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Enhancing Cognitive Learning Outcomes through HOTS-Based Learning in Indonesian Language Education: A Study of Grade VIII Students at SMPN 8 Sampang

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ABSTRACT

Purpose – This study aims to analyse the implementation of HOTS-based learning and its impact on improving cognitive learning outcomes in Indonesian language subjects for eighth-grade students at SMP Negeri 8 Sampang. The study is motivated by the low cognitive achievement of students, which is primarily influenced by conventional learning approaches centred on memorisation, despite the Merdeka Curriculum's emphasis on Higher Order Thinking Skills (HOTS).

Methodology – The research uses the Classroom Action Research (CAR) model by Kemmis and McTaggart, conducted over two cycles. The sample consists of 32 eighth-grade students. Data were collected using cognitive learning achievement tests, observation sheets, and field notes. Quantitative data were analysed through average score calculations and completion rates, while qualitative data were analysed descriptively to complement the results.

Findings – The study found a significant improvement in students' cognitive achievement. The average score increased from 62.50 in the pre-test to 80.31 in cycle II, and the mastery percentage rose from 31.25% to 87.50%. These results demonstrate that HOTS-based learning strategies effectively enhance cognitive outcomes and foster critical, analytical, and creative thinking skills.

Novelty – The research contributes original insights into the effectiveness of HOTS-based learning in the context of Indonesian language education, particularly in junior high school settings.

Significance – This study is beneficial for educators, curriculum developers, and policymakers seeking to improve cognitive learning outcomes by incorporating HOTS in educational strategies.

Keywords: Action research; Cognitive learning outcomes; HOTS; Indonesian language learning; Junior high school.

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1. Introduction

Indonesian national education has an important mandate in preparing the younger generation to face the increasingly complex challenges of the 21st century (Aktaş & Karaca, 2022; Lamo et al., 2023; Victoriia & Iryna, 2020). Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System (Sisdiknas) emphasises that education aims to develop the potential of students to become people who are faithful, pious, knowledgeable, skilled, creative, and independent, as well as democratic and responsible citizens. In this context, mastery of higher-order thinking skills (HOTS) is a non-negotiable requirement.

HOTS includes analytical, evaluative, and creative skills that serve as important tools for students to face globalisation, technological developments, and the rapid flow of information (Islamiyah et al., 2024; Kania et al., 2024; Suhaeni, 2022; Wibawa et al., 2025). According to Facione (2020), critical thinking is the ability to make reflective and rational judgments about information or situations encountered. This ability does not come instantly, but must be trained systematically in the learning process from primary to secondary education.

Indonesian language learning has a strategic role in fostering critical thinking skills (Azeera et al., 2024; Faridayanti et al., 2025; Firdaus, 2023). Indonesian is not only taught as a means of communication, but also as a vehicle for thinking and critical reasoning. Wulandari (2022) emphasises that effective Indonesian language learning should be able to hone the ability to understand, interpret, evaluate, and convey ideas logically and argumentatively. Thus, Indonesian language learning should not stop at memorisation activities but should be directed towards the development of higher-order thinking skills.

Cognitive learning outcomes are a key aspect that reflects students' ability to understand, remember, analyse, evaluate, and create based on the knowledge they have acquired (Alshaiji & Al-Saeed, 2021; Ioannou & Makridou, 2018; Mondal et al., 2025). Bloom, in his taxonomy, emphasises that the cognitive domain is at the core of the educational process because it determines the extent to which learners can internalise and apply the concepts they have learned (Alamsyah & Merdeka, 2023; Dias, 2024; Imawan & Ismail, 2023; Kania et al., 2025). In the context of Indonesian language learning, cognitive learning outcomes are not limited to understanding text content, but also include critical thinking skills in assessing arguments, organising ideas, and producing logical and systematic written work. Meaningful learning should grow from internal motivation rather than external coercion (Desiyanto, 2025). Therefore, strengthening cognitive learning outcomes is an important indicator in assessing the success of HOTS-based learning in order to achieve meaningful and in-depth learning.

However, the reality in the field shows that students' cognitive learning outcomes tend to be low. Based on academic reports at SMP Negeri 8 Sampang, most students are only able to achieve a basic level of understanding, while their analytical, evaluative, and creative skills have not developed optimally. This is due to the dominance of

conventional learning methods that still focus on memorisation and factual knowledge. This condition emphasises the urgency of implementing HOTS-based learning strategies as a systematic effort to improve students' cognitive learning outcomes, especially in Indonesian language subjects.

The Merdeka Curriculum, as the latest policy in the Indonesian education system, provides more space for strengthening HOTS (Ismail & Imawan, 2023; Rahmawati et al., 2024; Wahyuni et al., 2023). This curriculum emphasizes student-centered, differentiated, and project-based learning. At SMP Negeri 8 Sampang, the implementation of the Merdeka Curriculum encourages teachers to design innovative learning strategies, one of which is through the use of self-assessment. This strategy allows students to reflect, evaluate their learning achievements, and develop metacognitive awareness.

Based on this background, the research questions are: (1) How is HOTS-based learning implemented in Indonesian language lessons in grade VIII at SMP Negeri 8 Sampang? (2) To what extent can HOTS-based learning improve the cognitive learning outcomes of grade VIII students at SMP Negeri 8 Sampang? This research question forms the basis for the research methods and analysis. The purpose of this study is to describe the implementation of HOTS-based learning in Indonesian language classes and to analyze the improvement in the cognitive learning outcomes of eighth-grade students at SMP Negeri 8 Sampang. This study is expected to contribute theoretically to the development of HOTS-based learning models and provide practical benefits for teachers in improving the quality of Indonesian language learning, particularly in the cognitive domain.

Previous studies have shown that self-assessment has a positive contribution to strengthening critical thinking skills (Lestari, 2023; Supriyadi, 2023). Therefore, this study focuses on analyzing the implementation of HOTS-based learning strategies through self-assessment in Indonesian language learning. The focus of the study is to determine the extent to which this strategy can improve the learning outcomes of eighth-grade students at SMP Negeri 8 Sampang while supporting the achievement of the Merdeka Curriculum.

2. Methods

This study used the Classroom Action Research (CAR) model developed by Kemmis and McTaggart (2007), which consists of planning, implementation, observation, and reflection stages in two cycles. The research subjects were 32 eighth-grade students at SMP Negeri 8 Sampang in the 2025/2026 academic year, who were selected purposively because their cognitive learning outcomes were classified as low. The research instruments included cognitive learning outcome tests based on HOTS indicators (analysis, evaluation, creation), observation sheets of student and teacher activities, and field notes. Quantitative data were analysed using mean scores, mastery percentages, and score increases between cycles, while qualitative data were analysed descriptively to describe student engagement and learning barriers. The action was deemed successful if at least 75% of students achieved a score of ≥70 in accordance with the Indonesian Language Learning Objective Achievement Criteria (KKTP), and there was an increase in the average cognitive learning score from each cycle.

2.1. Size of Dataset

The main research instrument was a cognitive learning outcome test based on HOTS indicators (analysis, evaluation, creation). Student test results were analysed using the class average score ($\bar{x}$) with the following formula:

$$\bar{x} = \frac{\sum x_i}{N}$$

Where x^- is the average score, $\sum xi$ is the sum of student sores, and N is the number of students. Student learning completeness is calculated using a percentage:

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

With the percentage of mastery, the number of students who mastered the material, and the total number of students.The research instruments consisted of: (1) cognitive learning outcome tests (multiple choice & essay), (2) observation sheets of student and teacher activities, and (3) field notes. Quantitative analysis was used to calculate the increase in the average score and student mastery between cycles, while qualitative analysis described student participation and learning constraints. The following table presents the distribution of students' cognitive learning outcomes before the implementation of HOTS-based learning (pre-test).

Table 1 - Students' Cognitive Learning Outcomes (Pre-Test)

Score Range	Number of Students	Percentage (%)
≥ 70 (Mastered)	10	31.25
< 70 (Not Mastered)	22	68.75
Total	32	100

The results in Table 1 show that only 31.25% of students achieved the Minimum Passing Grade (KKM = 70). This condition reinforces the need for improvement measures through the implementation of HOTS-based learning to improve students' cognitive learning outcomes.

3. Results and Discussion

3.1. Results

The implementation of HOTS-based learning in class VIII of SMP Negeri 8 Sampang was conducted through two cycles, each comprising two meetings. Cognitive test results were given at the initial stage (pre-test), after cycle I, and after cycle II. The data obtained showed an increase in the average class score and the percentage of student learning completeness in each cycle.

The results in Table 2 show that before the intervention, only 31.25% of students achieved the minimum passing grade (≥70). After implementing HOTS-based learning in cycle I, the percentage of students who achieved the minimum passing grade increased to 65.63% with a class average score of 71.88. A more significant increase was seen in cycle II, with an average score of 80.31 and a passing rate of 87.50%.

Table 2 - Comparison of Students' Cognitive Learning Outcomes

Test Stage	Average Score	Number of Students Mastering (≥70)	Mastery Percentage (%)
Pre-test	62,50	10 students	31,25
Cycle I	71,88	21 students	65,63
Cycle II	80,31	28 students	87,50

This increase in scores shows that the implementation of HOTS-based learning is able to encourage students to be more active in analyzing, evaluating, and creating solutions in Indonesian language learning. Group discussion activities, text analysis-based exercises, and creative assignments have proven to have a positive influence on the development of students' cognitive abilities.

3.2. Discussion

The improvement in students' cognitive learning outcomes from the pre-test to cycle II proves that the application of HOTS-based learning is effective in developing higher-order thinking skills. The data shows a jump in the percentage of mastery from 31.25% on the pre-test to 87.50% in cycle II. This fact confirms that HOTS strategies are able to facilitate students to move from simply understanding concepts to the skills of analyzing, evaluating, and creating new ideas. These results are in line with Anderson & Krathwohl (2015), who emphasize the importance of learning at a high cognitive level to support complex thinking skills.

In terms of process, cycle I showed an initial improvement, although it was not yet optimal. This was because some students were still adapting to learning methods that demanded activity and critical engagement (Dawson et al., 2024; Fakhrudin & Lukita, 2023; Nkepah, 2025; Riwayatiningsih et al., 2025). However, improvements in strategy in cycle II, such as through guided group discussions, the use of text-based analysis questions, and creative writing assignments, were able to increase student motivation and cognitive learning outcomes. These findings show that the application of HOTS requires gradual adaptation so that students become accustomed to more challenging learning patterns.

This study also supports the findings of Lestari (2023), who reported a significant increase in the analytical abilities of Indonesian language students after two cycles of HOTS-based learning. Similarly, Supriyadi (2023) found that HOTS strategies improved students' evaluation skills by up to 30% compared to conventional methods. The similarity of these results shows the consistency of the positive impact of HOTS in various learning contexts. Thus, this study strengthens the empirical evidence that HOTS is relevant to be applied in improving the cognitive domain of junior high school students.

In addition to theory and previous research findings, success is also influenced by students' active involvement in the learning process. Husna, A., Ilmi, N., & Gusmaneli, G. (2025) state that critical thinking develops optimally when students are faced with challenging collaborative situations that require reflection. In this study, group discussion activities, collaborative text analysis, and project assignments proved to be effective in stimulating critical thinking skills. This shows that HOTS-based learning not only improves cognitive learning outcomes but also encourages students to be more

active, confident, and independent (Jailani et al., 2023; Susantini et al., 2024; Tambunan, 2019).

The practical implication of these findings is that Indonesian language teachers need to design lessons that emphasise analytical, evaluative, and creative skills (Kania et al., 2023; Palwa et al., 2024; Patria & Merdeka, 2023; Putri & Khadijatuzzahra, 2025). Teachers should not only rely on lecture or memorisation methods, but also integrate contextual questions, reflective writing activities, and argument-based discussions. In this way, students will become accustomed to facing complex cognitive challenges and be better prepared to meet the demands of the Merdeka Curriculum, which emphasises competency-based and project-based learning.

However, this study also has limitations. First, the study was only conducted in one class with a limited number of students, so the results need to be generalised with caution. Second, the research instruments emphasised written tests, so they did not fully describe students' cognitive skills in real situations. Third, time constraints meant that the evaluation only covered two cycles, whereas the development of higher-order thinking skills requires a longer period of time.

Given these limitations, future research could expand the scope of the subject by involving more classes or schools to obtain more representative data. In addition, assessment instruments could be developed by combining written tests, portfolios, and authentic assessments to provide a more comprehensive picture of students' cognitive skills. Further development could also examine the long-term effectiveness of HOTS and its impact on other skills such as communication and collaboration. Thus, HOTS-based learning not only improves cognitive learning outcomes but also prepares students to face the challenges of the 21st century holistically.

4. Conclusions

This study proves that the application of HOTS-based learning is effective in improving the cognitive learning outcomes of eighth-grade students at SMP Negeri 8 Sampang. The test results show a significant increase, from an average score of 62.50 on the pre-test to 80.31 in cycle II, with the learning completeness percentage rising from 31.25% to 87.50%. This indicates that HOTS-based learning strategies are able to encourage students to move from basic cognitive levels to higher-order thinking skills, namely analysis, evaluation, and creation.

This success cannot be separated from the role of group discussions, project-based assignments, and analytical exercises that foster active student engagement. Thus, Indonesian language learning designed with a HOTS approach has been proven to improve the quality of cognitive learning outcomes while fostering critical and independent attitudes in students.

Based on the results of the study, teachers are advised to use HOTS-based learning strategies more often in Indonesian language lessons. Teachers need to design learning activities that emphasize text analysis, argument evaluation, and idea creation through projects or creative assignments. In addition, further research should be conducted with a larger sample and over a longer period of time to test the consistency of the results. Assessment instruments can also be expanded to include not only written tests, but also portfolios and authentic assessments, so that students' cognitive learning outcomes can be measured more comprehensively.

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Conflict of Interest

The author hereby declares that there is no conflict of interest in all stages of research, data analysis, writing, and publication of this article. The entire research process was carried out independently, objectively, and based on the principles of academic integrity, without any intervention or influence from external parties that could cause bias in the research results. This research is purely intended for the advancement of science, particularly in the field of Indonesian language education, as well as to make a practical contribution to improving the quality of HOTS-based learning. Thus, the research results are scientifically accountable and free from irrelevant personal or institutional interests.

References

Aktaş, N., & Karaca, F. (2022). The relationship between Turkish high school administrators' technology leadership self-efficacies and their attitudes and competencies towards technology use in education. *Participatory Educational Research*, *9*(5), 430–448. https://doi.org/10.17275/per.22.122.9.5

Alamsyah, D., & Merdeka, P. H. (2023). Mental Health as Common Lifestyle. *Journal of Literature Language and Academic Studies*, *2*(02), 51–56. https://doi.org/10.56855/jllans.v2i2.669

Alshaiji, H. K., & Al-Saeed, S. J. (2021). Effect of Instructions in Course Book Tasks on Promoting Higher-Order Thinking Skills. *English Language Teaching*, *14*(12), 218. https://doi.org/10.5539/elt.v14n12p218

Azeera, A., Wulan, N. S., & Sari, N. T. A. (2024). Penerapan Model Pembelajaran problem Based Learning (PBL) Berbantuan Media Audio Visual Terhadap Kemampuan Menyimak Cerita Fiksi Siswa Di Sekolah Dasar. *Progressive of Cognitive and Ability*, *3*(4), 262–268. https://doi.org/10.56855/jpr.v3i4.1060

Dawson, C., Julku, H., Pihlajamäki, M., Kaakinen, J. K., Schooler, J. W., & Simola, J. (2024). Evidence-based scientific thinking and decision-making in everyday life. *Cognitive Research: Principles and Implications*, *9*(1), 50. https://doi.org/10.1186/s41235-024-00578-2

Desiyanto, J. (2025). Psikologi Pendidikan: Landasan Ilmiah Memahami Proses Belajar. Serasi Media Teknologi.

Dias, H. P. (2024). Islam Berkemajuan Perspektif Haedar Nashir. *Progressive of Cognitive and Ability*, *3*(3), 157–166. https://doi.org/10.56855/jpr.v3i3.1072

Fakhrudin, M. U., & Lukita, C. (2023). Teaching Speaking Skills Communicatively to Promote Education 4.0: Review. *Journal of Literature Language and Academic Studies*, *2*(02), 22–30. https://doi.org/10.56855/jllans.v2i2.606

Faridayanti, I., Nasrullah, A., Hidayat, A., & Kania, N. (2025). The Impact of the Discovery Learning Model on Mathematical Communication Skills and Study Habits of Junior High School Students. *Indonesian Journal of Teaching and Learning (INTEL)*, *4*(1), 16–29. https://doi.org/10.56855/intel.v4i1.1330

Firdaus, D. I. (2023). Peningkatan Hasil Belajar dan Aktivitas Belajar Siswa Melalui Penerapan Model Pembelajaran Kooperatif Tipe Numbered Heads Together.

Indonesian Journal of Teaching and Learning Hal, *2*(2), 242–252. http://journals.eduped.org/index.php/intel

Imawan, O. R., & Ismail, R. (2023). Analysis of Character Education Values on the Learning Achievement of Elementary School Teacher Candidates. *International Journal of Mathematics and Mathematics Education*, 103–131. https://doi.org/10.56855/ijmme.v1i02.331

Ioannou, A., & Makridou, E. (2018). Exploring the potentials of educational robotics in the development of computational thinking: A summary of current research and practical proposal for future work. *Education and Information Technologies*, *23*(6), 2531–2544. https://doi.org/10.1007/s10639-018-9729-z

Islamiyah, I., Nasrullah, A., Yendra, N., Ratnasari, S., & Khan, H. A. (2024). Empowering Problem-Solving Abilities and Self-Esteem in Students: Implementing the Teams Games Tournament (TGT) Model in Class VIII of MTS Daar Al-Ilmi. *International Journal of Applied Learning and Research in Algebra*, *1*(1), 1–9. https://doi.org/10.56855/algebra.v1i1.1157

Ismail, R., & Imawan, O. R. (2023). Five Priority Character Values: Content Analysis in The Independent Curriculum Mathematics Textbook in Indonesia. *International Journal of Mathematics and Mathematics Education*, *1*, 83–103. https://doi.org/10.56855/ijmme.v1i02.330

Jailani, J., Retnawati, H., Rafi, I., Mahmudi, A., Arliani, E., Zulnaidi, H., Abd Hamid, H. S., & Prayitno, H. J. (2023). A phenomenological study of challenges that prospective mathematics teachers face in developing mathematical problems that require higher-order thinking skills. *Eurasia Journal of Mathematics, Science and Technology Education*, *19*(10), em2339. https://doi.org/10.29333/ejmste/13631

Kania, N., Arifin, Z., Rismayani, R., & Bonyah, E. (2025). Utilisation of Mobile Learning in Mathematics Education: A Bibliometric Analysis Using The Scopus Database. *Progressive of Cognitive and Ability*, *4*(1), 8–21. https://doi.org/10.56855/jpr.v4i1.1310

Kania, N., Fitriani, C., & Bonyah, E. (2023). Analysis of Students' Critical Thinking Skills Based on Prior Knowledge Mathematics. *International Journal of Contemporary Studies in Education (IJ-CSE)*, *2*(1), 49–58. https://doi.org/10.56855/ijcse.v2i1.248

Kania, N., Kusumah, Y. S., Dahlan, J. A., Nurlaelah, E., & Arifin, Z. (2024). Research Trends in Higher-Order Thinking Skills in the journal Mathematics Education in Indonesia: from Design to Data Analysis. *International Journal of Mathematics and Mathematics Education*, 193–206. https://doi.org/10.56855/ijmme.v2i3.1048

Lamo, P., Dhuli, R., & Larsari, V. N. (2023). Perspectives of ESL Learners on the Integration of Technology in English Language Learning Process: An Evidence-Based Research. *International Journal of Contemporary Studies in Education (IJ-CSE)*, *2*(1). https://doi.org/10.56855/ijcse.v2i1.254

Mondal, S., Khatua, D., Mandal, S., Prasad, D. K., & Sekh, A. A. (2025). BMWP: the first Bengali math word problems dataset for operation prediction and solving. *Discover Artificial Intelligence*, *5*(1), 25. https://doi.org/10.1007/s44163-025-00243-7

Nkepah, B. D. (2025). Gender-Based Variances in Student Interest and Commitment to Mathematical Tasks in Secondary Schools in Bamenda Municipality. *International Journal of Mathematics and Mathematics Education*, *3*(1), 18–32. https://doi.org/10.56855/ijmme.v3i1.1238

Palwa, N., Inayah, S., Septian, A., & Larsari, V. N. (2024). Analysis of Students' Mathematical Creative Thinking Ability in Solving Open-Ended Questions Based on Their Self-Concept. *International Journal of Mathematics and Mathematics Education*, 60–73. https://doi.org/10.56855/ijmme.v2i1.965

Patria, R., & Merdeka, P. H. (2023). Creative Strategies in the Recovery of Endangered Languages. *Journal of Literature Language and Academic Studies*, *2*(02), 57–61. https://doi.org/10.56855/jllans.v2i2.671

Putri, K. K., & Khadijatuzzahra, K. (2025). Students' Creative Thinking Abilities in Solid Geometry Topics. *International Journal of Geometry Research and Inventions in Education (Gradient)*, *2*(01), 27–41. https://doi.org/10.56855/gradient.v2i01.1397

Rahmawati, R., Nopriana, T., & Haqq, A. A. (2024). Strengthening Mathematical Connections in Middle School Geometry: The Role of Means-Ends Analysis in Learning Cubes and Rectangular Prisms. *International Journal of Geometry Research and Inventions in Education (Gradient)*, *1*(01), 1–10. https://doi.org/10.56855/gradient.v1i01.1141

Riwayatiningsih, R., Prastikawati, E. F., Muchson, M., Haqiqi, F. N., Setyowati, S., & Kartiko, D. A. (2025). Empowering Higher-Order Thinking Skills in Writing through Gamification and Multimodal Learning within PBL. *Forum for Linguistic Studies*, *7*(2). https://doi.org/10.30564/fls.v7i2.8119

Suhaeni, N. (2022). The Effectiveness of Using Wattpad to Improve Students' Writing Skills and Critical Thinking Skills: A Phenomenolog-ical Approach. *Journal of Literature Language and Academic Studies*, *1*(01). https://doi.org/10.56855/jllans.v1i01.139

Susantini, E., Sari, Y. M., Marzuqi, M. I., & Asteria, P. V. (2024). EduQuestioning mobile learning application: a catalyst for developing HOTS-based assessment questions referring to Revised Bloom's Taxonomy. *Research and Practice in Technology Enhanced Learning*, *20*, 022. https://doi.org/10.58459/rptel.2025.20022

Tambunan, H. (2019). The Effectiveness of the Problem Solving Strategy and the Scientific Approach to Students' Mathematical Capabilities in High Order Thinking Skills. *International Electronic Journal of Mathematics Education*, *14*(2), 293–302. https://doi.org/10.29333/iejme/5715

Victoriia, K., & Iryna, H. (2020). Distance Education During the Covid-19 Pandemic. *Herald of Kyiv National University of Trade and Economics*, *131*(3), 135–146. https://doi.org/10.31617/visnik.knute.2020(131)10

Wahyuni, H., Iskandar, R. S. F., Raditya, A., & Talde, D. K. J. C. (2023). Analysis of Algebra Questions in Curriculum 2013 and Merdeka Curriculum Mathematics Textbooks. *International Journal of Mathematics and Mathematics Education*, *1*(3), 218–226. https://doi.org/10.56855/ijmme.v1i3.735

Wibawa, F. S., Hariri, D. D., Mahmudah, H., & Kania, N. (2025). Bridging mathematics and culture: A systematic review of indigenous mathematical concepts in Indonesian traditions. *Contemporary Mathematics and Science Education*, *6*(2), ep25013. https://doi.org/10.30935/conmaths/17076