



TEACHERS' KNOWLEDGE ABOUT HIGHER-ORDER THINKING SKILLS AND ITS IMPLEMENTATION IN TEACHING READING

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ABSTRACT

Higher-order Thinking Skills (HOTS) is a well-known term that is nowadays being discussed among researchers, especially in education contexts. In this globalization era, developing students' ability to think with HOTS becomes teachers' challenging task to do. They are responsible to enrich their knowledge about HOTS and update findings and ideas of HOTS implementation in teaching. So, they will be able to implement HOTS in teaching ideally and effectively to develop students' HOTS. This research aims to investigate teachers' knowledge about HOTS and investigate how they implement their knowledge of HOTS in teaching reading. This is a qualitative research with case study as the research design. The data were collected using in-depth interviews followed by observation. The participants of this research were three English teachers from a senior high school who teach different grades. The results of this research showed that the teachers' knowledge of HOTS is still low. They do not understand HOTS conceptually. However, their implementation of HOTS in teaching reading showed that they implement HOTS to teach reading that enables students to activate their HOTS. They include the concept of effective HOTS teaching suggested by Fogarty (2009).

Keywords: *Higher-order thinking skills; teachers' knowledge; the implementation of HOTS in teaching Reading.*

Higher-Order Thinking Skills (HOTS) is considered as an important skill that every student has to master. HOTS does not only allow students to understand what they learned but also helps them to use the knowledge beyond the classroom. The students need to prepare themselves for the challenging life that needs critical thoughts to solve complex problems at home or at work that happen in the future by applying

the information and gain experience with their expertise. Teachers, who have a role to transmit knowledge to the students, are responsible to develop HOTS in their classes. They need to update their knowledge of implementing HOTS in their teaching and adjust to what is happening in this globalization era.

Reading classroom is the object of this research. Constructing a concept of higher-order thinking in reading is a challenging job, and understanding reading is such a significant job that the learners must master (Kintsch, 1998; Thorndike, 1917). The characteristic of reading is goal-directed. The accomplished readers use strategies to identify, select, apply, revise, and evaluate the means to achieving reading goals (Alexander et al, 1998; van Dijk & Kintsch, 1983).

By conducting this research, the researcher wants to know to what extent teachers know about HOTS and how they implement their knowledge of HOTS in teaching reading classroom.

The definition of higher-order thinking skills is debatable among the experts. Facione (1984) as cited in Lewis (1993) defined higher-order thinking as an active process that does not only evaluate arguments but also construct them. Constructing arguments includes the common steps to solve the problem i.e. determining background knowledge; producing logic hypotheses; reorganizing the arguments from the result of the testing procedures and evaluating the arguments; and if necessary, revising the initial hypotheses. Another definition was introduced by Paul and Elder (2003) that stated higher-order thinking is the art of analyzing and evaluating thinking. Besides, Paul et al (1990) as cited in Lewis (1993) defined higher-order thinking skills is a self-

directed and focused thinking which shows the perfection of thinking. Ennis (1987) as cited in Lewis (1993) stated his definition of HOTS which is related to evaluative sense. He defined HOTS as reasonable, reflective thinking that is focused on deciding what to believe or do. The definitions of higher-order thinking stated by the experts mostly contain quite a similar idea that is connected to the human cognitive skill. Therefore, a summary of the definitions is offered: Higher-order thinking skills is the ability of thinking that involves the steps of adjusting a problem with one's background knowledge or experience, constructing arguments and make sure that the arguments are logic, and produce hypotheses to decide what she/he is going to say, believe, or do.

Facione (1990) published the Delphi Panel result of identification about six cognitive skills which become the concept of critical thinking. Those are interpretation, analysis, evaluation, explanation, inference, and self-regulation and were defined in the Delphi report as follows:

1. Interpretation.

Interpretation refers to comprehending and expressing the meaning or significance of various experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria. Interpretation involves the sub-skills of categorization, decoding significance, and clarifying meaning.

2. Analysis.

In order to know opinions, assumptions, observations, motivations, facts or views, analysis implies the identification of the intended and actual inferential connections between statements, concepts, or explanations. The research includes the ability to test

theories, identify arguments and interpret arguments in its components.

3. Evaluation.

Evaluation refers to an assessment of the credibility of statements which include a person's description of the perception, experience, situation, judgment, conviction, or opinion; and an assessment of logical strength among statements, descriptions, or questions. The assessment includes the ability to analyze and evaluate arguments.

4. Inference.

Inference refers to the identification and security of elements that are required for making reasonable conclusions; to form speculation and hypotheses, consider relevant information and lessen the consequences that flow from data, statements, beliefs, evidence, decisions, convictions, opinions, concepts, explanations, questions, or other representations. The specification requires the ability to ask for evidence, to conclude, and to draw conclusions.

5. Explanation.

Explanation refers to the declaration of the one's reasoning result; confirming that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon one's results were based; and presenting one's reasoning in the form of strong arguments. The explanation includes the ability to declare results, confirming procedures, and presenting arguments.

6. Self-regulation.

Self-regulation refers to self-consciously to inspect one's cognitive activities, the elements used in those activities, and the discovered results, especially by implementing skills in

analysis and evaluation to one's inferential judgments toward questioning, confirming, validating, or correcting either one's reasoning or one's results.

HOW TO IMPLEMENT HOTS IN TEACHING READING

To teach all the key elements of HOTS, Costa (2001) as cited in Yeung (2015) suggested that a balanced program should include three components: Teaching for Thinking, Teaching of Thinking, and Teaching about Thinking. Fogarty (2009) as cited in Yeung (2015) had a similar proposal about the Four-Corner Framework, where the 'four corners' are Teaching for Thinking, Teaching of Thinking, Teaching with Thinking, and Teaching about Thinking. Hence, literature in the field informs us that teaching HOTS should include four dimensions, i.e. Teaching of, for, with, and about Thinking.

The four dimensions were elaborated by using the concept of effective HOTS implementation in teaching in Western Literature (Fogarty, 2009 as cited in Yeung, 2015). They are:

1. Teaching for Thinking (setting the classroom climate). In this dimension, the teachers should be able to create a rich and encouraging classroom environment that is conducive to students' thinking.
2. Teaching of Thinking (instructing HOTS skills). In this dimension, the teachers should be able to ask HOT questions and/or structure, challenging HOT tasks and activities that motivate the students to use prior knowledge to gain new knowledge.
3. Teaching with Thinking (structuring classroom interactions). In this dimension, the teachers should be

able to give the students ample time to think and prepare responses to questions; encourage them to exchange thoughts with others and to be highly involved in a dialogue, discussion, etc.

4. Teaching about Thinking (helping students to reflect metacognitively). In this dimension, the teachers should be able to guide students to become conscious of their thinking processes and have the ability to control and regulate them. (Keefe & Walberg, 1992; Swartz & Perkins, 1990)

METHODOLOGY

Three English teachers are selected to be participants by using purposive sampling. They were from the same school but they teach different grades. The teachers adopted HOTS implementation in teaching as part of their recent curriculum reform, which is Curriculum 2013 (K-13). The first teacher was named "T1", the second teacher was named "T2", and the third teacher was named "T3".

The research is a qualitative research with case study as the research design. Case study is selected to be the research design since it can investigate a case deeply by collecting it from more than one source of evidence, just as how expert defines it as a qualitative approach in which the researcher conducts an empirical investigation of a contemporary phenomenon within its natural context using multiple sources of evidence (Yin, 2011). This research collected the data from in-depth interviews followed by observations. In-depth interview is a type of interview which researchers use to obtain information in order to achieve a whole understanding of the interviewee's point of view or situation. It can also be used to

explore interesting areas for further investigation (Berry, 1999).

As in-depth interview often involves qualitative data, it is also called qualitative interviewing. Patton (1987:113) suggests three basic approaches to conduct qualitative interview covers: the informal conversational interview, the general interview guide approach (commonly called guided interview), and the standardised open-ended interview. The researcher uses general interview guide approach in collecting data. An interview guide is adopted from Patton (2002) which included questions about the following matters.

1. Teachers' knowledge about HOTS.
2. The description of teachers' HOTS implementation in teaching reading.
3. Teachers' opinion about an ideal and effective HOTS implementation in teaching reading and the characteristics of an effective HOTS implementation in teaching reading should have.
4. The strategies that the teachers employed to enhance the effectiveness of their HOTS implementation in teaching reading.
5. The difficulties that the teachers encountered in their implementation of effective HOTS implementation in teaching reading.

The interviews are followed by the observation that aimed to get a crosscheck between what teachers have said and explained in the interviews and the real activities they do in the classroom. Observation is a type of qualitative research method which not only included participant's observation, but also covered ethnography and research work in the field. In the observational research design, multiple study sites are involved. Observational data can be

integrated as auxiliary or confirmatory research (Gray, 2009).

FINDINGS AND DISCUSSION

The identification of teachers' knowledge about HOTS showed that the teachers have different answers in every question asked.

1. Definition of HOTS.
 - a. T1 defined HOTS as a thought and problem solving that requires more skills.
 - b. T2 defined HOTS as a learning that teaches students to think more creatively, logically, and critically.
 - c. T3 defined HOTS as a way of thinking that is not only reaches the stage of memorization and understanding but also analyzing, synthesizing, concluding, and applying.

Among the three answers, only one is the closest to the construct of HOTS definition. The two others were confused in defining and describing HOTS. T1 and T2 could not distinguish HOTS as an ability or learning method.
2. The importance of HOTS in teaching and learning.
 - a. T1 said that the importance of HOTS is encouraging students' willingness to explore and maximize their ability in learning process.
 - b. T2 said that the importance of HOTS is that HOTS is connected with the current curriculum principle, so the students are able

to develop their ability to criticize what they have learnt.

- c. T3 said that the importance of HOTS is that HOTS is a challenge not only for the students but also for the teachers.

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The teachers are already aware of the importance of HOTS for the students and the teachers themselves.

3. HOTS Components.
 - a. T1 mentioned the components of HOTS are the students are able to express the idea (Explanation), analyze and explore more about the material given (Analysis).
 - b. T2 mentioned the components of HOTS are the analysis of what they learned (Analysis), making role play (Creating), and applying role play in the form of performance (Explanation).
 - c. T3 mentioned the components of HOTS are memorizing and understanding, analysing (Analysis), synthesizing, concluding (Inference), and applying (Explanation).

The teachers were still confused and were not able to mention the components of HOTS completely.

4. The Descriptions of HOTS Implementation in Teaching Reading.
 - a. T1 described that she often having discussion. Eventough the students still have difficulties, help is offered.
 - b. T2 described that she usually give learning materials in form of a text, asking the students to read, understand, analyze, and criticize what they read, then she lead a discussion and ask students to give feedback to their friends.

- c. T3 described that she usually change words or idioms in a text. The students are asked to find out the synonyms. The learning activity is ended with a discussion.

Not all teachers described their HOTS implementation in teaching reading in details. It can be seen that although the activities they do in the classroom are different, all teachers focus on the activities that involve students to have such a discussion.

5. The Characteristics of Effective and Ideal HOTS Implementation in Teaching Reading.

- a. T1 said that an effective and ideal HOTS implementation in teaching reading is when the difficulty of items are high, the text is usually quite long, and the diction and vocabulary are quite difficult too.
- b. T2 said that an effective and ideal HOTS implementation in teaching reading is not only giving material but also inviting students to participate in the learning activities. It also encourages students to activate their critical thinking, activeness, and think logically.
- c. T2 said that an effective and ideal HOTS implementation in teaching reading always need a dictionary. The students must have enough vocabulary. The characteristics can be seen from the questions given, it could be from looking for synonyms, antonyms, and filling the blank text.

T1 and T3 explained the characteristics of HOTS

implementation in general, not the effective and ideal HOTS implementation in teaching reading. T2 tried to explain that an effective and ideal HOTS implementation in teaching reading is turning on the students' activeness in thinking process.

6. The Strategies of HOTS HOTS Implementation in Teaching Reading.

- a. T1 mentioned her strategy is when the students find unfamiliar words, she usually triggers them with the synonyms, antonyms, or by definitions in English.
- b. T2 mentioned her strategy is asking students to make dialogue related to the learning material, performing a roleplay, and having discussion (giving feedback).
- c. T3 mentioned her strategy is changing words or idioms in a text, asking students to find out synonyms, and using instruction sentence that ask students to conclude something.

All teachers explained the the various strategies they usually do in HOTS implementation in teaching reading. T1 and T3 use similar strategy i.e. providing words' synonyms that the students are unfamiliar with. T2 uses different strategy but it was not suitable for teaching reading classroom.

7. The difficulties and Solutions in HOTS Implementation in Teaching Reading.

- a. T1 mentioned her difficulty is a lot of time is wasted because when the students know that the text they are going to learn is quite long and complicated, they will automatically be reluctant.

The solution by T1 is making jokes and ask the students to mention the vocabulary related to the topic being discussed.

- b. T2 mentioned her difficulty is when the class becomes noisy and disturbing other classes because of their discussion. The solution by T2 is setting the students' turn to talk.
- c. T3 mentioned her difficulty is when preparing the learning activities and tasks, teachers have to think twice. The solution by T3 is downloading, copying or printing a text that will be used for learning the read the text and the items. Sometimes, she needs to ask other teachers about certain terms she does not know about.

There are various difficulties that the teachers cope with along their HOTS implementation in teaching reading experiences and they are able to overcome the problem.

The results of the data analysis show that the teachers' knowledge of HOTS is still minimal. They did not understand what is HOTS conceptually. One of them interpreted HOTS as learning method, not an ability to think. From the teachers' answers, it can be concluded that teachers agreed to state that HOTS is important because using HOTS in learning process challenges students to work maximally using their thinking ability. The teachers' answers also prove that teachers are already aware of the importance of HOTS for the students and the teachers themselves. However, the teachers did not really understand of what is meant by HOTS components. They also give doubtful and too wordy explanation. They did not mention the points of the components but describe the students' attainments (T1) and the kinds of

activity in HOTS teaching (T2) instead. When the teachers were asked to mention the indicators of each components, they only explain it generally by saying that the indicators are achieved when the students are active and responsive in the class.

From the discussion of teachers' knowledge about HOTS, the research results did not correspond to the theories. The results also show their minimal knowledge about HOTS. It is in line with the results found by Retnawati et al. (2018) in their research that stated teachers still confused about what is meant by the definition of HOTS. There are still teachers mentioned HOTS as learning method, not an ability that the students have to master. These research results are also consistent with the outcomes of Driana & Ernawati's (2019) study that concluded the majority of the teachers understood HOTS partially. These things reflected to how importance teachers to participate socializations, workshops, and training that discuss HOTS more so that they can implement their knowledge to their classes ideally and effectively. The majority mentioned HOTS related to Analysis, not completely mentioning other components of HOTS.

The results of teachers' HOTS implementation in teaching reading reflected to the theory suggested by Fogarty (2009) although they have not applied all the points of HOTS teaching. The collaboration of teachers' knowledge about HOTS with their implementation of HOTS in teaching reading is very important to reach an ideal and effective of HOTS implementation in teaching, especially for teachers in Indonesia whose curriculum involves HOTS in their stage of learning. Teachers have to master the concept of the skills first. In fact, majority of teachers did not use certain questions or activities that are really lead the

students to HOTS. This findings is consistent with the research result of Yusoff & Seman (2018) that was conducted in Malaysia that presented majority of teachers participated in the research asked LOTS instead to check students' memorization and comprehension.

CONCLUSION

According to the discussion of teachers' knowledge about HOTS and the implementation in teaching reading classroom above, it can be concluded that teachers' knowledge about HOTS, especially in Indonesia, was still minimal and it needed to be developed more. The majority of the participants were not able to define Higher-order Thinking Skill (HOTS) and mention the components of (HOTS) conceptually.

They even did not know what is meant by the components of HOTS. It indicates that the teachers need to explore more insight about HOTS.

However, the result of the HOTS implementation in teaching reading classroom shows that the teachers have performed their version of HOTS implementation in teaching well. They were able to implement the concept of HOTS implementation in teaching suggested by Fogarty (2009) although not all of the points were included. Nevertheless, they still need to develop and create more activities to conduct an effective and ideal HOTS implementation in teaching so that they can infuse HOTS to the students.

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