

OPEN ENDED QUESTIONS: A TEACHING STRATEGY TO PROMOTE STUDENTS' HIGHER ORDER THINKING SKILLS

Sulistiyani

Universitas Nusantara PGRI Kediri, Indonesia

sulissulistiyani@rocketmail.com

Abstract

2013 curriculum requires teachers to employ higher order thinking skills. On the other hand there are many teachers who still have difficulties in designing teaching strategy which is oriented to lead students toward the development of higher order thinking skills. Therefore, this writing is intended to share information of the ways to develop HOTQs and to articulate the benefits of using higher order thinking questions.

One way to promote students with higher order thinking skills is through open-ended questions. Questions allow us to make sense of the world. They are the most powerful tools for making decisions and solving problems, for inventing, changing and improving our lives as well as the lives of others. Higher order thinking questions may also lead to technology-enriched instruction such as promotes students' comprehension in content areas, connects learning in the classroom to real-life situations (multimedia), creates a meaningful context for teaching and learning, facilitates auditory skill development (integrating visual with sound), and accelerates language development.

Keywords: open ended questions, teaching strategy, students' higher order thinking skills

A. INTRODUCTION

The dynamic and demanding world today requires students as the future citizens to go beyond their knowledge capacity building. They need to develop their higher-order thinking skills, namely critical system thinking, decision making, and problem solving. The development of higher-order thinking skills, or higher order cognitive skills by others (Ben-Chaim, Ron, & Zoller, 2000) is important in order to facilitate the changeover of students' knowledge and skills into mature action, regardless of their particular future role in society (Zoller, 2001). To meet this challenge, students' capacities of critical thinking need to be developed. This development is important to enable students to analyze unfamiliar situations, so that their question-asking, problem-solving, and decision-making capabilities will be based on a framework of rational thinking.

Critical thinking is a skill that can easily be integrated in any educational activity, it is not a subject that needs to be taught separately. As a skill critical thinking may be more essential than the subject matter being taught as it is a skill that never goes out of date (Pikkert & Foster, 1996). Like any other form of education, English education should equip students with thinking skills for them to be able to evaluate and analyze issues which constantly changing. As Indonesia prepares a cadre of English-speaking students whose role will be to accommodate with the flow

of English information before it is translated into Indonesian, these students need analytical and critical thinking skills to evaluate what is important and what is not.

Most teachers are familiar with Higher-order Thinking (HOT) due to Bloom's taxonomy. It is generally understood that to develop students' HOT teachers should enhance student engagement with learning tasks which surpass the second level 'comprehension' to stimulate application, analysis, synthesis and evaluation activities in information process (Zohar, 1999).

A study conducted by Ganapathy *et.al.* (2017) shows that from the available data, there are many activities used by ESL teachers to promote HOTs in their classrooms. A majority of teachers always encourage students to find answers to assigned tasks in order to promote HOTs.

Brain storming and problem solving are popular activities used in lessons to promote HOTs. However, other numerous studies still show that teachers' notion of teaching and learning is mostly that of the transmission-of-knowledge model rather than a constructivist-based approach (Tobin, Tippins, & Hook, 1994). There are only few teachers under investigation purposely integrated teaching strategies which are targeted at promoting higher order thinking skills. Focusing on teacher's questions, the study conducted by Ramadhani and Zainil (2019) demonstrated that the most type of questions asked by teachers in EFL classroom activity is display question. Teachers see it easier to design simplistic lessons in which the textbook does the teaching, the integration of HOT into the curriculum is being negotiated. This means that teachers lack the appropriate pedagogical knowledge to integrate HOT.

In classroom instruction, questioning is considered as one of the most common teaching strategy (Brualdi, 1998) and this strategy is one of the most frequently used in classroom instruction. Zepeda (2009) states that questions enable teachers to elicit students' responses which can range from simple recall of information to abstract processes of applying, synthesizing, and evaluating information. More importantly, the act of thinking is often guided by questions (Elder & Paul, 1998). The main benefit of particularly open-ended questions is to boost deeper learning. Some believe that these types of questions could support learning the concept especially it is easy to use in the unknown context outside the classroom. Therefore, EFL teachers can use questions to help students build understanding and think critically and creatively. Following this introduction is a brief concept of higher order thinking skills, higher order questions, developing critical thinking and enhancing creativity.

B. HIGHER ORDER THINKING SKILLS

Thinking is a mental process of combining and arranging data and information in the mind in a correct and meaningful sequence in order to understand or to solve problems. These may include understanding new concepts and knowledge, making decision in believing and acting or to come up with effective, ethical and sustainable solutions for real-world problems. According to al-Ghazali (2007), combining knowledge that exists in the mind to make logical and defensible conclusion is an intellectual thinking process. Thinking process starts when the mind recalls the data and information stored in memory to be processed in order to understand. Thinking process moves forward to make conclusion based on the existing knowledge to reach certainty and to combine the existing knowledge to bring about new thought to solve problems.

Skill is an ability gained as a result of practicing knowledge learned regularly until a skillful person would be able to do certain task effortlessly. Therefore, thinking skill is an acquired mental ability through the process of learning and can be improved through practice. Higher order thinking essentially means thinking that takes place in the higher-levels of the hierarchy of cognitive processing. Revised Bloom's taxonomy consists of application, analysis, evaluation (Anderson & Krathwohl, 2001).

Thinking skill used to process data and information in the mind in order to understand and make conclusion on truth and falsehood is called critical thinking. The sub skills of critical thinking are analysis, interpretation, evaluation, inference, explanation, and self-regulation skills. Analysis is to break down texts, statements, objects, videos or other media, or any kind of expressions expressed verbally or visually (written and pictures) to find proposed or actual relationships among them. Interpretation is –to comprehend and express meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures and criteria (Facione, 2006: 4). Evaluation is assessing the reliability and strength of

evidences of claims and statements; and ensuring that assessment is done based on standards or criteria which can stand critical examination. The subskills of inference include making hypothesis; making conclusion based on evidences; and coming up with logical consequences from data, claims, concepts, beliefs, judgements, and etc.

Facione (2006: 6) stated the experts spelled out explanation as –stating and identifying reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one’s results were based; and to present one’s reasoning in the form of cogent argument. The last core critical thinking skill is self-regulation which means self-awareness of one’s own thinking abilities, processes and evaluation of one’s own reasons for making conclusions for the purpose of confirming or correcting one’s own reasoning or belief. In other words, self-regulation is using reflective and metacognitive thinking to validate or correct one’s own reasoning and belief.

Higher order thinking skills carry some advantages. They promote technology-enriched instruction which includes promoting students’ comprehension in content areas, connecting learning in the classroom to real-life situations (multimedia), creating a meaningful context for teaching and learning, facilitating auditory skill development (integrating visual with sound), and accelerates language development (Buono, n.d).

C. HIGHER ORDER QUESTIONS

In classroom interaction, teacher’s questions often dominate the classroom activities. Being dominant, they have important role in shaping and constructing knowledge needed by students. However, the questions posed by teacher often reach only the level of comprehension, the low thinking level of Bloom taxonomy. A study conducted by Sulistyani (2018) show that teacher mostly exhibit literal or display questions that is elicitation in which students can find the answer in the text.

According to Nunn’s analysis (1999), the only purpose of display questions is to prompt students to display knowledge of factual content already known to the teacher. Questions which elicit lower level thinking are an important part of teaching; however, they are useless unless they build toward questions which help students develop higher order thinking skills. To examine students’ understanding, reasoning ability and aptitude to apply knowledge in less traditional contexts, open-ended questions are useful (Badger, 1992).

Why should teachers use high-level questions to differentiate instruction? First,

questioning is the most powerful tool in a teaching repertoire. Second, high-level, open-ended questions lead to better student understanding. Third, quality, thoughtful questions set high expectations and promote critical and creative thinking as well problem solving. Lastly, teachers can challenge every student by differentiating with effective questioning. In general, open-ended questions require complex thinking, leading students to think analytically and critically.

Similarly, Buono (n.d) claims that usually questions at the lower levels are appropriate for evaluating students' preparation and comprehension, diagnosing students' strengths and weaknesses, and reviewing and/or summarizing content. Questions at higher levels, on the other hand, are usually more appropriate for encouraging students to think deeply and critically, problem-solving, encouraging discussions, and stimulating students to seek information on their own.

Questions asked by Socrates promote the use of higher order thinking skills. By using Socratic Questioning, teachers stimulate students to clarify meanings; to uncover assumptions made by others or their own assumptions; to ask for and provide evidences, justifications and causes; to come up with implications and consequences of claims, beliefs and actions; to explain their viewpoints and perspectives; and to ask questions about questions.

Examples of Socratic Questioning

Question Types	Examples of Questions
Questions of Clarification	What do you mean by...? Could you put that another way? What do you think is the main issue here? Could you give me an example? Could you explain that further? Let me see if I understand you; do you mean or...? How does this relate to our discussion/problem/issue?
Questions that probe assumptions	What are you assuming? What is Karen assuming? What could we assume instead? You seem to be assuming... Do I understand you correctly? All of your reasoning depends on the idea that... Why have you based your reasoning on...rather than...? You seem to be assuming... How would you justify taking this for granted? Is it always the case? Why do you think the assumption holds here?
Questions that probe information, reasons, evidences and causes	How do you know? What are your reasons for saying that? What other information do we need to know before we can address this question? Is this good evidence for believing that? Do you have any evidence to support your assertion? How does that information apply to this case? Is there reason to doubt that evidence? What do you think is the cause?

Questions about viewpoints or perspectives	You seem to be approaching this issue from perspective. Why have you chosen this perspective rather than that perspective? How would other groups or types of people respond? Why? What would influence them? How could you answer the objection that would make? Can/did anyone see this another way? What would someone who disagrees say? What is an alternative? How are Karim's and Rozana's ideas alike? Different?
Questions that probe implications and consequences	What are you implying by that? When you say..., are you implying...? But if that happened, what else would also happen as a result? Why? What effect would that have? Would that necessarily happen or only probably happen? What is an alternative? If this and this are the case, then what else must be true?
Questions about questions	How could someone settle this question? Can we break this question down at all? Is the question clear? Do we understand it? What does this question assume? Why is this question important? Does this question ask us to evaluate something? To answer this question, what other questions would we have to answer first?

Adapted from Paul and Elder (2006). The thinker 's guide to the art of Socratic Questioning. Tomales, California: Foundation for Critical Thinking.

D. USING OPEN ENDED QUESTIONS TO PROMOTE HIGHER ORDER THINKING SKILLS

It is difficult to imagine a teacher or school leader who is not aware of the prominence of teaching higher-order thinking skills to prepare young generation to live in the 21st century. –In the social model, in order to live and work in a complex and competitive environment of the 21st century, students must be well-equipped with such important skills and qualifications, of which creativity, critical thinking, communication and collaboration skills are very necessary for learners in the future (Cao, 2018). However, the extent to which higher-order thinking skills are taught and assessed continues to be an area of debate, with many teachers and employers expressing concern that young people ‘cannot think’ (Collins, 2014). Many teachers have become familiar with Bloom's taxonomy and applied it during their preparation courses. Anyhow, in recent years, when learners can easily get information from the internet, teachers realize that developing higher-order thinking is very important for their students to learn.

HOT takes thinking to higher levels than restating the facts and necessitates students to do something with the facts — understand them, infer from them, connect them to other facts and concepts, categorize them, manipulate them, put them together in new or novel ways, and apply them as we seek new solutions to new problems. Brookhart (2010) identifies definitions of higher-order thinking as falling into three categories: (1) those that define higher-order thinking

in terms of *transfer* (*transfer requires students not only to remember but also to make sense of and be able to use what they have learned.*), (2) those that define it in terms of *critical thinking*, and (3) those that define it in terms of *problem solving*.

Students need problem solving ability. Thinking analytically is a skill like carpentry or driving a car. It can be taught, it can be learned, and it can improve with practice. But like many other skills, such as riding a bike, it is not learned by sitting in a classroom and being told how to do it (Buono, n.d). Higher order questions can be used in classroom situations like whole group discussion, small group discussion, seminar, and tests, both multiple choice and constructed response, as well as study guides.

There are some questioning strategies that provoke HOT for example: students are required to manipulate prior information by being given questions (Why do you suppose.....?, What can you conclude from the evidence?), students are asked to state an idea or definition in their own words, students are asked questions that require a solution to a problem, involve students in observing and describing an event or object (What do you notice?, Tell me about this., What do you see?), and ask students to compare or contrast. This can be done through scaffolding learning with rich input (thoughts and language) to prepare or activate students and use recall questions first to be sure the students have the knowledge. Then proceed to comprehension and analysis questions. Follow those up with evaluation/creative questions.

Thus, scaffolding includes the use of different types of questions, literal questions: encourage students to become aware of the information from the text and open-ended questions being central in developing higher order thinking skills. Open ended questions are complex in which students cannot answer by looking in the text; they require students to think about what they have read, think about what they already know, and think about how it all fits together. The questions permit us to make sense of the world. They are the most powerful devices for making decisions and solving problems, for inventing, changing and improving our lives as well as the lives of others.

E. CONCLUSIONS

Developing higher order thinking skills for students has been regarded as an essential outcome in education. Teaching EFL students to think critically is naturally part of classroom teaching. In order to achieve this purpose, EFL classroom teachers should be experts at asking good questions and using appropriate strategies. Among all types of questions, asking higher order questions is imperative to the development of EFL students' critical thinking ability. To some extent, the questions teachers ask determine the direction in which their students' thinking goes. Only when students' thinking goes somewhere do students learn anything of value.

Open-ended questions as higher order questions can drive students' thought below the surface of things, forcing them to deal with complexity. In order to achieve effectiveness in higher order questioning, EFL teachers need to know how to exploit good questioning strategies. Wigle (1999) points out that a questioning strategy may involve all students in the learning process; encourage all students to make an effort to prepare a response. Teaching critical thinking is a great challenge, but it deserves high commitment. If EFL students can strengthen their critical thinking skills at school today, they will become a qualified citizen tomorrow to solve any tough problems.

REFERENCES:

- Al-Ghazali, I. (2007). *Wonders of the heart*. (W. J. Skellie, Trans.). Kuala Lumpur: Islamic Book Trust.
- Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives*. New York: Longman.
- Badger, E., & Thomas, B. (1992). Open-ended questions in reading. *ERIC ED 355253*.
- Ben-Chaim, D., Ron, S., & Zoller, U. (2000). The disposition of eleventh-grade science students toward critical thinking. *Journal of Science Education and Technology*, 9(2), 149–159.
- Brookhart, S. (2010). *How to assess higher-order thinking skills in your classroom*. Alexandria, VA: ASCD.
- Brualdi, A. C. (1998). Classroom questions. *ERIC ED 422407*.
- Buono, Steve. (n.d). *Developing higher order thinking questions to promote student learning*. Palmyra Panthers. <https://www.youtube.com/watch?v=tQOr3dtDXiM>
- Cao, T.H. (2018). Teachers' capacity of instruction for developing higher – order thinking skills

- for upper secondary students – A case study in teaching mathematics in Vietnam. *Revista Romaneasca pentru Educatie Multidimensionala*, 10(1-Special Issue 1), 8-19. <https://doi.org/10.18662/rrem/33>
- Collins, Robyn. (2014). Skills for the 21st century: Teaching higher-order thinking. *Curriculum & Leadership Journal*, 12 (14).
- Facione, P.A. (2006). Critical thinking: What it is and why it counts–2006 update. Available at http://www.insightassessment.com/pdf_files/what&why2006.pdf
- Ganapathy, M., Singh, M. K. M., Kaur, S., & Kit, L. W. (2017). Promoting higher order thinking skills via teaching practices. *3L: The Southeast Asian Journal of English Language Studies* – Vol 23(1): 75 – 85. <http://doi.org/10.17576/3L-2017-2301-06>
- Miri, B. & Ben-Chaim, D. & Zoller, U. (2007). Purposely teaching for the promotion of higher-order thinking skills: A case of critical thinking. *Res Sci Educ*, 37, 353-369.
- Nunn, R. (1999). The purposes of language teachers' questions. *IRAL*, 37(1), 23-42. <http://dx.doi.org/10.1515/iral.1999.37.1.23>
- Paul R, Elder L. (2008). Critical thinking: The art of Socratic questioning, part III. *J Dev Educ*. 31(3):34–35.
- Pikkert, J.J. & Foster, L. (1996). Critical thinking skills among third year Indonesian English students. *RELC Journal*, 27 (2), 56-64. <https://doi.org/10.1177/003368829602700204>
- Ramadhani, R. & Zainil, Y. (2019). An analysis of teachers' questions in English classroom activity based on HOTS in SMAN kota Padang. *Journal of English Language Teaching*. 8(4), 540-548. Available at <http://ejournal.unp.ac.id/index.php/jelt>
- Sulistiyani, S. (2018). The power of directive speech acts in EFL classroom interaction. *Advances in Social Science, Education and Humanities Research*, 145, 16-20. DOI:10.2991/iconelt-17.2018.4
- Tobin, K., Tippins, & Hook, K. S. (1994). Referents for changing a science curriculum: A case study of one teacher's change in beliefs. *Science & Education*, 3, 245–264.
- Wigle, S. E. (1999). High quality questioning. *The Education Digest*, 65(4), 62-63.
- Zepeda, S. J. (2009). *The instructional leader's guide to informal classroom observations*. Larchmont, NY: Eye on Education, Inc.
- Zohar, A. (1999). Teachers' metacognitive knowledge and the instruction of higher order thinking. *Teaching and Teacher Education*, 15, 413-429. Retrieved from http://ac.els-cdn.com/S0742051X98000638/1-s2.0-S0742051X98000638-main.pdf?_tid=15eedcf2-ae4d-11e3-a3c2-00000aacb35d&acdnat=1395113365_ea57846029e898e47009763d26b2a644

Zoller, U. (2001). Alternative assessment as (critical) means of facilitating HOCS-promoting teaching and learning in chemistry education. *Chemical Education Research and Practice in Europe*, 2(1), 9–17 (an electronic publication).