

# Elementary School Teachers' Understanding of Differentiated Instruction: Challenges and Opportunities

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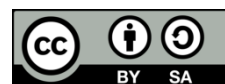
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## Abstract

Differentiated learning enables teachers to design instruction that meets the diverse needs of students. However, limited teacher understanding—both in terms of conceptual knowledge and practical application—remains a significant challenge to its effective implementation. This study evaluates elementary school teachers' understanding of differentiated learning based on Tomlinson's model and identifies challenges and opportunities for its implementation. A descriptive quantitative approach was used, with data collected through a questionnaire distributed to 49 elementary school teachers from Sekolah Penggerak in Karanganyar Regency. The findings reveal that while 71.44% of teachers demonstrate an excellent understanding of differentiation, 28.6% struggle with instructional adaptation. Key challenges include limited resources (39%) and time constraints (41%), which hinder effective implementation. Despite institutional support, gaps in professional development remain evident, with training often being too theoretical and lacking hands-on application. These findings highlight the need for targeted professional development programs and stronger policy support to ensure effective implementation. The results contribute to the growing discourse on inclusive and adaptive pedagogies, offering practical insights for policymakers and educators to bridge the gap between theoretical knowledge and classroom application, ultimately enhancing the quality of elementary education.

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## INTRODUCTION

Differentiated learning has been widely recognized as an effective instructional approach to address diverse student needs. However, its implementation in elementary schools remains challenging. Prior studies indicate that teachers' understanding of differentiated learning varies significantly, with many still struggling to apply it effectively in the classroom (Aprima & Sari, 2022; Ghani et al., 2023). Additionally, several barriers, such as inadequate training, limited

resources, and excessive administrative workloads, contribute to the inconsistent adoption of this approach (Jatmiko & Putra, 2022; Wahyudi et al., 2023). Despite these challenges, few studies—such as those by Tamba et al. (2024) and Kusrini et al. (2025)—have primarily focused on training interventions without evaluating teachers' actual understanding and practical classroom challenges. In contrast, this study uniquely examines both the conceptual comprehension and real-world implementation barriers faced by elementary school teachers in the context of the *Merdeka Curriculum*, thus providing a more comprehensive insight into differentiation practices at the ground level. This research aims to address this gap by examining the obstacles faced by teachers and identifying potential solutions for improving differentiated learning practices in elementary education. This approach differs from previous research that emphasized teacher training outcomes (Kusrini et al., 2025; Tamba et al., 2024) by assessing the direct experiences and difficulties of practicing teachers in adapting differentiated instruction within the framework of current curriculum reforms.

Differentiated learning is an instructional approach designed to accommodate students' diverse learning needs and characteristics (Amalia et al., 2023). According to Tomlinson et al. (2003), differentiation promotes collaborative learning by allowing teachers to tailor content and instructional strategies to student diversity. Furthermore, Susanti (2023) highlights that differentiated learning helps address various learning styles, preferences, and student disparities. Effective implementation of differentiated learning depends on teachers' ability to modify instruction based on student readiness, interests, and learning profiles (Milojevic-Dupont & Creutzig, 2021; Thapliyal et al., 2022; Van Munster et al., 2019).

Findings from the present study indicate that teachers are implementing differentiated instruction at relatively high levels across content (mean = 3.66), process (mean = 3.48), and product (mean = 3.62). In terms of content differentiation, teachers reported adjusting learning materials according to students' readiness levels by using resources of varied complexity, integrating multimedia, and allowing students to help co-construct classroom agreements to enhance ownership of learning (Halil et al., 2024; Santangelo & Tomlinson, 2009). For process differentiation, teachers employed strategies such as flexible grouping based on learning profiles, varied pacing, choice of tasks, and learning modality preferences to ensure deeper engagement and support for all learners (Halil et al., 2024; M. Tomlinson, 2017). Meanwhile, product differentiation was evident through teachers providing multiple modes of assessment—ranging from written reports, digital media, to oral presentations—thus enabling students to express understanding through formats aligned with their strengths and interests (Halil et al., 2024; Taylor & Iroha, 2015).

These practices not only reflect a growing pedagogical commitment to inclusive, student-centered learning but also align with the goals of Indonesia's *Merdeka Belajar* and *Guru Penggerak* initiatives that emphasize autonomy, flexibility, and equity in learning (Kemdikbud, 2020; Halil et al., 2024). Thus, differentiated instruction offers a practical and powerful framework to respond to diverse classroom dynamics while promoting academic engagement and success for all learners.

Despite its potential benefits, numerous challenges hinder the successful application of differentiated learning in elementary schools. Research has shown that many teachers lack sufficient knowledge and training in differentiation, which affects their ability to apply the

approach effectively (Aprima & Sari, 2022; Mastuti et al., 2022). Teachers often experience difficulties in adapting instructional materials due to time constraints, limited institutional support, and the pressure of standardized curricula (Aransyah et al., 2023; Rosiyani et al., 2024). Furthermore, Purwanto, (2022) identifies internal and external factors that impede differentiation, including inadequate professional development programs and the rigid nature of existing school curricula.

Another significant challenge is the heavy administrative burden placed on teachers, such as completing excessive lesson plan documentation, preparing detailed reports on student learning outcomes, and fulfilling numerous non-teaching tasks like committee work and school accreditation requirements. These demands limit their capacity to design and implement differentiated instruction effectively (Connolly et al., 2019; Zong, 2022). Additionally, teachers must develop strong analytical skills to assess variations in student readiness, interests, and learning styles (C. A. Tomlinson et al., 2003). Without sufficient institutional support and policy-driven innovations, these challenges may hinder the overall effectiveness of differentiated learning (Amalia et al., 2023; Dwipratama, 2023). Addressing these issues requires targeted interventions to improve teacher competency, provide adequate resources, and foster an educational environment that supports adaptive learning strategies.

The implementation of differentiated instruction has become increasingly significant in the context of Indonesia's Merdeka Curriculum, which emphasizes student-centered learning, flexibility, and autonomy for both teachers and learners. This curriculum explicitly encourages teachers to adapt their instruction based on students' readiness, interests, and learning profiles—principles that align closely with the foundations of differentiated instruction (Aziz et al., 2024). Practical implementations have demonstrated its potential to improve student engagement, motivation, and academic achievement when supported by formative assessment and a conducive learning environment. However, challenges persist. These include teachers' limited pedagogical preparation, large class sizes, insufficient resources, and the complexity of planning multiple instructional paths (Oktoma et al., 2025). Therefore, this study emphasizes the need to enhance teachers' understanding of differentiated learning and improve the quality of its implementation in educational settings. Given the diverse backgrounds and characteristics of students, it is important for teachers to implement strategies that effectively meet individual needs, as required by the Merdeka Curriculum (Asrifan et al., 2023; Fauzi et al., 2023). This study aims to assess elementary school teachers' understanding of differentiation and identify related challenges and opportunities for its implementation. The findings can inform the development of targeted training programs and policy recommendations that facilitate differentiated learning practices. Ultimately, this research contributes to the educational literature and supports efforts to improve learning quality and help students reach their full potential.

To address the lack of understanding among teachers regarding the implementation of differentiated learning, it is important to enhance training and develop specific competencies related to differentiated learning (Dalila et al., 2022; Langelan et al., 2024). This training can include strategies for modifying content, processes, and learning outcomes to align with individual students' needs, learning styles, and readiness, as suggested by (Zhong, 2023). Enhanced understanding and skills in differentiation enable teachers to design collaborative and inclusive learning activities, thus facilitating optimal development of student potential (Calkins, 2022;

Qorib, 2021). This solution is crucial because a lack of deep understanding can lead teachers to use uniform teaching methods, which potentially hinders the achievement of comprehensive educational goals.

The differentiated approach is based on constructivist learning theory, which promotes learning adaptation to align with student characteristics. This theory states that students have diverse learning modalities, which necessitates the creation of learning environments tailored to their different needs (Susanti, 2023). The strength of this theory lies in its flexibility in accommodating student diversity, enabling each student to be actively engaged and contribute effectively to learning. Differentiation allows teachers to effectively respond to classroom dynamics, fostering a learning environment that accommodates all students while meeting individual needs.

Previous research indicates that specialized training in differentiated learning effectively enhances teachers' understanding and ability to adapt instruction (Grecu, 2023; Van Geel et al., 2022). This study adopts a different approach from previous research conducted by Naibaho, (2023) dan Rintayati et al., (2023) by concentrating on assessing elementary school teachers' understanding of differentiated learning within the framework of the Merdeka Curriculum implemented in elementary schools. This study contributes a novel perspective by simultaneously assessing both the conceptual knowledge and the real-world implementation difficulties experienced by elementary school teachers within the context of the Merdeka Curriculum—an approach that extends beyond prior studies, which predominantly emphasized the outcomes of teacher training programs. Previous studies (Mastuti et al., 2022; Naibaho, 2023) examined differentiated instruction from a teacher training perspective. However, limited research has explored elementary teachers' actual understanding and classroom challenges in Indonesia. This study aims to fill this gap by analyzing teachers' comprehension and barriers to effective differentiation

This research focuses on teachers' understanding of learning differentiation, identifying existing gaps, and proposing solutions to enhance the effectiveness of differentiation implementation in elementary schools. This study seeks to bridge that gap by evaluating teacher's conceptual understanding, the challenges they face, and the opportunities available for strengthening differentiated learning practices.

Thus, this study aims to answer the following research question (1) To what extent do elementary school teachers understand the principles of differentiated instruction?; (2) What challenges do teacher face in implementing differentiation in their classroom; (3) What opportunities exist to support teacher in applying differentiated instruction effectively?

## METHOD

This study employs a descriptive quantitative research methodology, which is suitable for examining teachers' understanding of differentiated learning by quantifying responses and analyzing statistical trends. Quantitative descriptive research is particularly useful for capturing existing conditions and identifying patterns without establishing causal relationships.

The research was conducted in Sekolah Penggerak (Driving Schools) in Karanganyar Regency, which were specifically chosen because these schools are mandated to implement the Merdeka Curriculum, which includes differentiated instruction as a core component. The sample

was selected using a purposive sampling technique because this method allows the deliberate selection of participants who possess specific characteristics relevant to the research objectives—in this case, teachers and principals directly involved in implementing differentiated instruction under the Merdeka Curriculum. Although this technique limits the generalizability of findings to broader populations, it is appropriate for exploratory studies aiming to gain in-depth insights into particular practices and contextual challenges experienced by educators in *Sekolah Penggerak*. A total of 72 elementary school teachers and 10 principals from five Sekolah Penggerak were initially considered. However, after applying inclusion criteria—teachers and principals actively involved in differentiated instruction—49 participants (39 teachers and 10 principals) were selected. The sampling process did not distinguish between public and private institutions, ensuring a diverse representation of school contexts.

Data collection was conducted through a structured questionnaire consisting of 15 closed-ended questions designed to measure understanding across four key dimensions of differentiated learning: content, process, product, and assessment by Tomlinsot at Kalinowski et al. (2024). The research instrument used in this study was a structured questionnaire consisting of 15 closed-ended items designed to measure teachers' understanding of differentiated instruction. The items were developed by the researcher based on Tomlinson and Imbeau's (2013) differentiation framework, which includes four key dimensions: content, process, product, and assessment. To ensure the validity and relevance of the instrument, the questionnaire was reviewed and validated by three experts in elementary education and curriculum development. Examples of questionnaire items include:

*"What is meant by differentiated learning?"* with options such as "learning tailored to students' needs, interests, and abilities" (correct answer).

*"How should teachers adjust the learning process?"* with correct responses emphasizing the provision of various activities aligned to students' learning styles.

*"What is differentiated product in the learning context?"* where the correct choice involves allowing students to demonstrate understanding through various forms of tasks (e.g., written reports, oral presentations).

Responses were scored using a 4-point Likert scale ranging from 1 (minimal understanding) to 4 (excellent understanding). The questionnaire also included open-ended questions to explore teachers' perceived challenges and opportunities in implementing differentiated learning.

To ensure the validity of the questionnaire, content validation was carried out by three experts in elementary education and curriculum development. Their feedback led to minor modifications to improve clarity and alignment with differentiation principles. Reliability testing was conducted through a pilot study involving 10 teachers, yielding a Cronbach's Alpha score of 0.85, indicating high internal consistency. Further analysis confirmed that all individual constructs within the questionnaire maintained reliability above the acceptable threshold of 0.70.

Data analysis was performed using descriptive statistics to categorize teachers' understanding levels. Qualitative responses from open-ended survey items were analyzed thematically to identify recurring patterns in teachers' perceptions, challenges, and suggested improvements for implementing differentiated instruction.

## RESULTS AND DISCUSSION

The findings of this study are derived from analysis of questionnaire data distributed and completed by respondents. A total of 49 questionnaires were distributed and all were successfully collected and completed by respondents.

### 1. Description of Respondents

The table below presents a comprehensive overview of respondent descriptions.

Table 1. Description of Respondents

<b>Respondent Data</b>	<b>Number</b>	<b>Percentage</b>
Gender		
Male	6	12,25%
Female	43	87,75%
Total	49	100%
Teaching Experience		
1–5 years	3	6,12 %
6–10 years	18	36,74%
11–15 years	13	26,54 %
More than 15 years	15	30,6 %
Total	49	100%
Highest Education		
Bachelor's Degree (S1)	35	71,43 %
Master's Degree (S2)	14	28,57%
Doctorate (S3)	0	100%
Total	49	
Employment Status		
Civil Servant (ASN)	26	53,06%
ASN P3K	20	40,82%
WB	3	6,12%
Total	49	100%
Certification Status		
Certified	26	53,06%
Not Certified	23	46,94%
Total	49	100%

The demographic characteristics of the respondents provide essential context for interpreting their perspectives on differentiated learning. Understanding these attributes helps establish the relevance and credibility of their insights, particularly in relation to their professional backgrounds and experiences.

A significant majority of the respondents are female teachers, accounting for 87.75% of the total, while the remaining 12.25% are male. This gender distribution aligns with common patterns observed in the elementary education sector, where female educators typically constitute the predominant workforce. This demographic trend may also influence classroom dynamics and instructional approaches, including the implementation of differentiated learning strategies.

In terms of teaching experience, the respondents display a wide range of professional tenures. The largest proportion, 36.74%, consists of teachers with 6 to 10 years of experience. Those with more than 15 years of teaching experience comprise 30.6%, while 26.54% have been teaching for 11 to 15 years. A smaller segment, representing only 6.12%, has less than five years of experience. Notably, a combined 63.14% of respondents possess more than a decade of teaching experience. This suggests that the majority of participants have substantial classroom exposure, which may enrich their understanding and implementation of differentiated instruction.

Regarding educational qualifications, the majority of respondents (71.43%) hold a bachelor's degree (S1), while 28.57% have earned a master's degree (S2). The relatively high percentage of teachers with graduate-level education indicates a strong academic background, potentially contributing to a more informed and reflective approach to teaching practices, including differentiated learning methodologies.

In terms of employment status, over half of the respondents (53.06%) are civil servants (ASN), and 40.82% are contract-based civil servants (ASN P3K). Only a small proportion, 6.12%, are honorary teachers (WB). The dominance of civil servant status among respondents, totaling 93.88%, suggests a high level of job security and institutional support. This factor is likely to influence access to professional development opportunities, teaching resources, and support systems necessary for the effective implementation of differentiated instruction.

Lastly, in the area of teacher certification, 53.06% of the participants are certified, while 46.94% are not. Although the majority hold certification, the substantial percentage of non-certified teachers highlights variability in formal training levels, which may impact the consistency and quality of differentiated learning practices in the classroom.

This demographic data suggests that respondents generally have extensive teaching experience and academic qualifications, which should theoretically support the implementation of differentiated learning. However, the high percentage of uncertified teachers and the varying employment statuses could indicate disparities in access to training and resources. Future analysis could explore whether these factors influence teachers' ability to implement differentiated learning in their classrooms.

## 2. Teacher understanding of Differentiated Learning

In this section, respondents were asked questions about the definition of differentiated learning. The questions regarding understanding of differentiated learning concepts consisted of 15 questions with the following indicators: 1) understanding of differentiated learning; 2) objectives of differentiated learning; 3) identification of student needs; 4) content differentiation; 5) learning process differentiation; 6) product differentiation; 7) differentiation of students' prior understanding; 8) differentiation of students' backgrounds; 9) role of formative assessment in differentiated learning; 10) assistance provided to students experiencing learning difficulties; 11) assignment provision in differentiated learning; 12) planning for differentiated learning; 13) role of feedback in differentiated learning; 14) independent learning strategies in differentiated learning; 15) flexibility in implementing differentiated learning. Each question used choices with the highest point being 4 and the lowest being 1. The maximum total score possible was 60. With the understanding levels divided as follows.

Table 2. Understanding Levels of Differentiated Learning

Total Score	Category
0 – 15	Limited understanding
16 – 30	Moderate understanding
31 – 45	Good understanding
46 – 60	Excellent understanding (cutoff point for 'Excellent' is based on normative scoring)

The cutoff point for "Excellent understanding" (46 - 60) was determined based on normative scoring, derived from the distribution of scores across all participants in the study.

Based on respondents' answers measuring their understanding of differentiated learning, the data shows that 35 respondents or 71.44% achieved the maximum total points of 60, followed by 3 respondents or 6.12% obtaining 59 points, 3 respondents or 6.12% receiving 58 and 57 points, then 1 respondent each or 2.04% receiving 55 and 54 points, followed by 53 points earned by 2 respondents or 4.08%, and the lowest score of 43 points obtained by 1 respondent, representing 2.04%. Therefore, based on the respondents' answers, the results can be seen in the table below.

Table 3. Understanding Levels of Differentiated Learning

Differentiated Learning Aspects	Number of Respondents Answering Correctly	Percentage
Differentiated content	47	95,92%
Differentiated learning process	49	100%
Differentiated product	48	97,96%
How students demonstrate understanding	46	93,88
Understanding of students' backgrounds	48	97,96%

Based on the test results of teacher understanding of differentiated learning, it can be seen that in general, teacher understanding is at a high level in all aspects measured. The aspect with the highest level of understanding is the differentiated learning process, with all respondents (100%) answering correctly. This shows that teachers have understood the importance of providing a variety of activities that are in accordance with students' learning styles.

Meanwhile, the aspect of how students demonstrate understanding has the lowest percentage (93.88%). Although still relatively high, this indicates that there are still a small number of teachers who need reinforcement in understanding the importance of providing students with various choices to demonstrate their learning outcomes.

Overall, these results reflect that most teachers already understand the basic principles of differentiated learning well, but follow-up is still needed to strengthen certain aspects that still show variations in understanding. This findings aligns with the research by Mastuti et al., (2022), which indicated that 92% of teachers who participated in teacher leader training or were in a leader school comprehended the notion of differentiated learning. However, the practical application remains a challenge due to limited instructional resources, as also noted by Wahyudi et al., (2023). These constraints indicate a pressing need for resource development and teacher mentoring programs.

### 3. Challenges in Differentiated Learning

The indicators for challenges in differentiated learning are listed as follows: 1) resource limitations; 2) planning time; 3) concept understanding; 4) classroom management skills; 5) support and training from schools.

Several significant challenges were identified that hinder the effective implementation of differentiated instruction in classrooms. First, 39% of teachers see figure 1 indicated that the availability of learning materials was insufficient, making it difficult for them to modify



instructional content according to students' needs. To address this challenge, schools can optimize existing internal resources—for instance, by using free digital tools, open educational resources (OER), and peer collaboration methods such as multi-grade or peer-assisted learning strategies. These practices enable educators to tailor instruction for diverse learners without a heavy dependence on external funding or materials (Aziz et al., 2024; Prestridge et al., 2021). Research by (Oktoma et al. (2025) further supports that utilizing simple digital applications and school-based collaboration fosters effective differentiation even in low-resource settings. Second, 41% of respondents reported that the process of planning and preparing differentiated lessons was highly time-consuming, which limited their ability to effectively implement differentiation consistently. Third, 60% of teachers had attended professional development training; however, they perceived these sessions as overly theoretical rather than practical, which hindered their ability to apply differentiation strategies effectively in the classroom. This perception was reflected in open-ended responses, where several teachers noted that *“the training provided too much theory without real classroom examples”* and expressed a desire for *“more hands-on practice and modeling of differentiation techniques applicable to their teaching contexts.”* Lastly, while 80% of teachers acknowledged receiving institutional support, 15% cited insufficient resources, and 5% felt a complete lack of support from their schools, creating barriers in implementing differentiation successfully.

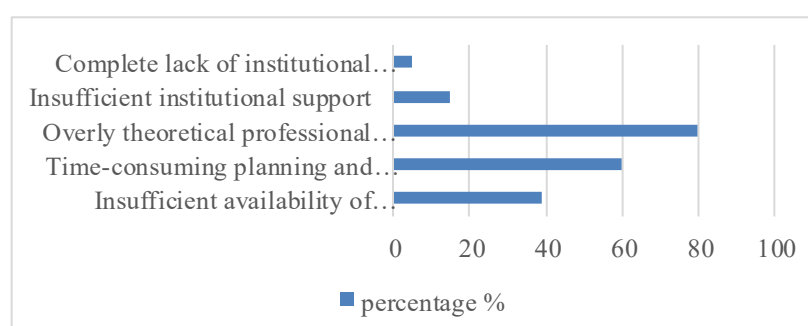


Figure 1. Challenges in Implementation Differentiated Instruction

The research findings show that many teachers face challenges in implementing differentiated learning, particularly regarding resources, school support, and time management, which pose significant barriers to its optimal implementation. Data indicates that the highlight the urgent need for structured, hands-on training that focuses on practical applications rather than theoretical knowledge. Additionally, increased access to adaptable instructional materials and stronger institutional backing would be instrumental in overcoming these barriers.

These findings align with previous research in other regions. A study by Agarwal-Rangnath, (2022) in East Java also found that inadequate instructional resources and time constraints were among the primary obstacles to differentiated learning in elementary schools. Similarly, research by Nunuk Hariyati et al., (2023) in Jakarta highlighted that many teachers lacked sufficient hands-on training, making differentiation difficult to implement in practice. On a broader scale, an international study by Smets et al., (2022) in the Netherlands revealed that even in well-resourced schools, teachers struggled with differentiation due to time limitations and difficulties in managing diverse learning needs within a single classroom. These studies indicate that challenges in differentiated learning are not unique to Karanganyar Regency but are prevalent across different educational contexts, both nationally and globally.

The research findings highlight the urgent need for structured, hands-on training that focuses on practical applications rather than theoretical knowledge. Additionally, increased access to adaptable instructional materials and stronger institutional backing would be instrumental in overcoming these barriers. Studies by Jatmiko & Putra, (2022) dan Wahyudi et al., (2023) reinforce the significance of ongoing mentorship and capacity-building programs in enhancing the adoption of differentiated instruction among teachers. Addressing these challenges requires a collaborative effort between educators, policymakers, and institutions to ensure that teachers receive the necessary support and resources to implement differentiated learning effectively.

#### 4. Opportunities for Strengthening Differentiation Practise

This question was directed to respondents to identify opportunities available to teachers for developing differentiated learning. The questions regarding differentiated learning opportunities consisted of 3 questions with the following indicators: 1. Support from institutions (schools) in providing resources and teaching materials. 2. Frequency of training and relevance of training to learning practice needs. 3. Role of collaboration between teachers and other parties in supporting differentiated learning.

Eighty percent of respondents stated that schools have provided policies and moral support that assist them in implementing differentiated learning. Survey findings revealed that the majority of educators believe they receive appropriate institutional support to implement differentiated learning. However, fifteen percent of educators believe this support is still limited, and five percent of them stated that they have not received significant support from their institutions. Schools are beginning to integrate their policies, with 80% of teachers reporting administrative encouragement

Regarding resource availability, seventy percent of educators reported having adequate access to learning materials that support the implementation of differentiated learning. Twenty percent of survey participants stated that this access is still lacking, especially in terms of specific material variants. Additionally, ten percent of participants indicated that they do not have adequate access, making it difficult to implement differentiation in the classroom. In response to these challenges, collaborative planning and peer mentoring have emerged as viable strategies for addressing differentiation difficulties. According to Anggraini, (2023) these practices allow educators to share best practices and support one another in implementing differentiation effectively. Research by Khusniyah et al. (2023) emphasizes that collaborative efforts can improve teacher efficacy and enhance the learning experience for diverse student populations. This approach has been proven to support educators in overcoming barriers to differentiation by fostering a culture of mutual support and continuous professional development. Furthermore, concerning professional development, sixty percent of educators have participated in training sessions on differentiated learning in the previous two years. These teachers believe that the training has helped them master more efficient methods. On the other hand, thirty percent of survey participants felt that the training they received was inadequate, and ten percent of them had never attended specialized training on differentiation.

The results from the respondents' answers above can be seen in the table below:

Table 4. Opportunities for Differentiated Learning

Aspect	Description	Percentage (%)
Institutional Support	Feels supported by the school	80%
	Support is still limited	15%
	Does not feel significant support	5%
Access to Resources	Access to Resources Has adequate access to resources	70%
	Limited access, especially to specific and varied materials	20%
	Does not have adequate access	10%
Professional Development	Professional Development Has attended training on differentiated instruction in the last two years	60%
	Feels the training is not yet adequate	30%
	Has never attended specific training on differentiation	10%

These findings align with research conducted in different educational settings. A study by Wahyudi et al. (2023) in Jakarta found that while schools provided administrative support, access to diverse instructional materials remained a challenge. Similarly, research by Hidayah et al., (2021) in East Java showed that while training sessions were available, many teachers found them lacking in practical application, mirroring the concerns expressed by 30% of respondents in this study.

On an international scale, a study by Van Munster et al., (2019) in the Netherlands indicated that well-supported teacher collaboration significantly improved differentiated learning practices, reinforcing the importance of peer mentoring as observed in this study. Meanwhile, research by Thapliyal et al., (2022) in India highlighted that despite strong institutional policies, the lack of relevant and practical training remained a significant barrier, a challenge also evident in this research.

These comparisons suggest that while institutional support and professional development opportunities are improving, the effectiveness of training and access to diverse instructional materials remain global challenges. Strengthening practical training programs and promoting teacher collaboration could further enhance differentiated learning implementation.

## CONCLUSION

The study findings indicate that while most elementary school teachers possess a strong theoretical understanding of differentiated learning, challenges persist in translating this knowledge into practical classroom strategies. Limited access to resources (39%), time constraints (41%), and insufficient hands-on professional development hinder effective implementation of differentiation. Although supportive policies exist and schools generally provide institutional backing, these are not always accompanied by sufficient training and resources, leaving teachers underprepared for practical adaptation of differentiation techniques.

Based on these findings, the most impactful differentiation strategies to emphasize in future training and policy interventions include: (1) tiered assignments that allow teachers to adjust the complexity of tasks according to student readiness without requiring additional resources; (2) flexible grouping methods that enable teachers to manage diverse learning needs efficiently within limited time; and (3) the use of simple, classroom-based formative assessments to guide real-time instructional decisions. These strategies address the key constraints of resources and time identified by the respondents..

Addressing these gaps through structured, practice-oriented teacher training programs—such as workshops featuring classroom simulations, lesson modeling, and collaborative lesson planning—will significantly improve teachers’ ability to apply differentiation principles. Moreover, developing a repository of adaptable teaching materials and providing school-based mentoring can further support teachers in overcoming these challenges.

To enhance the application of differentiated instruction, we recommend: (1) Regular, hands-on teacher training sessions focusing on tiered tasks, flexible grouping, and formative assessment techniques; (2) Creation of a practical, accessible resource bank containing differentiated learning materials tailored to varying student needs; (3) Strengthening school-based mentoring and peer collaboration systems to foster continual professional growth in differentiation practices.

Future research should investigate the long-term effects of such interventions on teachers’ differentiation skills and explore their impact on student learning outcomes within the context of the Indonesian elementary education system.

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