Implementing Differentiated Learning in the Merdeka Curriculum at Upper Elementary Level: Teachers' Constraints and Adaptive Strategies

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Abstract: Differentiated learning constitutes a fundamental component of the Independent Curriculum that realizes responsive instruction toward student diversity. Its implementation in grade VI poses complex challenges that require adaptive strategies. This study analyzes the constraints and strategies teachers employ in implementing differentiated learning within the Independent Curriculum for grade VI in an elementary school. This qualitative descriptive research involved two grade VI teachers, the principal, and the curriculum coordinator at SDN Serang 20, Serang City. Data were collected through interviews, classroom observations, and document analysis. Findings indicate that differentiation practices predominantly occur in the learning process through flexible grouping and individual mentoring, while content and product differentiation remain limited. Main constraints include non-operational conceptual understanding, limited planning time, high student ability heterogeneity, infrastructure limitations, and administrative burden. Teachers develop adaptive strategies through continuous independent learning, collaborative learning community, simplified teaching modules, flexible grouping, intensive individual mentoring, and creativity in creating simple learning media. Institutional support through learning communities and collaborative leadership is a key success factor.

Abstrak: Pembelajaran berdiferensiasi merupakan komponen fundamental Kurikulum Merdeka yang mewujudkan pembelajaran responsif terhadap keberagaman peserta didik. Implementasinya di kelas VI menghadapi tantangan kompleks yang memerlukan strategi adaptif. Penelitian ini bertujuan menganalisis kendala dan strategi guru dalam mengimplementasikan pembelajaran berdiferensiasi pada Kurikulum Merdeka di kelas VI sekolah dasar. Penelitian menggunakan pendekatan kualitatif deskriptif dengan subjek dua guru kelas VI, kepala sekolah, dan koordinator kurikulum di SDN Serang 20, Kota Serang. Data dikumpulkan melalui wawancara, observasi, dan analisis dokumen. Hasil menunjukkan praktik diferensiasi dominan pada proses pembelajaran melalui pengelompokan fleksibel dan pendampingan individual, sementara diferensiasi konten dan produk masih terbatas. Kendala utama meliputi pemahaman konsep yang belum operasional, keterbatasan waktu perencanaan, heterogenitas kemampuan siswa yang tinggi, keterbatasan sarana prasarana, dan beban administrasi tinggi. Guru mengembangkan strategi adaptif melalui pembelajaran mandiri berkelanjutan, kolaborasi dalam komunitas belajar, penyederhanaan modul ajar, pengelompokan fleksibel, pendampingan individual intensif, dan kreativitas dalam membuat media pembelajaran sederhana. Dukungan kelembagaan melalui komunitas belajar dan kepemimpinan kolaboratif menjadi faktor kunci keberhasilan.

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A. Introduction

The transformation of Indonesian education entered a critical phase with the implementation of the Independent Curriculum in 2022 as a strategic government initiative to address post-COVID-19 pandemic learning disparities. This curriculum reform was driven by national evaluations indicating persistently low levels of literacy, numeracy, and higher-order thinking skills among students, as well as the need for more flexible, contextually aligned learning that meets students' needs across regions. The curriculum implementation not only aims to overcome learning crises but also represents a systemic reform effort to prepare students for 21st-century dynamics. The Independent Curriculum was developed to provide greater space for teachers to adjust learning to classroom characteristics, emphasize essential materials, strengthen the Pancasila Student Profile, and encourage continuous use of formative assessment as a basis for instructional decision-making (Kemendikbudristek, 2022). This policy received positive responses, as evidenced by the number of schools implementing the Independent Curriculum, which reached more than 300,000 educational institutions and continued to increase in 2024 (Kemendikbudristek, 2024). The implementation of the Independent Curriculum brought fundamental pedagogical paradigm shifts, requiring learning to be responsive to student diversity (Hamdi et al., 2022). Rahayu et al (2022) found that driving schools, as curriculum pioneers, faced challenges in operationalizing curriculum principles into concrete learning practices, particularly in differentiation and formative assessment. Nevertheless, these implementation achievements do not automatically reflect the quality and uniformity of application in elementary schools, as learning practices heavily depend on teachers' pedagogical competence and schools' capacity to provide adequate support.

Among the various components of the Independent Curriculum, differentiated learning is a fundamental aspect that embodies student-centered learning. Tomlinson (2017) defines differentiation as a systematic instructional approach that adjusts the content, process, and product of instruction based on students' readiness, interests, and learning profiles. Smale-Jacobse et al (2019) demonstrated that differentiated learning is an effective strategy for addressing classroom heterogeneity and meeting diverse student learning needs. Meanwhile, Prast et al (2018) found that the consistent application of differentiated learning principles by educators can significantly enhance student Engagement and learning outcomes, demonstrating the approach's effectiveness across diverse educational contexts. National research shows similar trends regarding this approach's relevance, such as Kusumaningpuri (2024) study on Natural and Social Sciences learning in Phase B grade IV elementary school, which demonstrated that implementing differentiated learning can increase active student participation and help teachers optimize essential learning achievement.

Additionally, a study by Rompis (2023) found that implementing differentiation in mathematics instruction can empirically improve student learning outcomes by tailoring learning activities to students' needs. These findings confirm that differentiation is a strategic approach that is both relevant and effective in diversity-laden basic education

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contexts. In the Independent Curriculum context, Digna & Japa (2023) found that although elementary school teachers have positive perceptions of differentiated learning, operational understanding and practical implementation still face significant obstacles, particularly regarding time management, systematic differentiation planning, and the integration of diagnostic assessment as a basis for differentiation.

Despite the substantial potential of differentiated learning, its implementation faces various challenges. Several studies indicate that teachers' understanding of differentiation principles remains varied. Warsihna et al (2023) found that although most teachers understand Independent Curriculum concepts, many still struggle to apply differentiation when preparing teaching modules and implementing comprehensive, consistent diagnostic and formative assessments as a basis for relevant instructional strategies (Sucipto et al., 2024). In practice, teachers often struggle to vary their learning processes and products due to time constraints, administrative burdens, and a lack of best-practice examples for reference. This indicates that differentiation requires not only conceptual understanding but also a supportive learning ecosystem through training, mentoring, and ongoing professional collaboration.

Differentiated learning implementation challenges become increasingly complex when applied to Phase C, grade VI, as the final phase of elementary school learning, with higher academic and administrative demands. Grade VI teachers are required to ensure students master essential competencies while preparing for transition to junior high school (BSKAP, 2022). This pressure requires teachers to balance learning achievement, individual student needs, learning administrative demands, and heterogeneous classroom management. Listiani (2023) research showed that grade VI teachers struggle to balance differentiated learning planning with the demands of completing essential learning materials within a limited time. Meanwhile, Prihatien et al (2023) found that teachers face obstacles in consistently integrating diagnostic and formative assessments due to time limitations, high administrative burdens, and classroom heterogeneity. This condition indicates that differentiation in final grades involves not merely varying teaching strategies but requires teachers to construct adaptive, meaningful learning that remains aligned with learning objectives.

Although research on the Independent Curriculum and differentiated learning has developed rapidly, significant research gaps exist. First, most research focuses on general obstacles to Independent Curriculum implementation, such as administrative burden, teacher readiness, P5, or infrastructure (Sucipto et al., 2024; Warsihna et al., 2023), yet very few explore differentiated learning practices in critical phases such as grade VI elementary school, which has particular complexity in balancing competency achievement and grade transition preparation. Second, existing research tends to examine only one specific aspect of differentiation, such as conceptual understanding or implementation obstacles (Digna & Japa, 2023; Listiani, 2023), without tracing all three core learning stages simultaneously: module-based planning, classroom implementation, and assessment-based evaluation. Third, previous research rarely employed comprehensive data triangulation across multiple

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perspectives (teachers, principals, curriculum coordinators) and integrated classroom observations, in-depth interviews, and analysis of teaching documents. Deunk et al (2018) in their meta-analysis confirmed that differentiation effectiveness heavily depends on implementation consistency and integration with formative assessment, while also identifying significant research gaps regarding how teachers adapt differentiation in new curriculum contexts and critical learning phases. The scarcity of triangulative approaches and comprehensive research creates limitations in understanding how differentiated learning is implemented in real contexts and what factors hinder or support it.

The study makes three contributions. First, it frames differentiated learning in final-grade elementary classrooms as an adaptive-pragmatic approach that balances pedagogical flexibility and standards pressure, requiring teachers' professional judgement to manage ability heterogeneity, prepare students for secondary transition, and fulfil administrative responsibilities. Second, it analyzes planning, implementation, and evaluation together using multiperspective triangulation (teachers, principals, curriculum coordinators), classroom observations, and document analysis, yielding a more holistic, contextual understanding than single-source studies. Third, it demonstrates how local learning communities (Kombel Serdadu) function as institutional supports for collective reflection, sharing best practices, and collaborative professional development, thereby informing mentoring models and policy.

Based on the identified research gaps and novelty, this study addresses three research questions: (1) how differentiated learning is implemented in grade VI within the Independent Curriculum, particularly in planning, implementation, and evaluation; (2) what obstacles teachers face and how these challenges are interconnected; and (3) what adaptive strategies teachers develop and how institutional support strengthens their effectiveness. Accordingly, this study aims to comprehensively analyze teachers' practices, constraints, and strategies for implementing differentiated learning through a qualitative approach with multiperspective triangulation. The findings are expected to provide a contextual understanding of differentiation practices and to offer empirical recommendations for developing sustainable, context-responsive teacher mentoring programs.

B. Method

This study employed a descriptive qualitative approach to gain an in-depth understanding of teachers' obstacles and strategies for implementing differentiated learning in the Independent Curriculum for grade VI in an elementary school. This approach enabled researchers to explore teachers' experiences, practices, and decision-making processes in real learning contexts, emphasizing the meanings participants constructed in natural settings (Creswell & Poth, 2018). Qualitative research is relevant for understanding phenomena holistically.

The research was conducted at SDN Serang 20, Serang City, Banten, in October 2025. The site was purposively selected because the school has implemented the Merdeka Mandiri

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Curriculum since the 2022/2023 academic year with a supportive implementation ecosystem. Participants were determined through purposive sampling and included two sixth-grade teachers, the principal, and the curriculum coordinator to ensure perspective triangulation. Data were collected through semi-structured interviews, classroom observations, and document analysis. Interviews (30–60 minutes) explored teachers' experiences in planning, implementing differentiation, challenges, and adaptive strategies, and were audio-recorded and transcribed verbatim. Classroom observations documented learning practices, interactions, teaching strategies, assessments, and differentiation processes. Document analysis of CP, ATP, teaching modules, diagnostic and formative assessments, and learning documentation was conducted to verify data and examine alignment between planning and differentiated learning implementation.

Data analysis was conducted using the Miles et al (2014) model, comprising three cyclical, interactive stages: data reduction, data display, and conclusion drawing. Data reduction involved selecting, focusing on, and simplifying information from interview transcripts, observation notes, and learning documents to align with the research focus. Data were displayed in narrative descriptions, thematic matrices, and categorization tables to identify patterns in teachers' obstacles and strategies. Conclusion drawing was performed by interpreting patterns, trends, and thematic relationships among the obstacles and strategies developed by teachers.

This research was conducted in accordance with research ethics principles. Each informant was provided explanations of the research purposes, benefits, and procedures, and consent was requested before interviews were conducted (informed consent). Participant identities were anonymized to maintain confidentiality and privacy. The entire research process did not impose additional burdens on teachers or the school.

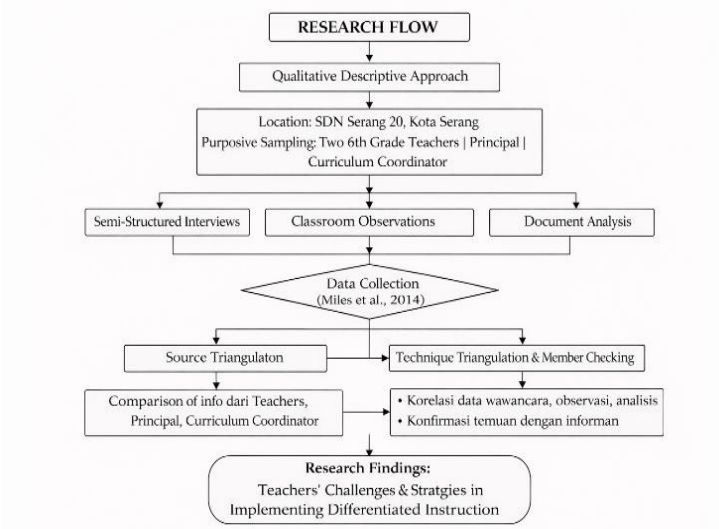

Figure 1. Research Flow of Differentiated Learning Implementation

Data validity was strengthened through source triangulation and technique triangulation. Source triangulation was conducted by comparing information from teachers, the principal, and the curriculum coordinator to ensure data consistency. Triangulation was

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conducted by correlating interview data, observations, and document analysis (Sugiyono, 2022). Findings validity was strengthened through member checking, in which informants reviewed the researchers' interpretations to ensure meaning accuracy (Birt et al., 2016).

C. Result

1. Practical Implementation of Differentiated Learning in the Merdeka Curriculum at Grade VI

Research findings indicate that differentiated learning has been implemented in grade VI at SDN Seran g 20 as part of the Merdeka Curriculum, although it is not yet fully systematic. Differentiation practices were found to encompass planning, implementation, and evaluation stages of learning, with data obtained through triangulation of classroom observations, document analysis, and in-depth interviews.

> "*The Merdeka Curriculum provides freedom for teachers and students to learn according to their nature and individual learning styles*" (Interview with Grade VI A Teacher, October 28, 2025).

Observations in classes VI A and VI B showed that differentiation occurred primarily in the learning process through flexible grouping based on comprehension levels. Students who had mastered the material were given advanced tasks or asked to help struggling peers, while students experiencing difficulties received intensive guidance.

> "*Create activities that encourage students to be active, such as discussions and presentations. Learning is designed to help students think critically and express their opinions*" (Interview with Grade VI B Teacher, October 28, 2025).

Figure 2. Documentation of Differentiated Learning Activities in Grade VI

The use of learning media varied despite limitations. Teachers utilized simple media such as pictures, self-made charts, and instructional videos. Module analysis showed

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teachers used concrete media (paper replicas of finger joints) and PowerPoint to explain the human musculoskeletal system.

> "*Yes, I use PMM to find reference teaching modules and learning ideas. Sometimes I also look for inspiration from social media like TikTok or YouTube*" (Interview with Grade VI B Teacher, October 28, 2025).

Figure 3. Concrete Learning Media: Paper Replica of Finger Joints

Formative assessment was conducted informally through questioning and observation of student activities. However, product differentiation in learning remained limited, with tasks given to students generally still being relatively uniform.

> "*The main goal is to provide students freedom in learning according to their interests and potential, as well as to develop positive character*" (Interview with Grade VI A Teacher, October 28, 2025).

Analysis of the planning documents showed that teachers had prepared teaching materials in accordance with the Merdeka Curriculum structure. The Learning Outcomes (CP) used referred to Phase C CP for grades V and VI, while the Learning Objectives Flow (ATP) was systematically and logically structured. Teaching modules had been fully prepared in accordance with the Merdeka Curriculum guidelines, identifying three student categories (regular, high achievers, and learning difficulties).

> *"The teaching module has been adapted to the children's conditions, but it is usually still general, not yet differentiated individually"* (Interview with Grade VI B Teacher, October 28, 2025).

Teachers chose Problem-Based Learning (PBL) with lecture, discussion, and demonstration methods for student-centered learning, as well as a Deep Learning approach, integrating joyful, mindful, and meaningful learning to create a pleasant, meaningful experience that fosters learning awareness.

Although the teaching modules identified three learner categories, the differentiation plans for learning activities were not specified in detail. The learning steps in teaching modules remained general. They did not show different treatments for each

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student category, such as task modifications, question difficulty levels, or forms of additional support for students with learning difficulties, nor did they show advanced challenges for high-achieving students.

> *"We provide teachers flexibility to adapt learning planning to real classroom conditions, as long as they still refer to the established CP and ATP"* (Interview with Curriculum Coordinator, October 28, 2025).

In terms of assessment, the teaching module includes various techniques, including formative assessment through written tests, group-work assessment via Student Worksheets (LKPD), and assessment of presentations and demonstrations through observation. The assessment rubric covers three areas: attitude, knowledge, and skills.

Figure 4. Student Worksheet (LKPD) for Natural and Social Sciences Subject

Teaching modules also included student self-assessment sheets for reflection on concept understanding and learning processes. However, the assessment rubrics used tended to be uniform for all students and did not yet show differentiated assessment criteria based on different student ability levels.

Document analysis showed that teachers conducted diagnostic assessments at the beginning of the semester across several main subjects, using multiple-choice and short-answer instruments to measure students' initial understanding. Assessment results showed significant variation in student abilities with a wide score range.

> *"I conduct diagnostic assessment at the beginning of the semester, both cognitive and non-cognitive. Formative is done after completing one learning topic, summative is done after completing one chapter or theme"* (Interview with Grade VI B Teacher, October 28, 2025).

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The utilization of diagnostic assessment results as a basis for differentiation planning remained informal. Teachers relied more on direct observation and teaching experience in adapting learning.

> *"In class, I usually adapt immediately. For example, children who are still struggling, I assist first; those who already understand, I give advanced tasks"* (Interview with Grade VI A Teacher, October 28, 2025).

Teachers also conducted non-cognitive diagnostic assessments to identify students' learning characteristics, including learning styles, interests, and motivation. Mental health and learning reflection documents were also used as instruments to monitor students' emotional and psychological conditions.

Analysis of daily learning journal documents showed that teachers routinely recorded learning activities, including the materials taught, the methods used, and brief reflections on the achievement of the learning objective.

The principal confirmed that the school provided full support for Merdeka Curriculum implementation through training provision, workshops, and the teacher learning community Kombel Serdadu (SDN Serang 20 Learning Community):

> *"We encourage teachers to share practices at school, so those who have tried can become examples for others"* (Interview with Principal, October 28, 2025).

Table 1. Synthesis of Differentiated Learning Practices in Grade VI at SDN Serang 20

Learning Aspect	Practice Findings	Data Source
Planning (Teaching Module)	Target students have been categorized (regular, high achievement, learning difficulties), but differentiation strategies have not been operationally detailed.	Teaching Module Documents, Teacher Interviews
Implementation (Process)	Differentiation is dominant in flexible grouping and individual mentoring, conducted adaptively during learning.	Classroom Observation, Teacher Interviews
Implementation (Content & Product)	Content and product variations are still limited; assignments tend to be uniform.	Classroom Observation, Teaching Module Documents
Learning Media	Concrete and digital media have been planned; teachers creatively create simple media when facilities are limited.	Teaching Module Documents, Observation, Interviews
Diagnostic Assessment	Conducted at the beginning of the semester (cognitive and non-cognitive), results have not been optimally used as the basis for written differentiation planning.	Assessment Documents, Teacher Interviews
Formative Assessment	Conducted informally through questioning and observation, assessment rubrics are still uniform.	Observation, Teaching Module Documents, Interviews

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Learning Aspect	Practice Findings	Data Source
School Support	Kombel Serdadu as a platform for sharing best practices, regular training, and principal mentoring	Principal Interview, Coordinator

2. Teachers' Constraints in Implementing Differentiated Learning

Research findings indicate that grade VI teachers faced various interrelated constraints that affected the quality of differentiated learning implementation, which were categorized into five main aspects: conceptual understanding, instructional material preparation, classroom implementation, infrastructure, and administrative support.

a. Constraints in Understanding the Concept of Differentiated Learning

Despite having attended training related to the Merdeka Curriculum, teachers' deep understanding of content, process, and product differentiation remained a challenge, particularly in translating diagnostic assessment results into concrete differentiation strategies.

> *"Initialloy, I was confused about differentiating formative and summative assessment. However, after training and practice, I began to understand the difference"* (Interview with Grade VI A Teacher, October 28, 2025)

b. Constraints in Preparing Instructional Materials

The main constraints were time limitations and the complexity of preparing detailed, differentiated teaching modules. Teachers prepared not only teaching modules but also supporting documents, including ATPs, semester programs, annual programs, and various administrative reports.

> *"If we want to detail it one by one, it indeed takes more time, while there is also a lot of administration to prepare"* (Interview with Grade VI B Teacher, October 28, 2025).

The curriculum coordinator confirmed that preparing ATPs and teaching modules takes time because they must be aligned with the broad Learning Outcomes. Although references are available on the Merdeka Mengajar Platform, teachers still need to adapt them to the school context.

c. Constraints in Classroom Implementation

The most prominent constraint was the very wide heterogeneity of student abilities. Diagnostic assessment results showed a significant range of scores for each subject, requiring teachers to make simultaneous learning adjustments.

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> *"In class, the children's abilities are different, so when teaching, I have to constantly adjust back and forth, while learning time is limited"* (Interview with Grade VI A Teacher, October 28, 2025).

Time management became a particular challenge, especially in group activities and presentations that often took longer than planned.

d. Infrastructure Constraints

Limited infrastructure constrained the optimal implementation of differentiated learning. The availability of facilities remained limited, causing teachers to take turns or create alternative learning media.

> "*School facilities are still limited, especially the number of projectors, which is inadequate (ratio 1:12 classes). However, internet is sufficiently available*" (Interview with Grade VI A Teacher, October 28, 2025).

These limitations affected teachers' ability to implement content differentiation.

> "*Usually one desk is for two students, with a ratio (1:2 students). This is quite helpful, although ideally each student should have their own book*" (Interview with Curriculum Coordinator, October 28, 2025).

e. Administrative Constraints

Administrative burden became a constraint affecting teachers' time and energy to focus on planning and implementing differentiated learning.

> *"Teacher administration is still too heavy. The curriculum is called 'merdeka' (independent), but the Administration is not yet. Administration should be made simpler and paperless*" (Interview with Grade VI A Teacher, October 28, 2025).

The principal confirmed that the administrative burden is quite high and the school continues to strive to simplify administrative procedures without reducing accountability.

Table 2. Matrix of Differentiated Learning Constraints in Grade VI at SDN Serang 20

Constraint Aspect	Constraint Description	Source Informants
Conceptual Understanding	Difficulty distinguishing and operationalizing formative-summative assessment; not yet understanding how to translate diagnostic assessment results into concrete differentiation strategies; requiring adaptation time for new concepts.	Grade VI A Teacher, Grade VI B Teacher, Coordinator, Principal
Instructional Materials	Limited time to prepare detailed teaching modules with specific differentiation strategies; difficulty analyzing and systematically documenting diagnostic assessment results; references from PMM require contextual adaptation	Grade VI A Teacher, Grade VI B Teacher, Coordinator

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Constraint Aspect	Constraint Description	Source Informants
Classroom Implementation	Very wide student ability heterogeneity (significant assessment score range); differences in learning pace require simultaneous adjustments; time management, especially in group activities and presentations	Grade VI A Teacher, Grade VI B Teacher, Coordinator
Infrastructure	Limited projectors (ratio 1:12 classes); books not yet 1:1 ratio per student; Smart TV available but limited; teachers use personal media; media limitations affect content differentiation	Grade VI A Teacher, Grade VI B Teacher, Coordinator
Administration	High administrative document burden, not yet paperless; takes up learning-planning time; gap between "merdeka" spirit and the complex administrative reality.	Grade VI A Teacher, Grade VI B Teacher, Principal

3. Teachers' Strategies in Overcoming Implementation Constraints

Research findings indicate that teachers have developed various adaptive strategies to overcome constraints in implementing differentiated learning.

a. Strategies to Overcome Conceptual Understanding Constraints

Teachers developed independent learning strategies through various sources, including official government platforms (PMM, GTK Space) and informal learning sources such as educational social media.

> *"I study independently through training at PMM, watching instructional videos, and following inspirational teachers like Deddy Rohandi"* (Interview with Grade VI B Teacher, October 28, 2025).

Teachers also actively participate in the Learning Community (Kombel Serdadu), held once a month, as a forum for sharing experiences and best practices.

b. Strategies to Overcome Instructional Material Preparation Constraints

Teachers applied simplification strategies by prioritizing core components of teaching modules and making flexible differentiation adjustments during learning.

> *"If the teaching module is made complete, it is indeed heavy, so usually I focus on the main objectives and activities first, then make adjustments as we go along in class"* (Interview with Grade VI B Teacher, October 28, 2025).

Teachers also developed collaboration strategies in preparing instructional materials by discussing and sharing tasks with colleague teachers.

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c. Strategies to Overcome Classroom Implementation Constraints

To accommodate student heterogeneity, teachers applied flexible grouping and individual mentoring strategies adapted to classroom conditions.

> "*I strive to create an inclusive, safe, and enjoyable learning atmosphere. The concept aligns with joyful learning and meaningful learning*" (Interview with Grade VI B Teacher, October 28, 2025).

A persuasive, personal approach became key in helping students who were slow to understand lessons. Teachers also developed innovative strategies in managing student behavior and social relations that support collaborative learning.

> "*Mrs Efa and I apply the restitution triangle to resolve conflicts between students. Children who quarrel are brought face to face until they reconcile themselves. We also create class agreements as behavioral guidelines*" (Interview with Grade VI B Teacher, October 28, 2025).

To overcome time management constraints, teachers used flexibility and creativity to implement active, enjoyable learning.

> "*I manage time strictly and flexibly according to the situation. If media is not available, I create simple learning media from surrounding materials*" (Interview with Grade VI A Teacher, October 28, 2025).

d. Strategies to Overcome Infrastructure Limitations

Teachers developed their creativity by creating simple yet effective learning materials, such as paper, pictures, and self-made charts, to explain learning concepts.

> *"We utilize the surrounding environment and school culture as learning resources. The principle is not to focus on what is lacking, but to maximize what is available"* (Interview with Curriculum Coordinator, October 28, 2025).

This strategy demonstrates teacher resilience and adaptability in the face of limitations. The principal also supports this by striving to gradually improve facilities through budget planning in the school RKAS and by optimizing the use of BOS funds.

e. Institutional School Support

The school provides systematic support through various programs, with Kombel Serdadu as the main pillar. In addition to the learning community, the school also provides mentoring through the PKKS (Principal Performance Assessment) program, which focuses not only on evaluation but also on coaching.

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"*The school is very supportive, especially in providing teaching materials, training, workshops, and seminars*" (Interview with Grade VI B Teacher, October 28, 2025).

Table 3. Matrix of Strategies to Overcome Differentiated Learning Constraints

Constraint Type	Applied Strategies	Source Informants
Conceptual Understanding	Independent training at PMM and GTK Space; following inspirational teachers through YouTube and TikTok; routine discussions in Kombel Serdadu; webinars and technical guidance; collaborative learning among teachers.	Grade VI A Teacher, Grade VI B Teacher, Coordinator, Principal
Instructional Materials	Simplification of teaching modules focusing on core objectives; collaborative drafting with colleagues in the same phase; adaptation from PMM adjusted to local context; utilization of BOS funds for support.	Grade VI A Teacher, Grade VI B Teacher, Coordinator
Learning Implementation	Flexible grouping based on learning readiness; intensive individual mentoring; persuasive and personal approaches; restitution triangle for conflict management; ice-breaking and active learning activities; integration of joyful, mindful, and meaningful learning.	Grade VI A Teacher, Grade VI B Teacher
Infrastructure	Creativity in making simple teaching media from surrounding materials; use of the school environment as a learning resource; alternating schedule arrangements; optimization of BOS funds for gradual procurement.	Grade VI A Teacher, Grade VI B Teacher, Coordinator, Principal
Institutional Support	Kombel Serdadu as a platform for sharing best practices; regular training and workshops; mentoring through the PKKS program; classroom observation and reflective discussions; collaboration with the Department of Education; collaborative leadership.	Principal, Coordinator

D. Discussion

The research findings indicate that differentiated learning practices in grade VI at SDN Serang 20 have been implemented as part of the Merdeka Curriculum. However, their application has not been fully systematic across all learning components. Differentiation appears more prominently in the learning implementation stage than in planning and evaluation. This condition suggests that teachers tend to practice differentiation adaptively based on classroom dynamics rather than through explicitly documented planning.

This pattern aligns with the pedagogical flexibility of the Merdeka Curriculum (Kemendikbudristek, 2022), yet it demands teachers' reflective capacity to manage student diversity. Tomlinson (2017) emphasizes that differentiation should ideally be designed from the planning stage by considering students' readiness, interests, and learning profiles to ensure consistent and effective outcomes. This condition is also consistent with the findings

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of Suprayogi et al (2017), who reported that elementary school teachers in Indonesia tend to apply differentiation informally through situational adjustments. These results are reinforced by Warsihna et al (2023) ho explain that although teachers have understood the concept of the Merdeka Curriculum, many still struggle to operationalize it in differentiated learning activities.

Louws et al (2017) emphasize that the success of curriculum implementation is greatly influenced by teachers' capacity to translate policy principles into contextual instructional practices. In the elementary school context, time constraints, resource limitations, and administrative burdens often shape more pragmatic implementation patterns. This explains why differentiation at SDN Serang 20 tends to be conducted adaptively during ongoing learning, rather than through systematic planning documented in teaching modules.

The most frequently applied differentiation strategy by teachers at SDN Serang 20 is process differentiation, with flexible grouping and individual mentoring. This strategy addresses the heterogeneity of students' academic abilities in grade VI, the final phase of elementary education, and one with high academic demands. This approach aligns with the view of Pozas et al (2020), who state that process differentiation is the most realistic starting point for accommodating diversity in students' learning readiness.

Empirically, this finding is consistent with the meta-analysis by Deunk et al (2018), which analyzed 14 studies on differentiation practices in elementary education. They found that process differentiation has the largest effect size (d = 0.19) among content and product differentiation in improving elementary students' cognitive learning outcomes. Their research also confirms that process differentiation is easier to implement because it does not require fundamental curriculum modifications, but rather adjustments in how students access and process information. In the context of the Merdeka Curriculum, Digna & Japa (2023) found that Indonesian elementary school teachers are more confident in applying process differentiation through flexible grouping and individual scaffolding than in applying content or product differentiation, confirming that process differentiation is the most realistic entry point for teachers to adopt differentiation gradually.

Similar results are also shown by Prast et al (2018), who emphasize that process differentiation can maintain student Engagement and create an inclusive learning environment. In the national context, Kusumaningpuri (2024) and Rompis (2023) found that process differentiation is the most common form of adaptation applied by Indonesian elementary school teachers because it is easily integrated into thematic and problem-based learning. They affirm that the success of differentiation largely depends on teachers' ability to conduct quick assessments of students' learning progress, which explains why teachers at SDN Serang 20 rely more on direct observation to adjust instruction.

Assessment is the primary foundation of differentiated learning because it determines students' readiness and learning needs. The research results show that teachers have conducted diagnostic and formative assessments. However, the results have not been fully used to design differentiation strategies systematically, and teachers rely more on

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informal observation than on written assessment data analysis. This condition is consistent with the view of Black & Wiliam (2018), who explain that formative assessment is only effective when its results are used as the basis for concrete instructional actions. Likewise, Andrade (2019) emphasizes in her critical review the importance of teachers' ability to interpret assessment data to direct relevant learning strategies.

In the Indonesian context, Sucipto et al (2024) found that many teachers understand the importance of diagnostic assessment but are not yet accustomed to documenting it as the basis for differentiation planning. Prihatien et al (2023) also noted that grade VI teachers struggle to conduct formative assessment consistently due to time constraints and academic pressure. Panadero et al (2017) emphasize in their meta-analysis that collaborative work in analyzing assessment data can strengthen teachers' capacity to make evidence-based instructional decisions, demonstrating that assessment success depends not only on instruments but also on teachers' reflective and collaborative practices.

The obstacles teachers face in implementing differentiated learning reflect a professional adaptation to curriculum policy changes. Strategies for simplifying planning, increasing implementation flexibility, and fostering learning community collaboration are teachers' coping strategies to maintain learning effectiveness amid limitations. Wan (2016) found in his study in Hong Kong that teachers' self-efficacy in implementing differentiation is greatly influenced by institutional support, access to practical training, and opportunities to collaborate with colleagues. Teachers with high self-efficacy are better able to develop adaptive strategies and remain motivated despite facing structural constraints. Admiraal et al (2016) add that effective teacher professional learning must provide affordances that support collaboration, reflection, and exploration of new practices in authentic school contexts.

Research by Day & Hong (2016) affirms that teacher resilience is formed through strong institutional support and professional networks. Similar results were found by Warsihna et al (2023), who showed that teachers active in learning communities are better able to adapt to curriculum changes. At SDN Serang 20, school leadership support has been shown to strengthen the teacher mentoring process, consistent with findings by Vangrieken et al (2015), who note that effective professional learning communities have characteristics of shared values, reflective collaboration, and a focus on student learning. Voogt et al (2016) emphasize that teacher collaboration in curriculum design teams not only improves the quality of lesson planning but also strengthens teachers' ownership and commitment. In the context of this research, Kombel Serdadu functions as a professional learning community that provides a safe space for teachers to share challenges, exchange strategies, and learn collectively.

Furthermore, Kennedy (2016) affirms that teachers' flexibility in making contextual decisions is an important form of professional judgment in the era of curriculum change. Teacher strategies such as simplifying teaching modules, flexible grouping, and creating simple media reflect rational and contextual professional adaptation. These strategies

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should not be viewed as deficiencies, but rather as forms of professionalism in responding to the complexity of curriculum implementation with available resources.

The findings of this research enrich the understanding of the implementation of differentiated learning in the final grade of elementary school as adaptive and pragmatic. The complexity of grade VI requires teachers to balance learning flexibility with the achievement of learning outcomes. Theoretically, these results support the view of Dixon et al (2014) that the success of differentiation is not measured by the ideal completeness of all its components, but by teachers' consistency in using assessment data to adjust instruction. This approach is realistic in schools with limited resources.

Valiandes (2015), in evaluating the impact of differentiation on literacy, found that adaptive and contextual differentiation is more effective in improving the quality and equity of learning than rigid or procedural application. This finding strengthens the argument that differentiation in the Indonesian elementary school context should be understood as a continuum of practices that develop gradually, rather than as an all-or-nothing implementation. From a national perspective, research shows that teachers' adaptation to the Merdeka Curriculum arises more from direct classroom practice (learning by doing) than from mere procedural application (Angga et al., 2022; Rompis, 2023; Sumarsih et al., 2022). This underscores the importance of providing teachers with space to experiment, reflect, and gradually develop differentiation practices tailored to their classroom and school contexts.

E. Implication

This research provides theoretical and practical implications for the development of differentiated learning in Indonesian elementary schools. Theoretically, the findings reinforce the view that differentiated learning within the Merdeka Curriculum is adaptive-pragmatic, in which teachers develop contextual strategies based on real classroom conditions and exercise professional judgment grounded in reflection, an understanding of student diversity, and assessment-based instructional decisions. Practically, the study highlights the importance of strengthening teachers' capacity to integrate diagnostic and formative assessments, supporting institutional learning communities as spaces for collaborative reflection, and simplifying administrative demands so teachers can focus on quality learning. For policymakers, these findings underline the need for practice-based mentoring, contextual teaching module examples, and school-based mentoring models involving principals and curriculum coordinators as instructional leaders to support sustainable implementation.

F. Limitation and Suggestion for Further Research

This research has several limitations. First, the study was conducted in a single public elementary school that has implemented the Merdeka Curriculum since 2022 with relatively strong institutional support, so the findings may not fully represent schools with different contexts or limited resources. Second, data collection was conducted within a

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limited timeframe, which restricts observation of long-term implementation dynamics. Third, the study focused only on grade VI, leaving differentiation practices in earlier phases unexplored. Fourth, the study did not examine the direct impact of differentiated learning on student learning outcomes. Future research should involve broader contexts through comparative studies across different school characteristics, longitudinal studies examining the development of teachers' differentiation capacity over time, action research measuring its impact on learning outcomes, and studies exploring effective teacher mentoring models in the Indonesian context.

G. Conclusion

This research found that differentiated learning in grade VI has been implemented, although not yet optimally across all learning components. Differentiation practices are dominant in the learning process through flexible grouping and individual mentoring, while content and product differentiation remain limited. Differentiation planning in teaching modules has identified student categories but has not been operationally detailed, making differentiation more adaptive and situational. Diagnostic assessment has been implemented, but its utilization as the basis for written differentiation planning has not been optimal.

The main obstacles include conceptual understanding that has not been operationalized, limited planning time, heterogeneity of student abilities, limited facilities and infrastructure, and high administrative burdens. Teachers develop adaptive strategies through independent learning, collaborative learning within the learning community, simplification of teaching modules, flexible grouping, individual mentoring, and creativity with simple media.

This research confirms that differentiation in the final grade of elementary school is adaptive-pragmatic in nature, demanding a balance between pedagogical flexibility and achievement of competency standards. Effective implementation of differentiated learning requires not only strengthening individual teacher capacity but also systemic support through a conducive learning ecosystem, continuous mentoring, and simplification of administrative burdens. Further research is needed to develop more contextual and sustainable teacher mentoring models.

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