

Analysis of Teacher's Questioning and Students' Critical Thinking in English Classroom

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Abstract

This study is on analysis of teacher's questioning and students' critical thinking in English classroom. This study aimed to answer: (1) what are the types of teachers' questioning, (2&3) how many questions that belongs to the Lower-Cognitive as were as the Higher-Cognitive. (4) It is also examined the analysis of teacher's questioning in the classroom that could facilitate student's critical thinking especially in English as a Foreign Language (EFL) Classroom. The study is done through a classroom observation, recording and transcription of the recorded data in six different classes. The teacher's question were compiled and classified into each levels that belongs to the Lower-Cognitive Questions and Higher-Cognitive Questions. The questions compiled was 202 questions that was related to the lesson. The result showed that (1) mostly, the types of question's that were asked belongs to knowledge levels (46.53%), (2) 67.3% teachers questioning are under Lower-Cognitive Questions, (3) 32.7% belongs to the Higher-Cognitive Questions, (4) it proved that in this study, the teacher's questioning could not facilitate students to think critically as shown by the data analysis above.

Keywords: Teacher's questions, Critical thinking, Lower-cognitive questions, Higher-cognitive questions.

1. Introduction

In the classroom, there is always an interaction between teacher and students. It may appear in giving and receiving the material, having discussion, asking and answering the questions, and etc. Hence based on those activities, it needs a big role of teacher to make and produce an interactive class while learning, so the students can get the profits by learning something.

In Indonesia, the English is included in the education curriculum of Indonesia. Huda (2001) stated that English should be included in the school curriculum. It starts from the elementary school until the higher education. It shows that learning and teaching English is important, English subject in the school curriculum is given a higher priority over all other foreign languages in the school systems, even though the Indonesian people only learn English as their Foreign Language (EFL). The main purpose of teaching English subject from the elementary

schools is to introduce the idea to the young learners that they have a foreign language besides of their native and national language, and they are required to accomplish the simple oral and written language (Huda, 1999). In addition to that, English is learned in the higher education, in the real situation and more complex.

Although, in other case, in 2013, English subject is placed as cognate subject of the curriculum in Indonesia. Kaslim, as the Deputy Education and Culture Minister (cited in Jakarta Post, 2012) said that the elementary students will not need to learn English because they have not even learned to understand the Indonesian language as their mother tongue yet. And do not just copy from the Western education system that would eliminate the Indonesian values. And there were many critics that disagree with this statement, and at this present time the government of Indonesia put back the English subject to their curriculum again.

In this case teacher has a big role and gives a big impact in class. Sometimes,

the teacher asks the students some questions, and the students are required to answer the questions based on the topic that they have been discussed.

At this point, the teacher's questioning has an important role in learning and teaching process in the class. Questioning is one of the nine research-based strategies presented in Classroom Instruction That Works (Marzano, Pickering & Pollock, 2001).

One of the important roles in the classroom is the question that is given by the teachers. This is one of the method that all of the students in that class can be participated and be active in the class. It is evident that a question can trigger students' motivation, focus their attention, help students learn and think better (Shen & Yodkhumlue, 2012). And Question-and-answer activity is viewed as the most common form of communication between students and teachers in the classroom.

Our governor in Indonesia craves for all English teachers to construct the interactive classroom because of the demand for English proficiency at schools. Shomoossi (2004) jot down in his thesis and said, "The interactive classroom is the result of mutual interaction between teachers and students, students and students, group discussion, and any other classroom participation." (p. 98)

Moreover, Critical Thinking has an essential role in the class because this is the important ability which can contribute to the development of human being. It can help the students analyze, evaluate, and construct their thinking.

Scriven (1997, cited by Fisher (2001) defined the critical thinking as "an 'active' process, partly because it involves questioning and partly because of the role played by metacognition- thinking about your own thinking." (p. 11)

Few research studies have examined the influence of teachers' questioning and student's critical thinking. For an example, the research in China. The data proved that the teacher asked more lowercognitive questions. And based on the theory of the cognitive domain, results revealed that excessive use of lower-cognitive questions could not facilitate the development of students' critical thinking (Shen &

Yodkhumlue, 2012).

In Iran, there was a study to reveal the EFL teacher's type of question in the classroom. The researcher investigated in this EFL class, it was revealed that teachers' low level of proficiency and lack of experience plays a great role in asking such questions. (Farahian & Rezaee, 2012).

Also, the researcher found the case study of teacher questioning in Indonesia, and it was done at SMA Al-Yasini Pasuruan on grade 10. The researcher just did an analysis on the questions that were used by an English teacher in the classroom in that school. The result showed that the English teacher used knowledge questions mostly in the classroom. So it means that the questions that had been used in this class could not stimulate students to think critically because the type of knowledge question is still in the LowerCognitive Questions (Adibah, 2012). Therefore, it is beneficial doing an investigation on the real situation in the Indonesia classroom. Considering the functions of teachers' questions and the importance of Critical Thinking, the researcher conducted the study to investigate the relationship between teacher's questions and students' Critical Thinking.

Thus, the first purpose of the present case study was to investigate the common of teacher' questioning in Indonesia, especially in English classroom. The second purpose was to detect whether teacher's questions could facilitate learners' Critical Thinking related to the category of lower-cognitive questions and higher-cognitive questions. And the researcher hoped that by doing this investigation, there were any improvement for the teacher in asking the questions that could stimulate the students to think critically. Brown (2001, p. 169) stated that one of the best ways to develop your role as an initiator sustainer of interaction is to develop a repertoire of questioning strategies. This study intends to examine the case by the following research questions:

- 1) What are the types of questions asked by the teacher in the English class based on the investigation?
- 2) How many questions that belong to the lower-cognitive questions?
- 3) How many questions that belong to the higher-cognitive questions?
- 4) Can the

teacher's questions facilitate learners' critical thinking based on the investigation?

2. Methodology

2.1. Research Instruments.

For this study, the researcher did a qualitative research Alvesson & Kärreman (2011) stated that by doing a qualitative research, the researchers concern and feel more challenged to do many observations than only checking the effectiveness of the theory. Hence Given (2008) points out there is no manipulation of the environment because the qualitative research is settled in a natural setting. The researcher did an observation to compile the data that was needed. Gather data from doing an observation it is one of the types of qualitative techniques, it belongs to the Qualitative comparative analysis technique (Leech and Onwuegbuzie, 2008). The Qualitative comparative analysis is systematically analyzing similarities and differences across sources, typically being used as theory-building approach, allowing the reviewer to make connections among previously built categories, as well as to test and to develop the categories further (Leech and Onwuegbuzie, 2008, p. 601). Classroom observation can supply the opportunity to record the data as it occurs in the natural situation and it succeeds and workable to reveal the teaching and learning strategies in the classroom (Creswell, 2005). The researcher sat on the back of the class from the beginning until the end of the lesson, and the researcher did the audio recording techniques and did the note-taking while doing the observation in the class.

2.2. Data Collection.

The study was conducted on the 3 schools that near to the campus that the researcher lived and studied. The researcher chose the junior high school with the 6 different teachers as the participants. The classroom observation was conducted around five weeks, totally 20 hours. While doing the observation, the researcher asked permission from the headmaster, the curriculum department and the teacher of that school, so the researcher could sit and observe while

the learning process. During the observation, only the questions that were related to the Bloom's Taxonomy that have been proposed by Brown (2007) were compiled.

The researcher took six times of recording with the different teachers and in the different classroom. Only one recording for one teacher, so the researcher got the 6 data from the 6 different teachers in the different class. Every meeting took time 2 hours per meeting. Audio-taping and note-taking both were used to collect the data of teacher's questions.

2.1. Data Analysis.

2.1.1. Analytical Framework.

The Bloom's taxonomy was chosen as the analytical framework in the study because it is regarded as the renowned and most widely used paradigm in education to categorize and analyze the types of questions (Bernadowski, 2006). Bloom's taxonomy was first proposed in 1956 at the University of Chicago by Bloom and his colleagues. Arends (1991) claimed that Bloom's taxonomy has been widely used as an aid in planning instructional goals as well as for other aspects of teaching; for instance, it can be used to assist in test construction and also to choose a questioning strategy. For the second purpose of the study, the researcher used the

Bloom's taxonomy also to detect the impact of teacher's questions to the Critical Thinking. The cognitive domain involves knowledge and the development of intellectual skills, which includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills (Bloom, Englehart, Furst, Will, & Krathwohl, 1956). It contains six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation, which are often used to categorize teachers' questions. The first two levels, knowledge and comprehension, are belonged as lower-cognitive levels, while the last four levels, Application, Analysis, Synthesis, and Evaluation are classified as higher-cognitive levels (Bloom et al., 1956; Wilen, 1991; McNeil, 2010). The example of keywords

and questions to indicate in which types of questions based on Bloom's Taxonomy was presented in the table 1.

Questions belonging to lower cognitive levels are likely to require students to simply recall the prescribed data from memory, concentrating on factual information whereas ones belonging to higher cognitive levels require students to be engaged in higher-order thinking, especially Critical Thinking, for instance problem solving, analyzing, creating or evaluating information (Gall, 1970; Bernadowski, 2006).

2.3.2 Analysis Procedures.

After getting the data from classroom observation, the audiorecorded data related to teacher's questions were transcribed verbatim. There were 202 questions that related to the lesson. The researcher classified it into the 6 types of questions in Bloom's Taxonomy that have been proposed by Brown (2007), they were Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. After it was done, the researcher calculated it by percentage and then the researcher could conclude the most types of questions that were used in the class. After calculated the total of percentage for each types, the researcher categorized it into two levels Lower-Cognitive Domain and Higher-Cognitive Domain. The data were analyzed in qualitative method to observe and categorize the types of the teacher's questions that were commonly used in Bandung, West Java, Indonesia.

3. Results and Discussion

3.1. Types of questions that have been asked in English classroom The total of questions that have been gathered was 202 questions that related to the lessons in six different classes and teachers. The researcher did a quantitative method to gather the data, by doing an observation, transcribing, and classifying the types of questions to answer the question number 1. The total of frequency of each type of questions were illustrated in Table 2. From table 1, we could conclude that all types of questions: Knowledge, Comprehension, Application, Analysis,

Synthesis and Evaluation based on Bloom's Taxonomy that have been proposed by Brown (2007) were used in the classroom. And the data showed that the most types of questions that have been asked was Knowledge (46.53%), and in the second rank was Comprehension (20.8%), and for the Evaluation, on the third rank (17.82%), Analysis (9.9%), then Synthesis (3.47%), and for the last was Application (1.49%).

3.2. Total of Questions that belong to the Lower-Cognitive Questions.

Freahat & Smadi (2014) declared that lower level questions emphasize the recall of specific and universal methods, processes, structures, and settings (p.1804). Usually questions at the lower levels are appropriate for:

1. evaluating students' preparation and comprehension.
2. diagnosing students' strengths and weaknesses.
3. reviewing and/or summarizing content.

(Instructional Development, 2006, p.2). Another study, Knowledge Network by and for Educators (2008) stated that lower cognitive questions are simple. It is used and only know the students' comprehension about one topic. As mentioned in McNeil (2010), the questions that under Lower Cognitive Questions are in Knowledge and Comprehension. From 202 questions that the researcher had compiled, there were 94 questions that belong to Knowledge level, and there were 42 questions in Comprehension level. According to the first problem, the teacher mostly asked the questions in Knowledge level, the researcher would give any example of the questions that had been used:

Excerpt 1 (in Knowledge level):

T: Ok. We come to this picture. It's a dog, and then next?

S: It is a rabbit.

In this excerpt 1, the researcher had analyzed and classified this question into the Knowledge questions. The words '*and then next?*' is a question that need an answer of labeling or naming that picture (Anderson & Krathwohl, 2001). The answer was stopped

and no more need any explanations about rabbit, is it white, or black, and so on (based on the students' answer.) The teacher already gave an answer on the previous picture, she said that it is a dog's picture, and the students' just follow the way of answering by the teacher.

The researcher gave another example in Comprehension level that the teacher had used in the class:

Excerpt 2:

T: What is 'meja' in English?

S: Table Ma'am.

The students' answer and the teacher' question showed that in this short conversation the questions was categorized in Comprehension level, which belongs to the Lower-Cognitive Questions. Comprehension question is a level of question that needs comprehension by comparing, translating, interpreting, describing, stating and organizing about the topic that had been discussed or the main topic (Anderson & Krathwohl, 2001). In this excerpt, the teacher said Indonesian word 'meja' (in English it means: a furniture that has a flat surface, four legs and it is used to write and work on it) and then asked to the students the English word of 'meja'. And the student answered 'table'. In this case, this question belongs in translating. So, there were 136 questions (67.3%) belong to the Lower-Cognitive Questions based on this investigation.

3.3. *Total of Questions that belong to the Higher-Cognitive Questions.* In higher-cognitive questions, basically the questions need deeper and deeper comprehension, not only just in the surface thinking and the students are required to solve a problem, make any judgments and evaluate (Alford et al. 2006.) Questions at higher levels of the taxonomy are usually most appropriate for:

1. encouraging students to think more deeply and critically.
2. problem solving.
3. encouraging discussions.
4. stimulating students to seek information on their own.

(Instructional Development, 2006, p.2). The categories of HigherCognitive Questions are Application, Analysis, Synthesis and Evaluation. And the researcher got that the total of Application questions only 3 questions. It is the fewest questions or the fewest data that the researcher got. An example of Application

Questions:

Excerpt 3:

T: Thorn? What is thorn ?

S: Thorn is yang lancip dan tajam Ma'am.

(In English: Thorn is something that sharp)

In this example, one category of Application Question is classifying the character of the human, animal, or thing. The teacher applied the question to the topic that they had discussed. The teacher was not asked the Indonesian word of thorn but the teacher pointed out to the picture and asked the students to analyze what is thorn based on the picture. The next question that belongs to the Higher-Cognitive Question is Analysis. We would see the excerpt number 4:

Excerpt 4:

T: What makes him feel disappointed?

S: He damaged his car.

Through this excerpt, the researcher may conclude that this question belongs to the Analysis, in which to identify the problem. The problem that the teacher gave was to analyze why the person felt disappointed. And the students were required to analyze and identify the cause of the problem that he got.

The second to the last is Synthesis, the keywords for this level are build, choose, combine, construct, create, design, develop, modify, and etc (Anderson & Krathwohl, 2001). The researcher illustrated on this excerpt:

Excerpt 5:

T: Can we make it become a simple message?

In this question, indirectly the teacher asked the students' to modify the previous message and create it into the simple message.

And for the last, is Evaluation. Evaluation means making a judgment based upon a pre-established set of

criteria (Instructional Development, 2006, p.4). The example is mentioned below:

Excerpt 6:

T: What group is it? Oh, group 6. It's good.

The teacher evaluated the students' work in front of the class. It is one of the activity of evaluating students in the classroom. After the students finished their work, the teacher asked them to submit it and then the teacher evaluated and gave a grade based on the work.

So, based on the explanation above, the total of the higher-cognitive questions were 66 questions of 202 questions. In percentage, it is only 32.68%.

3.4 Can the teacher's questions facilitate learners' critical thinking based on the investigation

Critical thinking is the way of how we distinguish which is true or false to find truth behind something (Wood, 2002). Moreover Elder & Paul (2008) stated that critical thinking is the art of thinking about thinking in such a way as to identify its strengths and weaknesses and recast it in improved form where necessary (p.20). Poole (2003) points out that the impressive discussion is pioneered from the questions, it caused people will speak up and utter their idea on a wide variety of topics. And the teacher has a big role as the stimulator of asking to the students. The Lower-Cognitive Questions are typically dominant and used in the process of teaching and learning in Bandung. The researcher had observed that 136 questions of 202 questions are under the Lower Cognitive Questions. The most type of the questions that have been used are in Knowledge Level (94 questions). And through the analysis, the researcher figured out that the teacher mostly asked about the definition of the topics, the meaning, and the translation. The teachers were lacked to formulate the questions in Higher-Cognitive Questions. It means that the teacher's questioning could not facilitate students to think critically as shown by the data analysis above.

4. Conclusion and Recommendation

The three processes interact that can influence student's to achieve and perform

the goal of learning are questioning, thinking and understanding (Walsh & Sattes, 2005). Because in class, to sure the students' comprehension and accomplish the goal of learning, the advanced questions are required (Kwit, 2012). And the advanced questions are categorized in Higher Cognitive Questions, such as the Application (how to solve the problems based on the given situation), Analysis (how to examine the causes and give the evidence), Synthesis (create and design a new one) and Evaluation (asking their opinion and evaluate the lesson that they have discussed). And through this investigation, it proved that the teachers' questioning could not facilitate students' critical thinking, because 136 questions from 202 questions that had been compiled were under the Lower-Cognitive Questions. And only 66 questions from 202 questions are in the category of Higher-Cognitive Questions.

As my recommendations, the teacher should provide and formulate the types of these questions. Moreover, the teacher should expand the students' critical thinking by providing the kind of questions in higher-cognitive questions. Black & Harrison (2001) agreed that the quality questions that given by the teacher can give an effect of the way of thinking and expressing the idea of the students. Ontario Ministry of Education (2011) added that teacher should plan to make effective questions while preparing the material that will be given to the students. Also, Walsh & Sattes (2005) mentioned teachers should help students become familiar with the different levels of thinking and help them be aware of the kind of thinking required by the questions (p.13).

Moreover, the researcher recommends to the government especially in Indonesia hopefully give an alternative way to change the education system especially in the curriculum. So, all of the subjects for the senior high school can stimulate the students to think critically. So, while in the learning process, the interaction between teacher and students will be more active and can enhance students' critical thinking.

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Table 1. Samples of Types of Questions

Types of Questions	Keywords	Example of questions
Knowledge	who, what why, when, omit, where, which, choose, find, how,	What is ... ?
		Can you select?
		When did . . . happen?
	define, label, show, spell, list, match, name, relate, tell, recall, select	
Comprehension	compare, contrast, demonstrate, interpret, explain, extend, illustrate, infer, outline, relate, rephrase, translate, summarize, show, classify	How would you classify the type of . . . ?
		How would you rephrase the meaning?
		Can you explain what is happening?
Application	apply, build, choose, construct, develop, interview, make use of, organize, experiment with, plan, select, solve, utilize, model, identify	How would you solve using what you've learned?
		What other way would you plan to . . . ?
		How would you organize to show ?
Analysis	analyze, categorize, classify, compare, contrast, discover, dissect, divide, examine, inspect, simplify, survey, test for, distinguish, list, distinction, theme, relationships, function, motive, inference, assumption, conclusion, take part in	Why do you think ?
		What is the theme . . . ?
		What conclusions can you draw?
		Can you make a distinction between ?
		What is the function of ?
Synthesis	build, choose, combine, compile, compose, construct, create, design, develop, estimate, formulate, imagine, invent, make up, originate, plan, predict, propose, solve,	What changes would you make to solve ?
		How would you improve . . . ?
		What would happen if . . . ?
		Can you elaborate on the reason . . . ?
		Can you propose an alternative . . . ?

	solution, suppose, discuss, modify, change, original, improve, adapt, minimize, maximize, theorize, elaborate, test, happen, delete	Can you invent . . . ? How would you adapt to create a different . . . ?
Evaluation	award, choose, conclude, criticize, decide defend, determine, dispute, evaluate, judge, justify, measure, compare, mark,	What is your opinion of ? Do you agree with the actions . . . ? Can you assess the value or importance of . . . ?
	rate, recommend, rule on, select, agree, appraise, prioritize, opinion, interpret, explain, support importance, criteria, prove, disapprove, assess, influence, perceive, value, estimate, deduct	What would you recommend . . . ? How would you rate the . . . ? What data was used to make the conclusion . . . ? What information would you use to support the view . . . ?

Table 2. Frequency of Each Type of Questions

No	Types of Questions	Total of questions	Percentage
1	Knowledge	94	46,53 %
2	Comprehension	42	20,8 %
3	Application	3	1,49 %
4	Analysis	20	9,9 %
5	Synthesis	7	3,47 %

6	Evaluation	36	17,82 %
	Total	202	100%