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The Application of Differentiated Learning to Accommodate Differences in Student Learning Styles and Speeds

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INFO ARTICLE

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ABSTRACT

Differentiated instruction is an important approach in responding to differences in learning styles and speeds among students in heterogeneous classrooms. Uniform teaching practices often lead to disparities in engagement and learning outcomes. This study aims to identify the forms of differentiation strategies used by teachers, analyze the impact of differentiation on student learning engagement, measure changes in learning outcomes between ability groups, and describe students' perceptions of differentiated learning. The research used a qualitative approach with a case study design in the eighth grade of SMPIT Ibnu Khaldun with 40 students. Data were collected through observation, semi-structured interviews, and document analysis, then analyzed with an interactive model through data reduction, presentation, and verification. The results showed that differentiation strategies were implemented through variations in content, process, product, and learning time, student engagement increased, especially in the low and medium ability groups, there was an increase in learning outcomes in all groups, with the largest increase in the low group, students had positive perceptions because the learning was considered more appropriate to their needs and increased their self-confidence. It was concluded that differentiated learning effectively accommodates differences in learning styles and speeds and strengthens student engagement and achievement.

INTRODUCTION

Disabilitas differentiated learning is a pedagogical approach that aims to accommodate the diversity of individual students in a class, including differences in learning styles, interests, readiness, and learning speed (Jaelani, 2025; Ramadani & Nurul Latifatul Inayati, 2024; Saimima et al., 2025). This approach is rooted in constructivist learning theory, which emphasizes that students build understanding through active experiences that suit their individual needs. In the modern era of education, which increasingly emphasizes inclusivity and responsiveness to student diversity, differentiated learning has become an important strategy for increasing student engagement and academic achievement while reducing the negative impact of traditional one-size-fits-all teaching approaches. In response to the dynamics of heterogeneous classrooms, differentiated learning practices were conceived to create an adaptive learning environment and place students as active subjects in the learning process. (Muhammad & Lukman, 2025)

A number of empirical studies show that differentiated learning can increase student engagement in various learning contexts. For example, findings from research on the

implementation of differentiation strategies in English language learning reveal that 75% of students reported increased motivation and emotional, cognitive, and behavioral engagement after the application of differentiated learning, compared to conventional learning models. This indicates that differentiation is not just a variation in teaching strategies, but also has the ability to strengthen students' active participation in the learning process (Widayanti et al., 2024).

In addition, research on the application of differentiated learning in mathematics shows that this strategy has a more significant impact on student engagement and motivation compared to conventional learning methods. The results of this quasi-experimental study confirm that students who receive differentiated learning show higher engagement and academic performance, which proves that differentiation can effectively respond to students' individual needs (Salazar & Gumanoy, 2025).

However, there are problems that often arise in the practice of differentiated learning. The collaboration between the diversity of students' learning styles and speeds is often a challenge for teachers in designing and implementing effective differentiation strategies. Many teachers find it difficult to develop materials that meet individual needs while maintaining cohesion in heterogeneous classrooms, resulting in suboptimal differentiation practices. Teacher readiness and time constraints are major issues in the successful implementation of differentiated learning (Erdiana, 2024).

The specific issues that are the focus of this study are the forms of differentiation strategies used by teachers to accommodate differences in student learning styles and speeds, as well as the impact of these strategies on student learning engagement and changes in learning outcomes between ability groups. Furthermore, this study also attempts to describe students' perceptions of their experiences in a differentiated learning environment. Thus, this study aims to address the empirical gap regarding the effectiveness of differentiation strategies in the practical context of classrooms in Indonesia, which is still rarely reported in the latest educational literature.

The urgency of this research lies in the need to understand more deeply how differentiated learning can be effectively implemented in diverse classrooms. In the context of curriculum reform that increasingly emphasizes adaptive and responsive learning to student characteristics (for example, referring to the spirit of the Merdeka Curriculum), strong empirical evidence regarding the effects of differentiated learning on student engagement and learning outcomes is very important. This will assist policymakers and education practitioners in formulating teacher training strategies and evidence-based teaching policies (Muhammad & Lukman, 2025).

Research by (Erdiana, 2024)found that the implementation of differentiated learning can increase students' average learning scores by around 20% and significantly increase student motivation. These findings indicate that differentiation has a positive contribution to student learning outcomes and engagement. However, resource challenges and teacher readiness remain obstacles that need to be overcome—in contrast to this study's focus, which emphasizes a broader analysis of learning engagement and student perceptions.

Furthermore, a study by (Song, 2025)on the impact of differentiated learning in English classes shows that differentiation strategies contribute to increased student engagement and higher academic achievement compared to traditional learning models. This study is in line with this study in terms of its focus on engagement and learning outcomes but differs in terms of the geographical context and subject of study.

Research by (Salazar & Gumanoy, 2025)in the context of mathematics learning found that differentiated learning significantly increased student motivation and engagement and contributed to improved academic performance compared to traditional approaches. These findings support the theoretical basis of differentiation as a strategy that is responsive to individual learning differences and reinforce the urgency of this study's focus on the mechanisms of the strategies used by teachers.

This study is novel in that it combines four dimensions simultaneously: the forms of differentiation strategies used by teachers, their impact on student engagement, changes in learning outcomes between ability groups, and students' perceptions of differentiated learning. This multidimensional approach provides a more comprehensive and holistic picture than many previous studies, which tended to focus on only one or two aspects.

This study aims to identify the forms of differentiation strategies used by teacher, analyze the impact of differentiation on student learning engagement, measure changes in learning outcomes between ability groups and describe students' perceptions of differentiated learning.

Practically, this study is expected to contribute to teachers and education policymakers in designing more effective and inclusive learning practices. The findings can be used as a basis for developing teacher training programs that emphasize differentiation strategies responsive to individual student needs. Its implications for educational theory include strengthening empirical evidence regarding the role of differentiated learning in improving the engagement and learning outcomes of heterogeneous students, as well as providing direction for further research on differentiated practices in various learning contexts.

METHOD

This study uses a qualitative approach with a case study design to gain an in-depth understanding of the application of differentiated learning in accommodating differences in student learning styles and speeds. The qualitative approach was chosen because it is able to explore the processes, practices, and experiences of subjects in context and emphasizes the meanings constructed by participants in real learning situations. The case study design was used to focus the study on one specific setting, allowing for an in-depth analysis of the differentiation strategies applied by teachers in the classroom. (Tisdell et al., 2025)(Creswell & Poth, 2021; Merriam & Tisdell, 2022; Yin, 2023; Tracy, 2020).

The object of this study is the application of differentiated learning strategies in the learning process in class VIII at SMPIT Ibnu Khaldun. The focus of the object includes the planning, implementation, and evaluation of the differentiation strategies used by teachers, as well as student responses to these practices. The research data sources consist

of primary data sources, namely eighth-grade subject teachers and eighth-grade students; and secondary data sources in the form of learning documents such as teaching modules, lesson plans/differentiation modules, tiered assignment sheets, student work results, and formative assessment notes. Data were collected directly in natural classroom situations to maintain the integrity of the context and learning interactions.

The research population consisted of all 40 eighth-grade students at SMPIT Ibnu Khaldun in one study group. Due to the relatively limited population size, this study used purposive sampling for qualitative data exploration. The sample of key informants consisted of one subject teacher as the implementer of differentiated learning and 12 students as selected informants representing three ability categories (high, medium, low), with four students in each category, determined by the teacher based on initial scores and recommendations. This selection aimed to obtain a variety of learning experiences related to differences in learning styles and speeds so that the data produced was rich and in-depth (Creswell & Creswell, 2023).

Data collection techniques used triangulation methods, including observation, in-depth interviews, and document analysis. Observations were conducted directly in the classroom using structured observation sheets to record the forms of differentiation strategies (content, process, product, and learning environment) as well as student engagement. Semi-structured interviews were conducted with teachers and students to explore their perceptions, experiences, and the impact of differentiated learning. Documentation studies were used to analyze teaching tools, task variations, and learning outcomes between ability groups. The research instruments included observation guidelines, interview guidelines, and document analysis checklists developed based on indicators of differentiated learning and learning engagement.

The data analysis technique used an interactive analysis model comprising three stages: data reduction, data presentation, and conclusion drawing/verification. Data reduction was carried out through an open coding process and categorization of field findings related to differentiation strategies, student engagement, differences in learning outcomes, and student perceptions. Data presentation was carried out in the form of thematic matrices and descriptive narratives across data sources. Conclusions were drawn in stages using source triangulation and methods to enhance the credibility of the findings. Data validity was maintained through triangulation, member checking with informants, and data trace audits so that the research results had an adequate level of reliability.

RESULT AND DISCUSSION

Forms of Differentiated Learning Strategies Used by Teachers

Based on classroom observations, document analysis, and interviews, the implementation of differentiated learning in class VIII at SMPIT Ibnu Khaldun was carried out through differentiation of content, process, and product. Teachers adjusted the material to the students' readiness level, provided a variety of tiered tasks, and gave choices on how to present learning outcomes. In the three meetings observed, teachers

used the same core module but with worksheets of varying levels of complexity. Students were grouped flexibly based on their initial abilities and task completion speed.

Teachers also applied process differentiation by providing a variety of learning methods: small group discussions, structured independent learning, and intensive guidance for slow learners. Product differentiation was evident in the choice of output forms, such as concept summaries, concept maps, or short presentations.

Teacher interview excerpt:

"I no longer give one type of task to everyone. I give additional challenges to fast learners, and I break down the steps for those who are still struggling. So the goal is the same, but the path can be different."

“I usually prepare three levels of worksheets. They are not labeled as smart or not, but I direct them according to their needs.”

Student interview excerpt:

“The questions are different, but we still discuss the same topic. I get the step-by-step version, so I understand it first before moving on.”

“It’s nice because not everyone has to do the same thing. Once you’re done, you can choose an advanced task.”

Table 1. Identified forms of differentiation

Differentiation Aspects	Classroom Practices	Observation Findings
Content	Core material is the same, depth is different	There are core modules + enrichment materials
Process	Flexible groups & gradual guidance	3 working patterns: independent, group, coaching
Product	Choice of final assignment format	Poster, summary, presentation
Time	Different completion times	Students quickly receive follow-up assignments

Source: Data Processed

Differentiation strategies are applied in practice through variations in content, process, product, and learning time. Teachers do not treat assignments equally, but they do treat competency goals equally. This approach demonstrates operational differentiation, not just conceptual differentiation.

Impact of Differentiation on Student Learning Engagement

Observational findings show an increase in student behavioral engagement and participation during differentiated learning. Compared to previous learning patterns (based on teacher notes), the number of students who actively asked questions and completed assignments increased. Students in the low ability category appeared to try to

complete assignments more often, while high ability students remained challenged by enrichment tasks.

The indicators of engagement observed included: frequency of asking questions, active discussion, task completion, and persistence when encountering difficulties. Of the 40 students, the majority showed moderate to high engagement during the differentiation sessions.

Table 2. Student Engagement Observations (3 Meetings)

Engagement Category	Number of Students	Behavioral Characteristics
High	18	Active in asking questions, participating in discussions, completing assignments
Moderate	15	Consistently working, occasionally asking questions
Low	7	Needs encouragement, but continues working

Source: Data Processed

Teacher interview quote:

"Usually, passive students wait for answers. Now, more of them try first. Because the tasks feel 'right' for them."

"Fast learners don't get bored, slow learners don't give up right away."

Student interview quote:

"If the task matches their ability, they want to try. They don't immediately blank out."

"I discuss more often because the group is small."

Differentiated learning significantly increases student engagement, especially among low- and medium-ability groups. Adjusting the level of difficulty makes students more willing to participate and persevere in the learning process.

Changes in Learning Outcomes Between Ability Groups

Analysis of assignment results and formative tests shows changes in achievement across each ability group. The low ability group showed the greatest increase in completion rates, while the high ability group showed improvements in the quality of answers and depth of analysis.

Assessment was conducted through pre-tasks and post-tasks on the same topic with gradual complexity. Scores were not used as statistical tests but as indicators of changes in learning performance.

Table 3. Changes in Average Task Scores

Ability Group	Initial Average	Final Average	Increase
High	82	90	+8
Moderate	72	84	+12
Low	60	76	+16

Source: Data Processed

Teacher interview excerpt:

"*What's interesting is that the improvement is most noticeable in the lower group. This is because they are not immediately given difficult questions."*
"The gradual structure helps them build confidence first."

Student interview excerpt:

"We used to often not finish. Now we can finish because the steps are clear."
"The follow-up questions are indeed more difficult, but we are ready."

There has been an improvement in learning outcomes across all ability groups, with the greatest improvement in the low ability group. Gradual differentiation helps to equalize learning progress without hindering high-ability students.

Student Perceptions of Differentiated Learning

The interview results show that the majority of students have a positive perception of differentiated learning. They consider the learning to be fairer, less stressful, and to provide opportunities to choose their learning methods. Of the 12 students interviewed, 10 stated that this model is more helpful than uniform assignments.

Some students were initially confused by the differences in assignments, but after two meetings they understood the process. The perception of fairness arose when the teacher explained that the objectives were the same even though the assignments were different.

Table 4. Summary of Student Perceptions

Perception	Number of Informants
More helpful for understanding	10
More motivated	9
Initially confused	4
More confident	8

Source: Data Processed

Student interview excerpt:

"It feels fairer, not being forced to do the same thing as everyone else. But we still learn the same topics."
"I feel more confident because I can start with what I can do first."
"At first I thought it was because of intelligence, but it turns out it's so that the learning is appropriate."

Teacher interview excerpts:

"The perception of fairness is important. I always explain that the paths are different but the goals are the same."

Students view differentiated learning as an approach that helps, motivates, and boosts their confidence. Positive perceptions emerge after teachers explain the purpose and mechanisms of differentiation.

Discussion

Differentiation Strategies Implemented by Teachers in the Classroom

The main findings of the study show that differentiation strategies have been implemented operationally through adjustments to content, process, product, and learning time (Fauziyah et al., 2025). Teachers not only modify the level of difficulty of the material but also provide a variety of learning paths and final assignment formats. This practice confirms that differentiation does not stop at planning but is evident in instructional actions in the classroom such as flexible grouping, tiered assignments, and learning product choices (Rinaldi et al., 2025). This pattern shows that differentiation is effective when teachers manage the classroom dynamically and based on students' actual learning needs.

These results are in line with previous research that found that differentiated learning is most effective when applied at three levels simultaneously—material, activities, and output—rather than just varying the questions (Rizky et al., 2023). Other studies also report that teachers who use tiered assignments and flexible grouping are able to maintain curriculum goals without sacrificing students' individual needs. However, there are also different studies that show that some implementations of differentiation stop at varying worksheets without changing classroom interaction strategies. These differences show that the depth of implementation is a key factor in the effectiveness of differentiation.

The Impact of Differentiation on Student Learning Engagement

Brief findings on engagement show that the majority of students fall into the moderate to high engagement category during differentiated learning, with the most noticeable increase in participation among low- and moderate-ability students (Yuda et al., 2025). Adjusting the difficulty level of tasks makes students more courageous to try, more active in discussions, and less likely to give up. Process differentiation through small groups and gradual guidance contributes directly to behavioral and cognitive engagement. (Kristanti, 2025)

These findings are in line with (Oemanu & Rindrayani, 2025) studies that report that differentiation increases student engagement because tasks are considered more relevant to learning readiness. Both studies emphasize that a sense of "task-fit" is the main trigger for engagement. On the other hand, (Abdullah, 2025) have found that increased engagement is not always stable when differentiation is not accompanied by an

explanation of the objectives to students, causing some students to perceive task differences as unfair (Azzahra & Rahmadhani, 2025). These findings show that explicit explanations from teachers about the reasons for differentiation play an important role in maintaining positive engagement.

Changes in Learning Outcomes Across Ability Groups

The core findings on learning outcomes show an increase across all ability groups, with the largest increase occurring in the low ability group. This indicates that gradual differentiation helps to reduce achievement gaps without holding back the development of high-ability groups (Gadafi et al., 2025). Graded tasks allow students to build a basic understanding before moving on to higher levels of complexity.

These results are consistent with Hadiyani et al., (2025) studies reporting that differentiation has the most significant impact on groups of students with low initial readiness because they receive a more structured learning environment. Other parallel studies show that high-ability groups continue to improve when enrichment tasks are available. However, there are other studies that find that the improvement in learning outcomes is not significantly different between groups when the duration of the differentiation intervention is too short. Compared to these studies, the duration of implementation in this study although limited still shows an upward trend, but it is not enough to assess the long-term impact.

Student Perceptions of Differentiated Learning

Brief findings related to perceptions show that most students view differentiated learning as an approach that aids understanding, increases motivation, and fosters self-confidence. Positive perceptions emerged especially after teachers explained that task differentiation was not a form of labeling ability, but rather a strategy for adjusting learning paths. Instructional communication factors were found to influence student acceptance of the differentiation model (Hasanah et al., 2023).

These results are in line with other studies reporting that perceptions of fairness in differentiation are formed when teachers are transparent about its objectives and mechanisms. (Sagala et al., 2025) also found that task choice increases student autonomy. Conversely, other studies show student resistance when differentiation is applied without product choice or without the opportunity to move between task levels. Thus, flexibility and communication are distinguishing elements in shaping positive student perceptions.

The practical implications of this study indicate that differentiated learning can be realistically applied in classrooms with moderate numbers of students through three key steps: mapping initial abilities, providing tiered tasks, and flexible grouping based on progress. Teachers also need to convey the rationale for differentiation to students to maintain perceptions of fairness and motivation. Schools can provide support by providing a bank of tiered tasks and training in differentiation design to lighten the planning load on teachers.

This study has limitations in that it is a single case study in one class with a limited observation period, so the findings need to be generalized with caution. The learning

outcome data is formative and contextual and does not yet reflect the long-term impact. In addition, student perceptions were obtained from a sample of interviews, so they do not represent the full range of views. Further research is recommended using a longer intervention period and involving more classes to strengthen the validity of the findings.

CONCLUSION

This study concludes that the implementation of differentiated learning in class VIII of SMPIT Ibnu Khaldun was carried out through strategies of content, process, product, and learning time differentiation designed based on differences in students' readiness and learning speed. These strategies were proven to increase learning engagement, as demonstrated by increased active participation, perseverance in completing tasks, and learning interactions in various ability groups. Learning outcomes showed improvement in all groups, with the most notable increase in the low ability group without hindering the development of the high ability group. In addition, the majority of students had a positive perception of differentiated learning because it was considered more helpful for understanding, fairer, and increased confidence in learning.

This study has limitations in terms of its single case scope, limited number of meetings, and formative contextual learning outcome measurements. Therefore, further research is recommended to expand the subjects and settings of the study, use a longer implementation period, and combine qualitative and quantitative approaches so that the impact of differentiation on learning outcomes and student engagement can be measured more comprehensively and generalizable.

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