

# Profile of High Order Thinking Skills of Students in Sociology Learning at IKIP Budi Utomo Malang as the Basis for E -Evaluation Development

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**Abstract.** High Order Thinking Skill (HOTS) is one of the competencies that must be developed at IKIP Budi Utomo. Empowering HOTS for students should be done to answer the challenges of the 21st century. It can be done effectively by utilising the technology of learning innovation. This study describes the profile of students ability of HOTS in Sociology Education study program at IKIP Budi Utomo Malang. This research was a descriptive research with survey method. The study was conducted by distributing the HOTS questionnaire developed by researchers consisting of 5 indicators. The results showed that all students were familiar with HOTS, and 29.71% of them were able to explain HOTS well. Knowledge of individual thinking strategies on average is 55.74%. Knowledge about the genre of thought is dominated by creative thinking (75%), and followed by an inquiry (68.96%) and problem-solving (65.52%). 38.79% of students have knowledge about metacognition, and 33.69% already have good thinking habits, but 38.46% of them still do not have a good culture of thinking as knowledge about additional problems. This information base can be used in developing e-evaluation.

**Keywords:** *high order thinking skills, e-evaluasi, sociology learning*

## INTRODUCTION

High Order Thinking Skill (HOTS) is a competency that needs to be developed at IKIP Budi Utomo. One of many ways to answer 21st-century skills as an outcome of student achievement during the Bachelor degree of History and Sociology Education at IKIP Budi Utomo Malang. High-level thinking can occur if there is a conflict of new knowledge with information that already exists so that the process of connecting, rearranging and expanding information can be used to solve a problem [1]. Based on Bloom's cognitive level, the higher-order thinking aspect refers to the ability to analyse, evaluate and create, while the aspects of remembering, understanding and applying are

classified as low-level thinking abilities (LOTS) [2]. The ability to think at high level of thinking will help someone in solving their problems in daily life through logical reasoning, which starts with knowing the problem, understanding, connecting [1], analysing, evaluating it in new situations [3]. It can also be interpreted that HOTS has a higher level than usual thinking abilities.

Several studies on HOTS are quite informative and extensive. The highest level of Bloom's taxonomy is an evaluation that requires an assessment of an idea or material. After that, Anderson and Krathwohl [2] changed the Synthesize category to create a category and placed at the top of Bloom's taxonomy. This concept shows that there are changes in levels in HOTS. HOTS formed and transcended Bloom's taxonomy, producing discrete dimensions related to critical thinking, creative thinking, problem-solving, decision making and metacognition [4]. The HOTS dimension includes four categories, namely: (a) Knowledge of individual thinking strategies, including the ability to make comparisons, formulating justified arguments, drawing legitimate conclusions; (b) Knowledge of genres of thinking such as argumentation, inquiry learning, problem-solving, critical thinking, scientific thinking, creative thinking; (c) Knowledge of metacognition which can be done by thinking about one's own thoughts; and (d) knowledge of a variety of additional issues such as thinking habits or culture of thinking [5]. HOTS can be characterized by its original argument based on information [6]. This can refer to critical thinking that focuses on cognitive tasks related to abstractions that lead to original arguments, theoretical information [7].

HOTS is a complex study and may not be easy to define, but its characteristics are quite easily observed in practice. Commitment to HOTS in sociology learning at IKIP Budi Utomo is relevant to global economic growth, information and communication technology development, knowledge-based economics, and the fast-moving world. In fact, HOTS is an indispensable skill for any individual in any educational environment [4]. In addition, Fisher [8] explained that the development of HOTS is a complement to lifelong learning. In other words, endless thought processes can respond

to real-world demands [4].

Several previous studies have revealed how the learning process improved HOTS students through certain learning [1], [3], [4], [8]–[11], the quality of teachers in empowering HOTS [5], [12], and his evaluation of sociology learning [7]. However, its application by utilizing technology media is still not done. HOTS empowerment in higher education is expected to be more leverage if carried out simultaneously with the process of evaluation and application of technology. The proximity of students to technology is one way of effective learning activities for students. The right approach and strategy can help the learning process move optimally. Based on this, it is necessary to know the profile of students' HOTS in Sociology Learning. The initial knowledge is expected to be used as a basis for compiling e-evaluations that emphasize the empowerment of HOTS.

**METHOD**

This research is a descriptive research with survey method. The research subjects were students of the History and Sociology Education Study Program, with a total of 116 students spread across four batches, namely 2016, 2017, 2018, and 2019. The instrument used in this study was a questionnaire developed by researchers to find out the HOTS knowledge of students. The questionnaire consisted of 15 questions with five indicators, namely 1) knowledge of HOTS, 2) knowledge of thinking strategies, 3) Knowledge of genres of thinking, 4) knowledge of metacognition, and 5) knowledge of a variety of additional issues. Through this questionnaire, qualitative data can be identified, namely student's initial knowledge of HOTS (indicator 1), and quantitative data, namely student scores in answering HOTS dimensions on indicators 1-5. Qualitative and quantitative data were analysed using the descriptive analysis to find out a complete and complete profile.

**RESULT & DISCUSSION**

The results of research conducted to refer to HOTS knowledge and aspects of the HOTS domain. Regarding the knowledge of HOTS (indicator 1), all students know about HOTS, but 70.69% of students still cannot explain HOTS well or are limited to translating. The second indicator is the knowledge of individual thinking strategies. On this indicator, the aspect measured is related to the ability of students to make comparisons, formulate justified arguments, draw valid conclusions. Figure 1 shows the results of students' knowledge of individual thinking strategies. The average knowledge of individual thinking strategies based on these aspects is 55.74%.

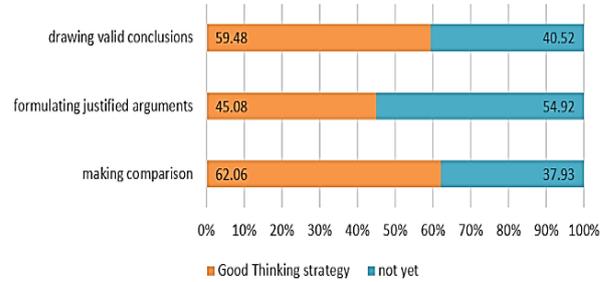


Figure 1. Results of students' knowledge of individual thinking strategies

The third indicator is knowledge about the genre of thinking, such as argumentation, inquiry learning, problem-solving, critical thinking, scientific thinking, creative thinking. The percentage of distribution results are known in Figure 2. Knowledge of metacognition is the fourth indicator that can be done by thinking about one's own thoughts. This indicator refers to the ability of students to think metacognitively. The results showed that 38.79% were able to think metacognitively, while 61.21% still needed to be empowered. Knowledge of additional problems (indicator 5) related to thinking habits or thinking culture. The results of the questionnaire showed that 33.69% already had good thinking habits, but 38.46% of them still did not have a good culture of thinking. This means that 61.54% are undergoing a process towards a culture of good thinking.

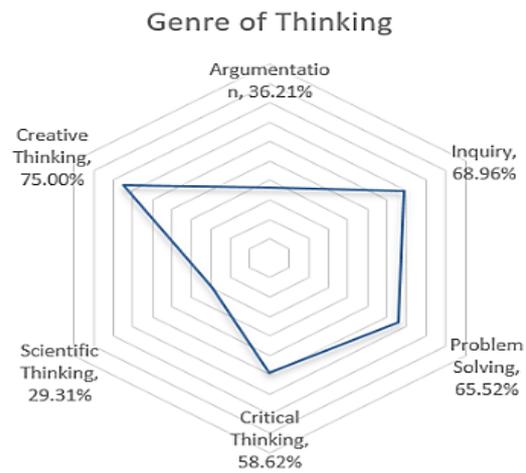


Figure 2. Genre of Students' Thought

The results of the research from the student questionnaire revealed very good opinions. Student A mentioned that "HOTS is the ability to think highly that refers to the ability to analyse, evaluate, and create something new, and be able to find solutions to problems with these abilities". These findings indicate that there is a possibility that the student has become aware of his thinking ability. Other findings show that 63.79% do not know the revised Bloom Taxonomy (knowing, understanding, applying, analysing, evaluating and creating [2]). This result is in line with previous field research

which explains that most teachers know what HOTS is about, but not many can prove it [7], [13]. This knowledge is likely to occur because there are students who have not received information about the concept of Bloom's Taxonomy.

Based on the results of these indicators, it can be seen that in general, there is a need for HOTS empowerment for students. HOTS needs to be taught to students either independently or with the help of lecturers. Table 1 shows a comparison between independent activities and routine learning.

Table 1. Comparison of HOTS independently and Routine Learning [8]

| <b>HOTS independently</b>  | <b>Routine Learning</b>  |
|--|--|
| <ul style="list-style-type: none"> <li>▪ Not routine / not fully known in advanced</li> <li>▪ complex</li> <li>▪ Yields many solution/ point of view</li> <li>▪ Involves uncertainly</li> <li>▪ Involves the process of making meaning</li> <li>▪ Hard work, requires mental work</li> </ul> | <ul style="list-style-type: none"> <li>▪ routine/results are planned in advance</li> <li>▪ Intent and clear purposes</li> <li>▪ Yields convergent results</li> <li>▪ Search for certainly</li> <li>▪ Involves process</li> <li>▪ Assessed outcome rather than process</li> </ul> |

Based on Table 1, HOTS learning independently and routine activities have both positive and negative sides. Seeing these conditions, HOTS learning cannot come from only one side (internal or external), but it needs both. Previous findings about HOTS in the classroom indicate that the lack of the role of educators in improving HOTS students' abilities. This happens because educators are more interested in mastering the material [4]. Another reason is that there is rarely an effort by educators to maintain the flow of high-level students' thinking, due to the teacher's inability or disinterest in pursuing learning outcomes other than learning [10]. Furthermore, educators feel that thinking ability is not one thing that can be taught and occurs naturally by one's social and cultural values. This condition is inversely proportional to some previous studies that thinking skills need to be trained and can be developed because it cannot happen automatically.

Besides the learning process, evaluation is also seen as one aspect that is able to influence the development of HOTS. Assessment of students' thinking skills based on the final result (only gives an assessment: true or false, good or bad, good or bad, appropriate or inappropriate) should begin to be abandoned [14]. Conventional learning that is designed based on content without regard to students' cognitive demands has a negative impact on their thinking abilities. Students need to understand, apply, connect these concepts in the real world and solve problems in their daily lives [10].

Conditions like this will bring HOTS students and empower them throughout their lives.

Tan [4] revealed the challenges in developing HOTS students from several sides apart from educators. In terms of time, HOTS requires quite a long time because students need to reflect, articulate, justify, interact, discuss, question, etc., all in one-time frame. Therefore, the right planning and time allocation greatly influence the success of HOTS. In terms of students, some students (even good ones) have the mentality to choose the easiest and fastest way, because they don't like it and don't have the motivation to think. Judging from the learning atmosphere, the arrangement of the table facing the teacher is still largely maintained. Classrooms will be better if arranged in an effective form for multi-directional activities (teacher with students, students with students). If the classroom for intellectual exchange can be brought to life, it can enable students to think deeply. From the Assessment side, teachers are concerned with accountability issues from standardised tests (UN), so teachers must stick to conventional classroom practices to meet the exam requirements. Assessments that are directed to the process, but still remain based on the content. This is supported by Zohar's statement that standardised tests hinder and contradict the development of HOTS [5]. Another step that can be taken is the use of alternative assessments by teachers by utilising the flexibility of school-level assessment effectively.

The results of this needs analysis are expected to have a significant impact and knowledge that plays a role in empowering HOTS. Seeing the current conditions, the ability of students is still low, but efforts to develop it need to be immediately followed up. Some learning strategies that are suitable with modern times are encouraging students to think critically and technological skills that require high-level thinking skills, directly and indirectly, make them trained so that HOTS can be developed [10]. E-evaluation is one solution that can be applied in empowering HOTS. E-evaluations can provide experience in measuring their abilities and provide opportunities for students who are not comfortable with formal style evaluations. E-evaluation is an emerging and interesting technology to be tested for its effectiveness because of its wide spectrum of features such as portability, interactivity, flexibility, and everywhere. Emran's results [15] showed a statistically significant difference between students in terms of their sex where the difference was preferred by male students. On the other hand, the results revealed no statistically significant differences between students' attitudes in terms of their age, degree and department. In accordance with descriptive statistics, the results revealed that 94% of students used technology for the evaluation process.

### CONCLUSION

The results showed that 1) all students were familiar with HOTS, and 29.71% of them were able to explain HOTS well. 2) Knowledge of individual thinking strategies on average is 55.74%. 3) Knowledge about the genre of thought is dominated by creative thinking (75%), inquiry (68.96%), problem solving (65.52%), critical thinking (58.62%), argumentation (36.20%), and scientific thinking (29,31%), 4) Student metacognition knowledge is 38.79% and 5) on knowledge of additional problems, 33.69% already have good thinking habits, but 38.46% of them still do not have a good culture of thinking.

### REFERENCES

- [1] I. F. Romadhoni and L. Nurlaela, "Higher Order Thinking Skills to Enhance Millennial Students Through Active Learning Strategies," in *Proceedings of the International Conference on Indonesian Technical Vocational Education and Association*, 2018, vol. 201, pp. 91–94.
- [2] D. R. Krathwohl, "A Revision of Bloom 's Taxonomy ;," vol. 41, no. 4, pp. 212–219, 2002.
- [3] A. Abdullah, S. W. Albeta, and A. Ardiansyah, "Profile Of Chemical Teacher Candidates' Higher Order Thinking Skills (HOTS) on Ionic Equilibrium In Solution Topic," *Unnes Sci. Educ. J.*, vol. 7, no. 3, pp. 300–305, 2018.
- [4] S. Y. Tan and S. H. Halili, "Effective Teaching of Higher-Order Thinking (HOT) in Education," *Online J. Distance Educ. e-Learning*, vol. 3, no. 2, pp. 41–47, 2015.
- [5] A. Zohar, "Challenges in wide scale implementation efforts to foster higher order thinking (HOT) in science education across a whole school system," *Think. Ski. Creat.*, vol. 10, pp. 233–249, 2013.
- [6] R. P. Massengill, "Sociological Writing as Higher-level Thinking: Assignments That Cultivate the Sociological Imagination," *Teach. Sociol.*, vol. 39, no. 4, pp. 371–381, May 2011.
- [7] D. Kane and K. Otto, "Critical Sociological Thinking and Higher-level Thinking: A Study of Sociologists' Teaching Goals and Assignments," *Teach. Sociol.*, vol. 46, no. 2, pp. 112–122, 2018.
- [8] R. Fisher, "Thinking Skills to Thinking Schools: Ways to Develop Children's Thinking and Learning," *Early Child Dev. Care*, vol. 153, no. 1, pp. 51–63, Jan. 1999.
- [9] A. J. Cañas, P. Reiska, and A. Möllits, "Developing higher-order thinking skills with concept mapping: A case of pedagogic frailty," *Knowl. Manag. E-Learning*, vol. 9, no. 3, pp. 348–365, 2017.
- [10] M. Hugerat and N. Kortam, "Improving higher order thinking skills among freshmen by teaching science through inquiry," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 10, no. 5, pp. 447–454, 2014.
- [11] S. Temel, "The effects of problem-based learning on pre-service teachers' critical thinking dispositions and perceptions of problem-solving ability," *South African J. Educ.*, vol. 34, no. 1, pp. 1–20, 2014.
- [12] A. H. Abdullah, M. Mokhtar, N. D. A. Halim, D. F. Ali, L. M. Tahir, and U. H. A. Kohar, "Mathematics teachers' level of knowledge and practice on the implementation of higher-order thinking skills (HOTS)," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 13, no. 1, pp. 3–17, 2017.
- [13] M. L. Rickles, R. Z. Schneider, S. R. Slusser, D. M. Williams, and J. F. Zipp, "Assessing Change in Student Critical Thinking for Introduction to Sociology Classes," *Teach. Sociol.*, vol. 41, no. 3, pp. 271–281, 2013.
- [14] M. G. Didis, A. K. Erbas, B. Cetinkaya, E. Cakiroglu, and C. Alacaci, "Exploring prospective secondary mathematics teachers' interpretation of student thinking through analysing students' work in modelling," *Math. Educ. Res. J.*, vol. 28, no. 3, pp. 349–378, 2016.
- [15] M. Al-Emran and S. A. Salloum, "Students' attitudes towards the use of mobile technologies in e-Evaluation," *Int. J. Interact. Mob. Technol.*, vol. 11, no. 5, pp. 195–202, 2017.