

■ INTRODUCTION

The main 21st century skills which had been known by most teachers are critical thinking, collaboration, communication, and creative problem-solving. These skills must be taught integrated within a learning instruction by using appropriate teaching methods and media. The choice of the methods and media should be related to the outcome of basic competence and materials within a syllabus. Critical thinking skills are needed by graduates to acquire creative problem-solving skills. Critical thinking is the ability to consider a variety of data from a variety of sources, to process it creatively and logically, to challenge and analyze it in order to get a well-thought-out conclusion that can be supported and justified (Moon, 2008). This means that learners must be taught to be able to process and analyze information to make conclude. This requires teachers to apply teaching methods that can develop critical thinking for learners. Critical thinking skills and higher-level thinking skills (HOTS) are closely related. According to the new Bloom taxonomy Anderson et al., (2001), HOTS is at cognitive level 4: analysis, (5): assessment, and (6): creation. Analyzing entails dissecting the material into its constituent parts and determining how they relate to one another; evaluating entails making decisions based on criteria or standards; and creating entails bringing the elements together to form a novel, coherent whole in order to create the original product.

Vocational High School (VHS) is part of the national education system with an objective of vocational education, namely to create a professional workforce that can meet the requirements of the business/industrial environment and to grow its potential. Adopting and adapting to the advancement of science, technology, and artistic knowledge. VHS's 21st learning and skills are one of the fields of its expertise, such as thinking analytical and able to solve problems, innovative, able to work together

and connect. (*Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 34, 2018, concerning National Standards for Vocational Education / VHS, 2018*).

To be able to acquire them, the skills must be taught integrated with the learning objectives and learning materials. Learning must be oriented toward increasing HOTS through media and strategies. A researcher showed that a learning must be oriented toward increasing HOTS through media and strategies (Ichsan et al., 2019) To know whether the objective had been achieved teacher also prepares the assessment program. Besides, the three learning aspects: objective, material, and assessment must be aligned. However, the fact that many teachers were still lack knowledge and ability to apply HOTS integrated (Ratnawati et al.'s, 2017; Ramasamy et al.'s, 2016). They often have no idea what teaching methods, teaching media, or teaching materials which are suitable to be applied to train students in higher-order thinking. Teachers need to be trained for using the methods, media, materials so that they can apply them in their classroom. However, there are very limited opportunities or rarely for teachers to attend this training. Consequently, their knowledge of HOTS implementation is not improved.

Having broad knowledge about teaching materials and teaching skills are required by teachers to carry out good lessons that are relevant to the learning objective. Campbell et al, (2004); Mujis and Reynolds, 2005; Shulman (1987) in Kyriacou (2007) argued at the very least knowledge base, which includes: (1) Material competence; Experience of large-scale management and organizational techniques in the classroom; (3) Expertise in the content of instruction and programs; (4) Experience in the teaching of distinctive subjects; (5) Pupil Experience; (6) Experience of education, spanning from facets of the classroom to the

community; (7) Awareness and significance for educational purposes. This base teaching knowledge must be obtained by teachers. So, they can apply their knowledge to teach the pupils. Through practice, teachers will be more skillful. A research showed that there is a positive effect of principal decision making, school climate and teaching experience on teacher performance (Shukla & Dungsungneon, 2016 and Mailool et al., 2020).

Teaching higher-order thinking skills are completely needed in this disruptive era where abundant information comes every second in our smartphone. Some information is good for us as they can add our knowledge and skills, but some are rubbish and needs to be selected through our critical thinking. The skills to analyze and evaluate are needed here. The valuable information can make learners creative, so learners can create something more creatively. A research has showed that the use of mobile technology influence HOTS directly (Kim et al., 2020, Amin & Ikhsan, 2021).

It can be assumed that HOTS is closely related to the four 21st century skills. If a learner is often exposed to the practice of analyzing and evaluating written text such as a report, news item, he becomes more critical. It is also one way to train to have critical thinking. If learning is done in groups, learners can learn to collaborate and they can communicate during working in a group to solve learning problems. This is to say that applying HOTS in a class is important for teachers of English subjects. Ong and Borich (2006) provided some strategies that promote thinking that can be applied by English teachers. Among them are (1) research-based learning (IBL)- is a method of learning that involves the process of questioning to find information, knowledge, and truth (Ong & Borich, p.29); problem-based learning (PBL)- is an innovative, self-directed, collaborative approach to learning that employs students' problem-solving abilities, and project-

based learning (PjBL) is a learning model that organizes learning. Projects can be difficult undertakings based on difficult concerns or challenges that require students to solve problems, make decisions, or do research (Ong & Borich, 2006, p.32). These strategies can be implemented by English teachers to develop students' critical thinking or higher-order thinking skills.

Some related studies concerning HOTS had been done concerning HOTS. First, the studies on teachers' knowledge about HOTS were done by Retnawati, Djidu, Apino, & Anazifa (2017) and Ramasamy et al. (2016). The studies focused to describe teachers' knowledge and interest in HOTS. The result found that the teachers' knowledge about HOTS was still low. However, the level of interest in HOTS in primary school teachers was higher than in secondary school teachers.

The second studies were about the teachers' perception of HOTS which was done by Afandi, Sajidan, Akhyar, & Suryani (2018), Ardini, (2017), and Fakhomah & Utami (2019). The studies aimed to investigate about the perception of pre-service teachers' and difficulties in implementing HOTS in language teaching in the 21st-century. The subject of the first study was the English teachers of Senior High School, while the second study was pre-service science teachers, and the third study was the pre-service English teachers. The result of the first research showed that the teachers' perception was 5% very good, 85% good, and 10% moderate. The finding of the second study that The participants expressed a positive attitude toward adopting HOTS in the classroom, although they are having difficulty doing so. Third, the students understood the significance of HOTS and learning that highlights the features of HOTS in order to meet the challenges of the twenty-first century. However, the result of the studies does not show the difficulties encountered by the participants of the studies.

Third studies, concerned with the implementation of HOTS in English class. First, Ahmad (2018) aimed to describe whether the implementation of LOTS and HOTS were applied properly. The subject of the study was an English teacher at Senior High School. The result showed that the teacher teaches remembering, understanding, applying, analyzing, creating, but no evaluating skill. The second study was on the integration of HOTS in language learning in the 21st century which discussed the teaching approaches and strategies that can be applied in the language classes to achieve HOTS (Daud, 2017). Among the strategies that can be used are employing appropriate technology to improve the students' engagement; changing the teaching style to produce proficient and critical learners. A similar study was done by Yoke, Hasan, Jangga, & Kamal (2015) and Husamah et al. (2018). They investigated whether HOTS can be integrated into the reading of the ESL and to what extent students see this idea as an application for them to develop critical thinking skills. The result showed that the students and the evaluation favored the given tasks and believed that they were innovative and out-of-the-box. Meanwhile, Setyarini, Muslim, Rukmini, Yuliasri, & Mujianto (2018) investigated the development of HOTS strategies and possible challenges through storytelling to improve students' ability to speak. It was done in the seventh grade of junior high school. The results of the study showed that HOTS in story-telling enabled students in practicing speaking through conveying an opinion, commenting, etc. and making imagination while analyzing and evaluating the story.

More studies about teacher strategies to enhance HOTS in English class had been done by Alsowat (2016), Husamah et al. (2018), Indriyana & Kuswando (2019), Akatsuka (2019), Alrawili et al. (2020), Susanti,

Retnaningdyah, Ayu, & Trisusana, (2020), Mei Ardaning Tyas (2020), Ong, Singh, Singh, Kaur, & Singh (2020), Wilson & Narasuman (2020), Haniah et al. (2020), Syafryadin, Harahap, Haryani, & Astrid (2021) and Qamariyah et al. (2021). These studies had proved enhancing HOT through the chosen strategies had made significant difference. The strategies which had been applied, among them are Collaborative Strategic Reading (CSR), Flipped classroom, classroom interaction focus socio-based learning with socio-scientific issues. However, only one study was done in vocational school, other studies were conducted in Senior High School, Junior High School, even Colleges.

So the related previous studies had underlined the pre-service teachers' and teachers' knowledge and perception about HOTS, and the perception about the difficulty in implementing HOTS in the classroom, and the implementation of teaching strategies in improving students' language skill, particularly in reading and speaking. The studies provide ways of implementing HOTS in English class. However, there was very limited study that reported the way of implementing HOTS in vocational high school, particularly on teacher perception about the application of teaching HOTS. Consequently, the purpose of the study are to investigate the vocational high school teachers' perception of the importance of teaching HOTS in this twenty-first century era and the complexity or difficulties in implementing HOTS.

■ METHODS

Research design

A mix-method approach of data collection and analysis was applied in this study. Survey techniques to identify the teacher's perception of HOTS in the twenty-first century and in-depth telephoning interviews were used for the methods of collecting data.

Research design

In Forty English teachers who taught English at state and private vocational high schools in the Wonosobo regency of Central Java, Indonesia participated in this study. They were purposefully selected as the participants. As they consisted of a senior professional who had taught English for more than 15 years and junior teachers who had taught less than five years who could represent teachers in English Teacher Association of Wonosobo regency.

Research site and participants

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Data collection and analysis

There were two instruments for data collection. The first instrument was a questionnaire. It is a written instrument that presents a sequence of questions or statements to the respondents, to which they must respond either by writing their replies or by picking from a list of answers (Donyei, 2003). It uses Likert scales – It consists of a series of assertions, all of which are related to a specific goal (a group of teachers); respondents are asked to indicate how much they agree or disagree with these claims by marking whether they agree or disagree such a tick mark on the answers ranging from “strongly agree” to “strongly disagree.” There were three indicators to develop the questionnaire for both aspects (importance and difficulty) namely

planning the lesson, implementing the lesson and assessing the students’ HOTS. The total The questionnaire items were 20 which consists of 10 items asking about teacher’s perception of the need for HOTS skills and 10 items asking about the teacher’s perception of the complexity of applying HOTS. The questionnaire had been tested for validity and reliability by using SPSS program version 22. The result showed that all items were valid and reliable as the r-value of each item was higher than 0.05. The data were obtained by scoring the subjects’ responses, “Strongly Agree” (SA) =5, “Agree” (A) =4, “Neutral” (N)=3, “Disagree” (D)=2, and “Strongly Disagree” (SD)=1. The questionnaire was distributed online to English teachers as member of English Teacher Association (ETA) Wonosobo.

The second instrument was a telephoning interview as it was impossible for having one-to-one interview directly during the COVID pandemic. There were four questions in each aspect (importance and difficulty). The indicator for importance namely reasoning, best practice of implementing and assessing HOTS, while indicator in difficulty aspect namely items of difficulty, factors caused the difficulty in implementing and assessing HOTS. Ten (10) volunteer teachers were interviewed. As it was in pandemic condition, an in-depth telephoning interview was done to triangulate the data for a. Investigator triangulation was also used to check the data validity.

Data Analysis

The data which had been collected from the questionnaire were analyzed by using Descriptive Statistics with SPSS version 22, while the data from interview were analyzed by using a thematic analysis. Table 1 is the interpretation of the mean score of the teacher’s perception.

Table 1. Interpretation of mean score based on interval

No	Class Interval	Level
1	1.00 - 1.79	very low
2	1.80 - 2.59	low
3	2.60 - 3.39	average
4	3.40 - 4.19	high
5	4.20 - 5.00	very high

■ RESULT AND DISCUSSIONS

English teachers' perception of the importance of teaching HOTS

After analyzing the data obtained from the questionnaire it was found that the teacher participants had a very high perception towards the need of HOTS for their students as the mean score for the questionnaire was 4.44. It lays in the range between 4.20 – 5.00. It can be interpreted in the ‘very high’ category. Item 2 obtained the highest score as the mean score was 4.70 (the highest perception), whereas, item 10 obtained the lowest score as the mean score was 4.10, however, it is still considered high perception. The complete finding is presented in Table 2.

Table 2. Descriptive statistics of teachers' perception of the importance of HOTS

Statement	Mean	Level
1	4.60	very high
2	4.68	very high
3	4.63	very high
4	4.5	very high
5	4.53	very high
6	4.33	very high
7	4.28	very high
8	4.23	very high
9	4.15	high
10	4.1	high

Table 2 shows that the majority of each item in the questionnaire obtained a very high perception of the importance of HOTS. There are only two items, namely item 9 and item 10 got high perception. The obtained mean of 4.43 is interpreted that the teachers in the study have a very high perception of the importance of HOTS for the VHS students.

Based on the finding above most teachers have a very high perception of the importance of applying HOTS in their lessons to equip learners with the skills. However, many teachers still faced difficulties in applying HOTS in their class which will be reported in the second part. To provide a more complete perception, the result of the thematic analysis based on the interview is presented below.

Table 3. Themes and codes the importance of teaching HOTS

Theme	Code
1. Fulfilling the current and future's need related to the thinking skills	A. thinking creatively B. thinking actively C. thinking critically D. solving problem
2. Fulfilling the future need related to getting a job	A. meeting job need B. being able to compete in a global era C. competing with other graduates

The result of the interview shows the teacher's reasons for integrating HOTS in English lessons. Two themes were found here, they are to fulfill the current and future's need related with the thinking skills and to fulfill the future need related with getting a job. Each theme has several codes that are related to the theme.

Based on the data of the interview transcript, HOTS is important as they fulfill the current's and the future's need related to the

thinking skills as it was mentioned by respondent 2 as follows:

Researcher: *Why is important to include HOTS in English learning in this era?*

Teacher 2: *HOTS is important to master because it is needed in the world of work, in order to make students more active, think critically and independently to explore knowledge.*

Other opinion was given by responden 9.

Teacher: *"HOTS needs to be integrated in learning so that students are able to compete in the global era-can apply knowledge, create more creatively"*.

The second theme shows that HOTS are essential for preparing the graduate with skills needed in getting job. It was conveyed by responden 1 as stated below.

Teacher 1: *HOTS is important so that graduates can master the skills needed in the world of work. So that students can solve problems in the world of work through analyzing and evaluating skills.*

Other opinion was also shared by responden 6. *"The importance of integrating HOTS into English subjects so that students are able to compete in the global era and can win the competition with other graduates"*.

The first question in this study sought to identify the Vocational High School English teachers' perception of the importance and the need of HOTS in the 21st century. The finding shows that the teachers have a very high perception of the need for applying HOTS for their students. The teachers believed that HOTS is important in this era and by achieving HOTS students will be able to solve real-life problems. HOTS must be integrated into the learning tasks and activities. This result is in line with Fakhomah & Utami's (2019), Affandi, Sajidan, Akhyar & Surya's (2015), and Ardini's research findings that the respondents who were pre-service

English and science teachers also had a high perception of the importance of HOTS. Both teachers and the prospective teachers were aware of equipping HOTS for students. However, the current study has a slightly different level of perception and more complete finding as it also adds the teacher's perception through the interview which can provide more complete data.

English teachers' perception of the complexity of teaching HOTS

After analyzing the data obtained from the questionnaire, it was found that the teacher participants had a high perception of the complexity of HOTS as the mean score for the questionnaire was 3.95. It lays in the range between 3.40 - 4.19. Item 6 obtained the highest score as the mean was 4.23 (very high perception); whereas, item 8 was the lowest score as the mean score was 3.67 (high perception).

Table 4. Descriptive statistics of teachers' perception of the complexity of HOTS

Statement	Mean	Level
1	4.0	high
2	3.83	high
3	4.0	high
4	3.85	high
5	3.92	high
6	4.23	very high
7	4.0	high
8	3.68	high
9	3.95	high
10	4.1	high

Table 4 shows that the majority of each item in the questionnaire obtained a high perception of the complexity of HOTS. It is only one item, namely item 6 has a very high perception. The obtained mean of 3.96 is interpreted that the teachers under study have a high perception of the complexity of HOTS to be implemented at vocational school.

They need some in-service training to realize their ideas of applying HOTS in their English lesson. This fact implied that teachers also need to develop their teaching knowledge about learning materials, methods, and media including assessment programs.

The result of the thematic analysis based on the interview is presented below to provide a more complete perception. To provide a more complete perception, the themes and codes gained from the analysis of the qualitative data obtained from the interview are put in table 5.

Table 5. Themes and codes of teacher' perception of the complexity of HOTS

Theme	Code
1. Teacher factor	A. having lack of knowledge about the concept of HOT B. having no training of integrating HOT into English lesson C. lack of experience in making test items containing HOT D. not ready of thinking critically
2. Student factor	A. obtaining knowledge instantly B. having limited vocabulary mastery C. not accustomed to thinking critically D. lack of reading interest E. not having learned HOT in lower school levels (junior high school and elementary school)
3. Material	A. difficulty in finding appropriate text for constructing test items
4. Time allocation	A. having limited time allocation for English subject at school

Table 5 shows the result of the interview with the volunteer teachers about the complexity of integrating HOT in an English lesson. Four themes related to the difficulty were found namely teacher factor, student factors, materials, and time allocation. The finding based on the interview shows that the complexity does not only derive from teachers themselves but also many factors from students, material, and time allocation. It seems that the students' factor is the most crucial factor that needs a solution.

The first difficulty in integrating HOTS is teacher factors. There were four sub-themes

found based on the interview transcript, namely having lack of knowledge about the concept of HOT; having no training in integrating HOT into English lesson, and lack of experience in making test items containing HOT as mentioned by respondent 2.

Researcher: *What factors cause teachers to encounter difficulties in integrating HOTS into English lesson?*

Teacher 2: *Teachers' perception of teaching HOTS is difficult due to lack of teacher knowledge about HOTS.*

Another view was conveyed by respondent

8, as follows.

“Some teachers have difficulty implementing HOTS learning because there is no learning training with HOTS integration, so teachers are still unsure whether they have taught HOTS or are still LOTS”.

The second difficulty lays in student factors. There are four factors mentioned by the respondents namely not ready and not accustomed to thinking critically, obtaining knowledge instantly, having limited vocabulary mastery, lack of reading interest, and not having learned HOT in lower school levels. This view was mentioned by respondent 5.

Teacher 5: Difficulties in implementing HOTS in VHS because students lack practice and are not accustomed to higher thinking skills; students need to be fond of reading - weak literacy - insight is less difficult to think critically - students must be encouraged to read - students are not familiar with HOTS at the previous level if there are already elementary and junior high schools in elementary school, it will be.

The third was the difficulty of finding learning materials that were appropriate for constructing test items as it was stated by respondent 1.

“Difficulty in making hot questions in finding relevant texts and make students interested - teachers lack a lot of reading references, lack of practice in choosing stimuli in making questions. So, questions become difficult. HOTS requires students’ ability to think; the teacher lacks practice making HOTS questions takes time to understand”.

The fourth reason is time allocation as VHS has limited time allocation for English subject as it mentioned by respondent 10 and respondent 9.

Teacher 9: “The selection of methods and their application have not been maximized due to the limited time allocation for English subjects in VHS”.

Teacher 10: Students do not understand the meaning of the text because they are still struggling at the surface level in interpreting word for word - it takes extraordinary effort to invite critical thinking and takes a long time while the number of face-to-face hours is limited.

The second objective of this study was to identify the teachers’ perception of the complexity of applying HOTS. The finding has shown that the Vocational High School English teachers also have a high perception of the complexity of applying HOTS. It can be stated that the participants have almost similar perceptions between the importance of HOTS and their complexity. They realized the importance of teaching HOTS, but they have difficulty in applying it. The result was in line with Ratnawati et al.’s (2017) and Ramasamy et al.’s (2016), which exposed that the teachers in their studies were still had low knowledge about HOTS. The lack of knowledge was also proved in the questionnaire result of the study. The low teachers’ knowledge about HOTS is related to knowledge about the teaching of particular content topics as explained by Kyriacou (2007). English teachers need to broaden this knowledge. The participants were lack of knowledge to develop lessons and tasks containing HOTS, besides, there were other factors of difficulty such as limited-time allocation for English lessons, low motivation of students, and school facilities. Another difficulty in applying HOTS lays in learners’ factors. This finding is in line with Seman, Yusoff, & Embong (2017). However, they focused their study in primary school. This current study has found more difficulties faced by VHS’s teachers. These factors were

uncovered more completely through the result of the interview presented in table 5 above.

Besides improving teacher knowledge it is also important to include HOTS into the curriculum as it is suggested by (Zohar, 2013). It is important to have a curriculum with explicit and clear goals so that teachers can implement them easily including developing HOTS assessment instrument types such as in Dewi et al. (2020), Rintayati et al., (2020), and Suprpto et al. (2020). However, when there is something new in the curriculum, mentoring and coaching need to be done as it is suggested by Rhodes, Stokes, & Hampton, (2004). These not only need networking and collaboration between colleagues but also exhibiting some differences like the relationship between coach, mentor, and teacher trainees.

■ CONCLUSIONS

This study has shown that Vocational High School English teachers have a very high perception of the importance of teaching HOTS. It is in contrast with the high perception of the complexity of applying HOTS. The teachers believed in training HOTS for the students to be able to acquire 21st-century skills that they will need in their job field. However, the teachers were also aware of their difficulties such as lack of knowledge in integrating HOTS in their lessons, students' factors, materials, and time allocation for English lessons at school.

The implications of the result of this study suggest that the English teachers in Vocational High School need help to realize their intention to equip the students with HOTS. Here are some implications can be drawn from this finding: vocational high school English teachers need to add their pedagogical knowledge about teaching methods, strategies, and media by reading some reference books or journal articles which can help them have ideas about applying HOTS particularly some methods and media that can

equip students with critical thinking. The research findings resulted by Ahmad (2018), Daud (2017), Setyarini et al. (2018), and (Singh et al., 2018) can provide some ideas about the method, technique, media, and module for integrating HOTS in English class. Besides, Ong and Borich (2006) provide some strategies which can be implemented by teachers. Husna (2019) asserts that to develop critical thinking skills needs teachers' creativity to provide learners with challenging learning activities.

Besides improving pedagogical knowledge, teachers also need to practice applying the knowledge into planning and action. However, the teacher participants wish that the government through education provides in-service training for integrating HOTS in English class. This requires in-service training or tutoring and coaching. In the tutoring section, tutors can provide the teachers with some activities including planning and implementing the lesson plans by employing certain teaching models like problem-based learning, inquiry-based learning, project-based learning, debate, and choosing appropriate media to support the learning process. In the training, teachers should also be allowed to implement the lesson plan and get feedback from the coach. Furthermore, it will be better for curriculum developers to reconsider the limitation of time allocation given to English subjects at vocational high school. To make better achievement in English subject more frequently learning period should be added. Integrating HOT must be started from the lowest level of education and continued to higher education.

English modules accompanied with assessment (Husna, 2019) guide for assessing HOTS for VHS needs to be produced as it had been conducted by (Poerwanti Hadi Pratiwi, Nur Hidayah, 2017) to access sociology. These research areas can be done by the next researchers.

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