

HOTS CRISIS IN GEOGRAPHY CLASSROOM: ANALYSIS OF FACTORS CAUSING LOW C4 ABILITY OF HIGH SCHOOL STUDENTS

Rana¹, *Ahyuni², Saiful Adli bin Suhadak^{3,4}

¹Master Program of Geography Education, Faculty of Social Science, Universitas Negeri Padang

²Department of Geography, Faculty of Social Science, Universitas Negeri Padang

³Social and Behavioral Sciences, Universiti Malaya

⁴Kuala Langat Education Officer, Malaysia

Email: ahyuniaziz@fis.unp.ac.id

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ABSTRACT: Analytical skills (C4) are an essential part of Higher Order Thinking Skills (HOTS), which is the main requirement in the Merdeka Curriculum. However, students' analytical abilities in the material on Village and City Spatial Interaction remain low. This study aims to identify the factors that cause the low analytical ability of grade XII students at SMA Negeri 3 Bukittinggi. The research method uses a mixed-methods approach, combining quantitative analysis of students' daily test results based on HOTS essay questions and qualitative analysis through questionnaires and interviews to explore the causal factors. A total of 132 students were analyzed for the ability category, and 20 were purposively selected for in-depth qualitative data collection. The results showed that 86% of students were in the Not Comprehending category, characterized by descriptive, non-concept-based answers. The main findings revealed that low analytical ability was caused by weak mastery of the geography concept, a lack of familiarity with HOTS questions, the absence of an analytical assessment rubric, and a learning process still oriented towards memorization. Conceptual models derived from data synthesis indicate that weak conceptual input and non-HOTS-oriented learning directly affect the low quality of student analysis. This research emphasizes the need to strengthen concept-based learning and improve the application of HOTS questions to enable students' analytical skills to develop optimally.

Keywords: HOTS, Analytical Skills, Causal Factors, Rural-Urban Interaction

1. INTRODUCTION

High-level thinking skills (Higher Order Thinking Skills/HOTS) are a key element in 21st-century learning, especially in subjects that demand the analysis of phenomena such as geography. HOTS It is necessary for students not only to receive information but also to process it into a deeper understanding and make it relevant to real-life contexts [1] [2]. Important HOTS include analytical abilities, as they help students understand the patterns, relationships, and complex structures in a phenomenon [3].

In the Indonesian curriculum, the Merdeka Curriculum emphasizes that learning must develop students' abilities to analyze, evaluate, and create. HOTS is the leading indicator in measuring the effectiveness of the implementation of the Merdeka Curriculum, especially for problem-solving-oriented subjects [4]. This aligns with the view [5], which emphasizes that analysis is at the core of high-level thinking skills that determine student

success.

Higher-order thinking skills (HOTS) form the basis for the development of analytical skills (C4) in geography learning in schools. Geography as a discipline aims to develop students' understanding of spatial relationships, human interaction with the environment, and the processes that shape spatial patterns. One of the geography materials that requires high analytical skills is the Spatial Interaction of Villages and Cities. This material requires students to read the social, economic, and physical dynamics that affect each other between village and urban areas. Urban village interaction is a complex phenomenon that requires understanding concepts such as accessibility, growth centers, population movement, and spatial structure. This is why analytical skills are so crucial for students to explain the phenomenon from a geographical perspective.

However, various studies show that Indonesian students' analytical ability in geography subjects

remains low. This aligns with the analysis of learning outcomes at SMA Negeri 3 Bukittinggi, which shows that students have low analytical ability in the Village and City Spatial Interaction material. Of the 132 grade XII students of SMA Negeri 3 Bukittinggi who worked on HOTS-based questions, 113 students were in the not understanding category, 15 in the understanding enough category, and 1 in the understanding category.

The low HOTS ability among students is due to teachers often giving low-level questions (C1–C3) [6]. The low quality of evaluation also affects students' ability to solve analytical problems. Research [7] stated that most teachers have not been able to develop evaluation instruments that measure high-level thinking skills validly and reliably.

Concept understanding also plays a strong role in students' analytical skills. Students who do not have an adequate mastery of concepts will have difficulty connecting phenomena with theories, so the analysis tends to be superficial. Students with low conceptual understanding tend to give descriptive, rather than analytical, answers to the urban village phenomenon.

Learning motivation is also an essential factor that determines students' analytical abilities. Intrinsic motivation significantly influences the depth of information processing and students' tendency to think critically [8]. In the context of geography learning, students with low motivation tend to avoid high-level questions because they are considered difficult [9].

The lack of implementation of problem-based learning also affects students' weak analytical skills. The use of model-based problem-solving can improve analytical and problem-solving skills by directly involving students in the exploration of phenomena [10][11].

Looking at recent findings, it is clear that a combination of factors, including low conceptual understanding, a lack of HOTS questions, a lack of assessment rubrics, weak learning motivation, and fewer contextual learning strategies, influences students' analytical abilities. Therefore, this study is essential for identifying the dominant factors contributing to students' low analytical ability in the Village and City Spatial Interaction material at SMAN 3 Bukittinggi, so that a more effective geography learning strategy can be formulated in the future.

2. METHODS

The research method used in this study is a mixed-methods approach, combining quantitative and qualitative methods to obtain a comprehensive picture of the causes of students' low analytical

ability (C4). A quantitative approach is used to analyze students' daily test results using HOTS-based essay questions, so that the level of mastery of concepts and the categories of students' analytical abilities can be numerically determined. Meanwhile, a qualitative approach was used to explore the factors underlying low analytical ability through questionnaires and interviews with students and teachers. The research subjects consisted of 132 grade XII students, who served as a sample for ability analysis. In contrast, 20 other students were selected as questionnaire respondents through purposive sampling to delve deeper into the factors that cause low analytical ability. Purposive sampling was used to choose qualitative respondents from each ability category. Qualitative data are analyzed through reduction, presentation, and conclusion drawing, resulting in a conceptual model of the relationships among concept understanding, habituation to HOTS questions, and student analysis results. This mixed-methods approach was chosen to deepen quantitative data on student achievement by complementing it with qualitative findings on the causes.

3. RESULTS AND DISCUSSION

3.1 Low Mastery of Geography Concepts

The results showed that 86% of students were in the Not Comprehensible category, characterized by simple, descriptive answers based on life experience rather than on the concept of geography. This finding indicates a weakness in conceptual understanding, namely, students' ability to build conceptual understanding to explain spatial phenomena. A lack of understanding of the concept prevents students from linking the phenomenon of urban villages to geography, resulting in a shallow analysis.

In addition, geography learning requires strong conceptual activities to help students organize spatial information into a meaningful knowledge structure [12]. Without a concept, students are only able to give surface answers, such as traffic jams, garbage, and many immigrants, without looking at spatial relations.

National studies also show that mastery of the geography concept among high school students remains low. Students tend to memorize definitions rather than understand the relationships among ideas. As a result, they fail to analyze when facing spatial phenomena [13]. This is reinforced by [14], which states that geography learning in schools still tends to be material-oriented rather than conceptual understanding that serves as the basis for analysis.

Thus, students' low analytical ability in the material on village-city interaction is not only influenced by the lack of practice questions but,

more fundamentally, by a weak conceptual foundation. Without a correct understanding of the concept of geography, students do not have an adequate frame of mind to conduct analysis.

3.2 Lack of Familiarity with HOTS Questions by Teachers

The teacher said that HOTS questions are rarely used due to time constraints and the difficulty of creating analytical questions. This condition causes students to become accustomed only to C1–C3 questions (remembering, understanding, applying), so that cognitive habits for analysis are not formed.

The lack of teacher training in preparing HOTS questions leads them to avoid C4–C6 questions, even though the curriculum has demanded them. Teachers view analytical questions as more difficult, time-consuming, and requiring special rubrics [15]. These findings are in line with international studies by [16], which states that teachers often lack the pedagogical and evaluative skills to build a culture of HOTS in the classroom.

In addition, the research [17] also emphasizes that geography learning is still often content-oriented and has not built a learning experience that demands analysis, evaluation, and synthesis. Students will find it challenging to master HOTS without gradual and consistent practice from the teacher [18].

Therefore, teachers' low habituation to HOTS questions is a direct cause of students' weak analytical skills. Without regular exposure to high-level cognitive activity, students do not develop analytical thinking habits.

3.3 Conceptual Model of Low Analytical Ability (C4)

Based on a synthesis of research findings and the literature, the conceptual model of the causes of students' low analytical abilities can be explained through the relationships among inputs, processes, and outputs.

Understanding concepts is the primary foundation of analytical skills. Analytical abilities can only emerge if there is a strong conceptual representation [19].

The unusual HOTS questions and the absence of assessment rubrics discourage analysis [20]. The learning process also does not provide a HOTS-oriented cognitive experience.

Without inputs and processes that encourage the development of higher-level thinking, students produce fact-based answers, rather than concepts, as found in 86% of students.

The following conceptual model describes the causal flow

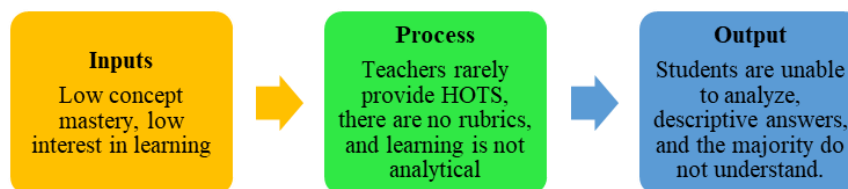


Figure 1. Causal conceptual model.

This model is consistent with the HOTS framework proposed by Anderson & Krathwohl, as well as international studies on internal and external factors that influence student analysis.

4. CONCLUSION

The low analytical ability (C4) of students in rural-urban spatial interaction material is due to weak mastery of the geography concept and a lack of familiarity with HOTS questions in learning. Most students (86%) were able to provide experiential-based descriptive answers. Still, they did not associate them with spatial concepts such as

accessibility, territorial hierarchy, and land-use values, indicating that a conceptual foundation for analysis has not been established. On the other hand, teachers rarely use C4 questions due to time constraints, difficulty in compiling them, and the absence of assessment rubrics, so students do not have the opportunity to practice a high-level mindset. These two factors result in a learning process that does not support the development of HOTS, leading to a superficial, non-concept-based student answer.

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