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## ANALYSYS OF TEACHER QUESTIONING SKILLS: THE USE OF OPEN-ENDED QUESTIONS IN LEARNING

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### Abstract

This study aims to analyze teacher questioning activities using oral open-ended questions in class. This study involved three elementary school teachers from two different schools in Yogyakarta. Samples are selected using *convenience sampling* techniques. The data collection technique used was two learning observations lasting 45-60 minutes using *zoom meeting* recordings and *google meet*. Records and transcripts of recordings were analyzed to find answers to three research questions. The results showed that teachers asked all kinds of questions verbally. The teacher asked two or three open-ended questions verbally. Students answer these questions with different answers. The answer is not only correct, but also false and incomplete. After getting an answer, the teacher responds by asking follow-up questions both closed and open-ended. Therefore, this study helped teachers to know the usefulness of oral open-ended questions, to understand how to optimize asking the questions orally, and to analyze the use of oral open-ended questions in the classroom. Researchers can also reflect on the way to do study related to questioning activity in which they are expected to focus on all the types of questions, the way teachers ask, students' possible answers, and follow-up the answer.

**Keywords:** teacher, questioning skill, open ended question

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## INTRODUCTION

*Learning* is an activity that takes place continuously in the educational process. In learning, students and teachers interact to achieve certain goals. Teachers in education and learning are also tasked with guiding so that students do not encounter difficulties. Guidance from teachers also helps students realize their potential.

The success rate of the teaching and learning process is determined by factors such as student ability, student activity, institutions, student motivation, and the teacher's ability to develop a teacher's teaching skills (Rowell et al., 2019). Developing teaching skills for teachers is essential to becoming a professional teacher. Therefore, in addition to mastering the subjects taught, essential teaching skills are also skills that support teacher success in the teaching and learning process (Brandenburg et al., 2017).

Teacher teaching skills are called basic teaching skills (Bastian, 2019). Essential educational abilities are specific skills or abilities teachers must have to teach effectively, efficiently, and professionally (Kyriacou, 2007). There are eight basic educational skills that teachers must master and possess. The eight basic teaching skills are questioning, strengthening, variation, explanation, beginning and end lesson, discussion, classroom management, and small group and large group teaching skills (Kyriacou, 2007).

The skill of questioning is a lesson in itself. In general, teachers always use responsibility in learning. *Questioning skills* are skills used to get answers and feedback from others (Griffin & Care, 2015). The ability to ask is the teacher's ability to ask and answer questions smoothly and conductively. Questioning skills must be done by teachers with various variations so that students do not feel bored.

Teachers should include high-level questions to maximize oral questioning activity, given that high-level questions refer to open-ended questions (Lee & Kinzie, 2012). Even though open-ended questions provide many benefits, some researchers have found that most teachers ask closed questions during lessons (Addini et al., 2018). They found it difficult for teachers to react to possible different responses from students when asking open-ended questions (Nurramadhani, 2019).

Based on the importance of asking open-ended questions orally above, it is necessary to look back at the extent to which previous research has been conducted. Several studies (Hobri et al., 2019); (Romli et al., 2018) related to the use of open-ended questions in the classroom have been carried out, but they analyze students' answers to open-ended questions in written

form (assignments or exercises). Thus, it is necessary to examine further how teachers ask open questions verbally in class.

When asking questions, the teacher's main goal is to get students to answer the questions (Ma, 2008). Student answers are very important because they affect the teacher's problem exploration (Retnawati et al., 2018). After asking a question, a teacher will get the student's answer, and then he can respond to it (Chin, 2007). Open-ended questions challenge teachers in response to unexpected student answers. Therefore, how students can answer open-ended questions orally and how teachers respond to students' answers can be studied more deeply.

### *Definition of Open Questions*

Questions are problems that must be answered. Most literature types questions according to the number of possible answers rather than the cognitive level of the question (Chin, 2007). A question is categorized as a closed question if it has only one correct answer and as an open-ended question if it has more than one acceptable answer. Closed questions require memory-driven responses, whereas open-ended questions require deeper answers that yield more than known facts (Kurniawan et al., 2018). Generally, open-ended questions refer to questions that have more than one acceptable answer (Kirana & Cahyowati, 2020). Furthermore, open-ended questions are called incomplete or unstructured problems because they allow correct answers and different mathematical ideas (Mihajlović, A., & Dejić, 2015). Meanwhile, open questions are questions where teachers receive more than one answer from students (Sarwanto et al., 2020). However, there are conditions when the teacher asks a question that allows the student to give more than one answer but he only gets the answers from one of the students. Therefore, it may be better to look further into the definition of open-ended questions based on the question itself rather than the teacher's reaction.

### *Open-ended Question Types*

Open-ended questions can be divided into several types. Kwon et al (2006) describe seven types of open questions: (1) *overcoming fixations*, (2) *multiple answers*, (3) *multiple strategies*, (4) *strategy investigation*, (5) *problem posing*, (6) *active inquiry tasks*, and (7) *logical thinking*. The open-ended questions are based on questions about what the teacher asked during the study. Therefore, there are possibilities for other types of open-ended questions that can be developed with further research. In addition, some answers and strategies may not be open-ended question

types because they are common criteria for open-ended questions. Different things conveyed by Popping (2015) there are 3 types of open questions, namely technical open questions, clear open questions, and really open questions. Therefore, from my point of view, some types of open-ended questions that might be asked in lessons are real-life questions, problem submissions, questions to explain errors and questions with missing data.

### *Student Answers to Open-ended Questions*

Popping (2015) divides students' answers into short answers, explanations, sharing, justifications, and questions or challenges. If students give a short response to a question using three words or less, this response will be called a short answer. Explanations are longer than short answers and differ from sharing in that students must further explain their answers or strategies when giving explanations. Justification refers to answers in which students can generalize an idea. Finally, when students question or debate the answer, this response will be put into the question or challenge category. Student answers in the form of explanations and/or justifications are closely related to the development of ideas, communication, problem solving, and reasoning skills (Rosli et al., 2014), (Rosli et al., 2014) while Tanner et al. (2005) found that most students' answers to questions are very short, involving only three or fewer words. Therefore, it is recommended that teachers ask questions that can result in longer answers. Teachers may receive different answers from students regarding closed-ended and open-ended questions. Closed questions will produce short answers that can be easily justified (Chin, 2007) (Chin, 2007)(Chin, 2007)(Chin, 2007) Meanwhile, (Popping, 2015) found that open-ended questions generate more explanations than other types of questions.

## **METHODS**

### *Research Design*

This descriptive research uses qualitative design to obtain conditions or processes that occur in the field. In this study tried to analyze the types of teacher questions in classroom interactions, student responses, and teacher reactions to student responses.

### *Participants*

The participants of this study were three elementary school teachers from two different schools in Yogyakarta. The schools are public schools and private schools located in Yogyakarta. The selection of teachers uses *convenient sampling* techniques which are based on the ease of obtaining

data. The ease of obtaining the data in question is the teacher who during online learning records online learning.

### *Data Collection Techniques*

Researchers used documents recorded online learning for observation of lessons in class to collect data. Class observation is carried out to obtain first-hand information about the teacher's questioning practice. Three teachers were observed based on document 2 lesson recordings, which generated about 2 hours of data for each teacher. Learning recordings are created to capture teacher questions, student responses, and teacher reactions to student responses. During observations, researchers make field reports descriptively. Semi-structured interviews were conducted to explore participants' perceptions. Interview questions for teachers follow a similar pattern, for example: 'What types of questions do you/the teacher usually ask?' 'What kind of questions do you prefer and why?' 'How do you/the teacher react to the student's answer, is it right or wrong?'. Key issues in the interview were cross-examined with observations to validate the researcher's interpretation according to the feasibility procedure or the validity of the data.

### *Data Analysis Techniques*

Observational data is analyzed through recording, sorting out episodes/sections involving question-and-answer interactions, and copying verbatim interactions. The teacher's questions and the teacher's follow-up actions towards the students' responsiveness are each encoded. Data analysis involves stages to obtain themes through encoding data, constructing categories, sorting categories and data, and naming categories. Researchers specifically look for meaning at all stages of analysis. In the analysis process using qualitative analysis software, namely **ATLAS.ti**. Measures to ensure categorical trustworthiness, including transcript checks and participant analysis, and constant comparative analysis of data and emerging proposition data are also taken. Wawancara is transcribed, transcripts repeatedly read, code or comments are given, and finally, similar codes are gathered to form themes, which offer qualitative insights into questioning practices.

## **RESULTS AND DISCUSSION**

Even though teachers discuss different topics in each thematic learning (Mathematics, Indonesian, Science, Social Studies, Civics), it turns out to use a consistent questioning strategy. Based on observation transcripts and interview transcripts, data can be found as follows:

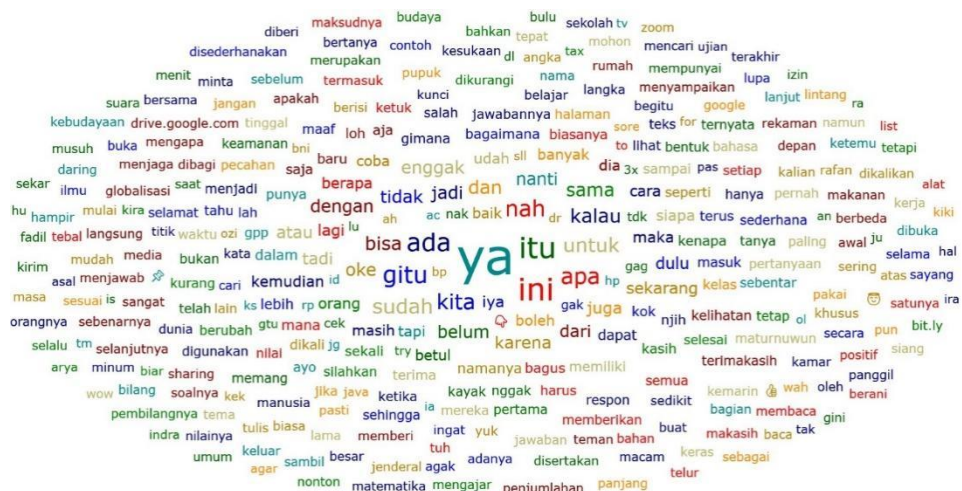


Figure 1. *Word cloud* field data

Based on *word cloud*, we can see several themes such as, how questions are asked by teachers, how students answer them, and how teachers respond or respond. The three activities turned out to be in full accordance with the results of observations and interview transcripts will be described below and supported by short transcripts as evidence. The most prominent or frequent answer is "yes." when the teacher asked, many students answered with the word "yes." the answer "Yes" becomes the student's main answer, which is then followed by explanations according to the questions posed by the teacher.

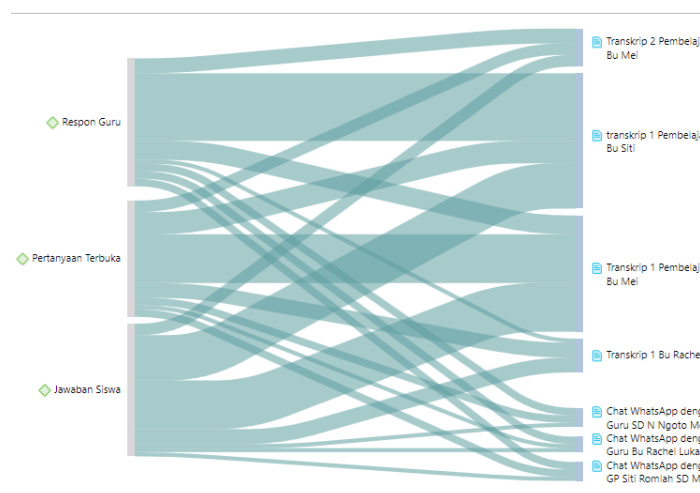


Figure 2. Sankey Diagram

Figure 2 explains how the code is distributed in video transcripts and interviews with teachers. However, the explanation for each code is explained further below.

### Teachers Ask Open-ended Questions Orally

When asking open-ended questions, teachers use different types of open-ended questions. The questions asked by the teacher can be seen in the following picture results:



Figure 3. word cloud Master Open Questions

Figure 3 illustrates that the results of the study show that teachers convey open-ended questions in learning. Researchers found that teachers asked two or three verbal open-ended questions during lessons. The teacher also develops these questions into later questions. Table 1 below lists the teacher's oral open-ended questions.

Table 1. Open-ended questions asked orally

Teacher	Observation	Question	Teacher's oral open-ended questions
1	1	Q1	Come on, mas K, what does the material remember about fractions? try what mas K remember?
		Q2	There are other ways to determine the KPK, does anyone know how?
		Q3	What are the multiples of 3?
		Q4	What is the simple form of 10/9?
		Q5	How do animals adapt to their environment?
	2	Q1	What season is it now?
		Q2	How do trees adapt during the dry season?
		Q3	Why can cacti live in dry places?
		Q4	How can the lotus live in a place where there is a lot of water?
2	1	Q1	The kids know the gag, which Mrs. R did earlier, eliminated some of the results how? What does that mean?



Teacher	Observation	Question	Teacher's oral open-ended questions
	2	Q2	What does subtraction mean?
		Q3	There are 4 apples minus 1 so how much?
		Q1	What are the eating rules in the song?
		Q2	What kind of healthy food are children?
		Q3	Look, from the picture which one includes healthy food?
3	1	Q4	Children, why should we eat a healthy diet?
		Q1	Does anyone know about the diversity/difference of the story of mas D?
		Q2	Does anyone know what an iguana animal looks like?
		Q3	Why are funnels rare animals? So, the orong-orong lives in water usually in rice fields, so why are the alleys and eels now rare animals?
		Q4	What's in the picture? What animals are there?
		Q5	Where is the bird of paradise a rare bird from?
		Q6	How to keep and preserve animals? Who knows?
		Q7	What is the rabbit used to?

All the questions in Table 1 are open-ended questions in which students are allowed to provide more than one answer. Question1 (Q1) can be categorized as a question that encourages students to recall understanding. Meanwhile, other questions are used by teachers to ask the self-analyze, such as question 2 (Q2), question 3 (2Q3). Through these questions, guru can also encourage students to find a conclusion. In addition, when teachers ask open-ended questions to elicit different reasons from students for what they find. Therefore, researchers found that the focus in asking open-ended questions orally should be on how they might stimulate different students' answers and not on the open-ended question types themselves.

#### *Students Answer Questions*

After the teacher asks open-ended questions orally, students also answer them orally. From observations, researchers found that students gave more than one answer to each open-ended question (Q) asked orally by the teacher.

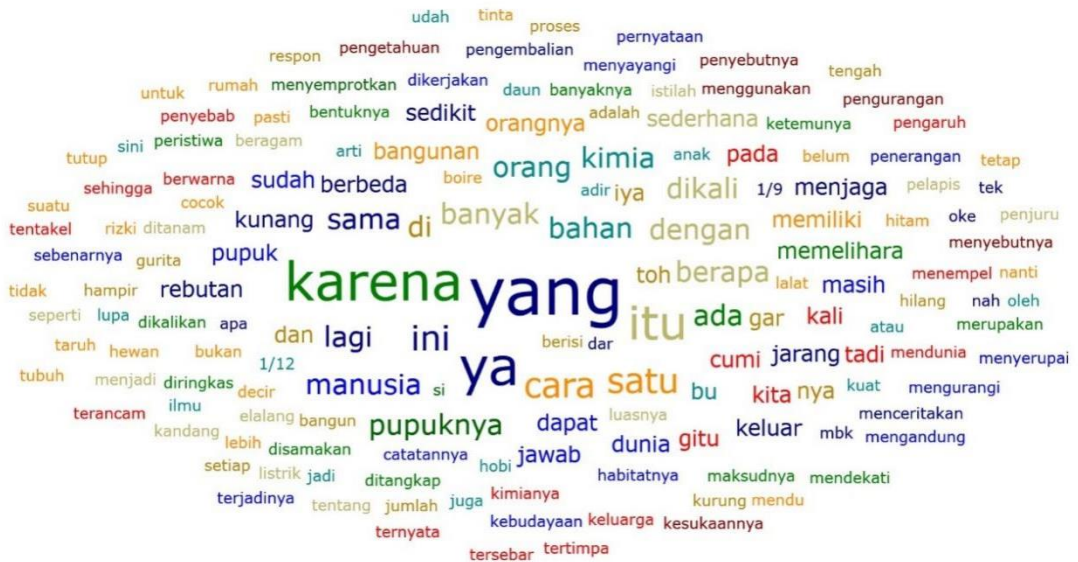


Figure 4. Student Response

Based on Figure 4, I found that students' answers can be categorized as short answers and explanations.

## Teacher Response to Student Answers

Teachers respond differently to students' answers based on the correctness of the answers. When the teacher asks a question and states that the student's answer is right or wrong, the teacher will respond. The teacher's response to the students' answers can be seen below.



Figure 5. *Word cloud* Student Answer Response

Based on figure 5 above, it can see mixed responses from teachers. The teacher does not state whether the answer is correct or not, the teacher asks some additional questions or follow-up to develop students' understanding or ideas. Meanwhile, teachers provide feedback, such as hints, for students when teachers receive incorrect answers to questions.

*Master: mother nanya now why do you enter endangered animals?*

*Student 1: because it's not there. Because it can dig the ground*

*Teacher: Okay but not quite right. Come on, who can help?*

*Student 2: People build houses because people are crushed.*

*Teacher: the answer is correct but not quite right, but not exactly who wants to help*

From all the questions that teachers use during questioning activities, it can also be seen that the follow-up can be open-ended. Teachers use closed follow-up questions to focus on clarity and completeness of answers.

After observing three punishments, I found that the teacher asked questions verbally throughout the lesson. These oral questions include open-ended questions. Teachers create rich classroom discussions by asking oral questions and encouraging students to express their ideas. Although teachers verbally ask closed, open-ended questions, teachers use open-ended questions not only to develop students' verbal communication skills but also to develop their thinking and reasoning. This is in line with the expected learning objectives. The potential use of open-ended questions in the classroom has been discussed by (Chin, 2007), (Çakır & Cengiz, 2016), (Hobri et al., 2019) but they have not specifically examined the use of open-ended oral

questions in thematic classrooms. Therefore, the findings of this study show that teachers can optimize questioning skills or ask open-ended questions orally in class.

The teacher's questioning activity consists of the teacher asking questions, students answering questions, and then the teacher responding to the answers. Teachers may consider asking open-ended questions to develop students' problem-solving, reasoning, and communication skills (Kwon et al., 2006). There are also different types of open questions they can ask. However, the most important point in asking open-ended questions is to let students give more than one answer, regardless of the type of open-ended question. Although the teacher asks questions, the teacher asks most open-ended questions (Table 1) using 'Why?' and 'What did you notice?'. So, when analyzing open-ended question types, it may be better to return to the general meaning of open-ended questions (Figure 1).

The response gives more than one answer to each oral open-ended question, but the teacher cannot get all possible answers from the students. While the teacher verbally asks open-ended questions, the teacher will also ask students to answer orally. As a result, if the teacher asked for every possible answer, it would take too much time. This can be seen as a weakness in asking open-ended questions verbally.

Unlike closed-ended questions, open-ended questions have great potential for longer answers. Although longer answers were not necessarily better, students in this study answered most of the teacher's questions (Table 1) not only with long answers but also provided reasoning, explanation, and justification, especially when the teacher asked 'Why?' and 'What did you notice?'. The cognitive levels of reasoning, explanation, and justification are closely related to the analysis, synthesis, and evaluation levels. Therefore, open-ended questions can be categorized as high cognitive questions that can foster students' critical thinking skills. Next, students can answer some open-ended questions with short answers. Teachers can expand on answers by using follow-up questions. Thus, the methods teachers use to follow up on students' answers can help to maximize the answers themselves.

## CONCLUSION

The teacher asked some open-ended questions verbally. From this research, using open-ended questions orally can enrich students' skills, such as creativity and communication, especially when they respond differently to each question. Furthermore, student participation increases. When teachers ask open-ended questions verbally, some students try to answer them. Teachers can also use follow-up questions to clarify students' answers, encourage students to think critically and develop depth of student responses to a math problem. Therefore, this study

helped teachers to know the usefulness of open-ended oral questions, to understand how to optimize asking the questions orally and to analyze the use of oral open-ended questions in the classroom. Researchers can also reflect on the way to do study related to questioning activity in which they are expected to focus on all the types of questions, the way teachers ask, students' possible answers, and follow-up the answer.

This study has some limitations, involving only three classroom teachers as a sample. This means the findings may only be appropriate for some teachers in different settings. The study also did not consider differences in learning topics when analyzing possible open-ended questions. It has yet to delve into teachers' perspectives on asking open-ended questions orally. In addition, these findings may benefit teachers and other researchers as a reflection for future teaching and research.

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