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Analysis on Pre-Service Teacher's Questioning Skills During Class Interaction

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Abstract

Questioning skill is one of the most common techniques for maintaining class interaction as well as stimulating students' thinking and guiding the development of knowledge that promotes a successful learning process. This study examines the questions delivere by Pre-service Teachers based on cognitive skills based on Bloom's Taxonomy. This study uses descriptive qualitative research in which the data were analyzed using content analysis. The data are taken from videos of the performances of Pre-Service teachers' of the English Education department who were practicing Microteaching. The results found 20 questions of Low Order Thinking Skills (LOTS) and seven questions of High Order Thinking Skills (HOTS) questions used by the PST. The LOTS consists of 5 questions of C1 (Remembering), 11 questions of C2 (Understanding), 2 questions of C3 (Applying); while the HOTS questions includes four questions of C4 (Analyzing), one question of C5 (Evaluating), and one question C6 (Creating) out of a total of 26 questions. This findings indicates the use of HOTS based questions in class is less than LOTS which means that the pre-service teachers' skills in making HOTS based questions need to be improved

Keywords: *Questioning skill, class interaction, low order thinking skills, high order thinking skills*

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INTRODUCTION

Class interaction is one of the factors that support the success of the learning process. Class interaction refers to the activities carried out by the teacher and students in the classroom where they are involved in the lessons taught by the teacher. With class interaction, teachers and students carry out the process of transferring or sharing knowledge (Harmer, 2003; Supriyadi, 2011). Through interaction, teachers and students exchange thoughts, feelings and ideas in, through and about the target language being studied in class. Teachers play a vital role in creating an environment that supports student learning (Singh, 2021). Class interaction can be defined as a two-way process between participants in the learning process (Dagarin 2004:128). The class interaction can be in the form of class analysis and evaluation because it can inspire students to learn, gain knowledge, and improve critical thinking. There are three general categories of interactions that can be built in any learning activity. Students can interact directly with their teacher, with other students, or with the content of learning materials. The types of classroom interaction are teacher-student interaction, student-teacher interaction, and student-student interaction. The interaction between teachers and students is

one of the most important activities in the classroom. Interaction in English class, (Brown, 2007) is a way to activate students and indirectly improve their ability to communicate and collaborate well. Teachers should be aware that classroom interaction affects the entire teaching and learning process; thus, effective interaction will improve communication that may also enhance students' cognitive, social and thinking skills.

One of the most common techniques for maintaining class interaction is asking questions. Asking questions is one of the teacher's ways to check students' understanding of the material being taught. It also provides opportunities for teachers and students to perform dialogue productively. According to Yuliawati (2016), questions are ideas that require responses from listeners or audiences to request information or test knowledge. Teacher questions are important for many educational purposes because they stimulate students' thinking and challenge them to deepen their understanding and engagement in the classroom. Questions from the teacher can improve student learning, participation and thinking In this way, the teacher can get more information about students because of the asking function. Questions as a basic way to stimulate students' thinking and guide the development of knowledge. Questions are also used to encourage students to express themselves verbally and to motivate them. In short, teachers can use questions to help students deepen their understanding so they can think critically and creatively. Through the strategy of asking questions, teachers can bring out the hidden potential of students and of course teach more effectively. Good thinking is driven by good questions, not the right answers.

Further, this can make the two exchange ideas with each other. Involving students is important in every teaching and learning process because there will be good interaction between teachers and students. In creating an interactive class, teachers need to provide support in the form of questions to students by interacting and involving them to practice speaking skills and ensure students understand concepts (Lomi, et al. 2020). Questions also serve to stimulate thinking and challenge them to deepen students' understanding and their involvement during the learning process. That is, asking questions is one of the teacher's ways to check students' understanding of the material being taught. In this way, teachers can get more information about students. Therefore, candidates English teachers or pre-service English Teachers must also understand this skill well.

Some studies on the analysis of class interaction through the technique of asking the teacher have been done before. A study conducted by Matra (2014) found out that 'reminder questions technique' which is the type of question most often used by teachers, namely low cognitive questions, namely remembering questions. Low cognitive questions are questions that ask students to only remember material previously read or taught by the teacher. This technique was commonly used by the teachers as it promoted class interaction and evaluated the learners' understanding of the content. Another research related to the application of Higher-Order Thinking Skills (HOTS) in teacher questions as way to increase class interaction by Syafryaddin, Alamsyah,H., Haryani., Anisa, A. (2020) with the title Boosting Classroom Interaction Based on Higher Order Thinking Skills (HOTS) in English Learning for Beginners. The results of the study show that teachers have applied

the High Order Thinking Skills (HOTS) principle during learning activities. The types of questions are at the level of thinking Analyzing (C4), Evaluating (C5), and Creating (C6). Students can think critically with cognitive questions at the HOTS level so that interactions are more active. Yola Indaura, C. C. (2021) also conducted research on asking techniques to increase student interaction in English classes with the title Questioning as an Effective Tool to Enhance Students´ Interaction in the English classroom. Studies conducted by researchers show the results that most teachers use questions that show a positive effect on learning. Applying adequate questioning in class, this way can increase class interaction consequently promote the development of students' skills making the learning process more effective.

This study examines questions delivered by Pre-Service Teachers based on cognitive skills that are divided into two levels: Low Order Thinking Skills (LOTS) and High Order Thinking Skills based on Bloom's Taxonomy (1965). The taxonomy was later revised by Krathwohl which results of the improvements were published in 2001 under the title Revised Bloom's Taxonomy (Effendi,2015). This revised version categorizes cognitive skills to remember, understand, apply, analyze, evaluate, and create.

Low Order Thinking Skills (LOTS)

Low Order Thinking Skills (LOTS) is a concept in educational and cognitive psychology that refers to basic cognitive processes or low-level mental tasks. These skills are often considered fundamental and necessary for higher order thinking to occur. Krathwohl (2002) categorizes three levels of thinking which include Low Order Thinking Skills: 1). Remembering (C1); 2). Understanding (C2); and 3). Applying (C3). There are several examples of questions from the three levels of LOTS thinking levels as shown in Table 1

Table 1 Examples of questions from LOTS (Bloom,2001)

Cognitive Domain	Useful Verbs	Sample Question Stems
Remembering	Tell	What happened after...?
	List	How many...?
	Desribe	Describe what happened at...?
	Relate	Which is true or false...?
	Locate	Who spoke to...?
	Find	Find the meaning of...?
	State	What is...?
	Name	Can you name the...?
Understanding	Explain	Can you write in your own words...?
	Interpret	Can you write a brief outline...?
	Outline	What do you think could of happened next...?
	Discuss	What do you think...?
	Distinguish	Can you distinguish between...?
	Predict	Can you provide an example of
	Translate	

		what you mean...? Can you provide a definition for...?
Applying	Solve Show Use Ilustrate Construct Complete Examine	Do you know another instance where...? Could this have happened in...? Can you group by characteristics such as...? What factors would you change if...? Can you apply the method used to some experience of your own...? What questions would you ask of...? From the information given, can you develop a set of instructions about?

High Order Thinking Skills (HOTS)

Higher-Order Thinking (HOTS) is a skill set that combines transfer, critical Thinking, and problem-solving abilities (Brookhart, 2010). According to Margana and Widyantoro (2017), critical thinking or HOTS is recognized as a crucial capability for maximally improving students' academic language. Based on Bloom's Taxonomy of critical thinking, the HOTS have three levels: 1). Analyzing (C4); 2). Evaluating (C5): 3). Creating (C6). Examples of questions from the three levels of HOTS thinking have been categorized according to the purpose of the level of thinking as shown
in Table 2

Table 2 Examples of questions from HOTS (Bloom,2001)

Cognitive Domain	Useful Verbs	Sample Question Stems
Analyzing	Analyze Distinguish Examine Compare Contrast Investigate Categorize Indentify Explain Separate	Which events could have happened...? How was this similar to...? What was the underlying problem with...? What do you see as other possible outcomes? Why did changes occur? Can you compaire your.....with the presented in? Can you explain what must have happended when..? What are some of the problems of...? Can you distinguish between...? What was the problem with...?

Evaluating	Judge Select Choose Decide Justify Debate Verify Argue Recommend	Is there a better solution to... ? Judge the value of... ? Can you defend your position about...? Do you think ... is a good or a bad thing? How would you have handled...? What changes to ... would you recommend...? Do you believe….? How effective are...? What do you think about...?
Creating	Create Invent Compose Predict Plan Construct Design Propose	Can you design a ... to ...? Can you see a possible solution to...? If you had access to all resources how would you deal with...? What would happen if...? How many ways can you...? Can you create new and unusual uses for...? Can you develop a proposal which would...?

Method

Qualitative research is used in this research because it tends to analyze both phenomena, events, social activities, views, and people's thoughts both individually and in groups as stated by Nana Syaodih Sukmadinata (2005). According to Dornyei (2007:24), qualitative research involves data collection procedures that mainly produce open non-numeric data which are analyzed mainly by non-statistical methods.This is also supported by Nasution (2003) who says that qualitative research tends to observe people in the environment, interact with them, and interpret their opinions about the world around them. Descriptive-qualitative method is used in this research because it focuses on textual data analysis.

The data in this study were in the form of videos of the performances of Pre-Service teachers' of the English Education department who were practicing Microteaching. The videos were analyzed by using content analysis that involved the process of collecting, organizing, and interpreting visual data obtained. With an emphasis on content analysis, namely identifying certain words that appear in the recording to understand the context or message conveyed, the context in this video study is in the form of questions spoken by the Pre-service English Teacher. Gheyle and Jacobs (2017) explain that content analysis (CA) is a research methodology for understanding the content of unstructured messages. It can enter text, images, symbols or audio data. The goal is to define textual meaning. The purpose of content analysis is to describe the characteristics of the content of a message.

Findings and discussion

This study examined the questions posed by Pre-service English Teachers during their teaching practices according to Bloom Taxonomy classification. The forms of the questions were categorized into cognitive thinking skills: LOTS (Low Order Thinking Skills) and HOTS (High Order Thinking Skills). The result found 20 types of Low Order Thinking Skills (LOTS) questions, consisting of five questions of C1 (Remembering), 11 questions of C2 (Understanding), 2 questions of C3 (Applying); whereas, there were seven types of High Order Thinking Skills (HOTS) questions consisting of four questions of C4 (Analyzing), one question of C5 (Evaluating), and three questions of C6 (Creating) out of a total of 26 questions. The classification of question types can be seen in Table 3

Table 3 The Result of Analysis of Questions on Bloom Taxonomy Cognitive Domain used by Pre-Service Teacher in Micro Teaching Class

No	Cognitive Domain	The Amount of Questions Item based on Cognitive Domain	The Total Amount of Questions
1.	Low Order Thinking Skills (LOTS		
	a. Remembering (C1)	5	20
	b. Understanding (C2)	11	
	c. Applying (C3)	4	
2.	High Order Thinking Skills (HOTS)		
	a. Analyzing (C4)	4	6
	b. Evaluating (C5)	1	
	c. Creating (C6)	1	

3.1 **Low Order Thinking Skills (LOTS)**

Low Order Thinking Skills (LOTS) is a part of Bloom's Taxonomy educational theory. Discussing the types of questions that are included in the Low Order Thinking Skills, in the LOTS category only explores students' abilities to remember (C1), understanding(C2), and applying (C3). This section discussed the 20 numbers of LOTS questions which are categorized into C1, C2 and C3.

Table 4. C1 (Remembering) Questions based on Bloom Taxonomy

Questions number	Data Sources	
	Questions	
Q1.1	Do you know thesis statement?	PST 1

Q1.2	Is it hard or easy/difficult or not?	PST 2
Q1.3	(Search article journal JELE UMBY) Do you know?	
Q1.4	What picture is it?	PST 5
Q1.5	Who is baby Nita?	

PST = Pre-service Teacher

This study found 5 questions that included the ability to think category C1 (Remembering). Recognizing or remembering at the cognitive level of Bloom Taxonomy relates to knowledge from memory. Remembering is when memory is used to generate or take definitions, facts, or lists, or read before learned information (Anderson and Krathwohl, 2001, cited in Lesie Owen Wilson, 2016:2). Level C1 has several purposes including students being able to define, describe, identify, label, list, match, memorize, point to, recall, select, state. As shown in Q1.1 (Table 1), these questions are categorized at the C1 thinking level because the students were expected to state what they know about the thesis statement. Another purpose of C1 (Remembering) thinking level is that students can identify relevant knowledge from prior memory as shown in Q1.2 (Table 1). Students are expected to be able to identify the questions displayed by the teacher as difficult or easy categories. Another objective of level C1 is to state, as shown in question Q1.3 (Table 1), students are expected to state their knowledge of the journal being discussed by PST 3. Meanwhile, Q1.4 and Q1.5, students are expected to be able to describe what pictures are displayed by PST 5 and describe their after seeing the pictures, so Q4 and Q5 by PST 5 are included in the thinking level C1 (Remembering) because describing is one of the goals of C1.

Table 5. C2 (Understanding) Questions based on Bloom Taxonom

Questions number	Data Questions	Sources
Q2.1	What is the exact meaning of annotating text?	
Q2.2	Based on this explanation what do you get ?	
Q2.3	Please read the explanation, Baku. Based on this explanation what do you get ?	PST 1
Q2.4	How many ways are used in this example, in annotating text? Tari, can you mention it?	
Q2.5	What do you know about article review ?	
Q2.6	What do you think about article review ?	
Q2.7	So do you get the point, guys ?	PST 3

	Fara what do you think about this?	
Q2.8	So Hana what do you feel ?	
Q2.9	What's the text about? (after students given time to read the material)	
Q2.10	Anyone want to share an opinion ?	PST 5
Q2.11		

PST = Pre-service Teacher

Table 2 shows 11 questions that included the ability to think category C2 (Understanding). At this level, it is expected that the ability to capture or construct knowledge that has been communicated can be mastered, and students are expected to be able to explain the ideas or concepts presented (Anderson and Krathwohl, 2001, cited in Lesie Owen Wilson, 2016:2). Level C2 has several objectives, including interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining, reviewing, calculating and predicting. As shown in Q2.1 *What is the exact meaning of annotating text?* this question is categorized at the C2 thinking level because students are expected to be able to explain their understanding of annotating text. Another purpose of the C2 thinking level is to explain and interpret which is shown in Q2.2, Q2.3, Q2.6, and Q2.10. These five questions require students to be able to explain and interpret their understanding after being given an explanation and reading the material. Therefore these questions are categorized as a C2 thinking level question. Further. Q2.4 *"How many ways are used in this example, in annotating text? Tari, can you mention?"*, on this question the purpose of level C2 is calculating and reviewing. The designated student is expected to be able to review and mention the many ways used in annotating text examples because one of the objectives of C2 level is to explain and demonstrate their understanding of the concept from the article review as shown in Q2.5. Meanwhile, Q2.7 and Q2.11 have a purpose that students can make conclusions and express their comprehension of the concepts given. Q2.8 and Q2.9 show another goal of the C2 level of thinking, namely interpreting. PST 5 addressed such questions to get students' interpretation on what they have seen.

Table 6. C3 (Applying) Questions based on Bloom Taxonomy

Questions numbers	Data Questions	Source
Q3.1	Do you have any questions related to the material about annotating text? (This one, you're make highlight or maybe you can give the responses of each paragraph or giving the summary or	PST 1

	giving agree/disagree about this text or giving part about structure of the text)	
Q3.2	Are you still confused about it?	
Q3.3	Hana can you describe your idol in 3 sentences?	
Q3.4	Describe your best friend in 3 sentences please!	PST 4

PST = Pre-service Teacher

There were four questions (Table 3) categorized as C3 (Applying) which means the use of concepts and procedures from the material studied that expects students to be able to use the information (Anderson and Krathwohl, 2001, cited in Lesie Owen Wildan 2016:3). The objectives of this level include implementing, discovering, building, describing, selecting, separating, sorting, dividing, adopting, demonstrating and collecting. As shown in Q3.1(Table 3), this question is categorized at the C3 thinking level because students are expected to be able to discover the questions they want to ask based on the material that has been presented. C3 level also has a purpose that is implementing the command from PST in accordance with the given material procedures shown in Q3.2 This question is an affirmation of the PST 1 after giving instructions ''*This one, you're make highlight or maybe you can give the responses of each paragraph or giving the summary or giving agree/disagree about this text or giving part about structure of the text)''* command which aims to make students able to apply procedures based on annotating text material. Meanwhile in Q3.3 and Q3.4, designated students are expected to be able to illustrate idols and bestfriends in three words after they get the material presented so these questions are included in the C3 thinking level (Applying) because illustrating is one of the goals of C3.

High Order Thinking Skills (HOTS)

High Order Thinking is a set of skills that combines transfer, critical thinking, and problem solving skills (Brookhart, 2010). High Order Thinking Skills (HOTS) is a part of Bloom's Taxonomy educational theory. Discussing the types of questions that are included in the High Order Thinking Skills, in the HOTS category explores students' abilities to analyze (C4), evaluating (C5), and creating (C6). This study discovered six HOTS questions which consist of 4 questions C4, 1 question C5, and 1 questions C6.

Table 7. C4 (Analyzing) Questions based on Bloom Taxonomy

Questions numbers	Data Questions	Source
Q4.1	What must be highlighted or underlined	PST 1
Q4.2	Why does it come before the subject?	PST 2
Q4.3	Hana, can you give example number two?	
Q4.4	Linda, can you explain the example?	

PST = Pre-service Teacher

Table 7 presents four questions that fall into the C4 (Analyzing) category. Analyzing means breaking material or concepts into parts, determining how the parts relate to one another or how they relate to each other, or how the parts relate with an overall structure or purpose (Anderson and Krathwohl, 2001, cited in Lesie

Owen Wilson 2016:3). Some of the goals of the C4 level of thinking include analyzing, comparing, differentiating, making diagrams, dissecting, illustrating, identifying, organizing, selecting, sorting and dividing. Q1 and Q2 questions were delivered in order to make students identify and solve the questions given by PST-1 and PST-2. Meanwhile, Q3 and Q4 have the aim of dissecting; the designated students are expected to be able to dissect or solve the given grammar problems.

Table 8. C5 (Evaluating) Questions based on Bloom Taxonomy

Questions numbers	Data Sources Questions	
Q5.1	Bagas, would you give a conclusion about our discussion today?	PST 1

PST = Pre-service Teacher

Evaluating is assessing material or methods that may be applied in learning, students are expected to be able to justify a position or decision (Anderson and Krathwohl, 2001, cited in Lesie Owen Wildan 2016:3). Some of the objectives of this level include receiving, assessing, mediating, choosing, concluding, criticizing, defending, evaluating, recommending, and supporting. This study just found 1 question that included the ability to think category C5 as shown in Q1 (Table 5) "Good can you give a conclusion about our meeting today?", the designated student is expected to be able to conclude verbally about the conclusions of the day's learning activities.

Table 9. C6 (Creating) Questions based on Bloom Taxonomy

Questions numbers	Data Sources Questions	
Q6.1	Can you share your idea related to the paraphrase/summary?	PST 1

PST = Pre-service Teacher

The highest level of Bloom Taxonomy is C6 (Creating) which concerns placing and connecting parts in an overall form, composing, formulating from the new to the existing. The sub categories for these are produce, plan, structure, develop, create, build, produce, design, assemble, and manufacture (Anderson et.al 2001, cited in Nafiati 2021). This study found one question that included the ability to think category C6 (Creating). Some of the goals of this level are integrating, compiling, formulating, estimating, revising, generating, planning, telling, and building. As shown in Q6.1 (Table 6) *"Can you share your idea related to the paraphrase/summary?"* PST-1 inquired students to formulate ideas concerning the passage they studied which means that the student developed their own concept and this is included in the objectives at the C6 thinking level.

CONCLUSION

Based on data analysis of the questions obtained from Pre-service English Teachers according to Bloom's Taxonomy classification which is categorized into LOTS (Low Order Thinking Skills) and HOTS (High Order Thinking Skills) cognitive thinking skills. The results found 20 types of Low Order Thinking Skills (LOTS) questions, consisting of 5 questions C1 (Remembering), 11 questions C2 (Understanding), 11 questions C3 (Applying); while for the High Order Thinking Skills (HOTS) question types there are seven types of questions consisting of four questions C4 (Analyzing), one question C5 (Evaluating), and three questions C6 (Creating) out of a total of 26 questions. Overall, Pre-service English Teachers use more C2 (Understanding) questions in the cognitive category as a way of interacting in class to carry out the process of exchanging ideas. This findings indicates the use of HOTS based questions in class is less than LOTS which means that the pre-service teachers' skills in making HOTS based questions need to be improved. It would be better if the English Education Department gave directions in advance about the importance of making cognitive questions in the High Order Thinking Skills category in class interactions so that Pre-service English Teachers could apply them during Microteaching practice.

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