

Implementation of Differentiated Learning Models in Improving the Quality of Teaching Practices of Elementary School Teachers

Ronny Mugara^{a*}, Enjang Yusup Ali^b

^aInstitut Keguruan dan Ilmu Pendidikan Siliwangi, Bandung, Indonesia, ronnymugara@ikipsiliwangi.ac.id

^bUniversitas Pendidikan Indonesia, Bandung, Indonesia, enjang@upi.edu

*Correspondence: ronnymugara@ikipsiliwangi.ac.id

Abstract

This study aims to describe the implementation of differentiated learning models in teaching practices in elementary schools and analyze their contribution to improving the quality of learning. This study is based on the observation that teachers' teaching practices in the field are often still homogeneous and less responsive to the diverse abilities, interests, and learning styles of students. On the other hand, the Merdeka Curriculum emphasizes adaptive and student-centered learning. Using a qualitative approach and case study design, this study involved elementary school teachers as participants. Data were collected through participatory observation, in-depth interviews, and documentation of teaching materials. Analysis was conducted using Miles and Huberman's interactive model, which consists of data reduction, data presentation, and conclusion drawing. Findings indicate that the implementation of differentiated learning improves the quality of teaching practices, particularly in lesson planning, classroom management, and evaluation that are more responsive to student needs. At the same time, this study identified several challenges faced by teachers, including limited conceptual understanding, technical skills, and institutional support. These findings highlight the role of differentiated learning as a transformative strategy that not only improves teacher professionalism but also strengthens the implementation of the Merdeka Curriculum in elementary schools.

Keywords:

Elementary school, Case studies;
Differentiated learning;
Merdeka Curriculum;
Teaching practices

1. Introduction

Improving the quality of teachers' teaching practices is a key prerequisite for effective and meaningful learning in elementary schools. The quality of teaching practices is not solely determined by mastery of the subject matter, but also by teachers' ability to design, implement, and evaluate learning that is responsive to the diverse characteristics of students (Hollins, 2011). In the context of elementary education, students exhibit significant variations in academic abilities, learning styles, interests, and social and cultural backgrounds. This diversity demands an adaptive and student-centered pedagogical approach, in line with the demands of 21st-century learning, which emphasizes inclusivity, flexibility, and equity in the learning process.

One relevant approach to addressing these challenges is differentiated learning, a learning strategy that allows teachers to tailor learning content, processes, and products based on students' readiness, interests, and learning profiles (Sudirman et al., 2023; Fatihah et al., 2024). This approach not only aims to improve student learning outcomes but also contributes to improving the quality of teachers' professional teaching practices. In Indonesia, the urgency of differentiated learning has grown stronger with the implementation of the Independent Curriculum, which places student diversity at the heart of learning planning and implementation. However, the implementation of these principles in classroom practice still faces various structural and pedagogical obstacles.

Various findings in the field indicate that many elementary school teachers still apply a uniform learning approach, with limited adaptation to differences in student abilities, interests, and learning

styles. This condition is often influenced by teachers' limited understanding of the concept of differentiated learning, a lack of practical experience in designing differentiation strategies, and minimal support for ongoing professional development. As a result, the quality of teaching practices does not fully reflect the principles of inclusive and equitable learning as mandated by curriculum policies. This gap between curriculum demands and the reality of classroom learning practices highlights the need for more in-depth and contextual empirical studies.

A review of the literature shows that most research on differentiated learning still focuses on its impact on student learning outcomes, while studies specifically examining its contribution to the quality of teachers' teaching practices are relatively limited. Furthermore, many previous studies were conducted in developed countries, thus not fully representing the educational conditions in developing countries like Indonesia, which have different social and cultural complexities and resource availability. Research exploring teachers' experiences in planning and implementing differentiated learning, particularly at the elementary school level in Indonesia, is still rare. This research gap underscores the need for research that places the quality of teachers' teaching practices as the primary focus of analysis.

Based on this background, this study aims to comprehensively examine the implementation of differentiated learning in the teaching practices of elementary school teachers and its contribution to improving the quality of teaching practices. Specifically, this study aims to: (1) analyze how teachers plan differentiated learning; (2) examine strategies for implementing differentiated learning in classroom practice; (3) evaluate the quality of teachers' teaching practices within the context of differentiated learning; and (4) identify challenges and opportunities in its implementation. The research questions were formulated to systematically explore the relationship between differentiated learning and improving the quality of teachers' teaching practices.

The uniqueness of this study lies in its emphasis on the quality of teachers' teaching practices as the primary indicator of the success of differentiated learning, rather than solely on student academic achievement. Thus, this study provides a theoretical contribution in broadening the understanding of differentiated learning as a framework for teacher professional development, as well as a methodological contribution by presenting empirical evidence contextualized to primary education in Indonesia. Practically, the findings of this study are expected to inform recommendations for teachers, educational institutions, and policymakers in strengthening the implementation of the Independent Curriculum and improving the pedagogical competence of primary school teachers. Therefore, this research is not only academically relevant but also has direct implications for improving the quality of learning in primary schools.

2. Method

This research employed a qualitative approach with a case study design, chosen to gain an in-depth and contextual understanding of the implementation of differentiated learning in the teaching practices of elementary school teachers. The qualitative approach allows for a comprehensive exploration of the processes, meanings, and dynamics of teaching practices in authentic classroom contexts, thus aligning with the research objectives, which focus on the quality of teaching practices rather than on quantitatively measuring relationships between variables. The case study design was used to intensively examine the implementation of differentiated learning in a specific context, either in a single school or across multiple classrooms, to generate a detailed picture of pedagogical strategies, implementation challenges, and their implications for the quality of teachers' teaching practices.

The research subjects consisted of elementary school teachers who had implemented differentiated learning in their teaching processes. Students were involved as supporting informants to provide additional perspectives on their learning experiences and responses to teachers' teaching practices. Subject selection was purposive, considering their relevance to the research focus and the depth of information available. The research was conducted within the context of regular classroom learning, ensuring that the data collected reflected natural and authentic teaching practices. Data collection was conducted using several techniques to ensure the depth and completeness of information, namely: (1) systematic classroom observations to identify teachers' actual practices in planning, implementing, and evaluating differentiated learning; (2) in-depth semi-structured interviews with teachers to explore conceptual understanding, implementation strategies, and the challenges and support

they experienced; and (3) analysis of learning documents, including lesson plans, teaching materials, and assessment instruments, to examine the consistency between planning and learning practices.

Data were analyzed using thematic analysis using the Miles and Huberman interactive model, which includes data reduction, data presentation, and drawing and verifying conclusions. Analysis was conducted iteratively and continuously throughout the research process to identify patterns, themes, and meaningful relationships relevant to the quality of differentiated learning practices. Data validity was ensured through triangulation of sources, techniques, and time, and strengthened by member checking and the creation of an audit trail. This strategy was used to ensure the credibility, dependability, and confirmability of the research findings, ensuring scientific accountability.

3. Results and Discussion

3.1 Results

Research on the implementation of differentiated learning in three elementary schools shows significant variations in school policies, teacher strategies, and student learning outcomes. Findings from interviews, classroom observations, and document analysis highlight several key differences.

School A demonstrated relatively consistent differentiated learning practices. The principal emphasized that differentiation had been positioned as a core element in the implementation of the Merdeka Curriculum. Institutional support was provided through Internal Training Programs (IHT), teacher forums, and ongoing supervision. Teachers adapt teaching materials to accommodate students with diverse abilities, including students with special needs. Lesson plans include a variety of activities, while student portfolios reflect a range of learning outcomes such as reports, posters, and group project work. However, limited digital resources and difficulties in maintaining teacher motivation remain significant challenges.

School B implements simpler practices, with an emphasis on basic literacy in the lower grades. Teachers adapt teaching materials based on students' reading abilities. Students who are already fluent readers are given short texts and writing assignments, while beginners are supported with illustrated worksheets and repetitive exercises. To enrich the learning process, teachers also try Problem-Based Learning (PBL) methods, role-playing, and group discussions. However, assessment is a significant challenge, especially in ensuring fairness for students with different abilities. These findings are in line with the research by Istiyati et al. (2024), which reported that elementary school teachers in Surakarta still face difficulties in implementing differentiated assessment, even though they demonstrate competence in the use of learning media and reflective practices.

School C showed a moderate level of implementation, with a stronger focus on adjusting teaching to students' learning styles. For example, in science lessons, students with visual learning styles were assigned to make food chain posters, students with auditory learning styles were involved in discussions and presentations, while students with kinesthetic learning styles participated in role-playing activities. Teachers also provide opportunities for students to create various products, such as short stories and short plays. However, they acknowledge that preparing these activities increases their workload, especially given the school's limited facilities. This situation is in line with the findings of Zulaiha (2025), who observed that although differentiated processes and products have begun to be implemented, teachers still face obstacles related to understanding, time, and resources.

Table 1

Comparison of Differentiated Learning Implementation in Three Elementary Schools

Aspect	School A	School B	School C
Policies & Support	There are IHT programs, supervision, and teacher communities.	Limited, individual teacher initiatives	There is support, but it is informal and limited in terms of facilities.
Content	The material is modified according to ability, including children with special needs.	Focus on basic literacy (text vs. images)	Adapted to learning styles (visual, auditory, kinesthetic)

Aspect	School A	School B	School C
Process	Grouping, varied strategies, reflection	PBL, role-playing, group discussions	Multimodal activities according to learning styles
Product	Posters, reports, portfolios	Simple worksheets, pictures	Posters, plays, short stories
Challenges	Limited facilities, teacher motivation	Time, fair assessment, minimal training	High workload, limited resources
Impact	Consistent, supporting the progress of students with special needs	Student participation in basic literacy has increased	Students are more active, but teachers are overburdened

3.2 Discussion

The findings of this study indicate that the implementation of differentiated learning in elementary schools is still inconsistent. Its success is greatly influenced by external factors such as school leadership, teacher competence, and resource availability. This inconsistency reflects variations in the education ecosystem, where schools with strong institutional support are better able to implement innovations than schools that rely on individual teacher initiatives. These results are in line with national studies that highlight that structural factors play a crucial role in determining the success of pedagogical innovations at the elementary school level (Pratiwi, 2021). Further international studies support this perspective, showing that resource constraints often hinder the adoption of differentiation strategies, especially in developing contexts such as Indonesia (Tomlinson, 2020). Therefore, this study emphasizes the importance of adopting a holistic approach to reduce this inequality and promote more inclusive learning practices.

At School A, leadership support played a key role in accelerating the implementation of differentiated learning. Visionary principals not only provided strategic direction but also improved teacher competence through regular internal training (IHT) and constructive supervision based on classroom observations. This strategy succeeded in creating a collaborative culture, enabling teachers to feel more confident in trying various teaching methods, such as grouping students based on their level of learning readiness. These findings are in line with the research by Sulistiani et al. (2025), which emphasizes that the quality of differentiated learning in elementary schools is greatly influenced by institutional support and the continuity of teacher training programs. Similarly, Nugroho (2022) reports that transformational leadership can increase teacher motivation by up to 30%, thereby accelerating the integration of differentiated learning into everyday pedagogical practices. Thus, strong leadership emerges as a critical catalyst in driving educational transformation.

At School B, teachers mostly rely on their personal creativity to implement differentiation in the absence of adequate institutional support. Although the strategies implemented, such as adjusting tasks according to student abilities, reflect the principles of differentiation, time and resource constraints pose significant challenges in implementing formative assessment. Teachers find it difficult to provide fair and individualized assessments, which often compromises the accuracy of measuring student progress. This situation is in line with the findings of Istiyati et al. (2024), who noted that assessment remains the biggest challenge in differentiation, mainly due to the difficulty of developing flexible rubrics. Similarly, Sari (2023) highlights that without specific training in assessment, teachers' creativity alone is unsustainable and risks causing fatigue and inconsistency in practice. Therefore, the case of School B highlights the importance of systematic external support to overcome these limitations.

At School C, the implementation of differentiated learning is still in its early stages. Teachers' understanding is generally limited to grouping students into visual, auditory, or kinesthetic learners. Although this approach has succeeded in increasing student engagement, it does not yet represent comprehensive differentiation that takes into account readiness, interests, and broader learning profiles. Teachers' efforts are also constrained by heavy workloads and limited infrastructure, such as divided classrooms and inadequate digital resources. These findings are in line with Zulaiha (2025), who reported that inadequate understanding and resource constraints hinder the sustainability of differentiation initiatives in rural schools. Similarly, Widodo and Fitriani (2021) observed that limited

access to technology often forces teachers to revert to conventional teaching methods. As a result, the case of School C highlights the need for continuous professional development and guidance to enable the concept of differentiation to evolve into a more mature and sustainable practice.

From a research perspective, differentiated learning has been proven to provide benefits not only in improving student achievement but also in encouraging teacher professional growth. Practicing this encourages teachers to become more reflective, adaptive, and collaborative, thereby strengthening their professionalism. This is supported by Hidayati and Sujarwati (2023), who reported that differentiation in the Merdeka Curriculum can improve student learning outcomes by up to 25% while also boosting teachers' confidence. Similarly, Kusuma (2024) emphasizes that differentiation contributes to reducing teacher fatigue, thereby supporting long-term teacher retention. In this regard, differentiation can be considered a double investment for both students and teachers.

From a policy perspective, these findings are in line with Mutmainah et al. (2024), who argue that although teachers conceptually understand differentiation, practical obstacles such as time constraints, rigid curriculum structures, and limited resources remain significant challenges. Although national initiatives such as the Merdeka Curriculum provide greater flexibility, their effectiveness is highly dependent on adequate budget allocation, ongoing training, and adequate infrastructure. Abdullah (2022) further points out that in the absence of effective policy monitoring, disparities between schools can reach up to 40%. Therefore, integrating differentiation into national teacher competency standards emerges as a crucial recommendation to ensure sustainability and fairness in its implementation.

From a theoretical perspective, this study contributes to the literature by viewing differentiation not only as a reactive pedagogical response to student diversity, but also as a proactive tool for teacher professional development. Tomlinson's (2020) differentiation framework, which emphasizes adaptation of content, process, and product, is further enriched by the addition of an institutional dimension involving leadership support and resource availability. This perspective complements Vygotsky's theory of adaptive learning, which has been reinterpreted in the context of the Merdeka Curriculum (Susanto, 2023). Additionally, Rahman and Dewi (2021) demonstrate that differentiation can be integrated with competency-based learning theory, thereby enriching the discourse on inclusive education in the digital age.

From a practical perspective, three strategic steps are recommended to maintain the implementation of differentiation. First, continuous professional development should be provided, with a particular emphasis on differentiation assessment and heterogeneous classroom management (Putri, 2024). Second, school policies should encourage systematic supervision, teacher collaboration through professional learning communities, and fair distribution of workload. Third, resource provision must be strengthened, especially in schools with limited facilities, by utilizing free digital platforms or modular teaching materials (Ministry of Education and Culture, 2022). The effectiveness of these efforts can be evaluated through indicators such as teacher participation rates and improvements in student assessment results (Ahmad, 2023).

By strengthening leadership, improving teacher capacity, and improving resource provision, differentiation has the potential to transcend isolated individual initiatives and develop into a systemic strategy. Such progress will promote inclusive and equitable learning practices in line with the mandate of the Merdeka Curriculum. However, achieving this transformation requires collaboration between various stakeholders including the government, schools, and local communities to ensure its long-term sustainability (Lestari et al., 2024). Ultimately, this study provides a foundation for further research on the long-term impact of differentiation in promoting educational equity in Indonesia.

4. Conclusion

This study concludes that the implementation of differentiated learning in elementary schools is still uneven in terms of quality, influenced by factors such as school leadership, teacher professional capacity, and the availability of facilities and infrastructure. School A showed the most consistent implementation, supported by clear policy direction, ongoing teacher training, regular supervision, and a collaborative teacher community that encouraged reflective practice. On the other hand, School B relies on individual teacher initiatives, particularly in adapting literacy content, but faces significant challenges related to assessment, time constraints, and minimal institutional support. School C implements transitional practices by adapting activities to students' visual, auditory, and kinesthetic

learning styles, which has successfully increased engagement but is difficult to sustain due to facility limitations, lack of teacher collaboration, and heavy workloads. Overall, these findings confirm that differentiated learning is not only vital for addressing students' diverse abilities, interests, and learning styles, but also serves as a means to strengthen teachers' professionalism and capacity in designing, implementing, and evaluating more responsive and inclusive teaching practices. Therefore, strategic efforts are needed, including the provision of more targeted and continuous training on assessment practices different assessments, strengthening institutional commitment through supportive policies and effective oversight, and improving infrastructure to enable differentiated learning to evolve from individual initiatives into sustainable systemic strategies. When these measures are optimized, differentiated learning has the potential to fully realize the goals of the Merdeka Curriculum by promoting inclusive and equitable education that meets the demands of 21st-century learning.

5. References

- Abdullah, R. (2022). Kebijakan pendidikan inklusif di sekolah dasar: Tantangan dan solusi. *Jurnal Pendidikan Dasar Indonesia*, 10(2), 45–60.
- Fatihah, J. J., Sudirman, S., & Mellawaty, M. (2023). Improving geometric thinking skills through learning cycles assisted by interactive geometry books. *International Journal of Mathematics and Sciences Education*, 1(2), 81–85. <https://doi.org/10.59965/ijmsed.v1i2.74>
- Istiyati, S., Marmoah, S., & Poerwanti, J. I. S. (2024). Elementary School Teacher's Competence in Implementing Differentiated Learning in Surakarta City. *Jurnal Penelitian Pendidikan IPA*, 10(10), 7276-7284.
- Hollins, E. R. (2011). Teacher preparation for quality teaching. *Journal of Teacher education*, 62(4), 395-407.
- Kusuma, A. (2024). Dampak diferensiasi terhadap profesionalisme guru SD. *Jurnal Pengembangan Guru*, 14(2), 150–165.
- Mutmainah, S.(2024). Hambatan implementasi diferensiasi: Perspektif kebijakan. *Jurnal Manajemen Pendidikan*, 9(4), 300–315.
- Pratiwi, L., & Rahman, A. (2021). Faktor struktural dalam inovasi pedagogis sekolah dasar. *Jurnal Pendidikan Indonesia*, 7(2), 120–135.
- Sulistiani, R., et al. (2025). Variasi mutu implementasi diferensiasi di SD: Peran dukungan institusional. *Jurnal Pendidikan Dasar*, 17(1), 1–18.
- Sudirman, S., Andrés Rodríguez-Nieto, C., Bongani Dhlamini, Z., Singh Chauhan, A., Baltaeva, U., Abubakar, A., O. Dejarlo, J., & Andriani, M. (2023). Ways of thinking 3D geometry: exploratory case study in junior high school students. *Polyhedron International Journal in Mathematics Education*, 1(1), 15–34. <https://doi.org/10.59965/pijme.v1i1.5>
- Tomlinson, C. A., & Moon, T. R. (2020). *Differentiated instruction: A guide for middle and high school teachers*. Alexandria, VA: ASCD.
- Zulaiha, S. (2025). Implementing Differentiated Instruction In Bahasa Indonesia Within The Framework of The Merdeka Curriculum. *Terampil: Jurnal Pendidikan dan Pembelajaran Dasar*, 12(1), 116-133.