

# Higher-Order Thinking Skills of Students in Learning the Indonesian Language through Problem-Based Learning

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**ABSTRACT:** Higher-order thinking skills (HOTS) are essential competencies for students today, so they need to be included in one of the main objectives in learning to improve these competencies, including learning Indonesian. This research aims to describe the HOTS of students after the implementation of problem-based learning (PBL) and student responses to the implementation of learning using PBL. Research uses quantitative and qualitative approaches (mixed methods). Measure students' HOTS through tests with essay questions, then observe students' answers with rubrics by HOTS indicators with Likert Scale. Other instruments used were student response questionnaires and observation sheets to measure student responses to applying PBL in Indonesian learning. This research was conducted on 40 students of STMIK Palangka Raya. Three observers analyzed the results of the test answers to the student description questions. The data obtained were then analyzed quantitatively and then described qualitatively. The results of observations of each aspect and indicator are categorized based on the rubric/criteria for the level of performance that has been determined and then analyzed descriptively—analysis of cognitive results by measuring completeness classically and individually. The research results show that Indonesian learning by using PBL fosters HOTS of students. The mean of HOTS from the observation result is 77.00% or in the excellent category. Data from the mastery learning test analysis showed that 92.5% of students completed it with an average score of 78.75. The results of the analysis of student questionnaire responses obtained an average score of 72.50% or in the excellent category. What can be known about students' responses after using the PBL learning model and their reasons? Many agree that the PBL model is applied during the learning process.

**KEYWORDS:** HOTS, PBL, learning

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## I. INTRODUCTION

Higher-order thinking skills (HOTS) are one of the critical learning goal achievements because they will positively influence students' cognitive learning outcomes (Syarifah et al., 2019). To solve everyday problems, students need HOTS (Deviana & Sulistyani, 2021). Students can develop HOTS by practising expressing their thoughts so others know them. With HOTS, students are trained to analyze, evaluate, and create and can think at a higher level during the learning process to support cognitive learning outcomes (Djumadi, 2021). Logical, analytical, responsive, critical, creative, thorough, accurate attitudes, not giving up quickly, and responsible problem-solving are essential competencies in the learning process (Hamid, 2017). That can be done through learning, including in Indonesian language courses, to achieve these competencies.

Learning Indonesian, in general, has yet to be HOTS-oriented, but mastering concepts by memorizing is still the main focus. HOTS is the ability to think critically and creatively to solve problems (Widana, 2018). In learning Indonesian, HOTS is essential to develop students' critical and creative thinking skills in solving problems. The development of HOTS aims to equip students with skills in making decisions and giving reasons (Widana, 2018). students can decide what can be trusted and what should be done, create new ideas and predictions, and solve problems through HOTS. Students' HOTS in learning Indonesian must still be higher in the field. One causal factor is that HOTS has yet to be a priority in learning objectives.

Data from a survey of 30 STMIK Palangka Raya students by giving questions that measured HOTS in the material on methods for preparing essay outlines concluded that students' HOTS was still low and needed to be improved. The results of the analysis showed that almost all students were not able to answer the HOTS questions. The interview results showed that, according to the students, the questions given were new, and they had never encountered questions like this before. The survey results show that the focus on developing HOTS needs to be increased in Indonesian language learning. An educator, in this case a lecturer, needs the ability to plan and carry out practical lectures, empower students to think logically and have the attitude and skills to develop HOTS. Educators must be able to prepare and implement systematic learning to effectively achieve

learning objectives (González-González & Jiménez-Zarco, 2015). This description underlies the importance of learning Indonesian to empower HOTS. The data shows a need to increase HOTS in Indonesian language learning. The development of HOTS has yet to be facilitated in the learning tools for Indonesian language courses. Therefore, it is essential to research the application of PBL to grow student HOTS.

Preparation for learning is carried out and outlined in learning tools, namely the means for achieving learning objectives and creating an effective and efficient learning process by the learning objectives to be achieved (du Plessis, 2020; Faraniza, 2021; Sari & Wahyudin, 2019). Research by Setiawan et al. (2018) shows that HOTS can be increased effectively to 77.77% through proper planning and learning. Field studies show that educators have yet to develop many learning tools independently for learning Indonesian. The observation results show that learning tools still need to be developed. The questionnaires and interviews with Indonesian language lecturers showed that four people (66.67%) used Internet sources to prepare learning tools, and two others (33.33%) prepared their plans. Most lecturers have yet to use it. Semester Lecture Plan (RPS) with a model that can develop student skills. The material used in lectures is generally in the form of PowerPoint downloaded from the internet. This data underlies the need to develop RPS to empower student HOTS with a suitable model according to the goals to be achieved. Educators must be able to determine a learning model that is appropriate to the goals they want to achieve. Among them is the development of HOTS by applying problem-based learning (Rismi, 2021).

PBL focuses on providing problems to facilitate students in empowering critical and creative thinking skills to solve real, unstructured problems. These stages include (1) presenting the problem, (2) planning to solve the problem, (3) investigating the problem, (4) presenting the results, and (5) analyzing and evaluating (Dabbagh, 2019).

## II. METHODOLOGY

This type of research is descriptive with a quantitative and qualitative approach (mixed method). The HOTS indicators in this research are (1) making decisions, (2) problem identification, (3) analysis, (4) proposing solutions, (5) conclusions, (6) evaluating, (7) predicting, (8) deductive thinking, (9) inductive thinking, and (10) creative thinking. They measured student HOTS through tests with detailed questions and observed student answers with a rubric according to the HOTS indicators with a Likert Scale. Other instruments used in this research were student response questionnaires and observation sheets to measure student responses to applying PBL in Indonesian language learning. This research was conducted on 40 STMIK Palangka Raya students. Three observers analyzed the results of students' essay test answers. The data obtained was then analyzed quantitatively and then described qualitatively. Quantitative analysis of observation sheets by three observers using reliability refers to (Siagan et al., 2019). Observation results from each aspect and indicator are categorized based on predetermined rubrics/criteria for achievement levels, and descriptive analysis is then carried out. Cognitive learning outcomes are measured using a description test. Analyze cognitive results by measuring completeness classically and individually. The cognitive results were increased by analyzing the average before and after.

## III. RESULTS AND DISCUSSION

Data from students' HOTS measurements was obtained by observation as the total score for each HOTS indicator. The measurement results show a range of levels of achievement from poor to good. The reliability value of the observation results from 3 observers was 0.91. The reliability category is outstanding so that the observation results can be used. Data on total scores and categories for each HOTS indicator from the results of data analysis are shown in Table 1.

**Table 1. Data on Total Score and Category for Each HOTS Indicator**

HOTS aspect	Indicator	Score (%)	Level of Achievement
Making Problem-Solving Decisions	Make decisions	85.00	Very good
	Identification of problems	72.50	Good
	Analysis	92.50	Very good
	Propose a solution	95.00	Very good
	Conclusion	80.00	Very good
Critical thinking	Evaluate	75.00	Very good
	Predict	72.50	Good
	Deductive thinking	67.50	Not good
Creative Thinking	Inductive thinking	60.00	Not good
	Think creatively	70.00	Good

The research results show that learning Indonesian using PBL materials to prepare essay outlines can increase students' HOTS. That can be seen from Table 1, showing that the average HOTS from observation results is 77.00% or in the excellent category through the implementation of PBL. For each HOTS indicator,

there are variations in the results obtained. Of the ten HOTS indicators, there are two indicators with poor performance, two with good performance, and six with excellent performance. These results show that students' HOTS achievement level is excellent. The results of these observations are described again for each indicator, as shown in Table 2.

**Table 2. Observation Results of Achievements Per Indicator**

Indicator	Number of Students				Total
	Very good	Good	Not enough	Very less	
Make decisions	13	21	4	0	40
Identification of problems	14	15	8	3	40
Analysis	15	22	3	0	40
Propose a solution	17	21	2	0	40
Conclusion	14	18	7	1	40
Evaluate	11	19	7	3	40
Predict	11	20	8	3	40
Deductive thinking	8	19	9	4	40
Inductive thinking	6	18	10	6	40
Think creatively	8	20	9	3	40

Indicators of decision-making thinking skills, more than half of the students are classified as good. There were no students who received abysmal achievement levels. From this indicator, students' decision-making thinking skills are excellent. In science, decision-making skills are essential. Scientific thinking is closely related to decision-making. The problem analysis skills of students are classified as very good; a few students are in the poor category. Problem analysis is needed before finding a solution to solve a problem. The indicator for proposing solutions is the indicator that has the highest score in measuring student HOTS because almost all students are in the sound and excellent categories. Observation data for concluding, predicting, deductive, inductive, and creative thinking indicate that most students are in the sound and excellent categories. However, some students are still in the not-so-good category, some even naughty. The deductive and inductive thinking indicators have the lowest achievements, so they need more attention and effort to improve them.

The research results show that HOTS in students grows well through implementing PBL but still needs attention to be developed. Students in their first year of college must receive educators' motivation to develop HOTS. Students with high academic scores also tend to have high HOTS (Moallem, 2019). Good HOTS mastery will impact student academic achievement. HOTS development can be implemented by implementing appropriate strategies and learning models (Sulistyanto et al., 2022; Widana, 2018). That is in line with the theory that states that in cultivating students' HOTS, learning is needed to provide accurate results of the research conducted (Hassan et al., 2018). show that implementing the PBL model influences students' HOT problems, active discussions, investigations, problem-solving, and exchanging ideas (Aisy et al., 2020). The application of the PBL model can encourage students to think creatively, act deliberately, reason and communicate between students more effectively, represent and motivate abilities, and improve cognitive learning outcomes (Fita et al., 2021; Ma et al., 2018). In line with Ulger (2018), their research found that learning device products with the PBL model were effective regarding HOTS. Applying PBL empowers students to think more rationally and creatively and communicate effectively. According to (Barrett, 2016), in the PBL learning model, students are more empowered in their learning abilities. Furthermore, research by Ajai et al. (2013) found that students could control thinking and problem-solving and develop practical skills by applying PBL.

Classical cognitive learning outcomes are completed if  $\geq 85\%$  of students complete the minimum criteria set by achieving a score of  $\geq 70$ . Test analysis data shows that 92.5% of students complete with an average score of 78.75, which increases the pretest to posttest mean. There is a significant difference between the pretest and posttest results. The implementation of PBL influences students' cognitive learning outcomes. That is because applying PBL facilitates students to develop their thinking skills and creativity, analyze problems, and have various ways of thinking to solve them (Dabbagh, 2019). Even with the application of PBL, students not only master their cognitive understanding but can implement this knowledge in everyday life (Ningtyas et al., 2019).

The analysis of student response questionnaires showed that the average score was 72.50% or in the excellent category. Students are happy with the application of PBL because it can help and facilitate the development of their thinking, which impacts the mastery of concepts. Research by Kuvac and Koc (2019) found that students respond well to implementing PBL.

#### IV. CONCLUSION

The research and data analysis results show that applying PBL in Indonesian language courses, the material on methods for preparing essay outlines can increase students' HOTS to the excellent category. PBL is

also practical in completing cognitive learning objectives both classically and individually. Student responses to learning Indonesian through the application of PBL, as measured using a student response questionnaire, showed that students responded well to the application of PBL. That is because PBL is felt to help students understand the learning material more efficiently.

This research shows that applying PBL can increase HOTS and good student responses so the PBL model can be recommended for frequent application in the learning process. Further research is needed regarding applying PBL related to HOTS in Indonesian language courses with other material topics. That is intended to equip students with competencies as learners, especially regarding HOTS, which is helpful for problem-solving skills that can be implemented in everyday life.

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