Journal of Innovative and Creativity
Journal Homepage: https://joecy.org/index.php/joecy
e-mail: journaljoecy@gmail.com

Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2776-771X (Online)
ISSN 2962-570X (Printed)
6 (2) 2026, Page: 31006-31014

Elementary School Teachers' Challenges in Developing Differentiated Teaching Modules within the Merdeka Curriculum: A Case Study at SDN Apal, Liang Subdistrict, Banggai Kepulauan Regency

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Published: Juni, 2026

ABSTRACT

This study aims to describe elementary school teachers' challenges in developing Teaching Modules based on differentiated instruction within the Merdeka Curriculum, analyze the factors causing these challenges, and identify teachers' adaptive strategies in overcoming implementation constraints in a non-Sekolah Penggerak school context. This study employed a qualitative approach with a case study design. The research informants consisted of a second-grade teacher, a fourth-grade teacher, and the school secretary as a representative of school management. Data were collected through semi-structured WhatsApp-based interviews, classroom observations, and documentation studies of Teaching Modules. The data were analyzed using the interactive model of Miles, Huberman, and Saldaña through the stages of data condensation, data display, and conclusion drawing and verification. The findings reveal that teachers experienced conceptual misconceptions about differentiated instruction, technical difficulties in developing tiered assessments, limited digital literacy, and insufficient face-to-face mentoring. Nevertheless, teachers demonstrated adaptive strategies by simplifying the format of Teaching Modules, implementing peer tutoring, designing tiered assignments, and utilizing WhatsApp as an alternative medium for collecting students' assignments. This study concludes that the implementation of the Merdeka Curriculum in non-Sekolah Penggerak schools requires more inclusive, contextual, and sustainable mentoring.

Keywords: Merdeka Curriculum; Teaching Module; Differentiated Instruction; Elementary School Teachers; Non-Sekolah Penggerak School

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INTRODUCTION

The Merdeka Curriculum positions teachers as key actors in designing learning that is centered on students' needs. One of the approaches emphasized in this curriculum is differentiated instruction, which provides teachers with opportunities to adjust learning processes, content, products, and learning environments based on students' readiness, interests, and learning profiles. This approach is highly relevant to elementary school students, who have diverse prior knowledge, learning styles, interests, and socio-emotional development.

In the implementation of the Merdeka Curriculum, differentiated instruction does not only require changes in teaching strategies but also demands changes in the development of instructional documents. Teachers are required to design Teaching Modules that do not merely fulfill administrative requirements but also function as pedagogical guides for managing students' diverse abilities in the classroom. Ideally, a Teaching Module contains learning objectives, instructional steps, assessment

plans, learning media, and activities that enable students to learn according to their individual learning needs.

Theoretically, Tomlinson (2014) explains that differentiated instruction is a proactive approach in which teachers adjust content, process, products, and learning environments based on students' characteristics. However, in practice, this concept is often misunderstood by teachers. Some teachers assume that differentiated instruction requires them to provide different tasks or learning designs for each individual student. Such misconceptions may lead to increased administrative workload and professional anxiety, particularly among elementary school teachers who are responsible for teaching multiple subjects in one classroom.

This issue becomes more complex in non-Sekolah Penggerak schools. Schools that are not included in the Sekolah Penggerak Program often have more limited access to intensive mentoring. Teachers tend to rely on representative-based training, informal discussions with colleagues, examples of instructional documents from the internet, or the Platform Merdeka Mengajar. These sources are not always sufficient to help teachers understand and operationalize differentiated instruction in classroom practice.

Previous studies have shown that the implementation of differentiated instruction still faces various challenges. Faiz, Prasetiyo, and Kurniawaty (2022) found that teachers still experienced misconceptions about differentiated instruction. Putri, Ariyanti, Sugito, and Murti (2024) showed that elementary school teachers' challenges in implementing differentiated instruction were related to limited time, diagnostic assessment, school support, and curriculum flexibility. Parasti, Murwaningsih, and Supianto (2025) also emphasized that elementary school teachers' understanding of differentiated instruction needs to be strengthened through more practical and practice-based training.

Based on preliminary observations at SDN Apal, Liang Subdistrict, Banggai Kepulauan Regency, teachers experienced difficulties in developing differentiated Teaching Modules. These difficulties were reflected in their initial assumption that differentiation meant creating different tasks for each student, their confusion in developing tiered assessments, their limited ability to use technology, and the lack of direct mentoring. This condition indicates the need for an in-depth study of teachers' experiences in developing differentiated Teaching Modules, particularly in non-Sekolah Penggerak elementary schools located in island-based areas.

This study focuses on three main research questions. First, what challenges do teachers at SDN Apal, Liang Subdistrict, face in developing differentiated Teaching Modules within the Merdeka Curriculum? Second, what factors cause these challenges? Third, what adaptive strategies do teachers use to overcome limitations in developing and implementing differentiated Teaching Modules?

The novelty of this study lies in its contextual focus, namely the experiences of elementary school teachers in a non-Sekolah Penggerak school located in an island-based region in developing differentiated Teaching Modules. This focus is important because most previous studies have discussed the implementation of the Merdeka Curriculum in general, while teachers' experiences in dealing with conceptual, technical, digital, and institutional constraints in non-Sekolah Penggerak schools have not been widely explored in depth.

METHOD

This study employed a qualitative approach with a case study design. The qualitative approach was chosen because this study aimed to understand teachers' experiences, meanings, challenges, and adaptive strategies in developing differentiated Teaching Modules within the Merdeka Curriculum. The case study design was used because this research focused on a specific context, namely SDN Apal, Liang Subdistrict, Banggai Kepulauan Regency, as a non-Sekolah Penggerak elementary school that independently implements the Merdeka Curriculum.

The research subjects were selected using purposive sampling. The informants consisted of three individuals: a second-grade teacher, a fourth-grade teacher, and the school secretary as a representative of school management. The second-grade and fourth-grade teachers were selected because they had been directly involved in developing Teaching Modules and implementing differentiated instruction. The school secretary was selected because he understood the school's

internal policies, institutional support, and the implementation conditions of the Merdeka Curriculum at the school level.

Data were collected through three techniques: semi-structured interviews, classroom observations, and documentation studies. The interviews were conducted online through WhatsApp using text messages and voice notes. The interviews were directed at exploring teachers' experiences in understanding differentiated instruction, developing Teaching Modules, designing tiered assessments, using technology, and developing adaptive classroom strategies.

Classroom observations were conducted to examine the relationship between the Teaching Module design and classroom practice. The focus of observation included student grouping, the implementation of process differentiation, students' responses to learning activities, the use of learning media, and teachers' strategies in managing classroom dynamics. Documentation studies were conducted by analyzing the Teaching Modules developed by teachers, student worksheets, assessment formats, and supporting documents related to the implementation of the Merdeka Curriculum at the school.

The main instrument in this study was the researcher as a human instrument. To support the data collection process, the researcher used interview guidelines, observation sheets, and document analysis guidelines. The interview guidelines included questions about teachers' understanding of differentiated instruction, challenges in developing Teaching Modules, school support, technology use, and adaptive strategies used by teachers.

The data were analyzed using the interactive model of Miles, Huberman, and Saldaña (2014), which consists of three stages: data condensation, data display, and conclusion drawing and verification. Data condensation was carried out by selecting and focusing on relevant data from interviews, observations, and documentation. Data display was conducted in the form of thematic narratives, finding tables, and visual models. Conclusion drawing was conducted gradually by considering recurring patterns, data consistency, and the relationships among themes.

Data validity was maintained through source triangulation, technique triangulation, and member checking. Source triangulation was conducted by comparing information from the second-grade teacher, the fourth-grade teacher, and the school secretary. Technique triangulation was conducted by comparing data from interviews, observations, and documentation. Member checking was conducted by reconfirming interview summaries with the informants to ensure that the researcher's interpretation was consistent with the intended meaning of the informants' experiences.

Ethically, the informants' identities were anonymized using initials. The researcher explained the purpose of the study to the informants before data collection. The data obtained were used only for academic purposes and presented without revealing the informants' full personal identities.

FINDING AND DISCUSSION

Outer Model or Measurement Model

1. Teachers' Misconceptions about Differentiated Instruction

The first finding indicates that teachers experienced misconceptions during the initial stage of understanding differentiated instruction. Teachers assumed that differentiation meant creating different Teaching Modules or assignments for each student. This understanding created anxiety because teachers felt that their administrative workload had become much heavier.

Mrs. W, the fourth-grade teacher, stated: "Honestly, at first we were very confused. We imagined that if there were 28 students in the class with different abilities, then we had to create 28 different Teaching Modules or assignments. The policy seemed good on paper, but in practice, the administration made us stressed because there were no concrete examples for the elementary school level."

This quotation indicates that teachers had not fully understood that differentiation does not have to be carried out individually for each student. Teachers need practical examples of how to group students' learning needs without having to create too many instructional documents.

2. Difficulties in Developing Process and Product Differentiation

The second finding shows that teachers experienced difficulties in translating the identification of students' needs into learning activities. The difficulty mainly appeared when teachers had to divide

students into learning groups with different activities. In the Teaching Module, such grouping could be written systematically, but in classroom practice, it was not always easy to implement.

Mrs. I, the second-grade teacher, explained: "The most difficult part is dividing the process and product differentiation. In my Teaching Module, I wrote that group A would read texts, while group B would look at pictures. But in classroom practice, the situation became less conducive because elementary school students tended to follow their friends. In addition, creating different assessment instruments for three groups took a lot of correction time."

Observation data showed that several students moved from one group to another because they wanted to be with their close friends. This condition indicates that the design of process differentiation in the Teaching Module needs to consider the socio-emotional development of elementary school students. Differentiation that is too rigid may lead to confusion, jealousy, or instability in learning groups.

3. Challenges in Designing Tiered Assessments

The third finding shows that teachers experienced difficulties in designing tiered assessments. Teachers understood that students had different abilities, but they did not yet have a simple assessment format to evaluate students' achievement based on different levels of difficulty. As a result, teachers felt that the assessment process became more complicated and required a longer correction time.

These assessment challenges appeared in three forms. First, teachers had difficulty determining assessment indicators that matched students' ability groups. Second, teachers had difficulty creating simple rubrics for different learning products. Third, teachers felt that recording assessment results became more demanding when each group had different tasks or products.

This finding indicates that the success of differentiated instruction is not only determined by teachers' ability to design learning activities but also by their ability to develop assessments that are efficient, fair, and aligned with learning objectives.

4. Factors Causing the Challenges

The factors causing these challenges consisted of internal and external factors. Internal factors were related to pedagogical understanding, teaching experience, and digital literacy. Some teachers, especially senior teachers, experienced difficulties in independently accessing and using the Platform Merdeka Mengajar.

Mr. A, the school secretary, stated: "The internal factor is clearly IT competence and age. Senior teachers here generally have difficulty accessing PMM independently. The external factor is that our school in Liang Subdistrict is not a Sekolah Penggerak, so we do not receive special funding or intensive mentoring from central facilitators. Training from the education office is only attended by representatives, so the impact on other teachers is not optimal."

This quotation indicates that teachers' challenges cannot be understood merely as individual weaknesses. These barriers are also influenced by the mentoring system, school status, and access to practical training. Non-Sekolah Penggerak schools tend to have more limited access to mentoring compared with Sekolah Penggerak schools.

5. Teachers' Adaptive Strategies in Addressing Limitations

Despite facing various challenges, teachers demonstrated adaptive strategies in developing and implementing differentiated Teaching Modules. The first strategy was simplifying the Teaching Module format. Teachers did not force themselves to use overly complex formats but adjusted them to classroom learning needs.

Mrs. W explained: "My strategy was finally not to rigidly follow the theory in books. I simplified the Teaching Module. I did not divide students into smart and less smart groups, but I used peer tutoring. Students who were already fluent in numeracy helped their friends who were not yet fluent. For the product, I gave students freedom; those who liked drawing could submit a poster, and those who liked speaking could submit a voice recording using their parents' mobile phone. The administration was made flexible; what matters is that the essence of learning is achieved."

The second strategy was the use of peer tutoring. Teachers utilized students who had better understanding of the material to help their peers who still needed assistance. This strategy helped teachers manage the classroom and reduced the impression of labeling students based on ability.

The third strategy was the use of tiered assignments. Based on the analysis of Teaching Module documents, teachers modified assignments into several levels of difficulty. Students studied the same topic, but with different types of support, complexity, or final products.

The fourth strategy was the use of WhatsApp as a medium for collecting assignments. Teachers allowed students to submit assignments in the form of photos, voice notes, or short videos through their parents' mobile phones. This strategy became a form of product differentiation that was relevant to the available technological conditions in students' environment.

Table 1. Matrix of Teachers' Challenges, Causes, and Adaptive Strategies

Focus of Findings	Field Findings	Data Evidence	Meaning of Findings
Misconception about differentiated instruction	Teachers assumed that they had to create different Teaching Modules or assignments for each student.	A teacher imagined creating 28 different Teaching Modules for 28 students.	Differentiation was understood as full individualization rather than grouping students based on learning needs.
Difficulty in process differentiation	Teachers had difficulty managing learning groups with different activities.	Students moved between groups because they wanted to be with close friends.	Differentiation design needs to consider elementary students' socio-emotional characteristics.
Difficulty in product differentiation	Teachers were not yet accustomed to providing different learning product options.	Learning products began to include posters, voice recordings, and written assignments.	Teachers began developing product options based on students' interests and abilities.
Challenge in tiered assessment	Teachers had difficulty creating indicators and rubrics for different ability groups.	Teachers stated that correcting different group assignments required more time.	Teachers need simple assessment formats that remain fair and measurable.
Limited digital literacy	Senior teachers had difficulty accessing PMM independently.	The school secretary mentioned IT competence and age as internal challenges.	Digital-based curriculum transformation requires direct technical training.
Limited mentoring	The non-Sekolah Penggerak school did not receive intensive mentoring.	Training was only attended by representatives and was not optimally transferred.	Sustainable face-to-face mentoring is needed for non-Sekolah Penggerak schools.
Peer tutoring strategy	More capable students assisted other students.	Teachers used students fluent in numeracy to help their peers.	Peer tutoring supports differentiation without negatively labeling students.
Tiered assignment strategy	Teachers provided assignments with different levels of difficulty.	Teaching Module documents showed simple assignment modifications.	Tiered assignments became a practical solution for managing students' different abilities.
Use of WhatsApp	Students submitted assignments through photos, videos, or voice notes.	Teachers used parents' mobile phones as a medium for collecting assignments.	Simple technology can support product differentiation contextually.

Table 1 shows that teachers' challenges in developing differentiated Teaching Modules were interconnected with conceptual understanding, technical ability, institutional support, and students' characteristics. Teachers' misconceptions became the starting point of increased administrative workload. This workload became more complex when teachers had to develop tiered assessments and manage diverse classroom dynamics. However, teachers did not remain passive. They

developed adaptive strategies through peer tutoring, tiered assignments, and the use of WhatsApp as a simple medium available in students' environment.

Table 2. Triangulation of Research Data

Theme	Interview Data	Observation/Documentation Data	Preliminary Conclusion
Misconception about differentiation	Teachers assumed that differentiation meant creating different tasks for each student.	Teaching Modules did not fully show a mapping of students' needs.	Teachers need more practical reinforcement of the concept of differentiation.
Process differentiation	Teachers had difficulty dividing activities based on students' abilities.	Students moved between groups and wanted to follow dose friends.	Process differentiation needs to be adjusted to students' social characteristics.
Tiered assessment	Teachers complained about correction time and complicated rubrics.	Assessment rubrics were still simple and inconsistent.	Teachers need examples of tiered assessments that are easy to use.
Digital literacy	Senior teachers had difficulty accessing PMM.	Teachers used simple devices and adapted examples from available documents.	Digital training needs to be conducted directly and gradually.
Adaptive strategies	Teachers used peer tutoring and flexible assignments.	Teaching Modules induded task modification and WhatsApp use.	Teachers demonstrated contextual initiatives in addressing limitations.

Table 2 shows that the research findings were obtained through triangulation of interviews, observations, and documentation. Interview data revealed teachers' subjective experiences, observation and documentation data showed actual classroom practices and written strategies, and the integration of these three data sources strengthened the validity of the findings.

Figure 1. Model of Teachers' Challenges and Adaptive Strategies in Developing Differentiated Teaching Modules

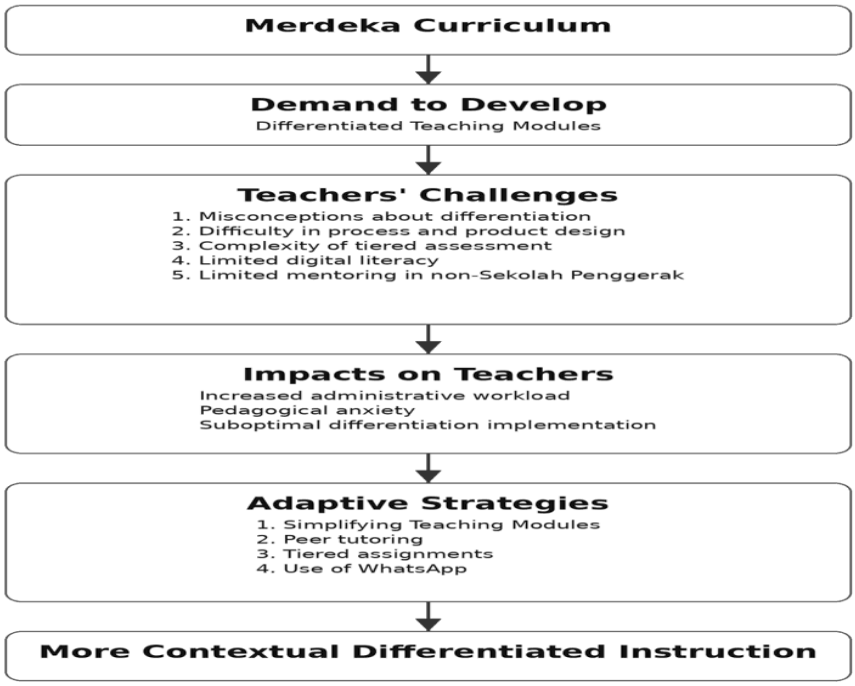


Figure 1 illustrates the flow of the research findings. The Merdeka Curriculum requires teachers to develop differentiated Teaching Modules. This requirement creates challenges in the form of conceptual misconceptions, technical difficulties, assessment complexity, limited digital literacy, and limited mentoring. These challenges contribute to increased administrative workload and pedagogical anxiety. Nevertheless, teachers develop adaptive strategies through simplified Teaching Modules, peer tutoring, tiered assignments, and the use of WhatsApp. These strategies enable differentiated instruction to be implemented in a more contextual manner.

Summary of Research Findings

Overall, the findings reveal three main patterns. First, teachers had not fully understood differentiated instruction as a flexible strategy based on groups of students' learning needs. Second, implementation challenges did not only originate from teachers but were also influenced by limited mentoring and institutional support in non-Sekolah Penggerak schools. Third, teachers demonstrated adaptive capacity by simplifying curriculum demands so that they could still be implemented according to classroom conditions.

Discussion

The findings show a gap between the ideal demands of the Merdeka Curriculum and teachers' readiness to develop differentiated Teaching Modules. This gap is reflected in teachers' misconception that differentiation means creating different learning designs or assignments for each student. Such an understanding indicates that the concept of differentiated instruction has not yet been fully understood as a flexible approach to managing student diversity.

From Tomlinson's (2014) perspective, differentiated instruction is not individualized teaching that requires teachers to create different instructional documents for each student. Differentiation is a teacher's effort to adjust content, process, products, and learning environments based on students' readiness, interests, and learning profiles. Therefore, the misconceptions experienced by teachers at SDN Apal indicate the need for more practical training rather than merely conceptual socialization.

Teachers' difficulties in developing process and product differentiation are also related to the developmental characteristics of elementary school students. Elementary students, especially those in lower grades, still require concrete activities, clear instructions, and careful social management. When students are placed into learning groups that are too rigid, they tend to move between groups because of their social closeness with peers. This finding indicates that differentiated Teaching Modules need to consider both academic and socio-emotional aspects of students.

The finding regarding difficulties in designing tiered assessments shows that differentiated instruction requires more complex assessment skills. Teachers need to develop diagnostic, formative, and summative assessments that are aligned with students' abilities. However, when assessment instruments become too numerous and complicated, teachers may experience a high administrative burden. Under such conditions, assessment risks shifting from its pedagogical function as a basis for improving learning into a mere administrative obligation.

Limited digital literacy among senior teachers also becomes an important factor in the implementation of the Merdeka Curriculum. Digital platforms such as PMM can serve as independent learning resources for teachers, but their use depends heavily on teachers' technological readiness and digital experience. When teachers do not yet have sufficient digital skills, the use of platforms may create additional pressure. Therefore, digital-based curriculum transformation needs to be accompanied by direct, gradual, and teacher-sensitive technical assistance.

The external factor of limited direct mentoring in non-Sekolah Penggerak schools reinforces the challenges faced by teachers. Training attended only by school representatives is not sufficient to ensure equal understanding among all teachers. In this context, non-Sekolah Penggerak schools require more systematic support through teacher learning communities, academic supervision, internal training, and mentoring from school supervisors.

Nevertheless, teachers' adaptive strategies indicate professional resilience. Teachers did not merely accept the challenges as barriers but attempted to develop strategies that better suited classroom conditions. The simplification of Teaching Modules, the use of peer tutoring, tiered assignments, and WhatsApp demonstrate teachers' ability to adjust curriculum demands to available resources.

The use of peer tutoring is relevant to Vygotsky's theory of the Zone of Proximal Development. Through assistance from more capable peers, students can receive learning support that is closer to their needs. This strategy also helps teachers manage heterogeneous classrooms without negatively labeling students who still need support.

The use of WhatsApp as a medium for collecting assignments shows that simple technology can be used to support product differentiation. Teachers do not always have to use complex learning platforms. Media that are already familiar to parents and students can be used to allow students to demonstrate their understanding through photos, voice recordings, or short videos.

Thus, this study confirms that the success of developing and implementing differentiated Teaching Modules is not only determined by teachers' understanding but also by institutional support, technical mentoring, digital literacy, and policy flexibility. Teachers need space to simplify administration without losing the essence of student-centered learning.

CONCLUSIONS

This study shows that teachers at SDN Apal, Liang Subdistrict, Banggai Kepulauan Regency, faced conceptual and technical challenges in developing differentiated Teaching Modules within the Merdeka Curriculum. These challenges included the misconception that differentiation means creating individualized learning designs for each student, difficulties in developing process and product differentiation, and the complexity of designing tiered assessments.

The factors causing these challenges originated from both internal and external aspects. Internal factors included limited pedagogical understanding and digital literacy, particularly among senior teachers. External factors included limited direct mentoring, insufficient practical training, and the school's status as a non-Sekolah Penggerak school that had not received intensive support.

Nevertheless, teachers demonstrated adaptive strategies by simplifying the Teaching Module format, implementing peer tutoring, designing tiered assignments, and using WhatsApp as a medium for collecting assignments. These strategies show that teachers are able to develop contextual solutions to maintain the essence of differentiated instruction despite limited resources.

RESEARCH IMPLICATIONS

The findings of this study have both practical and policy implications. Practically, teachers need examples of differentiated Teaching Modules that are simple, flexible, and suitable for elementary school students' characteristics. Teachers also need easy-to-use tiered assessment formats so that differentiated instruction does not become an administrative burden.

At the policy level, non-Sekolah Penggerak schools require more intensive face-to-face mentoring, not only representative-based training or digital platform-based learning. Education offices, school supervisors, and principals need to strengthen academic supervision based on teachers' actual needs, particularly in developing Teaching Modules, designing tiered assessments, and managing differentiated instruction in lower-grade classrooms.

RESEARCH LIMITATIONS

This study is limited by the relatively small number of informants and its focus on only one elementary school. Therefore, the findings are not intended to be broadly generalized but rather to provide contextual understanding of teachers' experiences in a non-Sekolah Penggerak school. Future studies may involve more elementary schools, compare Sekolah Penggerak and non-Sekolah Penggerak schools, and examine the influence of teachers' adaptive strategies on students' learning outcomes in a more measurable way.

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