



IMPLEMENTATION OF A DIFFERENTIATED LEARNING MODEL TO IMPROVE STUDENTS' SCIENCE AND SOCIAL STUDIES (IPAS) LEARNING OUTCOMES

Suarti^{1*}, Imran Kudus², Faslia³, Safiha⁴

^{1,2,3,4}Fakultas Keguruan dan Ilmu pendidikan, Universitas Muhammadiyah Buton, Indonesia

Email correspondence: suartilaupe64@gmail.com

ABSTRACT

This study aims to examine the improvement of students' learning outcomes in Science and Social Studies on the topic of buying and selling activities in Grade Four at SDN 18 Lakudo through the implementation of a differentiated learning model. This research employed a classroom action research design conducted in two cycles. The instruments used in this study included observation sheets and written tests. The indicator of success was set at eighty percent mastery, with the Minimum Learning Achievement Criteria established at seventy. The findings indicate a significant improvement in students' learning outcomes after the implementation of the differentiated learning model. In the first cycle, out of fifteen students, only three students achieved the minimum mastery criteria, resulting in a mastery percentage of twenty percent with an average score of fifty. In the second cycle, all fifteen students achieved mastery, reaching a one hundred percent mastery level with an average score of ninety. Based on these findings, it can be concluded that the implementation of the differentiated learning model effectively improves students' learning outcomes in Science and Social Studies on the topic of buying and selling activities in Grade Four at SDN 18 Lakudo.

Keywords: Learning Outcomes; Science and Social Studies; Differentiated Learning Model

1. Introduction

Education is not a static or fixed entity; rather, it is dynamic and continually evolving, requiring ongoing improvement and transformation. High-quality education can be realized through effective learning activities in schools that enhance students' abilities, knowledge, skills, and attitudes. Education therefore plays a fundamental role in human life, serving as a foundation for personal growth and future development. Efforts to improve the quality of education must include strengthening human resources, particularly teachers. Enhancing teachers' instructional competence should be a primary focus. Teaching is not merely the transmission of knowledge, but also a deliberate process of facilitating understanding so that learners can comprehend and apply what they have learned.

This objective can be achieved by creating an active, innovative, creative, effective, and enjoyable learning environment that motivates students to ask questions, express ideas confidently, and participate enthusiastically in classroom activities. Such conditions ultimately contribute to the achievement of optimal learning outcomes (Kosilah & Septian, 2020). Recently, a noticeable gap has emerged in students' learning achievement in Science and Social Studies at the elementary level, particularly at SDN 18 Lakudo. Some students experience difficulties in understanding the learning materials, while others are able to grasp the concepts more easily. This disparity reflects variations in students' prior knowledge, learning pace, interests, and cognitive readiness. As a result, uniform instructional

approaches may not adequately accommodate the diverse characteristics present in the classroom.

This condition indicates the need for a learning approach that is responsive to individual differences among students. Instructional strategies should be designed to address varying levels of ability, learning styles, and interests in order to ensure equitable learning opportunities. A significant gap exists between the expected learning outcomes in Science and Social Studies and the actual performance of students in the classroom. This discrepancy is reflected in low student engagement, limited participation, and unsatisfactory achievement levels, with many students failing to meet the established minimum learning criteria. The main challenge lies in addressing the diverse learning needs, abilities, and interests of students within a single instructional setting, where traditional teaching approaches often fail to accommodate individual differences. If this situation is not addressed through appropriate and responsive instructional strategies, it may lead to prolonged learning difficulties, decreased motivation, widening achievement gaps, and a decline in overall academic performance.

A differentiated approach to instruction can provide appropriate support and challenges for each student, thereby fostering better engagement and improving overall learning outcomes in Science and Social Studies. Based on preliminary observations conducted at SDN 18 Lakudo, several problems were identified in the learning process. Students tended to be less active and showed limited participation during classroom activities. Some students appeared bored while attending lessons, and several displayed undisciplined behaviors, such as talking during instruction. These conditions resulted in students having difficulty understanding and comprehending the material explained by the teacher. Consequently, a number of students were unable to fully grasp the subject matter delivered in class.

Students' achievement data further confirm this issue. The Minimum Learning Achievement Criteria for Science and Social Studies in Grade Four at SD Negeri 18 Lakudo is set at seventy, which falls into the sufficient category. Based on the results of the daily assessment, out of fifteen students, only three students achieved mastery, representing twenty percent of the class, while twelve students, or eighty percent, did not meet the required criteria. These findings indicate the need for instructional improvement and strategic changes to enhance the effectiveness of the learning process and to achieve the expected learning outcomes.

A potential solution to address these issues is the implementation of a differentiated learning model in Science and Social Studies instruction at SDN 18 Lakudo. This approach enables teachers to adjust instructional methods, learning materials, and assessment strategies according to students' individual needs, abilities, and learning characteristics, thereby improving instructional effectiveness and students' academic achievement (Breux & Elizabeth, 2013). Through differentiated instruction, learning activities can become more inclusive, engaging, and responsive to the diversity present in the classroom. The research problem is formulated based on the previously identified issues, namely: how can the implementation of a differentiated learning model improve students' learning outcomes in Science and Social Studies on the topic of buying and selling activities in Grade Four at SDN 18 Lakudo? In line with this problem statement, the objective

of this study is to enhance students' learning outcomes through the application of a differentiated learning model in Science and Social Studies on the topic of buying and selling activities in Grade Four at SDN 18 Lakudo.

2. Research Methods

This study employed a classroom action research design conducted at SDN 18 Lakudo, Central Buton Regency. The participants of the research were fifteen fourth-grade students, consisting of eight male students and seven female students. The classroom action research approach was selected to systematically address instructional problems and to improve students' learning outcomes through reflective and cyclical interventions implemented directly in the classroom setting. The research design was carried out in two cycles, each consisting of four main stages. The first stage was planning. During this stage, the researcher identified the problems encountered in the learning process, determined the objectives of the study, and designed appropriate instructional actions to achieve those objectives. Lesson plans, learning materials, instruments, and assessment tools were carefully prepared to support the implementation of the differentiated learning model.

The second stage was action. At this stage, the planned instructional strategies were implemented in real classroom situations. The differentiated learning model was applied in Science and Social Studies lessons, particularly on the topic of buying and selling activities. The teacher adjusted instructional methods, learning activities, and assessments according to students' readiness levels and learning needs. The third and fourth stages were observation and reflection. Observation was conducted to collect relevant data and information regarding students' participation, engagement, and learning outcomes during the implementation of the action. Reflection involved evaluating and analyzing the results of the observation to determine whether the research objectives had been achieved or whether further improvements were necessary in the subsequent cycle (Pardjono, 2007).

Data collection in this study was conducted through several techniques to obtain comprehensive and accurate information. Direct observation was carried out during the learning process to examine students' participation, engagement, and classroom behavior, as well as to monitor the implementation of the differentiated learning model. In addition, learning achievement tests were administered to collect quantitative data regarding students' academic performance in Science and Social Studies. The test results were used to measure students' mastery of the material and to determine whether they had met the established minimum learning achievement criteria. Furthermore, interviews were conducted to gain deeper insights into students' learning experiences and the teacher's perspectives on the instructional process. This technique provided additional qualitative data to support the findings from observation and tests. Documentation was also utilized by collecting relevant research data and supporting documents, such as lesson plans, students' work, assessment records, and photographs of classroom activities. These documents strengthened the validity of the research findings and provided evidence of the research implementation process.

Data analysis was derived from observations of both teachers and students during the learning process (Utami, 2015). The observation indicators were designed

to measure improvements in participation, engagement, and instructional implementation in each meeting. In addition to qualitative analysis, quantitative data analysis was applied to examine students' learning outcomes systematically (Trianto, 2013). This combination of qualitative and quantitative approaches enabled a comprehensive evaluation of the effectiveness of the differentiated learning model. Several formulas were employed as part of the data analysis process to calculate the percentage of students' achievement levels (Zulfahrani, 2018), the mean score of students' performance (Kusumah, 2012), and individual learning outcomes. In Grade Four Science and Social Studies, the Minimum Learning Achievement Criteria is set at seventy. Learning was considered effective when the average level of students' improvement in understanding reached at least eighty percent, indicating that the instructional objectives had been successfully achieved.

3. Results and Discussion

3.1 Results

Classroom Action Research was conducted at SDN 18 Lakudo, located in Wongko Lakudo Village, Lakudo District, Central Buton Regency. The research was implemented in the natural classroom setting to address instructional challenges and to improve students' learning outcomes in Science and Social Studies. The school was selected based on preliminary findings indicating the need for instructional improvement. The participants of this study were fifteen fourth-grade students consisting of eight male students and seven female students. The research was carried out during the second semester of the academic year. All students in the class were involved as research subjects to ensure comprehensive data collection and to provide equal opportunities for academic improvement.

This classroom action research was conducted in two cycles. Each cycle followed systematic stages including planning, action, observation, and reflection. The cyclical process allowed the researcher to evaluate the effectiveness of the instructional strategy and to make necessary improvements in the subsequent cycle. The primary objective of this study was to improve students' learning outcomes through the implementation of a differentiated learning model in Science and Social Studies, particularly on the topic of buying and selling activities. Through structured and reflective instructional interventions, the research aimed to create a more responsive learning environment that accommodated students' diverse learning needs and enhanced their academic achievement.

Cycle I Research Results

The results of Cycle One were obtained after the implementation of the initial action phase of the classroom action research. Cycle One was conducted on Tuesday, March eleventh, and Friday, March fourteenth, in the academic year. The learning activities were carried out in accordance with the lesson plans that had been designed using the differentiated learning model. During this cycle, the teacher implemented instructional strategies tailored to students' varying readiness levels and learning needs. At the end of Cycle One, an evaluation test was administered to measure students' understanding of the material on buying and selling activities in Science and Social Studies. The evaluation instrument consisted of ten multiple-choice questions designed to assess students' comprehension of key concepts. The

test aimed to determine whether students had achieved the Minimum Learning Achievement Criteria and to identify areas that still required improvement.

The results of the evaluation indicated that not all students achieved the expected level of mastery. Although some students demonstrated improvement in understanding the material, several others still faced difficulties in answering the questions correctly. These findings suggest that while the differentiated learning model began to show positive effects, further refinement and reinforcement were needed to optimize learning outcomes. The detailed results of students' performance in completing the evaluation test in Cycle One are presented in the table below. This data serves as a basis for reflection and planning improvements to be implemented in the subsequent cycle.

Table 1. Cycle I Results

Student Name	Gender	Minimum Criteria	Score	Mastery	Not Mastery
AS	Male	70	20		✓
AN	Male	70	60		✓
AR	Female	70	60		✓
FK	Female	70	20		✓
FL	Female	70	50		✓
JMN	Male	70	30		✓
KI	Male	70	50		✓
MR	Male	70	40		✓
MSA	Male	70	50		✓
MNT	Male	70	50		✓
NA	Female	70	60		✓
AR	Female	70	80	✓	
RHS	Female	70	40		✓
SK	Male	70	70	✓	
ZM	Female	70	70	✓	

In Cycle One, the researcher implemented the learning activities in accordance with the differentiated learning model. The results of the Cycle One test showed that out of a total of fifteen students, three students achieved mastery, representing twenty percent, while twelve students, or eighty percent, did not meet the Minimum Learning Achievement Criteria and remained below the required standard. The average class score obtained was fifty. Based on these results, students' learning outcomes in Cycle One had not yet reached the expected level despite the implementation of the differentiated learning model.

During Cycle One, students' attention and interest throughout the teaching and learning process were still not well managed. Some students were not fully focused and were noisy in the classroom. Students also showed little initiative to ask questions or express opinions regarding material they did not understand. One of the challenges encountered in this cycle was that the teacher was not yet able to effectively adjust the stages of instruction to the allocated learning time, resulting in incomplete lesson delivery. Since several shortcomings in Cycle One had not been resolved, the research was continued to Cycle Two for further improvement.

Cycle II Research Results

Cycle Two was conducted on Tuesday, March eighteenth, and Friday, March twenty-second, in the academic year. The learning activities were carried out based on the improvements identified during the reflection stage of Cycle One. Adjustments were made to instructional time management, classroom organization, and the implementation of differentiated strategies to better accommodate students' learning needs. In Cycle Two, the implementation of the differentiated learning model was carried out more effectively. The teacher was able to manage the stages of instruction in accordance with the allocated time, and students demonstrated greater focus and participation during the learning process. Classroom conditions became more conducive, and students showed increased enthusiasm in engaging with the learning materials.

The improvement in instructional implementation had a positive impact on students' learning outcomes. All students successfully achieved the Minimum Learning Achievement Criteria, resulting in a one hundred percent mastery level. The class average score increased significantly to ninety, indicating substantial progress compared to Cycle One. The results of students' learning achievement in Cycle Two are presented in the table below. This data demonstrates the effectiveness of the differentiated learning model in improving students' understanding and overall academic performance in Science and Social Studies.

Table 2. Cycle II Results

Student Name	Gender	Minimum Criteria	Score	Mastery	Not Mastery
AS	Male	70	90	✓	
AN	Male	70	100	✓	
AR	Female	70	90	✓	
FK	Female	70	90	✓	
FL	Female	70	80	✓	
JMN	Male	70	90	✓	
KI	Male	70	80	✓	
MR	Male	70	90	✓	
MSA	Male	70	100	✓	
MNT	Male	70	80	✓	
NA	Female	70	90	✓	
AR	Female	70	100	✓	
RHS	Female	70	80	✓	
SK	Male	70	90	✓	
ZM	Female	70	100	✓	

In Cycle Two, the learning activities were carried out in accordance with the expected objectives. The shortcomings identified in Cycle One were successfully addressed through improved planning, better time management, and more structured instructional delivery. The teaching and learning process became more organized and conducive to achieving the intended learning outcomes. The implementation of the differentiated learning model in Science and Social Studies was conducted effectively and systematically. The teacher was able to adjust

instructional strategies to accommodate students' diverse needs, resulting in a more responsive and engaging classroom environment. The stages of learning were completed within the allocated time, and classroom management improved significantly.

Students demonstrated greater activeness during the learning process. They worked collaboratively in groups, exchanged ideas confidently, and participated more actively in discussions. Their willingness to ask questions and express opinions increased, reflecting improved engagement and understanding of the material. Considering that the results obtained in Cycle Two had met the predetermined indicators of success, the research was deemed successful. Since all students achieved mastery and the learning objectives were fulfilled, the classroom action research was concluded at this cycle.

3.2 Discussion

The results of Cycle I indicate that the implementation of the differentiated learning model had not yet produced optimal learning outcomes. The average class score was 50, with only 3 out of 15 students (20%) achieving the Minimum Learning Achievement Criteria, while 12 students (80%) did not meet the required standard. These findings suggest that although differentiated instruction had been introduced, its execution was not fully effective in addressing students' diverse readiness levels and learning needs. Several students were still unable to demonstrate adequate understanding of the concepts related to buying and selling activities in Science and Social Studies, as reflected in their low test scores. This condition shows that the initial application of the model requires further adjustment to ensure that instructional strategies truly accommodate variations in students' abilities.

Classroom observations during Cycle I also revealed several challenges that influenced the learning process. Students' attention and engagement were not yet well managed, as some students were unfocused, noisy, and reluctant to participate actively in discussions. Limited initiative to ask questions or express opinions indicated that an interactive and supportive learning climate had not been fully established. Time management became another obstacle, since the teacher had not optimally aligned instructional stages with the allocated time, resulting in incomplete lesson delivery. These weaknesses served as important points for reflection and became the basis for revising strategies in Cycle II to achieve improved learning outcomes.

These findings are in line with previous research. According to Carol Ann Tomlinson (2001), differentiated instruction requires careful planning and continuous adjustment based on students' readiness, interests, and learning profiles to achieve effective results. Furthermore, Heacox (2002) emphasizes that the success of differentiated learning depends on teachers' ability to manage the classroom effectively and provide varied instructional strategies that respond to student diversity. Therefore, the limitations identified in Cycle I support earlier research, indicating that refinement and reflective practice are essential for optimizing the implementation of differentiated learning.

The results of Cycle II demonstrate a significant improvement in both the learning process and students' academic achievement. Revisions made after

reflecting on Cycle I—particularly in terms of time management, classroom organization, and the optimization of differentiated instructional strategies—contributed to a more structured and effective implementation of the learning model. The teacher was able to manage each stage of instruction according to the allocated time, ensuring that all planned activities were completed systematically. Classroom conditions became more conducive, and students appeared more focused and enthusiastic throughout the lessons. These improvements indicate that careful reflection and strategic adjustment are essential components in maximizing the effectiveness of differentiated learning. The positive changes in instructional practice had a direct impact on students' learning outcomes. In Cycle II, all 15 students achieved the Minimum Learning Achievement Criteria, resulting in 100% mastery with a class average score of 90. This substantial increase from Cycle I confirms that the differentiated learning model, when implemented effectively, can significantly enhance students' understanding of Science and Social Studies concepts. Students also demonstrated greater participation, confidence, and collaboration during group discussions. Their increased willingness to ask questions and express opinions reflects deeper engagement and improved comprehension. Since the predetermined success indicator of 80% mastery was exceeded, the classroom action research was concluded in Cycle II and considered successful.

These findings are consistent with previous research emphasizing the effectiveness of differentiated instruction. According to Carol Ann Tomlinson (2001), differentiated instruction improves student achievement when teachers systematically adjust content, process, and learning products based on students' readiness and learning profiles. Similarly, Heacox (2002) states that well-planned differentiated strategies can increase student engagement and overall academic performance. Therefore, the success achieved in Cycle II reinforces earlier studies, confirming that reflective practice and structured implementation are key factors in optimizing differentiated learning in the classroom.

4. Conclusion

Based on the research findings, it can be concluded that in Cycle I, the average student score was 50 with a mastery percentage of 20%, where only 3 out of 15 students achieved the Minimum Mastery Criteria (KKTP). In Cycle II, students' learning outcomes improved significantly, with the average score increasing to 90 and the mastery percentage reaching 100%, meaning that all 15 students met the KKTP. Therefore, the research was concluded in Cycle II because it had fulfilled the success indicator of 80%, indicating that this classroom action research was successful. In addition, students' responses after the implementation of the differentiated learning model showed positive changes. Students became more active in the learning process, demonstrated better collaboration, and actively exchanged ideas both within their own groups and with other groups, reflecting increased engagement and participation in classroom activities.

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