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# Implementation of Higher Order Thinking Skills Learning

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***ABSTRACT***
*This study aims to describe the implementation of Higher Order Thinking Skills (HOTS)-based learning at SMP 8 Satu Atap (SATAP) Tondano, particularly in core subjects such as Mathematics, Science, and Indonesian Language. HOTS-based learning is essential to equip students with critical thinking, creativity, and the ability to solve complex problems in line with the demands of the Merdeka Curriculum and the Industrial Revolution 4.0. This study employed a qualitative approach using a case study method. The subjects used in this study were 5 teachers. Data collection techniques included in-depth interviews with teachers. The results of the study indicated that teachers had made efforts to integrate HOTS elements into the learning process through the use of trigger questions, group discussions, and project-based assignments. However, the implementation still faced various obstacles, such as limited infrastructure, low student learning motivation, and a lack of teacher training in HOTS lesson planning. To overcome these challenges, teachers applied strategies such as scaffolding, the use of contextual learning media, and collaboration among teachers. This study concluded that the implementation of HOTS-based learning at SMP 8 SATAP Tondano was underway but not yet optimal, and still required strengthened institutional support and teacher capacity building.*

## INTRODUCTION

21st-century education demands the development of higher-order thinking skills (HOTS) as a vital competency that students must possess. These skills include the abilities to analyse, evaluate, and create, enabling students to address complex problems, think critically, and make appropriate decisions based on logical and creative reasoning. In the context of the national curriculum, the implementation of HOTS-based learning aligns with the demands of both the *Kurikulum Merdeka* and the 2013 Curriculum, both of which emphasise student-centred and competency-based learning (Kemendikbud, 2022).

Anderson and Krathwohl (2001), in their revision of Bloom's Taxonomy, position HOTS at the three highest cognitive levels: analysing, evaluating, and creating. These aspects are essential in encouraging students to think critically and find solutions in both academic and real-life contexts. Thus, the role of teachers in implementing instructional practices that support the development of HOTS is crucial. Teachers are no longer merely transmitters of information, but facilitators who design active, collaborative, and contextual learning experiences. Various studies have shown that the implementation of HOTS-based learning in schools still faces several challenges. Research by Mailani (2018) found that many teachers still lack a comprehensive understanding of the HOTS concept and how to apply it effectively in instructional activities. In addition, limited time, curriculum overload, and low student motivation are among the main obstacles to the optimal implementation of HOTS-based instruction (Setiawan, 2020; Handayani & Syukur, 2021). The problem identified at the research site, SMP 8 Satu Atap (SATAP) Tondano, indicates that although teachers have made efforts to integrate Higher Order Thinking Skills (HOTS)-based learning into the teaching and learning process, its implementation remains suboptimal. This is due to several obstacles, including limited learning facilities and infrastructure, low student motivation, and the lack of teacher training in effectively designing and implementing HOTS-based instruction. Teachers face difficulties in creating questions that require higher-level thinking and in fostering a learning environment that stimulates creativity and problem-solving. This situation highlights the urgent need for qualitative research to explore in depth how HOTS-based learning is being implemented, what challenges are encountered, and what strategies are employed by teachers in the field, so that appropriate solutions can be identified to improve the quality of education following the demands of the Merdeka Curriculum and the Industrial Revolution 4.0.

On the other hand, research by Yuniharto & Nisa (2022) revealed that when HOTS-based learning is implemented successfully, students demonstrate improved critical thinking skills and a deeper understanding of concepts. Project-based learning, open discussions, problem-solving activities, and case-based assignments are several strategies that have proven effective in developing students' higher-order thinking skills (Kurniati & Jamil, 2016; Beddu, 2019; Sugiman & Apin, 2017).

This study presents a novelty in its focus on the implementation of Higher Order Thinking Skills (HOTS)-based learning in a remote school, namely SMP 8 Satu Atap (SATAP) Tondano, within the context of the Merdeka Curriculum and the demands of the Industrial Revolution 4.0. Although many previous studies have discussed HOTS-based learning, most were conducted in urban or high-performing schools with adequate facilities and higher levels of teacher preparedness. For instance, research by Tasrif (2020) stated that HOTS implementation was effective in schools that had received intensive training and had sufficient digital infrastructure. However, the study did not address the challenges faced by rural or remote schools. Another study by Mitana et al. (2021) found that even though teachers understood the importance of HOTS, its application in the classroom was often limited to assigning analytical questions, without deep contextual learning. Similarly, a study by Fitriani et al. (2021) showed that successful HOTS implementation requires a supportive learning environment and adaptive teaching strategies, conditions that are often lacking in remote schools. The novelty of this research also lies in its qualitative approach, which emphasises the real-life experiences of teachers in integrating HOTS into core subjects such as Mathematics, Science, and Indonesian Language. This study not only explores teachers' understanding and application of HOTS but also highlights the adaptive strategies they use to overcome limitations, such as scaffolding, the use of contextual learning media, and inter-teacher collaboration. In this context, the research contributes both practically and theoretically to the development of more inclusive and sustainable educational policies, especially in enhancing teacher capacity in underdeveloped areas. Given the importance of HOTS in the teaching and learning process, as well as the challenges faced in its implementation, this study aims to explore how HOTS-based learning is implemented by teachers in the classroom, the obstacles encountered, and its impact on students' thinking skill development.

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## METHOD

This study employed a descriptive qualitative approach aimed at understanding and thoroughly describing the implementation of Higher Order Thinking Skills (HOTS)-based learning by teachers in classroom instruction. The qualitative approach was chosen because the researcher seeks to explore the meaning, experiences, and strategies used by teachers in designing and carrying out HOTS-based instruction in a natural and contextual school setting. Qualitative research allows for a holistic investigation of the complex teaching and learning process, particularly how teachers implement learning strategies that promote students' higher-order thinking skills (Moleong, 2018; Sugiyono, 2022; Ramdhan, 2021; Hamzah, 2021).

This research was conducted at SMP 8 SATAP Tondano, which was selected purposively because the institution has implemented a curriculum that supports the development of higher-order thinking skills. The selection of this site was based on the consideration that the school has integrated HOTS principles in the teaching and learning process, both in planning and in classroom implementation. The subjects of this study consisted of five teachers at SMP 8 SATAP Tondano, who each have a minimum of two years of teaching experience, and three eighth-grade students. Data in this study were collected through in-depth interviews, a data collection technique that allows researchers to explore information in a more detailed and comprehensive manner regarding teachers' experiences, perspectives, and strategies in implementing Higher Order Thinking Skills (HOTS)-based learning. These interviews were conducted directly with teachers to understand the realities in the field, including the challenges they face and the solutions they apply in the teaching and learning process.

These interviews were conducted semi-structurally using an interview guide developed based on HOTS implementation indicators, such as lesson planning, instructional strategies, assessment methods, and the challenges encountered. The use of triangulation techniques aims to enhance the credibility and validity of the data (Sugiyono, 2022).

Data analysis in this study followed the interactive model of Miles, Huberman, and Saldana (2014), which involved three main stages: data reduction, data display, and conclusion drawing/verification. Data reduction involves selecting and summarising relevant information based on the focus of the research. The reduced data is then presented in descriptive narrative form to facilitate understanding and interpretation. The final step is conclusion drawing and verification, conducted continuously throughout the research process to ensure data consistency and validity.

The validity of the data in this study was tested using source triangulation and technique triangulation. Source triangulation was carried out by comparing data obtained from teachers, students, and documents. The technique triangulation involved comparing data collected through interviews, observations, and documentation. In addition, member checking was performed to confirm the researcher's interpretation of the data with the participants to ensure the accuracy of the findings with the actual conditions in the field (Creswell, 2014; Ernianti, 2021).

## RESULTS AND DISCUSSION

### Results

#### HOTS Learning Planning

Question: How do you design learning activities to encourage students to engage in higher-order thinking?

Teacher 1 (Ms. R.A., Economics Teacher)

> In designing her lessons, Ms. R.A. stated that she begins by setting learning objectives that are aligned with higher-order cognitive domains. She uses a backwards design approach, where the expected outcome is for students to be able to conduct a SWOT analysis on local economic cases. She then tailors learning activities such as real-case discussions, economic debates, and mini

market research projects, which allow students to evaluate information and develop solutions. She also emphasises the importance of transparent assessment rubrics so students understand the evaluation criteria and can work within clear boundaries.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. explained that he designs his lessons using a Problem-Based Learning (PBL) approach. For example, in the topic of ecosystems, students are asked to analyse environmental damage in their surroundings, evaluate the causes, and design a conservation campaign. He divides students into groups to discuss and compose critical reports as well as creative presentations. According to him, higher-order thinking skills emerge when students are directly involved in finding solutions and defending their arguments in classroom discussions.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. mentioned that she applies a *project-based learning* approach that enables students to write argumentative essays or compose thematic poems based on current social issues. She starts with a literary text as a stimulus, then asks students to analyse its content and language style. Next, students evaluate the messages within the text and eventually create new literary works that reflect their understanding. She believes the creative aspect is essential in language learning because it showcases the originality of students' thinking.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. stated that mathematics learning is often seen as relying solely on memorising formulas. Therefore, he seeks to change this perception by presenting open-ended problems and contextual math challenges. He encourages students to explore various solution strategies, compare methods, and explain the rationale behind their chosen solutions. He also conducts weekly reflection activities so students can evaluate their thinking processes and develop new problem-solving strategies.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. explained that she uses an interdisciplinary approach by connecting Social Studies materials with both global and local issues. For instance, in the topic of social change, students are asked to analyse cultural shifts caused by digitalisation, evaluate its impacts on youth, and then create a digital campaign offering solutions. She incorporates interactive media and encourages group presentations. She believes that higher-order thinking skills cannot be trained through lectures alone, but must be nurtured through meaningful and challenging learning experiences.

**HOTS Learning Strategies and Methods**

Question: What methods or strategies do you most frequently use to develop students' higher-order thinking skills?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. stated that the method she most frequently uses is the case study method. According to her, case studies allow students to examine real economic problems, analyse causal factors, evaluate existing policies, and eventually propose solutions. She also combines this approach with group discussions and presentations, as presenting their solutions requires students to defend their arguments logically. She believes this strategy is effective in fostering students' analytical and evaluative skills.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. explained that he often uses the Problem-Based Learning (PBL) strategy to develop higher-order thinking skills. In each lesson, he begins by presenting real-world problems related to biology topics, such as environmental pollution or the effects of climate change. Students are asked to analyse the problem, gather additional information, formulate hypotheses, and propose solutions. He stated that this strategy not only improves conceptual understanding but also enhances curiosity and evaluative thinking in students.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

According to Ms. D.K., the strategy she most frequently employs is Project-Based Learning, especially in the form of essay writing and thematic literary works. Students are given the

freedom to choose relevant social issues, then analyse the problem, evaluate its impact, and express their ideas and solutions through writing. She believes that this strategy encourages students to think not only critically but also creatively. The process of revising their writing and engaging in feedback discussions also serves as a medium to enhance their higher-order thinking skills.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. shared that he often uses problem-solving strategies and open-ended questions in math instruction. Students are not only required to solve problems but also to explain their thinking process and compare different solution methods. Through this strategy, students are invited to think deeply, consider alternatives, and make decisions based on logical reasoning. He added that self-reflection activities after practice exercises are very helpful in improving students' evaluative skills toward their thinking.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. mentioned that she relies on inquiry-based learning and group discussions in teaching social studies. Students are encouraged to investigate social issues such as economic inequality, cultural conflict, or social changes due to technology. Through this strategy, students are prompted to ask critical questions, gather data, analyse, and draw their conclusions. She added that simulations and role-play activities are also frequently used to evaluate the impact of social policies, which indirectly stimulate higher-order thinking skills like evaluation and solution creation.

**Activities and Learning Tasks for Higher-Order Thinking Skills (HOTS)**

Question: Could you provide an example of a classroom activity specifically designed to develop students' critical or creative thinking skills?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. stated that one of the activities she designed to develop students' critical thinking skills is the analysis of local economic cases. Students are divided into groups and given case studies such as regional inflation, unemployment, or market price fluctuations. They are asked to identify the problems, analyse the causes and effects, and then formulate rational solutions based on data. This activity concludes with a presentation and a Q&A session, where students are required to defend their opinions logically.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. explained that he frequently conducts simple experiments followed by analysis, such as experiments on photosynthesis or water pollution. Students are asked to create hypotheses, record observation data, and then analyse and conclude the results. During class discussions, students are encouraged to evaluate whether the results matched their initial hypotheses and explain why. He believes this process is very effective in developing scientific reasoning and critical thinking skills.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. mentioned that she uses argumentative essay writing as a medium to foster both critical and creative thinking. Students choose current topics such as misinformation, freedom of speech, or digital culture, then write essays based on data and personal opinions. In the process, students are encouraged to think critically from multiple perspectives and structure their arguments coherently. She also provides opportunities for revision based on feedback, so students learn to refine their ideas.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. explained that he once conducted an open-ended problem-solving challenge, where students were given everyday situations that required the application of mathematical concepts, such as budgeting or space measurement. Students were not only asked to solve the problems but also to explain the reasoning behind their chosen methods. He encouraged students to compare strategies with one another, which led to critical discussions about the strengths and weaknesses of each approach.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. shared that she once held a mini United Nations simulation in class, where students were assigned as country representatives to discuss global issues such as climate change or international conflict. Students had to conduct prior research, understand their country's position, and construct strong arguments to debate. This activity trained students in analysis, evaluation, negotiation, and creativity in expressing ideas. She considers it one of the most effective activities for simultaneously nurturing both critical and creative thinking.

**HOTS Evaluation or Assessment**

Question 1: What form of assessment do you use to measure students' higher-order thinking skills?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. stated that she uses case-based assessments to measure students' higher-order thinking skills. In this assessment, students are asked to analyse real economic problems, evaluate their impacts, and formulate alternative solutions. She evaluates students based on their ability to process information, construct economic arguments, and produce logical and applicable solutions. The assessment rubric is carefully designed to evaluate aspects of analysis, evaluation, and creativity.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. explained that the form of assessment he uses is based on experiments and scientific reports. Students are required to design experiments, record data, analyse results, and draw conclusions. In this process, students are expected to think critically about variables, make predictions, and evaluate the outcomes. His assessment focuses not only on the final answers but also on the scientific thinking process demonstrated by students during the experiment.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. mentioned that she often uses written assignments and presentations as forms of assessment. For instance, students are asked to write argumentative essays on social issues or compose poems that express social criticism. The assessment focuses on the depth of analysis, the structure of arguments, and the creativity in delivering ideas. She also conducts presentation and discussion sessions to assess how students defend their arguments orally.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. shared that he uses open-ended questions and contextual math projects for assessment. In these tasks, students face real-world problems that require analytical thinking, such as creating a budget plan, calculating the efficiency of a method, or choosing the most logical solution based on data. His assessment emphasises the thinking process, the rationale behind method selection, and the ability to evaluate alternative solutions.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. stated that she uses project-based assessments and role-playing simulations. One example is an assignment where students develop a social analysis report and design a digital campaign as a solution to the issue discussed. The assessment includes how students gather and process data, analyse problems from various perspectives, and formulate creative and well-argued solutions. She evaluates based on the clarity of logical reasoning, data relevance, and the overall quality of the final project**.**

Question 2: Do you design questions that emphasise analytical, synthetic, or creative thinking skills? Could you provide an example?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. stated that she regularly designs questions that emphasise analytical and synthetic thinking. One example she uses is: Analyse the impact of rising fuel prices on microenterprises in your region, and develop a strategy that business owners could implement to cope with the situation. This type of question requires students to interpret data, understand the local economic context, evaluate policy impacts, and propose systematic solutions.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. shared that he creates questions that focus on scientific analysis and evaluation. A sample

question he uses is: A river near the school is experiencing pollution. Based on the visible symptoms, analyse the possible causes of the pollution and evaluate its effects on the aquatic ecosystem. Students are expected to identify causal variables, apply ecological theories, and draw logical scientific conclusions.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. designs questions that highlight discourse analysis and text creation. One example is: Read the following short story, analyse the social values contained in it, and then write a poem or reflective essay that conveys the moral message of the story. This kind of task encourages students to interpret meaning, evaluate context, and express their understanding through original creative work.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. explained that he develops questions that promote solution creation and method evaluation. An example is: Your school has a budget of IDR 10,000,000 for a class event. Create a budget plan that includes categories of expenses, and explain the mathematical rationale behind each allocation. This type of question enhances logical reasoning, analysis, and encourages students to design practical solutions in real-life contexts.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. stated that she integrates social analysis and creative problem-solving into her questions. For instance, analyse the impact of social media on youth culture in Indonesia, and then design a digital campaign aimed at promoting local cultural awareness among young people. This question challenges students to think critically, create meaningful campaigns, and present ideas creatively and persuasively.

**Challenges and Solutions in Implementing HOTS**

Question 1: What are the main challenges you face in implementing HOTS-based learning?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. explained that one of the main challenges she faces is students' low readiness and limited exposure to real-world problems. Many students are used to rote learning and struggle when faced with open-ended or analytical tasks. She also mentioned that students often lack the confidence to express opinions or develop creative solutions. Additionally, the time constraints in the curriculum make it difficult to conduct in-depth discussions or projects.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. stated that a major challenge is the students' limited critical thinking habits and reliance on memorisation. He also finds that the lack of laboratory resources and limited class time hinder the implementation of hands-on, inquiry-based learning that supports HOTS. Moreover, assessing students' higher-order thinking objectively is difficult without clear rubrics and sufficient time for evaluation.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. pointed out that the challenge lies in the students' difficulty in expressing complex ideas both in writing and speaking. Many students struggle to analyse texts or form structured arguments, especially when dealing with abstract or controversial topics. She also noted that some students are reluctant to engage in critical discussions, fearing judgment or making mistakes.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. highlighted that most students associate mathematics only with formulas and exact answers, making it difficult for them to approach open-ended problems creatively. He also added that designing HOTS-oriented math problems that are both relevant and engaging is time-consuming. Some students are also resistant to trying new problem-solving strategies and prefer following standard procedures.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. shared that a key challenge is students' limited access to reliable information sources when conducting research or analysis. She also mentioned that students cannot often synthesise information from different perspectives. Furthermore, not all students are motivated to explore deeper issues, especially when they feel the task does not directly affect their grades.

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Question 2: What strategies or solutions do you usually apply to overcome these challenges?

Teacher 1 (Ms. R.A., Economics Teacher)

Ms. R.A. explained that she overcomes the challenges by scaffolding learning gradually, starting with structured examples before moving to open-ended tasks. She also uses local economic contexts and familiar case studies to make HOTS-related problems more relatable. To build students' confidence, she provides clear rubrics, formative feedback, and encourages a supportive class environment where students feel safe to express ideas.

Teacher 2 (Mr. J.T., Biology Teacher)

Mr. J.T. stated that he applies a step-by-step inquiry model to help students get used to scientific thinking. When resources are limited, he uses virtual simulations or video demonstrations to substitute for laboratory experiments. He also incorporates group discussions and peer evaluation to foster collaboration and allow students to learn from one another, especially in interpreting data and forming conclusions.

Teacher 3 (Ms. D.K., Indonesian Language Teacher)

Ms. D.K. mentioned that she encourages students to develop critical and creative expression by using guided questions, brainstorming sessions, and writing workshops. To reduce anxiety, she allows multiple drafts and revisions before final submission. She also incorporates literature that resonates with students' lives, which helps them relate better to abstract topics and engage more deeply in the analysis and creation process.

Teacher 4 (Mr. A.S., Mathematics Teacher)

Mr. A.S. shared that he often starts with problem-solving routines and introduces real-life math problems incrementally. To help students adapt, he breaks complex problems into smaller parts and guides them through reflective questioning. He also promotes peer tutoring and collaborative problem-solving, where students can explain reasoning to one another and build confidence in exploring various solution strategies.

Teacher 5 (Ms. F.N., Social Studies Teacher)

Ms. F.N. stated that she applies project-based learning and multimedia resources to make HOTS activities more engaging and meaningful. She encourages students to use local issues as research topics to ensure familiarity and relevance. To address students' lack of synthesis skills, she provides graphic organisers and mind maps to help them connect ideas from various sources. She also emphasises process over product, encouraging growth through reflection and feedback.

Question 1: What do you think about classroom learning activities that encourage you to analyse, evaluate, or create solutions to a problem? Do you think those kinds of activities help you think more deeply?

Student 1 (Raisa A., 13 years old):

In my opinion, learning activities that encourage analysis and solution creation are quite challenging, but also enjoyable. For example, when we discussed environmental issues around the school and were asked to create an action plan. At first, I was confused about where to start, but eventually, I was able to think more deeply about the causes and effects of a problem. So yes, I believe activities like that help me think more deeply.

Student 2 (Farhan M., 14 years old):

Activities like discussions and case studies make me think more. Usually, lessons are just about reading and answering questions, but when we're asked to analyse or come up with solutions, I have to think more deeply. I've learned to look at problems from different perspectives. In my opinion, that's a good thing because it helps us not just accept information blindly.

Student 3 (Anita L., 13 years old) :

In my opinion, activities like evaluation or finding solutions make you think hard, but they also help you understand the lesson better. For example, when we were asked to evaluate which government policy would be most effective in reducing pollution, I had to read a lot, join discussions, and choose the most reasonable option. It made me more active, not just sitting quietly in class.

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Question 2: Describe an experience when you worked on an assignment or participated in a classroom activity that you found difficult but helped you learn more. What did you feel and what did you learn from that activity*?*

Student 1 (Raisa A., 13 years old):

> I was once asked to create a campaign poster about the dangers of plastic waste. It was quite difficult because I had to gather data, design the layout, and communicate the message. But since I worked in a group, we helped each other, and I learned how to express my opinions and listen to others' ideas. I felt more confident after completing it, even though I was unsure at first.

Student 2 (Farhan M., 14 years old):

> I was once asked to create a small business plan in Social Studies class. At first, I thought it was just a regular assignment, but it turned out I had to do market research, set product prices, and even plan promotions. I ended up learning new things I had never thought about before. It felt tiring but also made me proud, especially during the presentation when my classmates showed interest in my idea.

Student 1 (Raisa A., 13 years old):

> I once took part in a group debate on a social topic. It was difficult because I had to find data, build arguments, and be ready to answer questions. But from that experience, I learned to be confident speaking in front of others and to think quickly. At first, I was scared, but it turned out to be fun, and I learned a lot from my classmates' opinions.

Table 1
Data Triangulation of Teachers' and Students' Perspectives on HOTS-Based Learning

| Focus Aspect | Teachers' Responses | Students' Responses | Triangulated Analysis |
|---|---|---|---|
| Perception of HOTS Activities | Teachers agree that HOTS activities (e.g., case studies, debates, projects) encourage deeper thinking and engage students in analysis, evaluation, and creativity. | Students also express that HOTS activities are challenging yet enjoyable and help them think more deeply (e.g., action plans, social issue debates, group discussions). | Both groups recognise the value of HOTS in enhancing critical and creative thinking. Students and teachers align in seeing these tasks as more meaningful and thought-provoking than traditional methods. |
| Examples of Classroom HOTS Tasks | Examples include: SWOT analysis in Economics, environmental issue analysis in Biology, argumentative essay writing, open-ended math problems, and UN role-play in Social Studies. | Students recall experiences such as designing a plastic waste campaign poster, creating a small business plan, and participating in classroom debates. | Students' accounts confirm that HOTS tasks are being implemented across subjects, showing consistency with teachers' reports and practical engagement in complex thinking tasks. |
| Challenges Faced | Teachers mention low student readiness, limited time, lack of resources, and students' fear of making mistakes or lack of exposure to real-world thinking. | Students describe initial confusion, difficulty, and anxiety when first engaging with HOTS tasks, especially tasks involving public speaking or abstract thinking. | Both teachers and students acknowledge that HOTS tasks are mentally demanding and initially uncomfortable, especially due to unfamiliarity and confidence issues. |
| Supportive Strategies | Teachers use scaffolding, peer discussions, real-life contexts, formative feedback, visual tools (e.g., | Students feel supported through group collaboration, teacher guidance, and structured | Strategies used by teachers align with what students say helps them most—group work, discussion, and |

| Focus Aspect | Teachers' Responses | Students' Responses | Triangulated Analysis |
|---|---|---|---|
| | mind maps), and group work to facilitate HOTS learning. | tasks that allow them to revise and learn from peers. | gradual task building increase engagement and confidence. |
| Learning Outcomes | Teachers observe improvements in students' argumentation, creativity, solution design, and willingness to take intellectual risks. | Students report gaining confidence, learning to express ideas, thinking critically, and developing real-life problem-solving skills. | Both sets of data indicate positive learning outcomes. Students feel more confident and capable, while teachers observe growth in cognitive and affective domains. |

## Discussion

### Perceptions of HOTS-Based Learning

The interview results indicate that both teachers and students have positive perceptions of HOTS (Higher Order Thinking Skills)-based learning. Teachers believe that implementing HOTS can enhance students' thinking quality, as it requires them not only to memorise information but also to process, evaluate, and create solutions. Students also feel the benefits of this approach, as they are encouraged to think more deeply, understand real-world contexts, and develop broader perspectives. These findings are consistent with Febriani (2020), who stated that HOTS enhances students' readiness to face 21st-century challenges. Nugroho (2018) also emphasised that students feel more active, logical, and not merely recipients of information when HOTS-based learning is applied. Both teachers and students welcomed HOTS-based learning because it makes the learning process more contextual and meaningful (Handayani & Syukur, 2021; Hasanah, 2023; Aprilia et al., 2024).

### HOTS-Based Learning Activities

Teachers implement various HOTS-based learning activities such as case studies, mini research projects, debates, mock trials, as well as thematic essays and poetry writing. These activities are designed to train students' abilities in analysis, evaluation, and creation. Students also shared that they were asked to create campaign posters, develop small business plans, and engage in debates on social issues, which they found challenging but helpful in deepening their understanding. These findings align with research by Nurlaily et al. (2021), which concluded that project-based learning can improve critical and creative thinking skills. Puspitasari et al. (2021) also stated that group discussions and simulations are effective approaches for developing analytical and argumentative skills. Research by Fitriani and Anggraeni (2022) further added that contextual HOTS-based learning supports students in solving real problems systematically and reflectively (Sari, 2023).

### Barriers to Implementing HOTS

Despite showing enthusiasm, both teachers and students face various obstacles in implementing HOTS. Teachers mentioned time constraints, a dense curriculum, and students' lack of readiness as the main challenges. Meanwhile, students admitted feeling confused when first confronted with analytical tasks or asked to express their opinions openly. They also tended to fear making mistakes and lacked confidence in thinking independently. These conditions are supported by Wahyuningsih et al. (2023), who revealed that time limitations and curriculum burdens are major obstacles for teachers. Fauziyah et al. (2021) found that students are not yet accustomed to working on analytical and creative tasks due to the dominance of conventional teaching in schools. Wicaksono et al. (2021) added that low digital literacy and a lack of teacher training are factors hindering the implementation of HOTS learning in secondary schools.

### Strategies to Overcome Obstacles

To overcome these challenges, teachers employ various strategies such as providing scaffolding or gradual assistance, using contextual media and learning resources, implementing collaborative

learning, and giving formative feedback. Teachers also use clear assessment rubrics to help students understand task expectations. Students reported that group work, discussions, and revising assignments based on teacher suggestions greatly helped them understand the material and build confidence. These findings are in line with Widana (2022), who explained that scaffolding is effective in helping students grasp abstract concepts in HOTS. Mulyani and Hasan (2021) stated that collaborative learning and peer-to-peer discussions can reduce students' fear and enhance higher-order thinking skills. Meanwhile, Rosyada et al. (2022) emphasised that feedback and evaluation rubrics are essential for strengthening students' analytical and evaluative abilities in HOTS-based learning.

## CONCLUSIONS

The results of the triangulated interviews between teachers and students indicated a strong alignment in the perception, implementation, and impact of HOTS-based (Higher Order Thinking Skills) learning. Both groups view HOTS as an essential approach that fosters critical, analytical, and creative thinking. Teachers had made efforts to integrate HOTS through various strategies such as problem-based learning, case studies, open-ended tasks, group debates, and interdisciplinary projects. Students positively responded to these approaches, acknowledging that such activities push them to think more deeply and develop real-world problem-solving skills. Despite the enthusiasm, several challenges still hinder optimal implementation, including time constraints, low student readiness, and limited resources. However, these obstacles were addressed through strategic scaffolding, collaborative learning, contextual materials, and continuous formative feedback. The experiences of students also confirmed that support from peers and teachers plays a vital role in their confidence and ability to engage in higher-order thinking. In conclusion, HOTS-based learning had a significant and positive influence on students' intellectual development. To maximise its effectiveness, schools must ensure adequate teacher training, classroom resources, and a supportive environment that nurtures inquiry, creativity, and critical reflection.

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