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Higher-Order Thinking Skills (HOTS)-based Formative Assessment: A Proposed Model for Language Learning Assessment

Wiyaka Wiyaka,[1*] Entika Fani Prastikawati,[2] AB Prabowo Kusumo Adi[3]

[1,2,3]English Education Department, Universitas PGRI Semarang, Semarang, Central Java – Indonesia

Abstract

The integration of higher-order thinking skills (HOTS) in language learning assessments has become a crucial issue in 21st-century learning. However, not many teachers are aware of the need to incorporate HOTS in assessments due to their insufficient knowledge and the absence of good examples. Further, there is not much research and literature on HOTS-based formative assessment that can be used as references. This research aims to fill the existing gap by providing a model of higher-order thinking skills (HOTS)-based formative assessments for English learning, especially in junior high schools. By employing research and development design, this research describes the validation of the assessment model. The proposed model of assessment may be used as a prototype for assessing language learning.

Keywords: English learning; formative assessment; HOTS

Introduction

Assessment is an integral part of the teaching and learning process, which has various meanings in education. It is inseparable from teaching for some reasons. Commonly, assessment is used to gather information regarding students' learning progress, attitudes, behaviors, and performances (Widiastuti & Saukah, 2017). It is also used to grade students' work (Staub & Kirkgöz, 2019). Ableeva (2008) states that assessments provide valid information about how much students have mastered within a particular period. Apart from that, assessments provide feedback that can reinforce students' learning improvement and improve their motivation to learn deeply (Mahmood et al., 2020). This implies that an assessment functions as a tool to measure students' attainment of learning objectives and improve learning.

In classroom practices, the two types of assessments commonly conducted by teachers are summative and formative assessments. A summative assessment is usually used to measure what students have learned at the end of a course. It gives information about whether or not the students have met the required standard to earn school certification and

[*]**Corresponding Author:** Wiyaka Wiyaka (alwi28birin@gmail.com) Jalan Sidodadi Timur Nomor 24 - Dr. Cipto, Karangtempel, Semarang Timur, Karangtempel, Kec. Semarang Timur, Semarang, Jawa Tengah 50232

completion or even for further education (Hasim, Di, & Barnard, 2018). Conventionally, a summative assessment is carried out through a test and an examination. Meanwhile, a formative assessment is used to improve learning process, to make changes or adjustments, to provide a continuous evaluation, and to give an insight on issues in teaching and learning (Dixson & Worrell, 2016). It is believed that formative assessments can improve students' intrinsic motivation, which leads to the students' increased performance (Wiliam, 2011).

A formative assessment plays an important role in the adjustment of the teaching and learning process. It assesses the students' understanding, learning needs, and progress relating to a particular unit of materials (Karimi & Shafiee, 2014). This kind of assessment helps many teachers identify and determine students' difficulties in learning some materials and obtain requisite skills that are needed by the students to achieve particular learning competence. It is in line with the main objective of formative assessment, that is to seek and collect information about the process of teaching and learning so that teachers can improve students' activities to achieve better learning results (Zahaf, 2019). Teachers can use formative assessments to portray the students' difficulties in comprehending the materials, difficult skills to acquire, and learning standards to achieve. The assessments can also be used to investigate students' learning requisite and how the teachers make changes to improve the students' quality of learning. Moreover, it is intended to attain students' highest standards of learning (Marion, 2018). That is why in the formative assessment implementation, teachers are

allowed to adjust or change teaching techniques and materials to have successful teaching. The teachers may change their techniques and methods to create a better teaching process. Thus, the learning process will result from the adjustment of the teaching process. Another important thing about formative assessments is the feedback that aims to supervise the gaps between the learning process and the expected learning outcomes (Santamaría et al., 2018). As Kincal and Ozan (2018) state, the quality of formative assessment is essential to improve learning outcomes.

As explained above, formative assessments are conducted during teaching and learning activities and help teachers conduct suitable teaching and learning processes. Formative assessments should be integrated into students' learning activities. The formative assessment occurs when a teacher asks students to answer questions showing understanding on a particular task. Another simple implementation is when the teachers ask students to fill a self-assessment of their writing. Then, the self-assessment completed by the student is checked, reviewed, and commented on by the teachers. The comments from the teachers will assist students in developing their academic strengths and managing their weaknesses of what they have learned. Students' understanding of what they know, what they master clearly, and what they need to improve later will lead to academic progress.

According to Kincal and Ozan (2018), formative assessments have characteristics such as they are commonly used during teaching and learning processes; they provide feedback so that teachers can make immediate changes, and they modify teaching and learning activities to

achieve students' better learning. Teachers need to have a complete understanding of formative assessment so it can be properly implemented in classroom practices. It includes teachers' knowledge of the nature of formative assessment, the principles and characteristics, and the ability to give feedback and follow up actions. Teachers should understand theories underlying formative assessment theories of formative assessment and how it is implemented in the classroom so that feedback on students' learning can be given. At the same time, follow up actions are crucial because those actions provide benefits to students' learning.

In real classroom practices, based on observations the researchers conducted at several schools in Semarang, Indonesia, besides giving formative assessments, teachers mostly focus on giving summative assessments. Asghar (2013) also mentioned that summative assessment is mostly used as a standard assessment to ensure students' final school completion. Summative assessments have been used by teachers since they are found in midterm exams, final exams, and National Examination (Ujian Nasional). This type of assessment is used by teachers to gauge students' understanding and comprehension of materials. A summative assessment is usually performed at the end of a semester or a course to obtain a grade. The teachers' responsibility for determining the students' grades through summative assessments creates an imbalanced use of formative assessment in the classroom. The teachers tend to focus on preparing and finishing the materials for students before the summative assessment is done. This condition does not give advantages for the students since their teachers do not evaluate the process of

teaching and learning conducted in a certain period of time. Moreover, from the observation conducted by the researchers, English teachers do not have adequate knowledge of formative assessments. They mentioned that they do not have any clear guidance on how they should implement formative assessments. So, they were confused to do the assessment. The lack of teachers' knowledge in formative assessment becomes a key factor influencing the type of assessments performed in the classroom. This becomes worse since the teachers are demanded to fulfill many teaching requirements (Hussain, Tadesse, & Sajid, 2015). They need to meet the curriculum standards in their educational system synchronized that conform to the current needs (Sofiyan et al., 2019; Mappiasse & Bin Sihes, 2014), especially developing Higher-order thinking skills (hencefort, HOTS).

Bloom's taxonomy is a popular concept among practitioners, educators, teachers, and scholars (Sulaiman, Ayub, & Sulaiman, 2015). It is commonly used to determine the outcomes of teaching and learning processes; the taxonomy consists of six levels, namely remembering, understating, applying, analyzing, evaluating, and creating. Higher-order thinking skills (HOTS) can be found from the three levels of Bloom's taxonomy; analyzing, evaluating, and creating. Those three levels belong to the higher level in Bloom's taxonomy that encompasses any humans' thinking skills more than information memorization (Yen & Halili, 2015). In other words, memorizing and recalling information belong to lower-order thinking, whereas analyzing, evaluating, and creating are seen as belonging to higher-order thinking. The concept of HOTS emphasizes some skills such as critical

thinking, creative and innovative thinking, problem-solving, and decision making (Ganapathy, Singh, Kaur, & Kit, 2017). For students, learning HOTS will strengthen students' minds, guiding them in producing more alternatives, actions, and ideas. Learning HOTS also maintains the students' critical thinking, helping them produce many ideas and develop the problem-solving skill for their life. Hence, HOTS should be learned for completing assignments given by teachers.

In education, teaching HOTS has been one of the main educational goals considered crucial for students to guide their idea generation. HOTS is needed by the students to respond to the real-world demand in their future life. As a consequence, teaching HOTS to students is also a demand for teachers (Allen & Lee, 2017). For that purpose, teachers need to allocate much time to develop qualified materials in developing students' higher-order thinking. There must be a few efforts to acquire critical thinking inserted in teaching and learning processes. The importance of HOTS skills for students' thinking development requires teachers to be creative and innovative in providing teaching strategies and techniques for the learning process. Teachers can use various techniques or methods to support and facilitate students thinking skills. Questioning strategies can also be acquired as a way of proposing the HOTS concept in the learning process. There are three approaches that can be used by teachers to teach thinking: direct instruction of thinking, the teaching of thinking, and the infusion approach (Nagappan, 2001). Teachers may use many approaches in teaching thinking skills that are suitable to the learning objectives. In language learning, teaching HOTS is also

important to build up language competence. Teachers may improve students' thinking skills and language skills. The use of teaching strategies that enhance thinking skills also improves students' language achievement. Both language abilities and thinking competency shape each other to foster the students' learning process.

A high-level of thinking provokes students to have the ability to analyze, manipulate, and interpret the information they get (Sukla & Dungsungneon, 2016). Hence, higher-order thinking skills (HOTS) must be integrated into all aspects of students' learning. These thinking skills also enable the students to have more alternatives to facing global challenges in the future. This requires teachers to develop HOTS of their students to meet future expectations (Jerome, Lee, & Cheng, 2019). In the classroom setting, HOTS is expected to promote the students' learning engagement and encompass their thinking skills, which are more than information memorization (Miri, David, & Uri, 2007). In relation to English language teaching and learning, the English language is expected to be a means for developing higher-order thinking skills development. It means that not only do students use the English language, they also build and improve their higher thinking skills in a condition that goes beyond the language (Alsowat, 2016).

One of the demands in the latest Indonesian education curriculum at the secondary level is inculcating HOTS in the teaching and learning process, which leads to assessments. Considering the importance of formative assessments that incorporate HOTS in the teaching and learning process in an educational setting, teachers should make an important step

to redirect the way how they teach and assess the students. The previous studies reported an urgent need for formative assessment to be integrated into classroom practices, especially HOTS in the teaching-learning process (Djami & Kuswandono, 2020; Widiastuti & Saukah, 2017), but a few proposed a specific model of formative assessment developing HOTS at the secondary level.

By filling this void, this study is to provide a typical model of HOTS-based formative assessments. A model is needed to serve as a guiding framework to use when teachers are to run formative assessments that incorporate HOTS in classroom practices. This study attempts to assist teachers since many of them face barriers in implementing HOTS-based formative assessments due to their lack of knowledge and the absence of a typical model. The existing government assessment regulation does not deal with the formative assessment, and this leaves a question regarding the steps to take.

Method

This research applied a research and development model. It is an industry-based development model in which research findings are used to design, develop, and validate the educational product and procedures (Gall, G., & Gall, 2003); Sugiono, 2001). The R & D cycle adapted the essential steps of research and development: the needs analysis, preliminary model development, the involvement of experts to validate the product, and the try-out to find out the acceptability, usability, and utility of the product. This study was mainly focused on

product validation as one significant step in the whole cycle of R & D.

This research involved eleven English teachers of junior high schools who were members of the Semarang English teachers' organization. They were selected purposively based on the following characteristics: 1) they are active members of English teachers' organization in Semarang city; 2) they come from different schools, either government or private schools; 3) they have been teaching for a minimum of five years, and 4) they agree to take part in the study voluntarily.

In the needs analysis, the researchers distributed questionnaires, carried out interviews, and analyzed documents of the preliminary research. The closed questionnaires used a Likert-scale consisting of eighteen items. Construct validity was used to determine the instrument validity. For that purpose, the questionnaires were validated by three experts from the English Department of two universities. Based on the experts' judgments, the eighteen items of the questionnaires were valid and could be used in the study. The reliability of the instrument was measured by having an inter-rater reliability technique, i.e., the reliability obtained from the agreement level among the raters. The result revealed that the instrument was reliable and could be used for the purpose of the study.

In the planning process, the researchers examined some references and regulations on learning assessment. Then, drafting the model was made to initiate the model development. The preliminary model was then reviewed by

some experts before the trial stage. When the model had been reviewed, trial phases were planned and scheduled to be implemented at the schools. Some stages of implementing HOTS-based formative assessment model development and focused-group discussion (FGD) were carried out in model development. Then, the formative assessment model was validated by three experts from the Faculty of Language and Arts Education Universitas PGRI Semarang; one expert is a professor in English language teaching, one holds a Ph.D. in language assessment, and one holds a Ph.D. in English teaching. The instrument for model validation contains descriptors determined by the researchers, following the agreement in the focused-group discussion. The results of validation fall in between the range of validity criteria, as presented in Table 1.

Table 1. Levels of Instrument Validity Index

Score	Validity Criteria
X > 3.4	Very Appropriate
2.8 < X ≤ 3.4	Appropriate
2.2 < X ≤ 2.8	Slightly Appropriate
1.6 < X ≤ 2.2	Inappropriate
X ≤ 1.6	Very Inappropriate

To establish the reliability of the model, the researchers computed the intraclass correlation coefficient (ICC) from the three expert judgments. The reliability criteria are presented in Table 2.

Table 2. Levels of Instrument Reliability Index

ICC	Reliability Criteria
.75<V ≤ 1.00	Very Good
.50 ≤ V ≤ .75	Good
V < .50	Very poor

Findings and Discussion

In developing the model, certain criteria to determine a good model were developed through FGD. The model criteria were used as a reference in developing the final model of HOTS-based formative assessments. In the FGD, the participants agreed that the criteria of HOTS-based formative assessments must consist of some major components of feasibility, relevance, and comprehensive content.

Based on the main components, the first draft of the HOTS-based formative assessment model was discussed intensively by the researchers and the participants, including the experts. It was agreed that the model of HOTS-based formative assessment was still needed some improvements, such as adding materials about HOTS-based formative assessment, model layout, and language used. The proposed model of HOTS-based formative assessments is presented in figure 1.

As Figure 1 shows, the developed model was carried out through some procedures. The first procedure is identifying the core competencies (CCs) and basic competencies (BCs) by the English teachers. This analysis is called an initial stage of assessment. To determine the CCs and BCs, a teacher has to scrutinize the standard competencies in the syllabus and pick out which skills best comply with the teaching objectives.
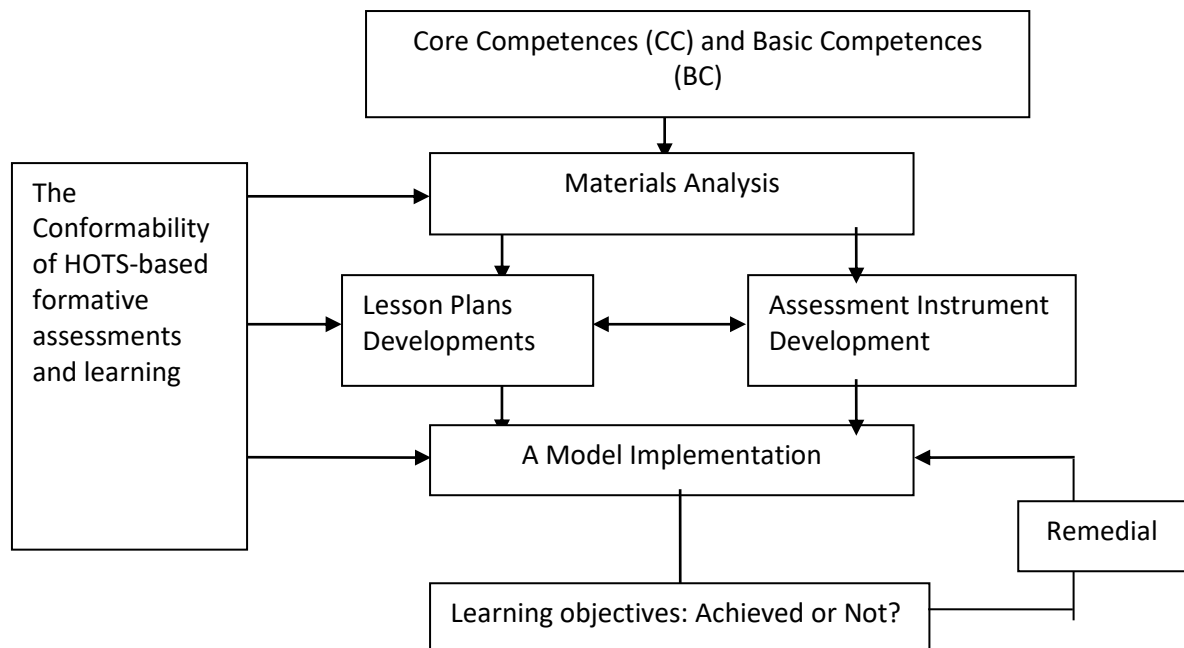

Figure 1. The Developed Model of HOTS-Based Formative Assessment

The next procedure is examining and preparing the teaching materials which can be used to meet the required competencies. Teachers are encouraged to provide authentic materials for open sources. They should not rely on the existing materials from textbooks. The idea to use various teaching materials came up during the session of teachers sharing when the model was first introduced to them. They argued that the materials provided in the textbook did not challenge the students to explore the contents.

The next step is lesson planning. Lesson planning begins with the formulation of the aims and objectives of the course. The learning objectives should be verbalized in such a way that they are measurable and attainable. In this research, the learning objectives were directed at acquiring higher-order thinking skills. Consequently, in lesson planning, HOTS is incorporated into the whole steps of teaching and learning. It can be observed from the learning syntax of the lesson plan. At the same time, formative assessments either in the formal and informal settings, must be prepared in the teaching scenario. The most essential step in doing the formative assessment is the real teaching implementation. Each step set in the

lesson plan will guide teachers to run the class. Finally, the English teachers of the junior high schools could run remedial teaching if the learning objectives were not well-achieved based on mastery learning principles. Remedial treatment should be done carefully to avoid students' reluctance to learn the same material repeatedly. For that purpose, it was suggested that teachers should use different sources of the same topic. To assess the intended learning outcomes, the teachers should use assessment tools different from the ones they used in the former classroom teaching and learning. It is important to note that remedial treatment should consider HOTS. By so doing, higher-order thinking skills were integrated into the learning. All these efforts were accomplished consecutively to determine the conformability of HOTS-based formative assessments used as a reference to implement the procedures.

The above model resulted from a consequential procedure in the research. Prior to being disseminated to the fields, the model was validated by some experts by using a validation instrument. The result of the validation of the HOTS-based formative assessment model is presented in Table 4.

Table 4. Validation Result of A Model of HOTS-Based Formative Assessments

Components	Mean	Standard Deviation (SD)
Content and Feasibility		
a. Conformability with the newest curriculum and regulation	3.42	.53

	Mean	SD
b. Conformability with teachers' need	3.57	.53
c. Procedure of implementation	3.57	.78
d. Coverage	3.57	.53
Format and Presentation		
a. Arrangement of material	3.57	.53
b. Arrangement of coverage	3.57	.53
c. Appropriate illustrations	3.28	.48
d. Layout	3.14	.37
Language Use		
a. Readability	3.71	.46
b. Communicative language use	3.85	.37
c. Correct Grammatical Accuracy	3.85	.37
Mean	**3.55**	**.52**

The validation covers three main components: content and feasibility, format and presentation, and language use. In terms of content and feasibility, there are four aspects that indicate good criteria for mean and standard deviation (SD). With regard to the aspect of conformability to the newest curriculum and regulation, the mean is 3.42 and SD= .53. The aspect of conformability with teachers' needs obtained a mean of 3.57 and SD= .53. Then, the aspect of the implementation shows 3.57 as the mean and SD=.78. The last aspect, content, and feasibility, obtained a mean of 3.57 and SD=.53. The second component of validation is format and presentation covering some aspects; the arrangement of materials, the arrangement of coverage, appropriate illustrations, and layout. In terms of the arrangement of materials and arrangement

coverage, they show similar mean (3.57) and SD (.53). Next, the aspect of appropriate illustrations obtained a mean of 3.28 as a mean and .48 as SD. The layout aspect has 4.14 as the mean and SD= .37. The last component of validation is language use that focuses on readability, communicative language use, and correct grammatical accuracy. The mean of the readability aspect is 3.71 and SD=.46. Then, the aspect of communicative language use and grammar accuracy show similar mean and SD, which are 3. 85 as the mean and .37 as SD. Those results of validation were then deeply consulted with the experts to get more feedback for the revised version. Overall, those results reveal that the model is appropriate to be used by English teachers as a guide in implementing HOTS-based formative

assessments in English teaching, particularly in junior high schools.

According to the result of the research, the developed model of HOTS-based formative assessments is appropriate to be used by English teachers of junior high schools. This model is also prepared for student-teachers in English education departments to be a reference model when they have their teaching practice at schools. This formative assessment model has been developed through some stages in research and development and implemented in eleven junior high schools in Semarang as trial phases. The validation result shown in Table 4 reveals that this model of HOTS-based formative assessment is feasible to be used as a formative assessment model that promotes higher-order thinking skills (HOTS) development for students, especially in English learning. As the newest curriculum in Indonesia declares, a HOTS concept should be inserted in learning activities and assessments. It aims to create knowledgeable students who are critical and able to compete in the future (Ganapathy et al., 2017). A HOTS concept can also be identified in some terms: transferring, critical thinking, and problem-solving. In the learning process, transferring means that students are expected not just to remember what they have learned at school but also to use what they have learned in their real life. Meanwhile, in terms of critical thinking, students do not only acquire English language knowledge and skills, but they are also expected to be able to give reasonable critique and personal judgment. This demand encourages the teachers to guide their students on how to make judgments and decisions. In

this case, the teachers can assist the students in improving some skills such as the skills of judging the credibility of learning sources, identifying assumptions, and identifying connotation cases in English language use. Problem-solving skills are nurtured when the students use their memorization and knowledge to find solutions for problems they face in English learning.

This model of HOTS-based formative assessments has been considered appropriate to be used for some validated aspects; (1) the content and feasibility, (2) format and presentation, and (3) language use. Furthermore, this model of HOTS-based formative assessments has shown good validation results with a mean of 3.55and SD .52 (see table 4). In content and feasibility aspects, some points are validated by the experts: conformability with the newest curriculum and regulation, conformability with teachers' needs, the procedure of implementation, and coverage. Besides, related to content and feasibility, this model of HOTS-based formative assessment has been synchronized to the newest curriculum and regulation that support English learning in junior high schools. It also meets the teachers' expectations, as found in the need analysis phase. So, it is expected to help English teachers implement HOTS-based formative assessment in real teaching practices. The procedure of implementation has been written and well clarified, that it covers all teaching aspects needed by English teachers. Moreover, this model emphasizes HOTS that is inserted in learning activities through formative assessment implementation. In this case, all

teachers involved in the study agreed that teaching HOTS is crucial for students to develop their idea generation (Heong et al., 2012). They realized that teaching and inserting HOTS in students' learning activities may increase students' engagement in English language learning. Additionally, HOTS has been considered as thinking skills required in industrial era 4.0 that forces people to be critical in facing any problems. Based on those facts, the model complies with the goal to build up students' high-levels of thinking skills without eliminating the assessment process that comforts their English learning.

The second aspect of the validation result is its format and presentation, which covers materials arrangement, illustration arrangement, coverage arrangement, and layout. The researchers and the teachers discussed those supporting aspects of the model and presentation in a focused-group discussion (FGD). The first result of FGD suggested that the format and presentation of the model need to be improved and revised in its material management and illustration management. According to the feedback from FGD, material management should be simplified to make the implementation easier. The layout also needs to be revised. The first look of the model's layout is considered too simple. So, it needs to be improved. When the format and presentation of the model had been revised and improved, it was then checked and validated by the experts.

The last aspect is the language used in the model that reflects the model's readability, communicative language, and grammatical accuracy. Those aspects were improved to make the final model easy to understand. The mentioned language aspects also become key factors influencing the result of model validation. In terms of readability, it can be noted that the language used in describing the model can be understood by all the subjects. The language does not create confusion for teachers as they appraise it as their teaching guidance in implementing HOTS-based formative assessment. Then, with regard to the communicative language used, some sentences and statements must be revised so that it is easier for English teachers to understand and use it. Meanwhile, in grammatical accuracy, this model has met the standard of grammatical accuracy. So, this model meets the standard of grammatical English language use.

Based on the trial phases, this formative assessment model is easy to understand and easy to use by the teachers. The eleven English teachers I mentioned that this model had given them clear guidance on how HOTS can be inserted in the assessment process. In this process of HOTS insertion, the teachers got used to check and consult to the model proposed by the researchers. In addition, the model also provides implementation procedures, so that it is easy for the teachers to follow each step in the suggested procedures. This model of HOTS-based formative assessments also offers the teachers non-test formative assessments which support the learning achievement of students. This non-test formative assessment is done during the learning activities by giving probing questions to students that stimulate their understanding on the materials explained by the teachers. Finally, the complete information of

the model can help teachers provide a new assessment process for students. This formative model can be used as a reference in conducting classroom assessment in English learning. In addition to that, this formative assessment model is expected to improve teachers' assessment literacy as it can help them develop their knowledge and skills in conducting classroom formative assessment based on its principles and ethics. By having this knowledge and skills of assessments, the teachers will be able to design and develop assessment instruments that develop students' higher-order thinking skills to achieve better learning for students (Yen & Halili, 2015).

HOTS-based formative assessments are carried out through learning activities and techniques such as questions and answers, daily tasks and quizzes, and even non-test assessment techniques and methods. Those learning activities are built by emphasizing HOTS as the main concept of formative assessments. This aims to change the assessment concept that is not merely a matter of judgment on students' ability but assists the students in solving their upcoming problems with their HOTS. Thus, teachers need to appreciate the efforts and responses in the assessment processes (Supriyadi, Zamtinah, Soenarto, & Hatmojo, 2019). The teachers must do keep in mind in carrying out the assessment during the class so that the intended assessment functions to smooth the students' learning, make a fun learning atmosphere, and create respective teaching without losing a chance to achieve the learning objectives and goals.

Using dialogues or activities of questioning and answering during the lesson enables the teachers to develop students' thinking skills. Using dialogues or questions and answers, teachers try to gain more information on students' knowledge, understanding, and competence. Through questions and answers, the students have a chance to play a role actively in the assessment process (Spiller, 2015 ;Ruiz-Primo & Furtak, 2007). The teachers' informal questions will reduce the pressure on the students as opposed to the formal assessment. In this context, creating a positive perception and assumption toward an assessment is crucial to motivate the students to be more enthusiastic in achieving the learning goals and objectives. If that happens, students will have positive thinking and appreciate the assessments conducted by the teachers (Kivunja, 2015). Students will not feel depressed in the assessment processes conducted by teachers. A positive perception of assessments gives a positive motivation that will support and strengthen HOTS and self-values in the learning process.

This proposed model also focuses on the integration of assessment and learning. The result in the trial phases has shown that this model of HOTS-based formative assessments allows the teacher to carry out both learning and assessment at the same time. Learning and assessment should be conducted before, during, and after the learning process. Assessment is an integral part of learning activities (Lindstrom& Weleschuk, 2017) that should be carried out from the beginning to the end of learning. A formative assessment can also be carried out

through class observations, i.e., by collecting continuous information during teaching and learning (Othman & Mohamad, 2014). As a consequence, teachers can adjust learning activities so that the students' learning outcomes are optimal (Mulenga-Hagane et al., 2019).

A model of HOTS-based formative assessment may present various techniques such as informal questionings, quizzes, and daily assignments. They can be used as a foundation to develop students' thinking skills. With regard to the on-going curriculum, the assessment should be synchronized to the core competencies and basic competencies listed in the syllabus. It must be noted that the focus of learning based on this model is not only students' English competence but also the development of students' HOTS. In this case, students practice more on remembering, understating, applying, analyzing, evaluating, and creating. This means that more efforts must be made by teachers in teaching and students' activities, which are in line with the demands of the current curriculum.

Conclusion

A formative assessment is an important tool that provides feedback for teachers in adjusting their teaching and learning to achieve students' learning objectives. Through this model of HOTS-based assessments, students are challenged to experience assessments that develop their HOTS. This model also helps teachers make improvements in the teaching process and the assessment process to reach the maximum result. By using this HOTS-based formative assessment model, it is expected that

the quality of teaching and learning will improve. This assessment model has also been proven effective as a reference for teachers in creating their teaching assessment. This model of HOTS-based assessments has been proven workable as a teachers' guide in implementing formative assessments when they are to improve the quality of teaching and learning and, at the same time, develop students' thinking skills.

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Wiyaka Wiyaka, Entika Fani Prastikawati, AB Prabowo Kusumo Adi