

Cognitive Domains in an English Teacher's Classroom Discourse at Petra Language Center

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ABSTRACT

Asking questions in class can facilitate a smooth flow of discussion and encourage students' active participation. Teachers help students to have a better understanding by giving questions related to the students' cognitive domains. Therefore, this study aims to find the cognitive domains employed by an English teacher to primary students in the Children 3B English class at Petra Language Center. The theoretical framework is Anderson and Krathwohl's (2001) cognitive domains. Employing a qualitative approach, the writers transcribed and analyzed the teacher's WH questions in both English and Indonesian languages during three meetings before the final exams. The analysis showed that the teacher utilized two of six cognitive domains: *remember* and *understand*. The teacher primarily employed *remember* cognitive domain. In conclusion, significant factors influencing the outcomes include the learning objectives and the students' proficiency levels. Future research should expand to the Teenager class at Petra Language Center to examine the teacher's response to students' answers to the teacher's questions.

Keywords: children's class, cognitive domains, WH questions

INTRODUCTION

One of the most common activities in the classroom is questioning. Questions can make the class flow and open up a discussion. They can also point up misconceptions and give students an understanding of the topic during the discussion. Therefore, questioning is regarded as one of the most advantageous teaching activities and a technique for involving students in a learning experience to increase students' participation and communication skills (Wragg & Brown, 2001).

In this research, the writers focused on WH questions. As stated in research conducted by Terada (2020), WH questions are sentences that start with question words such as what, who, when, where, why, and how. In addition, Larsen-Freeman and Celce-Murcia (2016) added to the previous theory of question words to include words and phrases such as which, whom, whose, how long, how many, how much, and how often. There are several reasons why the writers chose WH questions. According to Terada (2020), WH questions help students develop their language and cognitive skills. By asking and responding to WH questions, students are able to develop their vocabulary, have a better understanding, and improve their communication and social skills. Furthermore, answering WH questions requires students to draw connections between various pieces of information. This may help in the development of their reasoning and problem-solving abilities (Terada, 2020). Thus, asking WH questions is significant for students.

Teachers help students to have a better understanding by giving questions related to the students' cognitive domains. According to Anderson and Krathwohl (2001), there are six cognitive domains: *remember*, *understand*, *apply*, *analyze*, *evaluate*, and *create*. As stated by Orey (2010), these six cognitive domains are illustrated as a stairway that aims to guide teachers in encouraging students to "climb to a higher (level of) thought" (p. 42). This theory is useful for teachers when delivering questions, so students can improve themselves by understanding and applying what they learn in class.

This study intends to analyze the cognitive domains asked by an English teacher to primary students at Petra Language Center. The writers chose to observe Children 3B's English class at Petra Language Center. The writers deliberately observed primary students because they are the foundation of education. Oktaviani and Fauzan (2017) show that primary students will improve their English proficiency if they begin learning English at an early age, and it will be useful for them to obtain employment and social-economic benefits in the future.

The original Bloom's taxonomy theory proposed by Bloom et al. (1956) explains that the cognitive domain is included in the taxonomy of educational objectives. Bloom et al. (1956) devise a classification system for different types and learning levels based on learners' cognitive processes while learning. Then, Anderson and Krathwohl (2001) revise and produce the six cognitive domains of Bloom's Revised Taxonomy. The revisions are *remember*, *understand*, *apply*, *analyze*, *evaluate*, and *create*.

1. Remember

Anderson and Krathwohl (2001) explain that *remember* is used when the goal of question and instruction is intended to help people remember what was taught, similarly to how it was introduced. They propose that *remember* requires relevant information that can last a long time in memory. Furthermore, Anderson and Krathwohl (2001) state that the cognitive processes in *remember* are *recognizing (identifying)* and *recalling (retrieving)*. For example, a student learned to match Spanish words with their English equivalents (Anderson & Krathwohl, 2001).

2. Understand

Anderson and Krathwohl (2001) point out further that students are understood when they can build "meaning from instructional messages, including oral, written, and graphic communications, however they are presented to students: during lectures, in books, or on computer monitors" (Anderson & Krathwohl, 2001, p. 70). According to Anderson and Krathwohl (2001), *understand* has seven cognitive processes: *interpreting*, *exemplifying*, *classifying*, *summarizing*, *inferring*, *comparing*, and *explaining*. The example of *understand* domain is asking questions like, "Which of these is an inorganic compound? (a) iron, (b) protein, (c) blood, (d) leaf mold" (p. 72) or "How could you improve a bicycle tire pump so that it would be more efficient?" (p. 76)

3. Apply

According to Anderson and Krathwohl (2001), *apply* requires procedures to carry out exercises or find solutions to difficulties. As a result, the ability to *apply* is intrinsically related to procedural knowledge. Anderson and Krathwohl (2001) mention that there are two cognitive processes: *executing* and *implementing*. The examples of *apply* provided by Anderson and Krathwohl (2001, p. 78)) are "What is the density of a material with a mass of 18 pounds and a volume of 9 cubic inches?" and "After completing Step 3, should I do Step 4A or Step 4B?".

4. Analyze

The fourth cognitive domain is *analyze*. Anderson and Krathwohl (2001) state that *analyze* means "breaking material into its constituent parts and determining how the parts are related to one another and to an overall structure" (p. 79). There are three cognitive processes in the *analyze*: *differentiating*, *organizing*, and *attributing*. Anderson and Krathwohl (2001) come up with the following examples of *analyze* questions: "Pencils come in packages that contain 12 each and cost \$2.00 each. John has \$5.00 and wishes to buy 24 pencils. How many packages does he need to buy?" (p. 81) and "What is the author's purpose in writing the essay you read on the Amazon rain forests?" (p. 82)

5. Evaluate

Anderson and Krathwohl (2001) further explain the next cognitive domain, *evaluate*. It means "making judgments based on criteria and standards" (Anderson & Krathwohl, 2001, p. 83). In addition, they note that the most frequently used criteria are "quality, efficacy, efficiency, and consistency" (p. 83), which students and others can decide. *Evaluate* has two cognitive processes: *checking* and *critiquing*. The examples of *evaluate* questions (Anderson & Krathwohl, 2001, p. 84) are "Is this where I should be in light of what I've done so far?" or "What are the possible ways you could multiply two whole numbers to get 60?"

6. Create

The last cognitive domain is *create*. Anderson and Krathwohl (2001) indicate that *create* means putting things together to make a whole that makes sense or works. When students *create* goals, they "make a new product by mentally reorganizing some elements or parts into a pattern or structure not clearly present before" (Anderson & Krathwohl, 2001, p. 84). *Create* has three cognitive processes: *generating*, *planning*, and *producing*. The examples of *create* proposed by Anderson and Krathwohl (2001) are "What alternative methods could you use to find what whole numbers yield 60 when multiplied together?" (p. 86) and "What would happen if there was a flat income tax rather than a graduated income tax?" (pp. 86-87).

METHODS

This study employed a qualitative approach. The source of the data was all English teacher's questions to primary students in Children 3B's English class at *Petra Language Center* within three class meetings before the final exam. Each class meeting was held for one hour. The class ran every Monday and Thursday from 16.30 to 17.30 and consisted of four primary students. The data analyzed in this study were all Indonesian and English WH questions related to the lesson delivered by the teacher during the three class meetings.

The writers collected the data on November 21st and 24th and December 01st, 2022. The writers observed and recorded the three class meetings. The writers also observed and wrote down the teacher's non-verbal communication while asking questions. After recording the class meetings, the writers made the transcripts of each meeting by using verbatim transcription. Furthermore, the writers selected all Indonesian and English WH questions related to the lesson. Lastly, the writers made one table to help her analyze the data. The writers analyzed the questions and put a tick (✓) in the appropriate column or sub-column, and matched the cognitive domains that are related to each question.

FINDINGS AND DISCUSSION

There are six levels of cognitive domains: *remember*, *understand*, *apply*, *analyze*, *evaluate*, and *create* (Anderson & Krathwohl, 2001). Out of six cognitive domains, two categories were applied by the teacher. The two categories were *remember* and *understand*. This is due to the fact that the teacher asked questions to students to recall earlier lessons. In all meetings, the teacher did not use the other four cognitive domains, *apply*, *analyze*, *evaluate*, and *create*. It was because the objective of Children 3B's English class was to know, recognize, and understand. Furthermore, primary school students may not have fully developed the advanced cognitive abilities, abstract thinking, and critical reasoning skills necessary for engaging in the cognitive domains of *apply*, *analyze*, *evaluate*, and *create*.

1. Remember

According to Anderson and Krathwohl (2001), *remember*, the lowest cognitive domain, is used when the goal of question and instruction is intended to help people remember what was

taught, similarly to how it was introduced. The cognitive domain *remember* appeared in all meetings. The teacher used this cognitive domain to help students remember what they learned. Furthermore, Anderson and Krathwohl (2001) state that the cognitive processes in *remember* are *recognizing (identifying)* and *recalling (retrieving)*. These are examples of *remember*.

Example 1

- T : Affirmative *nya kan gini... Nah kan gitu. To-be nya di mana? (1.7)* [*The teacher asks students the to-be in the book*] (The affirmative is like this... So that's it. Where's the to-be? (1.7) [*The teacher asks students the to-be in the book*])
- S3 : *Ini.* (This one.)
- T : *Paling? Depan, toh? Paling depan, toh. To-be nya paling depan, toh?* (Most? Front, right? At the very front, right. The to-be is at the front, right?)

One cognitive process of *remember* is recognizing. In recognizing, the students look in their long-term memory for a piece of information that is the same as or very similar to what is being shown (as represented in working memory). During this meeting, the teacher taught them about the formulas of affirmative, negative, and interrogative sentences. The teacher then gave them exercises to make affirmative, negative, and interrogative sentences by remembering the formulas. However, some of the students were still confused.

Then from the example above, one of the students struggled. Therefore, the teacher asked the student to first recognize the to-be in the example in the book by asking, "To-be *nya di mana?*" (1.7). The teacher reminded the student about the to-be in the sentences. She asked the student in order to make the student remember where to locate the to-be in the interrogative sentence. This question supported Anderson and Krathwohl's (2001) theory that the students needed to find long-term memory knowledge similar to what they had previously learned. Because the student had already learned about the to-be, the teacher presumed that the student knew where it was and could point it out in the example. Another detailed example is provided below.

Example 2

- T : **Lawyer itu apa?** (What is a lawyer?) (2.14)
- S2 : *Ngga tau.* (I don't know)
- T : *Lawyer itu?* (A lawyer?)
- S1 : *Pengacara. Mana?* (Pengacara. Which one?)
- T : **Mana? (2.15) Ayo kira-kira yang mana? (2.16) Ada loh.** (Where? Come on, which one do you think? (2.16) There is a lawyer on the screen.)
- S3 : *Yang paling atas.* (On the very top.)

Another cognitive process of *remember* is recalling. Recalling involves the student looking up knowledge in long-term memory and bringing it into working memory to be processed (Anderson & Krathwohl, 2001). The example above shows that the teacher delivered this type of question to remind her students what a lawyer means. The names of occupations were already listed in the book, and the teacher had asked students to do the questions in the previous meeting. Therefore, the teacher wanted to check if the students could describe and define the job description and recall the word 'lawyer' meaning by asking, "Lawyer *itu apa?*" (2.14).

Additionally, when the students were asked, they checked to see if the picture of a lawyer fit with what they had already learned, looking for a match - the occupation's name: 'lawyer' and the picture. Therefore, the teacher wanted to test students' memory by asking, "*Mana?*" (2.15). Then, the teacher continuously asked, "*Ayo kira-kira yang mana?*" (2.16). The teacher encouraged the students to recognize and match the occupation of a lawyer with the

picture shown on the screen. The following is another example of *remember*.

Example 3

T : *Oke, jadi caranya begini. Ini nanti... Apa namanya... Miss punya 4 spidol. Nah, ini masing-masing kalian harus maju nanti untuk menulis. Misalnya, clean. Sebelah sini dan sebelah sini ya [The teacher points the left and right whiteboard] Yang mau di sini siapa? [The teacher points the left whiteboard] S3.. S3 dan S2 yaa. S3 ini spidolnya... S2... Semua masing-masing sudah ada spidolnya satu-satu. Sekarang tugasnya... Ini caranya ya. Ini kan ada exercise untuk comparative adjective. **Nanti kalau misalnya sudah comparative tuh, coba pakai apa diingat-ingat? (3.12) Apa ciri-cirinya comparative? (3.13)***

(Okay, so this is how it goes. This will be... What is it... Miss has 4 markers. Well, each of you must come forward later to write your answers. For example, clean. Over here and over here [The teacher points the left and right whiteboard] Who wants to be here? [The teacher points the left whiteboard] S3.. S3 and S2 yaa. S3, this is the marker... S2... Everyone already has one marker. Now the task is... Here's how to do it. This is an exercise for comparative adjectives. Later, for example, if you have made a comparative adjective, try to remember, what should we use? (3.12) What are the characteristics of comparative? (3.13))

S3 : *Pake -er (Use -er)*

T : *Ya, pake apa? (Yes, use what?)*

S3 : *Yang belakangnya pake -er (The end of the word uses -er)*

T : *Ya, betul. Itu kalau comparative ya. Jadi misalnya clean. Ada clean. **Clean apa yang betul? (3.14) Contohnya? (Yes, correct. That is for comparative, alright. So, for example, clean. Clean. What is the right form of clean? (3.14) For example?)***

S2 & S3: Cleaner

The question “*Nanti kalau misalnya sudah comparative tuh, coba pakai apa diingat-ingat? (3.12)*” was used by the teacher to encourage students to recall the formula of comparative adjectives. “... *coba pakai apa diingat-ingat?*” (3.12) explicitly asked by the teacher, indicating that the student’s level of knowledge is still at the *remember* level.

Furthermore, she asked again, “*Apa ciri-cirinya comparative?*” (3.13). This showed that the teacher tried to remind her students about the characteristics of comparative adjectives, which concludes that this question is also in the recalling cognitive domain. The teacher delivered a question to test whether or not the students remembered the formula of comparative adjectives.

The data (3.14) above presents that the teacher wanted to remind the students of the comparative form of the word clean. The comparative adjectives were written in their book, so the students had to remember the forms of each adjective. Besides, the teacher had taught them the comparative form of one-syllable adjectives, so she expected the students to recall and answer it correctly.

2. Understand

Another cognitive domain found in the data is *understand*. This cognitive domain involves comprehending or grasping the meaning of information (Anderson and Krathwohl, 2001). *Understand* is the second lowest cognitive domain. The teacher used this cognitive domain to check students’ understanding of the lesson.

Understand has seven cognitive processes: *interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining* (Anderson & Krathwohl, 2001). However, three out of seven cognitive processes were found: *exemplifying, classifying, and explaining*. Below are examples of *understand*.

Example 4

T : Oke. I am going to go to the next page. Comparative and superlative. **Nah, apa sih comparative? (1.16)** *Kemarin sudah ya comparative. Comparative? Compare. Comparing. Membandingkan. Ini comparative ini contohnya kaya yang di... halaman... hmm... nah ini loh...* “The Wind and The Sun”. **Coba, mana kata comparative-nya di the “The Wind and The Sun”? (1.17)** Miss tanya. **Mana kata-kata comparative yang ada di “The Wind and The Sun”? (1.18)** *Halaman lima puluh enam.* (.... Okay. I am going to go to the next page. Comparative and superlative. So, what is comparative? (1.16) Yesterday, we learned about comparative. Comparative? Compare. comparison. Compare. The example of comparative like the one on... page... hmm... now here you go... “The Wind and The Sun”. Try, where is the comparative word in “The Wind and The Sun”? (1.17) Miss asked. Where are the comparative words in “The Wind and The Sun”? (1.18) Page fifty-six.)

[pause]

T : *Ya, coba, S4 dulu, S4 dulu. Yang mana? (1.19)* (Yes, try. S4 first, S4 first. Which one? (1.19))

S4 : *Yang ini* (This one) [*The student points to the comparative adjective in the book*]

In the previous meeting, the teacher had taught them about comparative adjectives repeatedly. Therefore, the teacher hoped the students would level up in this meeting. By asking, “*Nah, apa sih comparative?*” (1.16), the teacher wanted to check students’ knowledge of comparative adjectives. She encouraged students to explain the answer clearly. This type of question was counted as the explaining cognitive process.

Moreover, the teacher used the exemplifying cognitive process to check their understanding. Exemplifying involves students finding or giving examples of a concept (Anderson & Krathwohl, 2001). In this case, the teacher wanted students to find or give examples of comparative adjectives in the story “The Wind and The Sun.” The teacher asked, “*Coba, mana kata comparative-nya di the “The Wind and The Sun”? (1.17)*.” She then repeated her question, “*Mana kata-kata comparative yang ada di “The Wind and The Sun”? (1.18)*” in order for the students to focus and find the comparative forms in the story.

Furthermore, to check each student’s understanding, the teacher decided to ask every student to point out the comparative adjective by asking a question like “*Ya, coba, S4 dulu, S4 dulu. Yang mana?*” (1.19). Fortunately, all students found the examples, indicating that they understood the comparative form of adjectives. Below is another in-depth explanation of the *understand* cognitive domain.

Example 5

T : *Ini S1 dan S2 uda. Thank you so much. Sekarang S4 dan Kak S3. S4 dulu apa Kak S3 dulu?* The rabbit is ____ the dog. *S3 dulu. Pilih yang mana ini? (3.37)* Smaller, biggest, smallest, bigger. **Yang mana? (3.38)** (S1 and S2 have done. Thank you so much. Now, S2 and Kak S3. S4 first or Kak S3 first? The rabbit is ____ the dog. S3 first. Which one do you choose? (3.37) Smaller, biggest, smallest, bigger. Which one? (3.38))

S3 : Small?

T : **Small yang mana? (3.39)** *Satu, dua, tiga, empat.* (Which small? (3.39) The first, second, third, fourth.)

S3 : Yang ketiga. (The third one.)

T : The smallest the dog. *Coba ya, nanti kita cek ya. ...* (The smallest the dog. Let’s try, we check it later, alright. ...)

The teacher displayed a picture of a rabbit and a dog in order to check the students’ understanding of comparative and superlative adjectives they had previously learned. In this

case, the teacher wanted the students to fill in the blank provided in the sentence “... *The rabbit is ____ the dog.*”. Then, the students had to carefully select one of the four choices: smaller, biggest, smallest, and bigger.

Furthermore, the teacher asked each student. She asked one of the students, “*Pilih yang mana ini?*” (3.37). The teacher hoped that the student could classify the answer. Classifying, in this case, is determining that the rabbit and the dog belong to different categories, and the students needed to choose the right answers, whether the rabbit or the dog belongs to comparative or superlative adjectives.

The teacher then asked again, “*Yang mana?*” (3.38) for the student to choose the one that suited the sentence. The teacher implicitly asked students to determine the right form of a comparative or superlative adjective that belongs to the sentence.

Furthermore, when the student answered “Small”, the teacher thought her answer was not specific. Therefore, the teacher asked, “*Small yang mana?*” (3.39), indicating that the teacher hoped the student understood the difference between smaller and smallest and could choose the correct answer. Another example of *understand* is shown below.

Example 6

- T : ***Kenapa kok kamu tau hakim?*** (Why do you know that it is a judge?) (2.10)
 S2 : *Karena ada pentungan.* (Because there is a stick.)
 T : [*laughing*] *Itu bukan pentungan. Itu... hammer-nya untuk hakim yang biasa untuk bilang ‘Oke, kamu dihukum!’ Tok tok tok. Judge ini adalah hakim. Oke, bawahnya tadi yang sudah disebutkan sama S2.* ([*laughing*] That is not a stick. That is... a hammer for judges when saying ‘Okay, you are punished!’ Knock knock knock. Judge is *hakim*. Okay, below was what S2 had mentioned.)

In the example above, the teacher wanted to check the students' understanding by asking them to find the picture of the judge and explain the reason. When the teacher asked the students to choose the picture of a judge, one of the students chose the first picture. Then, the teacher was curious and wanted the student to explain the reason why she knew that the picture was a judge by asking, “*Kenapa kok kamu tau hakim?*” (2.10). The student managed to explain by saying, “*Karena ada pentungan.*” Although the word *pentungan* is inappropriate in law, the student's explanation showed that she understood.

From the data analysis, the cognitive domains found were *remember* and *understand*. *Remember* was the most applied cognitive domain in the data, especially in the second and third meetings. The cognitive process that appeared the most was *recognize*. This might happen because of the objectives of the Children 3B English class, which were to know, recognize, and understand. *Knowing* and *recognizing* were included in the *remember* level. Moreover, the students' proficiency level that was still at the basic level, namely Children 3B might affect the teacher's decision of asking questions under *remember* and *understand* cognitive domains.

Furthermore, the writers did not find the *apply*, *analyze*, *evaluate*, and *create* cognitive domains. It might be because primary school students were generally in the early stages of cognitive development. They were still building foundational knowledge and skills, and their ability to engage in higher-order thinking processes, such as applying, analyzing, evaluating, and creating, might be limited. These cognitive domains often required more advanced cognitive abilities, abstract thinking, and critical reasoning skills that might not be fully developed in primary school-aged children.

CONCLUSION

In conclusion, the results of the study indicate the learning objectives of the class and the students' level of proficiency might affect the cognitive domains reflected in the teacher's questions. Since this study was limited, further research on the teacher's questions to the Teenager class at Petra Language Center would be recommended. Another suggestion would be to investigate how the identified types of questions align with the instructional goals of the lesson. It is also recommended that further research examine the teacher's response to students' answers to the teacher's questions and analyze whether there are opportunities for follow-up questions, engaging discussions, or comprehensive explanations that support students' learning and encourage deeper understanding. Despite the current study's limitations, the writers hope that this study will help other researchers to conduct similar research and contribute to the English teachers' classroom discourse.

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