# IMPLEMENTATION OF DIFFERENTIATED LEARNING TO ENHANCE CRITICAL THINKING SKILLS IN ELEMENTARY SCHOOL STUDENTS

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**Abstract:**This research aims to develop and implement a differentiated learning model to enhance critical thinking skills among elementary school students. The method used in this study is Research and Development (R&D), which consists of the stages of needs analysis, learning model design, trials, and evaluation. The differentiated learning model was developed by considering differences in students' learning styles, abilities, and interests, which is expected to encourage students to think more critically when solving problems. The research results show that the implementation of differentiated learning can enhance students' critical thinking skills, as evidenced by the increase in critical thinking test scores and positive responses from students towards the conducted learning. Based on these findings, differentiated learning can be an effective alternative in developing critical thinking skills in elementary schoolstudents. This study also suggests that teachers pay more attention to the diversity of student characteristics in designing and implementing lessons.

## INTRODUCTION

In the era of 21st-century education, critical thinking skills have become one of the most important competencies for learners to possess. This ability enables students to analyze, evaluate, and make decisions based on relevant information, allowing them to face the increasingly complex challenges of the world. However, various studies show that the critical skills of school students in Indonesia are still relatively low. This poses a significant challenge for the education sector, especially for educators who play a role in maximizing students' potential. One approach that can be used to enhance students' critical thinking skills is through differentiated learning. Differentiated learning is an approach that focuses on

meeting the diverse learning needs of students, whether in terms of ability, interest, or learning style. By providing learning experiences that align with the individual needs of students, this approach is believed to facilitate the development of critical thinking skills more effectively. Differentiated learning, as proposed by Carol Ann Tomlinson (1999) in (Marlina, 2019), explains that differentiated learning is an approach that can accommodate, serve, and acknowledge the diversity students in learning according to their readiness, interests, and learning preferences. Meanwhile, (Puspitasari et al., 2020) in their research state that differentiation is a solution to address the diversity of students' abilities when learning in one class, namely a pleasant learning atmosphere, speaking practice, collaborative learning, and the selection of materials and learning processes.

Critical thinking skills have become an important focus in modern education.Accordi ng to Facione (2011), critical thinking encompasses the ability to analyze, evaluate, and make logical decisions based on relevant information. These skills are very important for helping students understand complex problems and make appropriate decisions. Paul and Elder (2014) also emphasize that critical thinking can be developed through a systematic and structured learning process. Differentiated learning, as explained by Tomlinson (2001), is a teaching strategy aimed at meeting the individual needs of students through variations in content, process, product, and learning environment. This approach allows students to learn according to their ability levels, interests, and learning styles. Research shows that differentiated learning can help students reach their maximum potential. (Santangelo & Tomlinson, 2012).

In the context of primary education, differentiated learning has a positive impact on the development of critical thinking skills. According to Subban (2006), the implementation of differentiated learning at the elementary school level can enhance students' active participation in learning, which in turn facilitates the development of analytical and evaluative skills. However, the success of this implementation highly depends on the teachers' understanding of the differentiation concept and their readiness to apply this strategy in the classroom. (Coubergs et al., 2017). Although the concept of differentiated learning has been widely discussed in educational literature, its implementation at the elementary school level still faces various obstacles. One of them is the limited understanding of teachers regarding its principles and strategies. On the other hand, the application of differentiated learning also requires thorough planning and adequate support, both in terms of resources and the learning environment.

This research aims to explore the implementation of differentiated learning in elementary schools and analyze its impact on students' critical thinking skills. Through this

research, it is expected to produce findings that provide practical guidance for teachers in implementing differentiated learning, as well as contribute to the improvement of the quality of primary education in Indonesia. With that background, this research will provide answers to important questions: how the implementation of differentiated learning can enhance the critical thinking skills of elementary school students, and what are the supporting and inhibiting factors in its implementation? This research is expected to serve as a foundation for the development of more effective and adaptive learning strategies in addressing the increasingly diverse learning needs of students.

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With this study, it can be concluded that differentiated learning is a relevant and effective approach to enhancing the critical thinking skills of elementary school students. However, the success of its implementation requires thorough planning, institutional support, and continuous teacher training.

## RESEARCH METHODS

This research uses the Research and Development (R&D) method to develop a differentiated learning design to enhance critical thinking skills for elementary school students. The research was conducted at Soko State Elementary School and Kedungwilut State Elementary School to improve students' critical thinking skills. This research and development procedure refers to the steps of Borg & Gall. (1983). The stages of the research include (1) Preliminary Study, at this stage conducted to identify the needs and learning problems related to students' critical thinking skills. Data were collected through interviews, classroom observations, and questionnaires from teachers and students. (2) Design Development, based

on initial findings, a differentiated learning design was developed that aligns with the characteristics of elementary school students. This design includes variations in content, process, product, and learning environment. (3) Design Validation: The developed learning design is validated by educational experts to ensure its feasibility and relevance. (4) Initial Trial: A small-scale trial is conducted in one class to identify weaknesses in the design and obtain feedback for improvement. (5) Design Revision: Based on the results of the initial trial, the learning design is refined to enhance its effectiveness. (6) Field Trial: The implementation of the learning design is carried out on a larger scale to evaluate its effectiveness in enhancing critical thinking skills students. (7) Data Analysis: The trial data is analyzed quantitatively and qualitatively to measure the success of the implementation and its impact on students' critical thinking skills. (8) Product Refinement: Based on the analysis results, final improvements are made to the learning design so that it is ready for broader implementation.

The Data Collection Instruments and Analysis Techniques used in this research include: (1) Questionnaire: To measure the responses of students and teachers towards the differentiated learning model. (2) Interviews: To obtain qualitative data regarding teachers' experiences in implementing the model. (3) Observation: To monitor learning activities and student participation. (4) Critical Thinking Skills Test: To measure students' critical thinking abilities before and after the implementation of the model.

Based on the obtained data, the next step is to conduct data analysis. Data is analyzed using the following techniques: (a) Quantitative Descriptive Analysis: To analyze questionnaire and test data using descriptive statistics, such as mean, percentage, and standard deviation. (b) Qualitative Analysis: To analyze interview and observation data using coding methods and thematic interpretation. (c) Inferential Statistical Test: To test the effectiveness of the model using the t-test on pretest and posttest data of students' critical thinking skills.

The instruments used in data collection include: (a) Questionnaires and Interviews given to most students and teachers to provide positive feedback on the implementation of differentiated learning. Teachers stated that this approach helps meet the individual needs of students. Meanwhile, the observation instrument is used to determine the increase in student participation during learning, marked by their high involvement in discussions and critical thinking activities. And for the critical thinking skills test instrument, using t-test analysis shows a significant improvement in students' critical thinking abilities after the implementation of the differentiated learning model ($p < 0.05$).

## RESULTS AND DISCUSSION

Research results show that differentiated learning can enhance students' critical thinking skills. Students who participate in this learning demonstrate better abilities in analyzing information, solving problems, and making decisions. Supporting factors for implementation include teacher training, adequate learning resources, and support from the school environment. Meanwhile, the main obstacles are the limited planning time and teachers' understanding of the concept of differentiation.

1. Preliminary Study The results of the preliminary study show that most teachers face difficulties in adjusting teaching methods to the individual needs of students. This affects the development of students' critical thinking skills.
2. Design and Validation of the Model The developed differentiated learning model consists of three main components: content adjustment, process, and learning products. Validation by experts indicates that this model is feasible for use with some revisions.
3. Testing and Evaluation Quantitative and qualitative data from the trials show a significant improvement in students' critical thinking skills, measured using a critical thinking assessment rubric.

Based on the analysis of the obtained data, the implementation of differentiated learning has yielded several important findings:

1. Improvement in Critical Thinking Skills: Students who participated in differentiated learning showed significant improvement in their skills to analyze, evaluate, and solve problems. This is evident from the results of critical thinking skills tests, which showed an average score increase of 25% compared to before the implementation.
2. Increased Student Engagement: Students are more actively involved in the learning process. This is demonstrated through classroom observations, where students participate more in group discussions, ask critical questions, and respond to various issues presented.
3. Teacher Support and Supporting Factors: The teachers involved in this research revealed that the training and guidance provided were very helpful in understanding and applying differentiated learning strategies. In addition, the availability of varied learning resources also supports the effectiveness of the implementation.

4. Constraints in Implementation: Some of the challenges faced include the limited time to design materials that meet students' needs, as well as difficulties in managing a classroom with highly diverse ability levels.

These findings underscore the importance of ongoing support, both in the form of teacher training and the provision of resources, to ensure the successful implementation of differentiated learning in elementary schools.

## CONCLUSIONS AND RECOMMENDATION

Constraints in Implementation: Some of the constraints faced include limited time to design materials that meet students' needs, as well as difficulties in managing a class with highly diverse skill levels.These findings underscore the importance of ongoing support, both in the form of teacher training and the provision of resources, to ensure the successful implementation of differentiated learning in elementary schools.

Differentiated learning has proven effective in enhancing the critical thinking skills of elementary school students. Students with different characteristics certainly have different learning styles from one another. Ideally, teachers should be able to understand their roles and functions philosophically to facilitate the diverse potentials of each student, so that everyone has equal learning opportunities with different characteristics but their learning needs can be met. However, the success of the implementation greatly depends on the readiness of the teachers, the available resources, and the supportive learning environment. This research makes an important contribution to the development of adaptive and innovative learning strategies to impro

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