teachers added that teachers must have critical thinking skills as well.

*How do you know or measure students' critical thinking skills? Have you ever conducted a critical thinking skills assessment?*

Teachers knew students' critical thinking skills by independent or group assignment, students' feedback, students' activity during learning, students' responses, and discussion. Teachers saw students' opinions or arguments through assignments or during the learning process. Teachers gave topics or questions to provoke students' critical responses so teachers could see students' critical thinking skills. Teachers have never conducted critical thinking skills assessments. Teachers or schools have not had the development of assessment instruments of critical thinking skills. Teachers measure students' critical thinking skills through higher-order thinking skills questions in exercises and exams. Higher-order critical thinking skills included several elements, namely analyzing, evaluating, and creating (Anderson et al., 2001; Kusuma et al., 2017).

Teachers made higher-order thinking skills questions based on students' thinking skills levels. If the students were in the analyzing level, then teachers made exercises for that level. Teachers did not make for all indicators or levels. Meanwhile, critical thinking skills assessment should measure all thinking elements at one (Villacís Villacís & Hidalgo Camacho, 2016). In addition, critical thinking skills indicators could be obtained from the operational definition of critical thinking (Reynders et al., 2020). Indicators of critical thinking skills could also be appraised using critical thinking standards so that the logical results of critical thinking processes or activities can be understood (Elder & Paul, 2013). The thinking elements are interrelated in critical thinking skills. Therefore, critical thinking skills assessment should measure every thinking element. Critical thinking indicators and standards can also be used as references for implementing critical thinking skills.

*How do you improve students' critical thinking skills?*

Teachers shared their ways to expand students' critical thinking skills. Teachers suggested students read some books or anything else and discuss to apply and expand students' critical thinking skills. Some studies indicated that reading some information and having discussions involved critical thinking skills (Jones, 2014; Mbato, 2019). In addition, students could use the online discussion forum to discuss with their friends while improving their critical thinking skills (Rathakrishnan et al., 2017). Teachers also used teaching methods for fostering students' critical thinking skills. Teachers used problem-based learning, project-based learning, and inquiry-based learning to enhance students' critical thinking skills, especially in English learning. Teachers added that they have ever conducted debates to increase students' critical thinking skills. This was in accordance with studies that found that problem-based learning, project-based learning, inquiry-based learning, and debate could enhance students' critical thinking skills (Bashith & Amin, 2017; Fuad et al., 2016; Ghaemi & Mirsaeed, 2017; Rochmahwati, 2015).

*Is analytical exposition text can be used to foster students' critical thinking skills?*

Teachers were asked about the potential of analytical exposition text material in English subjects that can enhance students' critical thinking skills, especially for eleventh grade. Teachers stated that analytical exposition text can be used to foster students' critical thinking skills. This was in accordance with studies that found that critical thinking skills could influence students in writing analytical exposition text or exposition text (Kiptiyah, 2019; Rossa, 2017). Teachers (3) added that it was because analytical exposition text included the writer's argument and opinion as well. Analytical exposition text contains the author's point of view which is strengthened by facts about a phenomenon or social issue that occurs so that critical thinking skills are needed in creating and evaluating arguments about a phenomenon. Analytical exposition texts can be delivered in oral and written form. Oral and written are productive skills related to critical thinking skills in English learning (Golkova & Hubackova, 2014; Nikou et al., 2015; Ramezani et al., 2016).

Teachers (2) added that critical thinking skills can be applied in other English material, especially for writing, besides analytical exposition text. It was because critical thinking skills might be used when students write a text. When writing text, students have to think word by word, paragraph, and meaning. Teachers could use an approach to infuse students' critical thinking skills in their paragraph writing (Chason et al., 2017). A study found that there was a critical thinking skills effect on writing skills (Subroto & Rosalinah, 2017). There was also critical thinking skills effect on argumentative text and it could help students for increasing their critical thinking skills (Nejmaoui, 2018; Winarti et al., 2021). Previous studies indicated that writing activities involved critical thinking skills. Involving critical thinking skills in writing will make a writing quality. Therefore, teachers can consider applying critical thinking skills in other English material.

*What are students' problems in English learning?*

Students had several obstacles in the English learning process. The researchers asked teachers about students' obstacles in English. Teachers' responses indicated the similarity. Teachers revealed that students' main problem in English was vocabulary. This was in accordance with students' interview answers. Students have limited English vocabulary and students were stuck in the translation phase. In addition, teachers revealed that pronunciation was also students' lack in English. Students sometimes make mistakes or errors in their English pronunciation. English pronunciation made students less confident when they want to speak English. A study found that students' self-confidence affected their pronunciation skills (Zainnuri, 2014). Teachers encouraged students not to feel ashamed in speaking English.

Moreover, teachers stated that some students thought too long when they wanted to give their opinion in English because students thought about the correct grammar besides vocabulary and pronunciation. Teachers added that students' obstacles in English could affect their critical thinking skills. The teachers believed that critical thinking skills have to go hand in hand with students' English skills. A study found that grammar proficiency and vocabulary mastery correlate with students' critical thinking skills (Ünaldı & Yüce, 2021). A teacher added that students' obstacles in English such as vocabulary could affect students' language comprehension, especially in reading context. Some studies indicated that

vocabulary mastery was important for reading comprehension and it showed a correlation (Brooks et al., 2021; Manihuruk, 2020). Moreover, critical thinking skills need the comprehension ability for analyzing until concluding. This was in accordance with what Ünalđı and Yüce found that vocabulary correlates with critical thinking skills.

Teachers stated that teachers knew students' critical thinking skills through discussions and assignments. Students might have many ideas to be shared but students have problems with their vocabulary, pronunciation, and grammar. Therefore, teachers sometimes use code-mixing and code-switching in their English classes. Code-mixing was found could help students to decrease their English vocabulary problem and might enhance students' bilingual language (Jiang et al., 2014; Sabri et al., 2019). In addition, English code-switching was commonly used in the Indonesian language (D. Setiawan, 2016). Using code-mixing and code-switching in English class for communicating could help students understand what teachers' and other students' mean.

*What are your suggestions for students to solve their English problems?*

Teachers stated that students have to practice English in students' daily life such as having a conversation in English, reading English books, listening to English songs, and writing English words or texts to decrease students' English problems. Subramaniam and Zainal found that extensive reading influences students' vocabulary size (Subramaniam & Zainal, 2016). Then, students can utilize their social media such as Instagram for writing while improving their writing skills and vocabulary (Singh et al., 2021). Setiyawan and Fathir found that using movie segments could develop students' grammar mastery (Setiyawan & Fathir, 2019). Furthermore, teachers added that students can use a mobile application to learn English nowadays. Mobile application such as Duolingo was found could increase students' vocabulary (Ajisoko, 2020). Wongsuriya also found that students could improve their English pronunciation through a mobile application (Wongsuriya, 2020). Students can establish their English skills such as reading, writing, listening, and speaking besides vocabulary, pronunciation, and grammar through activities suggested by teachers and previous studies.

## 5. CONCLUSION

The development of technology-based assessment instruments of critical thinking skills on vocational school English subjects for the eleventh grade needs to be developed. Technology-based include technology such as website, application, etc. The development of technology-based assessment instruments of critical thinking skills has to be based on critical thinking indicators or critical thinking standards. The development of technology-based assessment instruments of critical thinking skills can be made as formative assessment or summative assessment. Furthermore, critical thinking skills be able to be applied in analytical exposition text material so that the development of technology-based assessment instruments of critical thinking skills be able to be developed for analytical exposition text material. It does not rule out the possibility to develop critical thinking skills assessment instruments for other English materials. Having the development of technology-based

assessment instruments of critical thinking skills can be beneficial for both students and teachers. Critical thinking skills should be practiced as often as possible.

In addition, the eleventh-grade students have never taken on critical thinking skills assessments at schools and teachers have never conducted critical thinking skills assessments at schools. The teachers and schools also have not had a development of technology-based assessment instruments of critical thinking skills on English subjects or analytical exposition text material. Students and teachers knew that having critical thinking skills was important. Critical thinking skills are one of the 21<sup>st</sup>-century skills that vocational school students should have for their careers. Teachers used teaching methods to involve students' critical thinking skills in English learning. Moreover, teachers used technology in teaching and learning activity and students could follow the learning. Thus, these can be supporting factors to develop and implement critical thinking skills technology-based assessment instruments on vocational school English subjects for the eleventh grade.

However, students still have problems with English vocabulary, pronunciation, and grammar. Students' obstacles in English can influence students' English comprehension especially for receptive skills such as reading and listening. Moreover, students' obstacles can be inhibiting factors to implement critical thinking skills technology-based assessment instruments on vocational school English subjects for the eleventh grade. The development of technology-based assessment instruments of critical thinking skills can be made in English and Indonesian but teachers should keep helping students to improve their English vocabulary, pronunciation, and grammar through teaching methods or English learning activities that did not discuss in detail in this study. English is an international language and vocational school students should be able to be English. Students can also improve their English vocabulary, pronunciation, and grammar in their ways. Thus, other researchers can make studies related to the development of technology-based assessment instruments of critical thinking skills on vocational school English subjects, an activity that can enhance students' critical thinking skills and students' English, or designing critical thinking skills-based lesson design for English subjects.

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