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LOTS & HOTS Composition of Reading Comprehension Exercises on English Textbook Using Revised Bloom's Taxonomy

Indah Nabila, Dewi Rochsantiningsih
English Education Department
Teacher Training and Education Faculty
Sebelas Maret University of Surakarta
Email: nabilaindah029@gmail.com

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Abstract
This study aims to figure out the composition of Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS) in reading comprehension exercises obtained from the English textbook titled "English for Nusantara" for 8th grade Junior High School (SMP) students. This study also determines the most dominant cognitive level in each category (LOTS & HOTS) depending on the revised Bloom's taxonomy. Every single reading comprehension exercise is examined using Content Analysis. The results discovered that the amount of exercises under the LOTS is wildly disproportionate, reaching 95.75% with the 'remembering' (C2) level becoming the dominant level. Meanwhile, the exercises under the Higher Order Thinking Skills (HOTS) category barely account for 4.25% of the total. Therefore, the results indicate that the textbook fails to expose students to Higher Order Thinking Skills (HOTS) topics as one way to train developing their critical thinking.
Keywords: Cognitive level; critical thinking; English textbook; reading comprehension; revised Bloom's taxonomy

INTRODUCTION

The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) made a significant advancement in 2022 when they established the Merdeka Curriculum to replace the 2012 Curriculum. A prominent differentiation between the 2013 Curriculum and the Merdeka Curriculum is the incorporation of the Pancasila Learner Profile which is also known as the Profil Pelajar Pancasila. In the Merdeka Curriculum, students are required to attain several character qualities and competence which are based on the noble values of Pancasila. Critical thinking is one of the fundamental values of the Pancasila Learner Profile

(Profil Pelajar Pancasila), implying the capability of students to objectively digest information (both qualitative and quantitative), build connections between different types of information, analyze it, assess it, and draw conclusions. As stated by Thamrin (2018), reading comprehension exercises that employ Higher Order Thinking Skills (HOTS) may help pupils become more proficient in thinking critically. For that reason, pupils ought to master Higher Order Thinking Skills (HOTS) to enhance their critical thinking abilities instead of merely paying attention to the material they have just read. According to Merizka (2020), when reading comprehension questions are paired with Higher Order Thinking Skills (HOTS), students will be required to do more than simply recite facts or details from the reading material they have read. When students are creating responses, Higher Order Thinking Skills (HOTS) will promote their critical thinking abilities.

The term "Higher Order Thinking Skills" (HOTS) alludes to Bloom's taxonomy which is a cognitive classification system that developed in 1956. It consists of six cognitive dimensions, namely: a) knowledge, b) comprehension, c) application, d) analysis, e) synthesis, and f) evaluation. However, there are only the three last cognitive dimensions (analysis, synthesis, and evaluation) that are categorized as the Higher Order Thinking Skills (HOTS). Besides, Anderson and Krathwol released a revisionized Bloom's taxonomy in 2001. This revision makes a small adjustment to the category of cognitive dimensions, which are now: a) C1 for remembering, b) C2 for understanding, c) C3 for applying, d) C4 for analyzing, e) C5 for evaluating, and f) C6 for creating. Then, the classification of the Higher Order Thinking Skills (HOTS) remains consistent with the prior iteration of Bloom's taxonomy. Analyzing (C4), evaluating (C5), and creating (C6) are the components of the Higher Order Thinking Skills (HOTS).

Numerous studies have looked at how many Higher Order Thinking Skills (HOTS) are utilized in the textbooks that Indonesian students. However, it is still quite uncommon to discover research that looks at Higher Order Thinking Skills (HOTS) in the 'English for Nusantara' textbook for 8th grade junior high school students. Hence, the objective of this study is to measure the percentage of Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS) from reading comprehension exercises in the 'English for Nusantara' for 8th grade students. Furthermore, this study will additionally show which cognitive level is the most prevalent in each category (LOTS & HOTS). Eventually, these are the research questions that this study attempts to explore and address:

(1) How is the composition of Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS) on the reading comprehension exercises found in the 'English for Nusantara' 8th grade students?
(2) What are the dominant Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS) cognitive levels that exist in the textbook?

LITERATURE REVIEW

The following list of bullet points provides a quick overview of some important ideas that are directly relevant to this study.

1. English Textbook

According to Cunningsworth (1995), textbooks are best understood as a tool for accomplishing pre-established objectives related to students' requirements. Additionally, because textbooks provide teachers with a wide range of materials and activities to choose from, textbooks themself can also be viewed as resources.

Textbooks are a major component of most language programs. There are situations in which a large amount of the language that pupils are exposed to and practice in the classroom is derived from textbooks. A textbook may provide the basis for the subjects covered in class, the balance of skills imparted, and the range of language practice activities students partake in. Furthermore, in some circumstances, the textbook itself may serve mainly as a teaching aid for the teacher's lesson preparations (Richards, 2001).

2. Reading Comprehension

As defined by Anderson (2003), reading comprehension is the product of a fluid process in which readers interpret textual material by fusing it with prior knowledge. Compared to that, Woolley (2011) defined reading comprehension as the process of interpreting written material. Therefore, getting the meaning of the text as a whole is more crucial than just deriving it from words or sentences alone. As they read, pupils construct mental models or representations of the concepts in the to comprehend the information contained therein.

Additionally, Oakhill (2015) asserted that reading comprehension is a challenging endeavor that requires the coordination of a wide range of cognitive skills and talents. Reading comprehension unavoidably depends on both good language knowledge more broadly and at least competent word reading to integrate the meaning of words and sentences into a coherent whole.

Eventually, it is possible to summarize those concepts by saying that reading comprehension is a sophisticated cognitive process that makes use of the reader's prior knowledge to comprehend, generate, extract, and construct meaning from written language.

3. Revised Bloom's Taxonomy

Bloom published a classification scheme for educational purposes in 1956. It is widely known as 'Bloom's Taxonomy' which includes six major cognitive levels, namely: a) knowledge, b) comprehension, c) application, d) analysis, e) synthesis, and f) evaluation. In 2001, nevertheless, Bloom's taxonomy was revised by Anderson and Krathwohl. As stated by Sainyakit (2023), rearranging the last two categories is the only distinction between the original and amended versions of Bloom's taxonomy. Synthesis and evaluation levels have been replaced by evaluate and create as the final two categories. Their meanings are still the same despite a minor change in sequence.

3.1. Lower Order Thinking Skills (LOTS)

Winanda (2022) claimed that Lower Order Thinking Skills (LOTS) offer the basic framework that Higher Order Thinking Skills (HOTS) are constructed upon. All that is needed for Lower Order Thinking Skills (LOTS) is the ability to recall and comprehend information in imprecise terms. The application of knowledge to any real-world situations or studies is not required. In addition, Atiullah et al. (2019) said that learned behavior and reproductive thinking are the two categories under which Lower Order Thinking Skills (LOTS) competence falls. According to Khan (2011), Lower Order Thinking Skills (LOTS) will only cause pupils to think at a lower level.

From those definitions, it follows that Lower Order Thinking Skills (LOTS) is a foundational framework that is limited to lower-order thinking abilities such as recall as well as comprehension, and the knowledge acquired cannot be extended to new situations. In the revised Bloom's taxonomy, three cognitive domains that are categorized as Lower Order Thinking Skills (LOTS) namely: a) remembering (C1), b) understanding (C2), and applying (C3).

3.2. Higher Order Thinking Skills (HOTS)

According to Underbakke et al. (1993), Higher Order Thinking Skills (HOTS) include techniques for managing content and strengthening one's capacity for information processing. As a framework for belief and behavior, Higher Order Thinking Skills (HOTS) are the active and skilled process of conceiving, applying, analyzing, synthesizing, and/or evaluating knowledge gleaned from observation, experience, reasoning, reflection, or communication. Furthermore, Sagala (2019) stated that exercising self-control when thinking is necessary for Higher Order Thinking Skills (HOTS). Put another way, if someone still needs assistance from others to think, then they cannot be said to be going through the process of developing higher thinking skills.

Based on the aforementioned definitions, it can be inferred that Higher Order Thinking Skills (HOTS) refers to an active, self-regulated process of thinking that encompasses critical thinking, problem-solving, creativity, analysis, and evaluation of specific information. In the revised Bloom's taxonomy, the Higher Order Thinking Skills (HOTS) cover the last three cognitive levels which are: a) analyzing (C4), b) evaluating (C5), and c) creating (C6).

4. Review of Higher Order Thinking Skills Composition in Textbook

Research conducted by Danianti and Fitrawati (2020) evaluates Higher Order Thinking Skills (HOTS) questions in reading assignments from Erlangga's 2018 English coursebook. The result suggests that the analyzing level (C4) placed highest among HOTS cognitive levels in reading questions with 11.9%. The evaluating level (C5) came in second place with 5.8%. Following that, creating level (C6) ranked third with a frequency of 1.2%. The researchers determined that in this study, Higher Order Thinking Skills (HOTS) questions are not the most prevalent level in the textbook.

Another research carried out by Takasana (2020) recognizes and analyzes several questions from two English textbooks for junior high school pupils, English in Mind (EIM) and Bright Academic English (BAE). The finding shows that both textbooks are dominated by Lower Order Thinking Skills (LOTS) questions. In Bright and English (BAE), there are 62 questions (88.28%) classified as Lower Order Thinking Skills (LOTS), whereas English in Mind (EIM) has 6o questions (85.72%).

The next study comes from Manurung & Sari (2020), who examine the reading exercises in the Erlangga 2013 Curriculum textbook. According to the findings, the Lower Order Thinking Skills (LOTS) reading activities take up the majority of the textbook. The Lower Order Thinking Skills (LOTS) reading activities have 93.1% but the Higher Order Thinking Skills (HOTS) reading tasks have just 6.8%.

Arlansyah et al. (2023) examine the reading questions in the 'English for Nusantara' textbook for seventh-grade students. The results demonstrate that Lower Order Thinking Skills still dominate the questions. Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS) questions had a combined score of 92.10% and 7.89%.

The last investigation is done by Arsana et al. (2023). They look at the cognitive domain levels in 'English for Nusantara' textbook assignments for seventh-grade pupils. The result suggests that the textbook's tasks are dominated by the remembering level (C1). The Lower Order Thinking Skills (LOTS) have 132 (74.6%) tasks, whereas the Higher Order Thinking Skills have 45 (25.4%) tasks.

RESEARCH METHOD

To extract reliable conclusions from textbooks, content analysis methodology (aligned with the revised Bloom's taxonomy) is applied to examine a textbook's content. As defined by Weber (1990), content analysis is a research methodology that uses a set of steps to extract trustworthy conclusions from text. Furthermore, document analysis is used to obtain the data. Bowen (2009) stated that document analysis is a systematic procedure for analyzing or evaluating documents, including printed and electronic (computer-based and internet-transmitted) materials. The procedure to collect the data in this study is: 1) selecting and reading the entire "English for Nusantara" textbook for 8th grade junior high school, 2) picking the reading comprehension activities from each textbook chapter, and 3) assigning codes to the quantity of information, chapters, units, and sections.

Table 1. *The Example of Coding in the Reading Comprehension Exercises*

No.	Code	Data	
1.	CH.4/U2/S2/p. 205	(a) Read the following dialogue between Andre, Monita and Galang.	*NA*
		(b) Complete the following table based on the previous dialogue between Andre, Monita and Galang.	*A*
		(c) Can you tell the types of plastic items that troubled the sea turtles in the following pictures?	*A*

		(d) Circle one of the pictures that show what happened to the turtle in the YouTube video.	*NA*

Note:

CH	= Chapter	p.	= Page
U	= Unit	*NA*	= Not Applicable
S	= Section	*A*	= Applicable

In addition, this study used the interactive models designed by Miles et al. (2018). The following is the process of interactive models for data analysis:

1. Data Collection: The data is classified according to chapters, units, and sections. It then utilizes the following codes: CH for chapters, U for units, S for sections, and p for pages.
2. Data Condensation: The process of condensing data involves refining, focussing, sorting, eliminating, and arranging information such that a 'final' conclusion may be made and validated. Based on the cognitive domain of the revised Bloom's taxonomy, the data is classified.
3. Data Display: The condensed data then being arranged into a compact, readily readable so that it can be comprehended and reasonable conclusions can be reached to help write the study's findings. The formula to calculate the data:

$$P = \frac{n}{N} \times 100\ \%$$

Note:

P	= percentage
n	= number of questions
N	= total questions

The calculation's outcomes would then be displayed in the tabular format that is seen in the table below.

Table 2. *The Percentage of LOTS and HOTS in Reading Comprehension* Exercises

Chapter	Revised Bloom's Taxonomy Cognitive Level						Total
	LOTS			HOTS			
	Remember	Understand	Apply	Analyze	Evaluate	Create	
CH.1							
CH.2							
CH.3							
CH.4							
CH.5							
Total							
Percentage							

4. Conclusion (Drawing or Verifying): The findings of the data analysis are recorded qualitatively in this step. The endpoint is that reading comprehension exercises using Higher Order Thinking Skills (HOTS) may be considered appropriate and proportionate if their distribution approached 50% of all exercises. To be more precise, Sukiman (2012) stated the exercises at the analyzing level (C4) ought to have the highest percentage (20%), evaluating and creating level ought to have the same share (15%).

FINDINGS & DISCUSSION

1. The Composition of Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS)

The Lower Order Thinking Skills (LOTS) includes a larger portion of instructions and question items. Lower Order Thinking Skills (LOTS) comprise more than 95% of the textbook's instructions and question items. The C1 level, which is remembering, makes up 61.21% of the total while the C2 level (understanding) comes in second at 34.54%.

On the other hand, the Higher Order Thinking Skills (HOTS) category has comparatively few question items and instructions. There are merely 7 instructions and question items in total, representing 4.25% of the 165 reading comprehension exercises in the textbook. 1.21% of the instructions and questions items go under the category of analyzing (C4), 1.81% fall under the category of evaluating (C5), and 1.21% fall under creating level (C6).

Table 4. *The Percentage of LOTS and HOTS in Reading Comprehension Exercises*

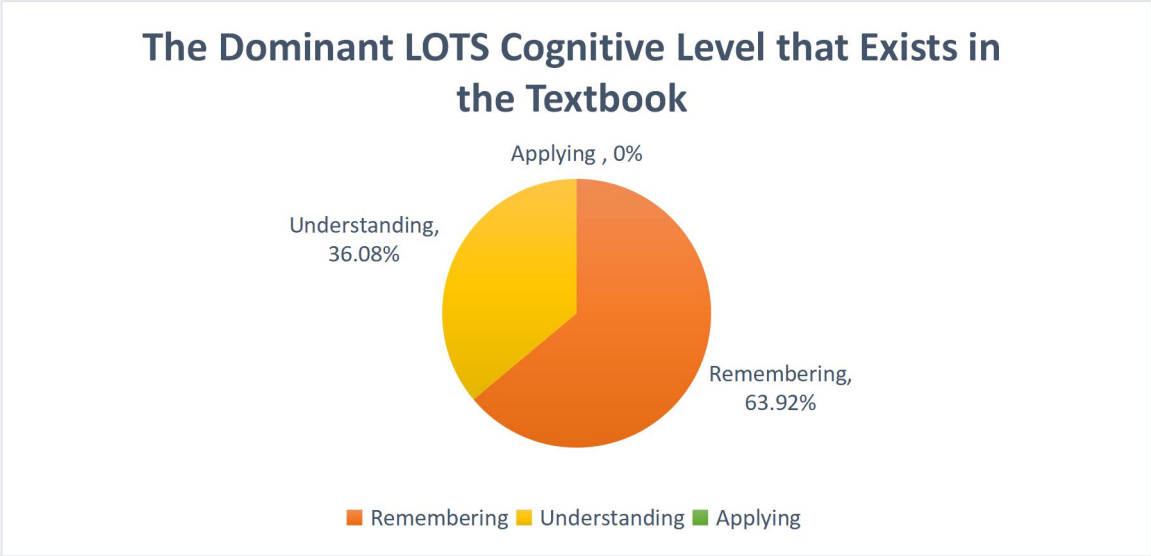
Chapter	Revised Bloom's Taxonomy Cognitive Level						Total
	LOTS			HOTS			
	Remember	Understand	Apply	Analyze	Evaluate	Create	
CH. 1	22	3	-	-	-	1	26
CH. 2	25	15	-	1	1	-	42
CH. 3	6	13	-	-	1	-	20
CH. 4	21	7	-	1	1	1	31
CH. 5	27	19	-	-	-	-	46
Total	101	57	0	2	3	2	165
(%)	61.21%	34.54%	0%	1.22%	1.81%	1.22%	100%
Total (%)	**95.75%**			**4.25%**			**100%**

2. The Dominant Cognitive Level in Each Category Lower Order Thinking Skills (LOTS) and Higher Order Thinking Skills (HOTS)

The Lower Order Thinking Skills (LOTS) category comprises 158 reading comprehension exercises, of which 101 are categorized as remembering (C1), 57 as comprehending (C2), and there are no exercises categorized as applying (C3). Consequently,

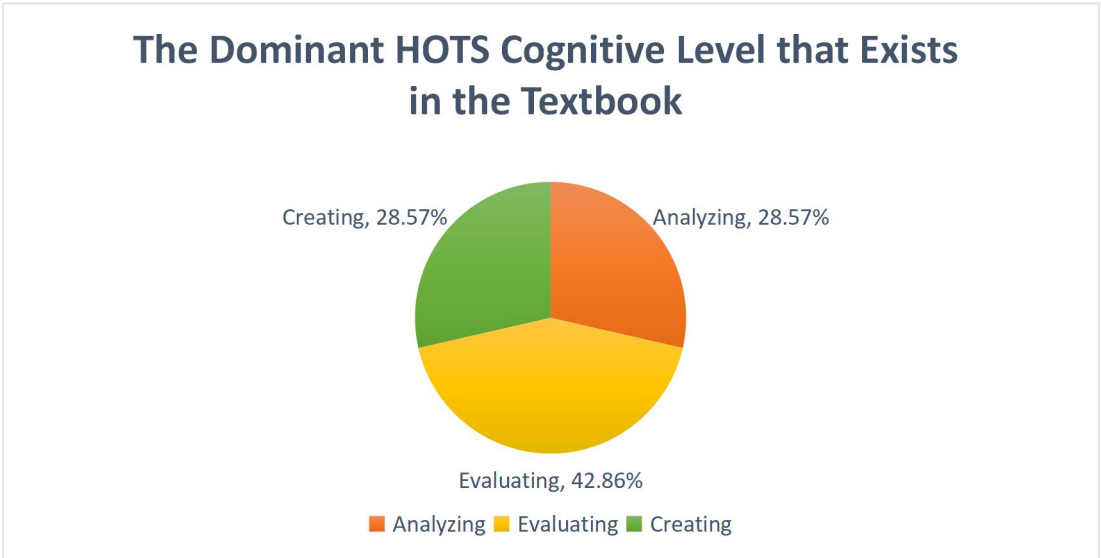
the researcher must focus only on determining the remaining cognitive levels which are remembering (C1) and understanding (C2). The remembering (C1) level, which equals 101 overall or roughly 63.92%, is therefore the most prevalent cognitive level in the Lower Order Thinking Skills (LOTS) category.

Figure 1. *The Dominant LOTS Cognitive Level that Exists in the Textbook*



Three out of seven exercises categorized as Higher Order Thinking Skills (HOTS) fall into the evaluation (C5) level at 42.86%. It means that the evaluating (C5) level is the most significant cognitive level under the Higher Order Thinking Skills (HOTS) category. Furthermore, the two following cognitive levels, analyzing (C4) and evaluating (C5), have the same number of reading comprehension exercises with 28.57% respectively.

Figure 2. *The Dominant HOTS Cognitive Level that Exists in the Textbook*



DISCUSSION

The majority of the cognitive level in the Higher Order Thinking Skills (HOTS) category is the evaluating level with roughly 4% of the exercises falling into this category. Moreover, the distribution of reading comprehension exercises is not entirely proportionate as there are no instructions or even question items at the applying or C3 level. Additionally, the 8th grade students' 'English for Nusantara' textbook included a variety of reading comprehension exercises. These exercises typically took the form of brief essays or "true-or-false" questions. It implies that pupils just reread the passage to respond to the exercises' questions. The 'English for Nusantara' textbook is indeed intended for junior high school students. However, it does not mean that the exercises are limited to simple forms. It is preferable to assign pupils a range of exercises that could develop their critical thinking abilities.

This study's findings are quite similar to those of previous studies which found that Lower Order Thinking Skills (LOTS) appeared more frequently in the textbook's reading comprehension questions. The quantity of percentages differs just a little and is impacted by the brand of textbooks tested. The remaining commonalities regarding the fraction of Lower Order Thinking Skills (LOTS) are still very relevant to the previous findings.

From the justification above, it could be deduced that the textbook's reading comprehension exercises are insufficiently progressive. The stark disparity between the number of Lower Order Thinking Skills (LOTS) activities and Higher Order Thinking Skills (HOTS) activities raised concerns as it is widely acknowledged that the current Merdeka Curriculum strengthens pupils' critical thinking abilities, which may be developed by giving them exercises incorporating Higher Order Thinking Skills (HOTS).

CONCLUSION & SUGGESTION

The result of this study discovers that the textbook's reading comprehension exercises are more closely aligned with the Lower Order Thinking Skills (LOTS) than the Higher Order Thinking Skills (HOTS) domain. Additionally, there are unbalanced proportions related to the cognitive domain since none of the reading comprehension exercises and/or instructions are at the applying level (C3).

Following receipt of the study's results, some suggestions that may be useful are provided to English teachers, pupils, textbook authors, and further studies. English teachers are encouraged to be more cautious in choosing English textbooks as learning materials for their pupils. Likewise, English teachers are highly encouraged to create their own HOTS exercises as additional tools for teaching pupils critical thinking. Pupils should be proactive in looking for alternate sources and in using various Higher Order Thinking Skills (HOTS) to sharpen their cognitive abilities. In addition, the authors of the English textbook should be able to enhance the textbook's content (especially the reading comprehension tasks) to

give pupils more opportunities to practice and help them develop critical thinking abilities. Lastly, further studies can still investigate the Higher Order Thinking Skills (HOTS) in other areas of English language competency. The 'English for Nusantara' textbook's wide range of content analysis research would be beneficial to the advancement of English teaching materials in the field of education.

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