



## Differentiated Learning Implementation in High Schools A Case Study in West Sumatra, Indonesia

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### ABSTRACT

This study examines the implementation of differentiated learning in high schools across West Sumatra, Indonesia, focusing on how educators adapt instruction to meet diverse student needs. The research investigates teachers' understanding, strategies, and challenges in applying differentiated instruction within the context of the Indonesian Merdeka Curriculum. Using a qualitative approach with classroom observations, teacher interviews, and document analysis across five high schools in West Sumatra, this study reveals that while teachers demonstrate awareness of differentiation principles, implementation remains inconsistent due to large class sizes, limited resources, and insufficient professional development. The findings indicate that successful differentiation requires sustained teacher training, administrative support, and cultural adaptation to local contexts. This research contributes to understanding how differentiated learning can be effectively implemented in Indonesian educational settings while addressing regional challenges.

## INTRODUCTION

Education systems worldwide are increasingly recognizing the importance of addressing student diversity in classrooms. Differentiated instruction has emerged as a pedagogical approach that acknowledges and responds to the varied learning needs, interests, and readiness levels of students. Tomlinson (2017) defines differentiated instruction as a framework that requires teachers to be proactive in modifying curriculum, teaching methods, resources, and learning activities to meet individual student needs. This approach has gained significant attention in educational discourse as classrooms become more heterogeneous, requiring educators to move beyond one-size-fits-all teaching methods (Muhsyanur, 2024).

In the Indonesian context, the implementation of differentiated learning has become particularly relevant with the introduction of the Merdeka Curriculum in 2022. This curriculum emphasizes student-centered learning and provides flexibility for teachers to adapt their instruction based on student needs and local contexts. According to Kemendikbudristek (2022), the Merdeka Curriculum encourages educators to implement differentiated learning strategies that honor student diversity and promote inclusive education. The shift toward differentiation represents a significant pedagogical transformation in Indonesian schools, requiring teachers to develop new competencies and mindsets about teaching and learning.

West Sumatra, as one of Indonesia's provinces with rich cultural heritage and diverse educational landscapes, presents unique opportunities and challenges for implementing differentiated learning. The region's schools serve students from various socioeconomic backgrounds, ranging from urban areas like Padang to rural communities in mountainous regions. Hattie (2012) and (Muhsyanur et al., 2021) emphasizes that effective differentiation must consider contextual factors, including cultural backgrounds, resource availability, and community expectations. Understanding how differentiated learning is implemented in West Sumatran high schools can provide valuable insights for educational policy and practice across Indonesia.

The theoretical foundation of differentiated instruction rests on constructivist learning theories and understanding of cognitive development. Vygotsky's zone of proximal development provides a framework for understanding how teachers can scaffold learning to meet students at their current level while challenging them appropriately. Gardner's theory of multiple intelligences further supports differentiation by recognizing that students possess different strengths and learning preferences. Tomlinson and Imbeau (2010) argue that differentiation is not merely a set of strategies but a philosophical approach that views student differences as normal and valuable rather than as problems to be solved.

Research on differentiated instruction has demonstrated positive effects on student achievement and engagement when implemented effectively. Studies by Deunk et al. (2018) indicate that differentiated instruction can lead to improved academic outcomes, particularly for students who struggle or those who need additional challenges. However, implementation quality varies significantly across

contexts, with teachers often facing barriers such as inadequate training, time constraints, and limited resources. These challenges are particularly pronounced in developing countries where educational systems may lack infrastructure and support mechanisms for innovative pedagogical approaches.

In Indonesian high schools, the transition to differentiated learning occurs within a context historically characterized by teacher-centered instruction and standardized curricula. The cultural dimensions of Indonesian education, including hierarchical teacher-student relationships and emphasis on examination performance, can both support and hinder differentiation efforts. Suryaman (2020) notes that Indonesian teachers often express commitment to student-centered approaches but struggle with practical implementation due to systemic constraints and ingrained teaching habits. Understanding these tensions is crucial for supporting effective differentiation in Indonesian contexts.

West Sumatra's educational landscape reflects broader Indonesian patterns while also exhibiting regional characteristics. The province has made significant investments in education infrastructure and teacher development, yet challenges remain in ensuring equitable access to quality education across urban and rural areas. According to local education statistics, high schools in West Sumatra vary considerably in terms of resources, teacher qualifications, and student performance. This variability makes the province an ideal context for examining how differentiated learning can be adapted to diverse school environments while maintaining fidelity to core principles of the approach.

This research addresses the gap in understanding how differentiated learning is conceptualized and implemented in Indonesian high schools, specifically within the West Sumatran context. By examining teacher practices, institutional support systems, and student outcomes, this study aims to contribute evidence-based recommendations for strengthening differentiated instruction implementation. The findings have implications not only for West Sumatra but for other regions in Indonesia and similar educational contexts in Southeast Asia where educators are working to make instruction more responsive to student diversity.

## **METHODE**

This study employed a qualitative research design to explore the implementation of differentiated learning in high schools across West Sumatra. The qualitative approach was chosen because it allows for in-depth examination of how teachers understand and practice differentiation in their specific contexts. As Creswell and Poth (2018) explain, qualitative research is particularly appropriate when studying complex social phenomena in natural settings, enabling researchers to capture the nuanced experiences and perspectives of participants. This methodology aligns with the study's aim to understand not just what teachers do but why and how they make instructional decisions regarding differentiation.

Data collection occurred over a six-month period from January to June 2024 and involved multiple methods to ensure comprehensive understanding of

differentiated learning practices. Classroom observations were conducted in 15 classrooms across five high schools in West Sumatra, selected to represent urban, suburban, and rural settings. Semi-structured interviews were held with 20 teachers and 5 school principals to gather perspectives on differentiation philosophy, strategies, challenges, and support systems. Document analysis included examination of lesson plans, student work samples, and school policies related to curriculum implementation. According to Merriam and Tisdell (2016), this triangulation of data sources enhances the credibility and trustworthiness of qualitative findings by allowing researchers to cross-verify information from multiple perspectives.

Data analysis followed thematic analysis procedures as outlined by Braun and Clarke (2021), involving systematic coding and pattern identification across the dataset. Interview transcripts were transcribed verbatim and coded using both deductive codes derived from differentiated learning literature and inductive codes emerging from the data. Classroom observation notes were analyzed for evidence of differentiation strategies including content, process, product, and learning environment modifications. The research maintained ethical standards through informed consent procedures, participant confidentiality, and member checking to validate interpretations. This rigorous analytical approach enabled the identification of key themes regarding how differentiated learning is understood and practiced in West Sumatran high schools.

## **RESULT AND DISCUSSION**

### **Understanding of Differentiated Learning Among Teachers**

Teachers in West Sumatran high schools demonstrated varying levels of understanding regarding differentiated learning principles and practices. Interview data revealed that most participants (18 out of 20) could articulate basic definitions of differentiation, often relating it to addressing student diversity and individual needs. One experienced teacher from an urban school explained that differentiation means recognizing that students learn differently and adjusting teaching accordingly. This understanding aligns with Tomlinson's (2017) conceptualization of differentiation as responsive teaching that proactively addresses learner variance. However, deeper analysis revealed that teachers' theoretical knowledge often exceeded their practical application capabilities.

The concept of differentiation was frequently conflated with individualized instruction or remedial teaching among participants. Several teachers described differentiation primarily as providing extra support for struggling students rather than as a comprehensive approach benefiting all learners. This narrow interpretation contrasts with research by Suprayogi et al. (2021) emphasizing that differentiation should challenge advanced learners while supporting those who struggle, creating optimal learning conditions for every student. The misconception that differentiation serves only struggling students potentially limits its implementation scope and effectiveness in classrooms.

Teachers' understanding was significantly influenced by their exposure to professional development opportunities. Those who had participated in workshops on the Merdeka Curriculum demonstrated more sophisticated understanding of differentiation principles. According to Subedi (2019), sustained professional development that includes both theoretical learning and practical application support is essential for teachers to develop robust understanding of differentiation. In West Sumatra, teachers who received ongoing mentoring showed greater confidence in explaining how differentiation connects to learning theories and student developmental needs.

Cultural factors also shaped how teachers conceptualized differentiation within the Indonesian educational context. Many participants expressed concern about maintaining classroom harmony and avoiding perceptions of favoritism when treating students differently. This reflects Hofstede's cultural dimension of collectivism prevalent in Indonesian society, where group cohesion is highly valued. As noted by Tomlinson and Imbeau (2010), successful differentiation requires explicit communication with students about fairness meaning everyone getting what they need rather than everyone getting the same thing. Teachers in West Sumatra are navigating how to implement differentiation while honoring cultural values that emphasize group welfare and respect for authority.

### Differentiation Strategies in Practice

Classroom observations revealed that teachers employed various differentiation strategies with differing frequencies and effectiveness levels. Content differentiation was most commonly observed through tiered assignments where students worked on problems at varying complexity levels based on their readiness. Process differentiation occurred through flexible grouping strategies, with teachers organizing students homogeneously for skill development and heterogeneously for peer learning. Product differentiation was less frequently observed but included options for students to demonstrate learning through presentations, written reports, or creative projects. These practices reflect the four key elements of differentiation identified by Tomlinson (2017): content, process, product, and learning environment.

Table 1: Observed Differentiation Strategies in West Sumatran High Schools

Strategy Type	Frequency	Examples Observed	Effectiveness Rating
Tiered Assignments	High	Math problems at 3 levels, Reading texts with varying complexity	Moderate to High
Flexible Grouping	Moderate	Skill-based groups, Mixed-ability groups	Moderate
Learning Centers	Low	Station rotation in language classes	Variable
Choice Boards	Low	Project options in social studies	High (when used)

Strategy Type	Frequency	Examples Observed	Effectiveness Rating
Varied Pacing	Moderate	Extended time for assessments, Compacting for advanced students	Moderate
Technology Integration	Low	Adaptive learning software, Online resources	High (when available)

Technology integration for differentiation remained limited across observed schools despite its potential to support individualized learning. Only three schools had reliable internet connectivity and sufficient devices for differentiated technology use. Research by Hall et al. (2020) demonstrates that technology can facilitate differentiation by providing adaptive content, immediate feedback, and diverse presentation formats. The digital divide between urban and rural schools in West Sumatra creates inequitable opportunities for implementing technology-enhanced differentiation strategies.

Assessment practices showed mixed alignment with differentiation principles. While some teachers used pre-assessment to inform instructional planning, formative assessment practices were inconsistently applied. Continuous assessment allows teachers to adjust instruction based on ongoing evidence of student learning, a cornerstone of effective differentiation according to Deunk et al. (2018). Teachers reported feeling pressure to cover curriculum content within limited timeframes, making it difficult to pause for assessment and instructional adjustment. This tension between curriculum coverage and responsive teaching represents a significant challenge to differentiation implementation.

The learning environment dimension of differentiation received less explicit attention in observed classrooms despite its importance for supporting diverse learners. Physical classroom arrangements typically featured traditional row seating with limited flexibility for varied learning configurations. However, some teachers cultivated inclusive classroom cultures that valued diverse contributions and normalized asking for help. As Subedi (2019) emphasizes, the psychological environment—characterized by respect, safety, and growth mindset—is as crucial as physical arrangements for effective differentiation. Teachers who established strong relationships with students and communicated high expectations while providing necessary support created environments more conducive to differentiated learning.

### **Challenges and Support Systems**

Implementation challenges emerged as a dominant theme across all participant schools, with large class sizes cited most frequently as barriers to effective differentiation. Teachers reported having 36-40 students per class, making it difficult to monitor individual progress and provide personalized support. This finding aligns with research by Suprayogi et al. (2021) indicating that class size significantly impacts teachers' capacity to differentiate instruction effectively. One teacher

poignantly noted that while she understands differentiation principles, managing diverse needs for 38 students feels overwhelming without additional support.

Time constraints represented another critical challenge affecting differentiation implementation quality. Teachers described heavy workloads including administrative duties, co-curricular activities, and preparation for multiple classes with different grade levels. Planning differentiated lessons requires additional time for creating varied materials, designing tiered activities, and analyzing student data to inform instruction. According to Tomlinson and Imbeau (2010), successful differentiation requires investment in planning time that many school systems fail to provide adequately. West Sumatran teachers expressed desire for collaborative planning time with colleagues to share differentiation strategies and resources.

Resource limitations posed practical barriers particularly in rural schools where access to diverse learning materials was restricted. While urban schools could access libraries, educational technology, and varied instructional materials, rural schools relied primarily on textbooks and teacher-created resources. Kemendikbudristek (2022) acknowledges resource disparities across Indonesian schools as challenges to equitable curriculum implementation. Creative teachers in resource-limited settings developed low-cost differentiation strategies such as using local materials and community resources, demonstrating that differentiation is possible though more challenging without adequate materials.

Administrative support varied considerably across schools and significantly influenced differentiation implementation success. Schools where principals actively promoted differentiation through professional development, collaborative planning time, and public recognition of innovative teaching showed more consistent implementation. Leadership support is identified by Hattie (2012) as critical for sustaining instructional innovation, as principals set expectations, allocate resources, and shape school culture. Conversely, schools where administration focused primarily on examination results with little attention to instructional methodology showed limited differentiation despite teacher interest.

Professional development opportunities specifically addressing differentiation remained insufficient across the province. While initial Merdeka Curriculum training introduced differentiation concepts, ongoing support for deepening implementation was limited. Effective professional development for differentiation requires sustained engagement including modeling, practice, feedback, and reflection as described by Creswell and Poth (2018). Teachers expressed desire for practical workshops demonstrating differentiation in their specific subject areas and school contexts rather than generic theoretical presentations.

Peer collaboration emerged as an informal support system with significant potential for strengthening differentiation practices. Teachers who engaged in collegial sharing of strategies, co-planning lessons, and peer observation reported greater confidence and more diverse differentiation approaches. According to Merriam and Tisdell (2016), communities of practice where teachers collaboratively solve instructional challenges can accelerate professional learning. Several schools

had begun establishing teacher learning communities focused on Merdeka Curriculum implementation, providing platforms for sharing differentiation experiences and resources.

Parental understanding and support for differentiation varied and sometimes posed challenges when parents questioned why students received different assignments or assessment formats. Teachers noted the importance of communicating with parents about differentiation philosophy to build understanding and support. As Subedi (2019) suggests, stakeholder education about differentiation helps address concerns about fairness and prepares families to support varied learning approaches at home. Schools that proactively engaged parents through meetings and newsletters about Merdeka Curriculum changes including differentiation experienced fewer misunderstandings.

The provincial education office's role in supporting differentiation implementation showed potential but remained underdeveloped. While policy documents endorsed differentiated learning aligned with national curriculum directives, systematic support including monitoring, resource provision, and recognition of exemplary practice was limited. Research by Hall et al. (2020) emphasizes that policy-level support including clear expectations, resources, and accountability mechanisms strengthens implementation of instructional innovations. Strengthening the connection between provincial education policy and school-level practice could accelerate differentiation adoption across West Sumatra.

### **Student Outcomes and Engagement**

Student engagement observations revealed notable differences between classrooms implementing robust differentiation and those using primarily whole-class instruction. In differentiated classrooms, students demonstrated higher levels of active participation, asking questions, and persisting with challenging tasks. When students worked on appropriately challenging activities matching their readiness levels, off-task behavior decreased markedly. These observations support findings by Deunk et al. (2018) that differentiated instruction enhances student engagement by providing optimal challenge and relevance.

Teachers reported improved student confidence and willingness to take academic risks in classrooms where differentiation normalized working at different levels. Students interviewed described appreciating when teachers provided options for demonstrating learning or allowed varied pacing for completing assignments. One student explained feeling less anxious about mathematics when the teacher provided problems matching his current skill level with gradual progression to more complex concepts. This reflects Vygotsky's zone of proximal development principle that learning is most effective when tasks are neither too easy nor too difficult but appropriately challenging with support.

Academic performance data from schools implementing differentiation more consistently showed positive trends though conclusive causal claims require longitudinal quantitative research. Teachers observed particular benefits for students

at both ends of the achievement spectrum – those who previously struggled gained confidence and skills through appropriate support, while high-achieving students who had been bored with standard curriculum showed renewed engagement when provided advanced challenges. Tomlinson (2017) emphasizes that differentiation should benefit all students by providing appropriate challenge and support regardless of starting point.

The affective dimension of learning showed improvements in differentiated classrooms as students expressed feeling valued and understood by teachers who recognized their individual needs. Building positive teacher-student relationships is identified by Hattie (2012) as among the most powerful influences on student achievement. Differentiation provides a framework for teachers to know students deeply—their interests, strengths, challenges, and aspirations—enabling more personalized support. Students described feeling that teachers "really cared" about their learning when instruction was adapted to their needs.

## CONCLUSION

This study reveals that while high school teachers in West Sumatra demonstrate growing awareness of differentiated learning principles, implementation remains uneven and faces significant systemic challenges. Teachers understand differentiation conceptually and recognize its potential benefits for addressing student diversity, yet translating this understanding into consistent classroom practice is constrained by large class sizes, limited resources, time pressures, and insufficient ongoing professional development. The research indicates that differentiation is not merely a technical skill to be learned but requires supportive ecosystems including administrative backing, collaborative professional cultures, adequate resources, and alignment with assessment and accountability systems.

The findings suggest several implications for strengthening differentiated learning implementation in West Sumatran schools and similar contexts. First, sustained professional development that moves beyond introductory workshops to include ongoing coaching, collaborative planning, and peer learning communities is essential for building teacher capacity. Second, addressing structural barriers such as class size and resource allocation requires policy-level interventions that may challenge traditional resource distribution patterns. Third, leadership development ensuring principals can support and sustain instructional innovation will multiplicatively affect implementation quality across schools. Finally, differentiation must be culturally adapted to Indonesian contexts, honoring collectivist values while promoting individualized learning approaches.

Future research should examine long-term student outcome impacts of differentiated learning in Indonesian settings through mixed-methods longitudinal designs. Additionally, investigation of how technology can support differentiation in resource-constrained environments could identify scalable solutions. Comparative studies across Indonesian provinces would illuminate how regional characteristics

influence implementation and what adaptations prove most effective in diverse contexts. As Indonesia continues curriculum reform emphasizing student-centered learning, understanding how to implement differentiation effectively will be crucial for achieving the Merdeka Curriculum's vision of education that honors and develops each student's unique potential.

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