The Dominance of LOTS in Summative Assessment: The Challenge of Improving HOTS in Indonesian Language Learning

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Abstract

The competence of teachers in making test questions for students is very diverse. There are teachers who are able to make HOTS questions, there are teachers who are still using HOTS questions. HOTS questions are questions that measure students' level of critical thinking, for that we need to know how the teacher's competence in making HOTS questions so that students can measure their level of critical thinking in mastering the material taught. This study aims to describe the level of LOTS and HOTS questions made by teachers on formative and summative questions in Indonesian subjects. The participants in this study are junior high school Indonesian teachers in the Brebes area, Indonesia. This type of research is qualitative descriptive. The data and data source are Indonesian teachers in the Brebes area, Indonesia. The results of the study revealed the dominance of LOTS-based questions (Lower Order Thinking Skills) in summative assessment, which covered 66.9% of the total questions, while HOTS-based questions (Higher Order Thinking Skills) only reached 33.1%. The observed differences suggest that current learning assessment practices largely emphasize basic cognitive processes, such as memorization and comprehension, while neglecting the development of students' higher-order thinking skills, including analysis, evaluation, and creativity. For this, this imbalance reflects systemic challenges in assessment design, particularly the lack of comprehensive teacher training, as well as the scarcity of robust guidelines for structuring questions targeting Higher Level Thinking Skills (HOTS). In turn, these findings underscore that, there is a critical need for continuous professional development initiatives aimed at equipping teachers with skills in the assessment process.

Keywords: High-Level Thinking Skills (HOTS), Low-Level Thinking Skills (LOTS), Culminating Evaluation, Indonesian Language, Assessment Tool Development

Introduction

The era of globalization is marked by the rapid development of science and technology, where education is one of the most affected sectors (Imamov & Semenikhina, 2021; Spring, 2008; Stofkova & Sukalova, 2020). For this, the progress of the times requires an improvement in the quality of human resources (HR) who are not only

cognitively intelligent, but also able to think critically, creatively, and adaptively. This shows the relevance to the global need for individuals who are able to innovate, solve problems, and collaborate in a dynamic work environment. As once expressed by Bereczki & Kárpáti (2021), educators need to keep up with technological developments and integrate them in the learning process to create a creative and innovative atmosphere. In this ha, technology is no longer just a tool, but has become an integral element in effective learning. This is because educational challenges in the Industry 4.0 era also require educators to equip students with collaboration and problem-solving skills as capital in facing the complexities of the world of work (Ahmad, 2020; Goulart et al., 2022; Mian et al., 2020; Vieira et al., 2022). Therefore, education focuses not only on the transfer of knowledge, but also on the formation of relevant character and life skills.

However, the implementation of learning that emphasizes high-level thinking skills (HOTS) still faces various challenges, especially in assessment design. Many teachers do not have a deep understanding of the importance of HOTS in encouraging students to think more analytically and creatively. Diverse student learning styles, as explained by (Rachmad, 2022), are one of the important factors in determining the effectiveness of learning (El-Sabagh, 2021; Firman et al., 2020; Hassan et al., 2021; Wahyudin & Wahyuni, 2022). Teachers must be able to recognize how students absorb and process information so that they can create appropriate learning strategies. In addition, HOTS-based assessments designed to measure students' analytical, synthesis, evaluation, and creative abilities often do not meet the ideal criteria due to the lack of teachers' skills in structuring relevant and contextual questions (Hamzah et al., 2022; Kusumaningtyas et al., 2023; Maryani et al., 2021). This is exacerbated by the habit of using centralized questions without encouraging teachers to innovate in learning evaluation design. If this continues to be left unchecked, it will be difficult for the quality of learning and student learning outcomes to develop according to the needs of the times.

For this reason, the role of professional teachers is the main key in improving the quality of learning and educational outcomes (Fernández-Batanero et al., 2022; Guljakhon & Shakhodat, 2020; Kilag & Sasan, 2023). Competent teachers are not only able to understand the characteristics of students' learning styles, but also master the techniques for preparing assessment instruments in accordance with the principles of HOTS. Teachers must keep updating their insights through relevant and ongoing training. As affirmed in Law Number 20 of 2003 concerning the National Education System, the evaluation of learning outcomes must be carried out in a planned and continuous manner to ensure the achievement of student competency standards. Classroom-based assessments should be geared not only to measure learning outcomes, but also to motivate students in exploring their best potential. This study aims to analyze the quality of HOTS-based questions prepared by teachers, with the hope of contributing to the development of teachers' capacity in creating more quality assessments that are relevant to the needs of the 21st century. In

addition, this research is expected to be able to become the basis for education policies that support the improvement of the quality of learning holistically.

Methodology

This study uses a descriptive qualitative approach to describe in detail the implementation of LOTS and HOTS-based assessment instruments by Indonesian teachers at the junior high school level in the Brebes area. This approach was chosen because it is able to provide an in-depth understanding of the phenomenon being studied, especially related to the assessment practices carried out by teachers. Participants in this study are Indonesian teachers who are active teaching in the region, with a total of 20 people selected based on their availability and willingness to be involved in the research. This study uses the purposive sampling method, by selecting three summative assessment instruments from the evaluation documents for the final semester of the 2022/2023 academic year. This instrument serves to analyze the structure of the questions, the cognitive level, and their correspondence with the LOTS and HOTS frameworks. By examining authentic assessment tools, the study seeks to collect relevant data, which accurately describes the research phenomenon.

In the process, the study uses four main methods for data acquisition, which include: observational studies, survey distribution, in-depth interviews, and content examination. Observational studies are carried out to gain insight into the design and application of assessment in everyday educational settings. The distributed survey was conducted to measure teachers' understanding of the principles of LOTS and HOTS. Incidentally, in-depth interviews were conducted to collect qualitative data on the difficulties faced by educators when compiling HOT-based questions. Then, content checks are used to assess the attributes of the questions in the evaluation document, which include cognitive level, query construction, and their conformance to HOTS-based scoring standards. The collected information is then analyzed using an interactive analytics methodology.

Results and Discussion

This study is designed to identify the distribution patterns and characteristics of LOTS (Lower Order Thinking Skills) and HOTS (Higher Order Thinking Skills) based questions in summative assessments prepared by Indonesian teachers at the junior high school level in the Brebes area. In the context of 21st century education, the shift in learning paradigm demands critical, analytical, and creative thinking skills that are realized through HOTS-based assessments. However, various studies show that many educators are still more comfortable with the LOTS approach, which is oriented towards information

reproduction and basic skills. Therefore, this study not only explores the distribution of questions based on the six cognitive levels of Bloom's taxonomy but also evaluates the depth and relevance of questions in supporting more meaningful learning. The data and visualizations presented aim to provide clear insights into the current conditions, as well as a foothold to recommend strategic steps to improve the quality of assessment.

LOTS: Dominance of Basic Abilities in Assessment

The results of the study show that LOTS (Lower Order Thinking Skills) dominated the summative assessment analyzed, with the largest distribution at the level of C1 (remembering) at 26.1%, followed by C2 (understanding) at 26.9%, and C3 (applying) at 13.9%. For example, a question at the C1 level asks students to identify a basic fact, such as *"Name the elements in the text of a fantasy story!"*. At level C2, the questions require more understanding of concepts, such as *"The above text excerpt is part of the structure of the text...."*, while level C3, although it begins to involve the application of concepts, is still limited to simple contexts, such as *"The order of steps of the procedural text in order is...."*.

Overall, LOTS-based questions cover 77 out of 115 questions or about 66.9%. This dominance reflects a more assessment approach oriented to students' basic abilities, without providing analytical or applicative challenges in more complex contexts. The following figure shows the overall distribution of LOTS and HOTS in the form of a pie chart, as well as the detailed distribution of each cognitive level in LOTS through a horizontal bar chart. This visualization helps to understand the concentration of questions at each cognitive level and provides insight into the existing LOTS dominance patterns.

Tabel 1: Data LOTS

Level Cognitive	Sample Questions
C1 (Remember)	*"Mention the elements in the text of the fantasy story!"*
C2 (Understand)	*"The text quote above is part of the text structure...."*
C3 (Apply)	*"The sequence of steps of the procedural text in order is...."*

For this, Figure 1 shows the overall proportion of LOTS problems compared to HOTS, where LOTS dominate significantly. Meanwhile, Figure 2 shows a detailed distribution of questions at each cognitive level of the LOTS, with the largest concentration at levels C1 and C2.
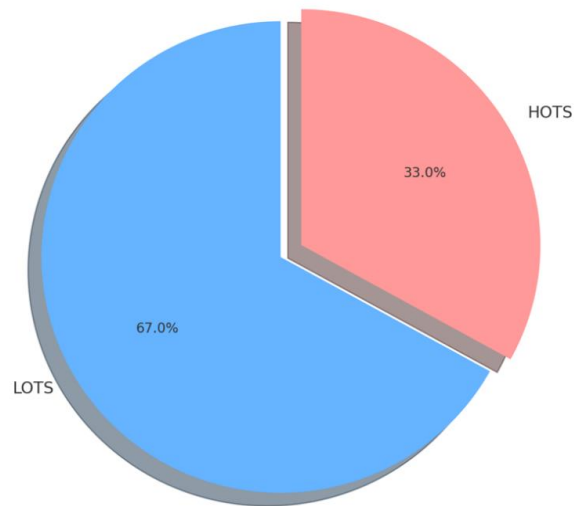
Figure 1: Overall Distribution of LOTS and HOTS

Figure 1 shows the overall proportion between LOTS (Low-Level Thinking Skills) and HOTS (High-Level Thinking Skills). The proportion of LOTS is 67%, while HOTS is only 33%. This indicates that the questions designed predominantly assess lower-order thinking skills, such as recalling and comprehending, rather than higher-order thinking skills, such as analysing or evaluating.

Figure 2 shows the detailed distribution of questions belonging to the LOTS category, based on cognitive levels in taxonomy Benjamin S Bloom said that An in-depth analysis was conducted to evaluate the distribution of questions at the levels of C1 (Remembering), C2 (Understanding), and C3 (Applying) (Grebin et al., 2020; Mahmudi et al., 2022; Prasad, 2021; Sobral, 2021; Voss, 2024). For this, Figure 2 is an overview of the distribution of the amount of questions based on the determined cognitive level.

Distribution of Questions by LOTS Cognitive Levels (English)

C3 (Applying) — 16

C2 (Understanding) — 31

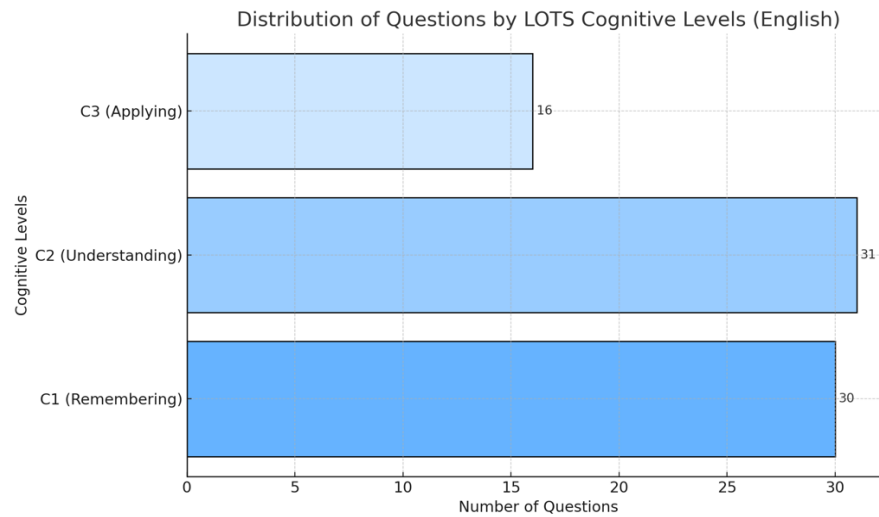C1 (Remembering) — 30

Number of Questions

Cognitive Levels

Figure 2. Distribution of the number of questions based on the cognitive level of LOTS (lower-order thinking skills)

In this case, the findings of this study highlight several significant trends regarding the prevalence of LOTS in the final evaluation phase.

a) **Dependence on Levels C1 and C2:** Most LOTS questions, which fall under the C1 and C2 categories, focus on remembering facts and understanding basic concepts. This suggests that the evaluations designed to test students' ability to reproduce information emphasize the direct transfer of knowledge.

b) **Lack of use of Level C3:** Level C3 began to show involvement in implementation, although the number of questions at this level was only 13.9%. In addition, questions at this level often do not seem to involve visual stimuli or contextual elements that could trigger further exploration.

c) **Limitations in Integrating Real Context:** Lots-based questions are generally textual in nature without supporting students' exploration through real-world scenarios or supporting graphics. For example, a question that asks students to structure procedural steps relies solely on text without integrating visual illustrations or practical situations.

d) **Question Design Transformation Needs:** To increase the relevance and significance of LOTS-based assessments, it is necessary to transform the question design. The use of visual stimuli, such as tool drawings or data tables, can enrich students' experience in understanding and applying concepts. For example, the application question (C3) can be modified to:
    "Sort the steps in the procedure text to create the following tool based on the given image."

HOTS: Limitations in Analysis, Evaluation and Creation

The results showed that HOTS (Higher Order Thinking Skills) only covered 33.1% of the total 115 questions analyzed. This category includes the cognitive levels of C4 (analyzing), C5 (evaluating), and C6 (creating). The largest distribution is in level C4 sebesar 20%, sedangkan C5 dan C6 masing-masing hanya mencakup 5,2% dan 7,8%.

For example, questions at the C4 level generally ask students to analyze elements in the text, such as *"The character depicted in the story above is..."* C5 questions often ask students to evaluate arguments or improve sentence structure, for example *"Fix the following ineffective sentences into effective sentences!"* As for C6 questions, they usually require students to come up with new ideas or creative solutions, such as *"Make a connotative sentence from the following word: 'red jago'."* Details are displayed in Table 2.

Table 2: Examples of HOTS Data

Level Kognitif	Contoh Soal
C4 (Menganalisis)	*"Fix the following ineffective sentences into effective sentences...."*
C5 (Evaluate)	*"Fix the following ineffective sentences into effective sentences!"*
C6 (Create)	*"Make a connotative sentence from the following word: 'red jago'."*

Table 2 presents examples of questions that fall into the HOTS (Higher Order Thinking Skills) category based on cognitive level in the Bloom Taxonomy:

- C4 (Analysis): An example question encourages students to analyse characters within a narrative.
- C5 (Evaluating): An example question requires students to assess and rectify ineffective sentence structures.
- C6 (Creation): An example question that invites students to develop innovative sentences using specific terms.

These examples illustrate how HOTS questions can be designed to enhance students' higher-order thinking skills, such as analysis, evaluation, and creation.

Table 3 shows the distribution of the number of HOTS questions according to their cognitive level. This data includes the number of questions at each level (C4, C5, and C6) as well as their percentage to the total HOTS questions. After that, Table 3 is a more in-depth analysis of this.

Table 3: Distribution of HOTS Questions Based on Cognitive Level

Level Kognitif	Jumlah Soal	Persentase (%)
C4 (Analyze)	23	20%
C5 (Evaluate)	6	5,2%
C6 (Create)	9	7,8%

The results show that HOTS-based questions are still focused on the C4 (analyzing) level with a percentage of 20%, much higher than the C5 (evaluating) and C6 (creating) levels which only cover 5.2% and 7.8% respectively. The dominance at the C4 level indicates that most HOTS-based questions are designed to challenge students in analyzing elements of information, such as understanding the relationships between passages in the text or identifying certain characteristics. For example, a question like *"The character depicted in the story above is..."* Ask students to perform a simple analysis without involving a more complex context. Although the questions at this level are a step forward from the LOTS, the approach tends to be limited to basic exploration that does not take advantage of the full potential of the student's analytical skills.

Meanwhile, the number of questions at the evaluation (C5) and creation (C6) levels is very limited. Evaluation questions usually require students to assess the quality or effectiveness of certain information, such as *"Fix the following ineffective sentences into effective sentences!"*, but rarely accompanied by relevant contexts or challenges that require deep critical thinking. The same is true for the problem of creation, which generally requires students to come up with something new, such as *"Make a connotative sentence of the following word: 'red jago'."* Although this problem involves an element of creativity, the design is less challenging because it does not involve more realistic situations or practical applications.

Discussion

This study reveals a significant disparity between LOTS (Lower Order Thinking Skills) and HOTS (Higher Order Thinking Skills)-based questions in summative assessment. The dominance of LOTS shows that assessment approaches still tend to focus on basic abilities, such as remembering and comprehending information, while the development of analytical and creative skills that are at the core of modern learning has not received enough attention. This is a question design approach that is not yet fully aligned with the requirements of education, especially in the 21st century, where students are expected to use critical thinking, conduct evaluations, and engage in creative problem-solving to overcome increasingly complex challenges.

For this, differences in assessment practices not only reveal evaluation trends but

also shed light on the hurdles that educators face. Then, limited time, inadequate technical expertise, and the absence of a framework for drafting Higher Order Thinking Skills (HOTS) questions present significant barriers to incorporating advanced cognitive abilities into the assessment process. To that end, HOTS-based questions often fail to fulfill their potential to truly challenge students when they don't have relevant stimuli or contextual support.

As a result, a comprehensive strategy for assessment reform appears to be a very important aspect, emphasizing the improvement of educators' proficiency in developing innovative, contextually relevant, and relevant HOTS-based questions. By implementing a rigorous training program and building a repository of HOTS-oriented questions, the training program is believed to serve as an important initiative to assist teachers in perfecting their assessment methodology. By adopting a more balanced approach, the program becomes a part that facilitates meaningful learning experiences. This transformation aims to cultivate academically superior graduates, as well as have the critical and creative thinking skills necessary to navigate global challenges effectively.

Conclusion

The investigation revealed that there was a noticeable difference in summative assessment questions, with 66.9% categorized as Low-Level Thinking Skills (LOTS) and only 33.1% as High-Level Thinking Skills (HOTS). This distribution shows that current evaluations mostly focus on very basic cognitive processes such as: memorization and basic comprehension, while largely ignoring the development of students' analytical, evaluative, and creative abilities. This scenario underscores the difficulties faced in question formulation, including inadequate teacher preparation and limited resources to create HOTS-based questions. To that end, addressing these imbalances requires a multi-pronged approach, involving extensive training initiatives, with an emphasis on the establishment of a comprehensive database of questions. A more balanced approach will support more meaningful learning, producing students who not only excel in cognitive abilities but are also prepared to face global challenges with critical and creative thinking skills.

These findings have several important implications. First, continuous training is needed for teachers to improve their ability to design assessment instruments that encourage students to think more deeply and critically. However, this study also has limitations, namely limited coverage of the area so that the results do not necessarily reflect conditions in other regions. Therefore, further research with a wider scope and a more in-depth approach is highly recommended to understand the obstacles teachers face. In addition, the provision of technical guidance and practical training modules can be a strategic step to support the wider implementation of HOTS-based questions. Thus, it is

hoped that students can be better trained in facing the challenges of a world that continues to develop.

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