Higher Order Thinking Skill: Teachers' Perception and Their Assessment Implementation

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Abstract: Higher order thinking skill (HOTS) is a required skill one needs to possess in this 21st century. Without it, one can hardly compete with others in the world which increasingly demands critical thinking and creativity to solve problems. In teaching and learning process, the assessments towards HOTS are needed in order to make sure the skills are used effectively. This article highlights some issues of HOTS assessment. Firstly, the perception of the teachers regarding HOTS and its assessment is comprehensive but in practice, lower order thinking skills (LOTS) are more dominant in the assessment. Secondly, the factors challenging the teachers in constructing HOTS-based questions are categorized into teacher's aspects, teaching and learning aspects, and student's aspects. Lastly, the advantages of HOTS assessment for the students relate to how this type of assessment motivate students to learn as well as improve the learning outcomes.

Keywords: *Higher Order Thinking Skill (HOTS), assessment*

Abstrak: Kemampuan berpikir tingkat tinggi (HOTS) merupakan kemampuan wajib yang perlu dimiliki seseorang di abad ke-21 ini. Tanpanya, orang-orang akan kesulitan bersaing dengan orang lain dalam menjalani hidup yang menuntut pemikiran kritis dan kreatif dalam memecahkan masalah. Dalam proses belajar mengajar, diperlukan penilaian terhadap HOTS agar kemampuan tersebut digunakan secara efektif. Artikel ini menyoroti beberapa aspek yang berkaitan dengan penilaian kemampuan berpikir tingkat tinggi (HOTS). Pertama, persepsi guru tentang HOTS dan penilaiannya yang bersifat komprehensif namun dalam praktiknya muncul pertanyaan yang berbasiskan LOTS. Faktor-faktor yang menjadi tantangan guru dalam mengembangkan soal berbasis HOTS dikategorikan menjadi aspek guru, aspek belajar mengajar, dan aspek siswa. Manfaat penilaian HOTS bagi siswa adalah meningkatkan motivasi belajar siswa serta meningkatkan hasil belajar.

Kata-kata kunci: *Kemapuan berpikir tingkat tinggi, penilaian, HOTS*

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Skills are required to possess, especially in learning to face the education and competitiveness in 21st century. Creativity and innovation, critical thinking and problem solving, making solutions with technology, and woking together in a communicative and collaborative way are the skills that all of our students need in response to the competitiveness of 21st century learning. Runco (2014) states that nowadays, it is also not only reading, writing, and arithmetic that are vital to teach, but also how to advance and apply thinking skills in education. Specifically, according to Kameo (2006), it is creative and critical thinking skills that students are required to possess in the tight and worldwide competition in the 21st century. Similarly, in Indonesian context, learning outcomes are gained through the internalization of knowledge, attitudes, skills, competencies, and accumulated work experiences (Indonesian National Qualification Framework, 2012*)*. This is in line with what Lutfianto and Sari (2019) reported that with all the changes in the era of globalization, we need to prepare to improve the human resources in order for them to have the communicative, collaborative, creative and critical thinking skills as well as the ability to make decisions so that they are able to make use, to manage and to respond to the current information flow and technology updates. As a result, the world of education must also plan itself to encounter these adjustments, such as enabling students with HOTS.

HOTS is the ability that is needed to be acquired by learners in order to be able to compete in the 21st century learning since it requires critical thinking and creative thinking. These thinking skills are included in the cognitive domain that Anderson and Krathwohl (2001) had revised by omitting sythesizing and adding creating at the end of Bloom's Taxonomy. They put forward that the nature of thinking skills offers a classification of cognitive (thinking) skill domain which consists of: (1) remembering which refers to the ability to recognize and recall the relevant information from long-term memory; (2) comprehending which means the ability to explore concepts and draw the meaning based on detailed knowledge; (3) applying defined as the ability to implement the information acquired to the real-life circumstances; (4) analyzing which is the ability to specify the knowledge to further comprehension; (5) evaluating which refers to the ability to critisize based on standard, criteria, and va-

lidity of the knowledge or information; (6) creating which is determined as the ability to produce new concepts or viewing things based on the prior knowledge. The last three classifications are what have been integrated in the current curriculum of Indonesian educational system.

Regarding the educational system in Indonesia, Ministry of Education and Culture has revised the 2013 Curriculum (K-13) to integrate HOTS as well in the teaching and learning process as in the revised curriculum (2017). This is why Indonesian educational system is supposed to show a shift in teaching with the emphasis of HOTS. Countries with a high degree of achievement in the Program for International Student Assessment (PISA) base the practices on HOTS and how it is used to address actual challenges of life (Schleicher, 2018).

A research carried out by Jensen, McDaniel, Woodard, and Kummer (2014) revealed that an assessment emphasizing on higher-level skills will encourage learners to grasp the lessons more thoroughly in order for them to be both able to apply, analyze, and evaluate the lessons and easier to remember the accurate information that has been learned. Diversely, questions that rely exclusively in memorization do not improve the student's capacity to think objectively and apply knowledge.

In order to improve students' HOTS, questions from teachers about HOTS might play a key role to classroom teaching. Teachers' questioning in the classroom has been used for centuries as a method for testing students' abilities, encouraging comprehension and improving higher-level thought skills among students (Tofade, Elsner & Haines, 2013). The assessment of HOTS appears to be a problem for teachers at multiple degree of learning. The items of measurement were still led by lower order thinking skill instruments (Budiman & Jailani, 2014). Meanwhile, in teaching and learning, the assessments towards HOTS are needed in order to make sure the skill is used effectively. Therefore, this paper will highlight some aspects in relation to HOTS assessment. Firstly, the perception of the teachers regarding HOTS and its assessment is comprehensive but in practices, LOTS-based questions occured. Secondly, the factors challenging the teachers in developing HOTS-based questions are categorized into teacher's aspects, teaching and learning aspects, and student's aspects. Lastly, the advantages of HOTS assessment

for the students are increasing the motivation for the students to learn as well as improving the learning outcomes.

Indonesian EFL Teachers' Perceptions and Practices

According to Driana and Ernawati (2019), teachers mostly identified HOTS as an ability that is above recalling and comprehending. "Analyzing" took the majority of cognitive process stated by the teachers when they shared their conception towards HOTS. One of the teachers shared about their conception of HOTS assessment which are questions to determine a learner's skill on a particular grade, so it reaches the ability to understand, explain, identify, and analyze the problems. Based on revised Bloom's taxonomy, analyzing is included in HOTS (Anderson and Krathwohl, 2001). However, explaining and identifying are not included in HOTS. Another conception from different teacher was that the assessment is intended to measure the skills of proceeding and utilizing the knowledge, to search for relation from knowledge to another one and to critically analyze it. This is in line with Paul and Elder (2007) who state that critical thinking is one of those skills included in HOTS. Thus, teachers' conceptions of HOTS and its assessment are still conflicted. In overall, they have not totally grasped the conception of HOTS. No one explicitly pointed out "evaluating" and "creating". There was, however, one of them mentioning those two cognitive processes by addressing them with C5 and C6. Moreover, there have been some imprecise beliefs of the definition of HOTS assessment which the teachers defined as essay question, better quality, and objects that provide figures. The dicoveries of this study have reinforced the inference reached by Retnawati et al. (2018) that the perception of HOTS by teachers is still inadequate.

Some teachers put forward that they did not know how to address questions based on HOTS. They carried out the HOTS-based questions which were mostly at the level of "analysis". They also had difficulties in asking such questions in the level of "evaluating" and "creating". Moreover, when evaluating HOTS, teachers are often concerned more on questions with multiple choices. They thought that essay questions are still not tailored to the students' competence. Even though the large number of questions asked were overtaken by multiple-choice questions,

a teacher realized that it was more challenging to make multiple-choice HOTS questions that led them to only be able to apply "analyzing", while "evaluating" and "creating" will be constructed as essay questions.

Brookhart (2010) argued that noticing the descrepancies between the challenge and complexity level of thinking skill is one of criteria to determine higher order thinking skill. Consequently, the complicated problem does not necessarily measure HOTS. Teachers have been faced with a conflict because of the exlusion of HOTS in 2013 Curriculum core competencies of the school. The disparity between the basic competencies as laid out in the curriculum and the manner in which HOTS problems are incorporated into the national exams has created an inside tension among teachers who carry out research and evaluation in the classroom. FitzPatrick and Schulz (2015) state that students would have a better opportunity of achieving HOT if the instruction, learning and evaluation are clear. As a result, the introduction of HOTS-related questions in exams will be accompanied by the incorporation of cognitive processes identified as HOTS in education papers. In fact, HOTS will also be used in the instruction and evaluation of students.

Indonesian EFL Teachers' Challenges in Developing HOTS Assessment

The in-service EFL teachers' understanding of HOTS was very low to the bottom (Tyas et al., 2019). Most of EFL teachers have not grasped the conception of HOTS very well. They were also uncertain in recognizing HOTS abilities and the potential to overcome tough problems. As a consequence, most EFL teachers have always misconstrued the idea of HOTS. Obviously from the comments of some instructors who were often uncertain in differenciating between HOTS and the ability to solve complex challenges. It was believed that the questions are often hard to address which is similar to the investigation done by Retnawati et al. (2018). This misunderstanding caused teachers of EFL to create complicated questions instead of HOTS-based ones. They appeared to believe that HOTS–based questions are classified as complicated or challenging, while HOTS–based questions, according to experts, are not necessarily a challenging one, and vice versa (Brookhart, 2010). Similar to this result, it is important to recognize that the understanding of HOTS is the fundamental tool of the EFL teachers

in order to be able to incorporate HOTS into the teaching and learning process, both at the preparation stage, the execution stage and the assessment stage.

The perception and execution of intimacy will directly affect their ability to build problems based on HOTS. This is in line with Sulaiman et al. (2017) who suggests that teachers will have to grasp what HOTS means first, only then will they be able to adapt this to teaching and assessing HOTS. This means that even though teachers said they had an idea of how to grow HOTS, they preferred to grow LOTS-based questions rather than the HOTS-based ones. This teachers' own interpretation is assumed to be one of the challeges for teachers in developing HOTS-based assessment.

Misinterpretation of HOTS conception might also be caused by limited medium of learning or learning resources. The provision of learning opportunities will enable them significantly to improve their ability to build the questions in reference to HOTS. However, the provided seminar or training regarding this matter is still inadequate.

It concerns the case that the incorporation of HOTS into the teaching and learning activity is part of a recent procedure in the national system of national education. EFL teachers have not yet been acquainted with HOTS because of the absence of it in their university studies at that time. The deficiency of teachers in HOTS expertise and practice caused it hard for them to apply it for the school setting, especially constructing questions with HOTS-based. That teachers are required to become often acquainted with HOTS with the better cooperation and encouragement of all stakeholders in the field of education. This leads to the narrow practice in constructing HOTS-based questions.

Knowing that students were varied, teachers were obliged to consider more than once before designing HOTS-based questions. In such situation, that having students with various cognitive levels of competence will immidiately influence their capability to solve the problems, particularly with HOTS. It is better for students with better cognitive skills to answer questions if they are in LOTS or HOTS. In contrast, the outcome will not be the same for students with weak or impaired cognitive skills. Additionally, the finding is confirmed by a research Singh et al. (2018) conducted that claims the requirement of remarkable attention in teaching and learning

for poor English as a second-or foreign-language learners. Therefore, teachers of EFL have to find a smart determination on suitable teaching pedagogy and also assessment questions to implement HOTS in the context of teaching and learning.

Students first have to learn and appreciate the language in English before they can grow their HOTS. In reality, it is not easy for Indonesian students to understand English because it is not Indonesian native language. This has prompted teachers to incorporate it in the list of factors included in the creation of questions on the basis of HOTS.

Teachers also claim that examining the primary skill and making design plan as the one of the aspects. Examining the primary skill and making design plan will make it easier for teachers to develop the proper evaluation for learners. Therefore, in constructing assessment or questions on the basis of HOTS, teachers are demanded to ensure that the questions are valid. In regards, teachers perceived that the circumstances and the student's actual situation were fundamental aspects of teaching and learning processes in order for them to ensure that HOTS-related on the questions constructe–were consistent with the need in actuality. It has been confirmed with a study by Lee (2014) which indicated that social existence is affirmatively linked to the level of cognitive presence influencing the ability of HOTS. What can be derived is the necessity to facilitate learners with a good learning experience both in or out of the class, in order to promote learners' HOTS development process.

The challenges mentioned above are faced by teachers in constructing HOTS-based assessment. These are in line with what was found by Tyas et al. (2019) in their study that there are six aspects that become the challenge for the teachers in developing HOTS-based assessment. First, it is teachers' own interpretation of the principle of HOTS. Second is limited medium or resource of learning. Third is the narrow practice in constructing HOTS-based questions. Fourth is the cognitive ability of the students and the complexity level of the content materials of the EFL. The fifth aspect is students' reading comprehension and students' cognitive competence in general. The last aspect that becomes the challenge for teachers in creating assessment in reference to HOTS is the level of difficulty and the appropriateness of the materials.

Advantages of Incorporating HOTS Assessment

Brookhart (2010) confirms two benefits of the HOTS assessment. First, increasing the students' motivation to learn is one of the advantaged of the integration of HOTS assessment. Teachers have also struggled to lift the enthusiasm of learners because instructional resources in the classroom are vague and theoretical. Teachers would also be able to relate the subject to the real-life circumstances. This assessment usually consists of instances, common occurences, or circumstatial issues in daily routines that have demonstrated a correlation between classroom learning materials and the real-world environment. In this way, learners may believe that studying in the classroom is actually advantageous to address the challenges in day-to-day living. It is supposed to improve the morale of the learners.

The other advantage of HOTS assessment is improving students' achievement of learning outcomes. Achieving learning results is highly affected by the drive of the learners. The result of the study done by Marhaeni (2005) revealed that students with learning motivation tend to have higher academic achievement, too. Hence, the research proposed that teachers should be able to inspire learners to enhance learning outcomes. According to Kameo (2006), it is critical thinking skill that is one of the skills that students are required to possess in the tight and worldwide competition in the 21st century, and critical thinking is included in HOTS.. Therefore, assessment of HOTS is also required since it will evaluate the process of teaching and learning whether they are already according to standard.

CONCLUSION

Indonesian EFL teachers appear to interpret the constructed questions in HOTS category, even though they were clearly known and recognized as LOTS questions. This disparity in interpretation arose because the teachers had not yet had a thorough knowledge of HOTS. The HOTS assessment is useful for the enthusiasm of learners, since the HOTS assessment will relate the subject matter in the classroom to real-world experiences so that learning is perceived to be more important, improving learning results for HOTS assessment will educate the way learners think creatively and objectively, not only to memorize or comprehend any realistic facts and concepts, but also to boost

the performance of learners at both national and international level, as HOTS assessment of learners should have the potential to think critically and creatively better. In order to improve HOTS, coordination between curriculum that is usually applied nationally, instruction which depends on the lesson plan and assessment as the evaluation is required. Teachers will require chances to expand the expertise and competence in designing and applying the HOTS assessment through appropriate coaching seminars.

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