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ANALYSIS OF THE IMPLEMENTATION OF DIFFERENTIATED INSTRUCTION IN MATHEMATICS LEARNING AT SDN 104186 TANJUNG SELAMAT

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Abstrak

Tujuan dari penelitian ini ialah untuk mendeskripsikan proses pelaksanaan pembelajaran berdiferensiasi dan faktor keterlaksanaan pembelajaran Matematika menggunakan pembelajaran berdiferensiasi di kelas IV. Penelitian kualitatif ini menggunakan data berupa data deskriptif seperti tulisan, perkataan gi guru dan siswa dalam pembelajaran yang diuraikan dalam penerapannya yang terdiri dari tiga tahap: dan perilaku yang bisa diamati. Penelitian dilakukan pada semester ganjil 2024 di SDN 104186 Tanjung Selamat. Informan penelitian guru dan siswa kelas IV. Pembelajaran berdiferensiasi dalam mata pelajaran Matematika yang dilaksanakan di kelas IV SDN 104186 Tanjung Selamat memberikan dampak yang baik badiferensiasi konten, proses dan produk. Selanjutnya, juga diperoleh faktor keterlaksanaan pembelajaran berdiferensiasi dalam Matematika kelas IV, yaitu strategi pembelajaran yang efektif dan keterlibatan siswa yang aktif.

Kata Kunci: *Implementasi; pembelajaran berdiferensiasi; matematika*

Abstract

The purpose of this study is to describe the implementation process of differentiated instruction and the factors that affect the implementation of Mathematics learning using differentiated instruction in the 4th grade. This qualitative research uses descriptive data such as written texts, statements, and behaviors observed in the teaching and learning process. The study was conducted in the odd semester of 2024 at SDN 104186 Tanjung Selamat. The research informants were the teacher and the 4th-grade students. The differentiated instruction in Mathematics implemented in the 4th grade at SDN 104186 Tanjung Selamat had a positive impact on content, process, and product differentiation. Furthermore, the factors influencing the successful implementation of differentiated instruction in 4th-grade Mathematics included effective teaching strategies and active student involvement.

Keywords: *Implementation*; differentiated instruction; mathematics

A. Introduction

The Merdeka Curriculum is one of Indonesia's educational policies that grants primary schools more autonomy in determining the content and teaching methods tailored to the needs of students (Handiyani & Muhtar, 2022). As a new curriculum implemented in 2021 by the Indonesian government, the Merdeka Curriculum aims to accelerate students' independence and competitiveness in facing the era of globalization (Ardianti & Amalia, 2022). The implementation of the Merdeka Curriculum introduces a unique approach through differentiated instruction, which emphasizes the concept that every individual has different interests, talents, and potentials. Furthermore, teachers are required to integrate and coordinate these differences using appropriate strategies in the teaching and learning process (Sri Yanti et al., 2022).

One of the approaches that can be used in the implementation of the Merdeka Curriculum is differentiated instruction. Differentiated instruction began to be recognized in Indonesia with the introduction of the first Teacher Movement program held in 2020. Differentiated instruction is an approach in which teachers consider differences in students' learning styles, interests, and abilities, providing learning experiences that are tailored to their individual needs (Pane et al., 2022). As an approach, differentiated instruction encourages teachers to integrate multiple differences to gather information, generate ideas, and express what students have learned (Mufida, 2017). Differentiated instruction provides guidance and perspectives for teachers, while focusing on four key aspects: process, content, product, and the learning environment (Marlina, 2019). Therefore, it can be concluded that differentiated instruction is a learning process that enables students to learn according to their diverse abilities, preferences, and needs.

The implementation of differentiated instruction in learning is important to help students understand quickly, reason effectively, and achieve their own pace based on their individual learning styles and interests. It is widely known that mathematics is a subject that involves logic, focusing on shapes, structures, magnitudes, concepts, and numbers. Therefore, differentiated instruction serves as a tool to address the challenges in delivering material to students, each with their unique learning styles. This approach ensures that every student can engage with the content in a way that best suits their strengths and preferences, improving both their understanding and performance in mathematics.

In the process of mathematics learning, if the teaching method remains conventional, such as simply instructing students to read books and complete exercises, it can lead to boredom among students. As a result, many students may perceive mathematics as difficult to understand. Therefore, in the context of the Merdeka Curriculum, it is expected that

teachers will be able to apply differentiated learning styles. This approach allows students to engage with the material in ways that suit their individual needs, helping them to better comprehend the content and overcome the challenges they face in learning mathematics.

Differentiated instruction provides students with the opportunity to develop their potential by engaging in learning that aligns with their readiness, interests, and learning profiles. In this approach, students are given the freedom to determine the path of their learning, allowing them to maximize their learning potential and achieve learning goals in the most effective and efficient way (Sarie, 2022). It can be concluded that differentiated instruction, when applied to mathematics learning, fosters an environment of openness, offering students the chance to learn despite differing needs, and ensuring the alignment of teaching methods to meet those needs. This approach promotes a more personalized learning experience, ultimately helping students succeed in mathematics.

The best learning process for students in the classroom will stimulate their development, both in receiving and understanding the material presented by the teacher (Fitriyani, 2018). In the learning process, teachers must be able to understand the potential and interests of each student, utilizing their skills and roles as the primary leaders in guiding learning to achieve success and meet learning objectives (Zein, 2016). Essentially, in the teaching and learning process, the teacher plays a crucial role in conveying the knowledge or material being taught, which should be understood by the students. One of the teacher's duties is to determine the appropriate and relevant learning model for the lesson (Yestiani & Zahwa, 2020).

Field conditions related to the implementation of differentiated instruction in mathematics at primary schools with the Merdeka Curriculum can vary across regions, depending on factors such as the availability of human and financial resources, facilities, as well as the availability of teaching materials and adequate learning tools (Suwartiningsih, 2021). In some schools, the implementation of differentiated instruction in mathematics has been carried out effectively and in a structured manner, while in other areas, teaching still follows a conventional approach and has not yet addressed the varying characteristics of students. Based on the field study conducted by the author at SDN 104186 Tanjung Selamat, the mathematics learning outcomes in the 4th grade were categorized as having some students complete the semester exam and others not. Furthermore, based on interviews with the class teacher who had implemented differentiated instruction, it was found that students still struggled to understand the material being taught due to a lack of attention to how the lesson was delivered by the teacher.

Previous research related to the implementation of differentiated instruction in Mathematics at primary schools with the Merdeka Curriculum aimed to evaluate and identify the extent to which differentiated

instruction in Mathematics was being implemented across primary schools in Indonesia (Yani et al., 2023). In Fitra's (2022) study, it was concluded that differentiated instruction from a progressive perspective aligns well with mathematics learning, particularly in developing products in mathematics learning. This approach attempts to explore students through content, while also enhancing their interest in the subject. Furthermore, research findings by Putriana Naibaho (2023) suggest that differentiated instruction can increase student engagement and improve learning outcomes. Based on the aforementioned studies, it can be concluded that research on differentiated instruction aligns with concepts and approaches that focus on content, process, and product in learning. However, the research conducted by the author focuses specifically on analyzing the implementation of differentiated instruction by the 4th-grade teacher within the Merdeka Curriculum, particularly in mathematics for 4th-grade students in primary schools.

B. Research Method

This study uses a qualitative research method. The research procedure involves descriptive data, such as written texts, statements, and behaviors that can be observed (Sugiyono, 2019). Furthermore, Sidiq & Miftachul Choiri (2019) explain that descriptive qualitative research aims to understand the phenomena experienced by the research subjects, with data obtained in this study consisting of various types, such as words, images, and behaviors. This research is descriptive in nature, where the efforts made to solve the problem are based on the available data. Descriptive research is characterized by data results in the form of words or images, rather than numerical data (Sugiyono, 2022).

According to its type, this study will describe and explain the implementation of differentiated instruction in Mathematics at the 4th-grade level under the Merdeka Curriculum in primary schools. The research subjects are one teacher and 29 4th-grade students who participate in Mathematics learning at SDN 104186 Tanjung Selamat. The reason for choosing this school is that it has been implementing the Merdeka Curriculum in the 4th grade for two semesters, and the teacher has been provided with instructional guidelines from the Merdeka Curriculum.

The instruments used in this study are: 1) Observation guidelines to collect data on the learning process. 2) **Interview guidelines** to gather the perspectives of teachers and students regarding the implementation of differentiated instruction in Mathematics. 3) **Documentation** to collect supporting documents such as lesson plans, teaching materials, and student learning outcomes.

Below is the instrument grid for the study presented in Table 1.

No.	Technique	Indicators
1.	Observation	1. Learning activities 2. Teaching strategies 3. Student engagement 4. Teacher's attentiveness to students' needs

2	Interview	Teacher Interview: 1. Experience with the implementation of differentiated instruction 2. Challenges in implementing differentiated instruction 3. Strategies used in differentiated instruction 4. Student learning outcomes 5. Involvement of parents in learning Student Interview: 1. Experience in Mathematics learning 2. Perceptions of differentiated instruction 3. Strengths and weaknesses of differentiated instruction 4. Relationship between learning and daily life
3	Documentation	1. Mathematics lesson plan 2. Mathematics teaching materials 3. Student learning outcomes in Mathematics 4. Products created by students from Mathematics learning

The data collection procedure was carried out in three stages. The first stage involved classroom observation during Mathematics lessons to observe the learning process and the use of differentiated teaching strategies by the teacher. The second stage consisted of interviews with the teacher to gain insights and experiences regarding the implementation of differentiated instruction in Mathematics. The third stage involved interviews with students to gather their perspectives and experiences regarding Mathematics learning and the application of differentiated instruction. Additionally, documentation was collected as supporting data. The data collected were analyzed descriptively using a qualitative approach. The data obtained from observations, interviews, and documentation were analyzed using techniques of data reduction, data presentation, and drawing conclusions.

C. Research Results and Discussion

Based on the field data, this study has found the implementation of differentiated instruction in Mathematics at the 4th grade of SDN 104186 Tanjung Selamat. The presentation is divided into two main sections: the implementation process and the factors influencing the successful implementation of differentiated instruction in Mathematics at SDN 104186 Tanjung Selamat.

1. Implementation of Differentiated Instruction in Mathematics

The concept of differentiated instruction aligns with long-established guidelines, but the term "differentiated instruction" re-emerged after the shift from the previous curriculum to the Merdeka Curriculum introduced by the government through the Ministry of Education and Culture. Observing its implementation by the 4th-grade teacher in Mathematics lessons was quite interesting and received positive responses from students. This implementation was driven by a decrease in student motivation and low learning outcomes for some students.

Many students lacked understanding of the Mathematics material, which often involved memorization and recalling national symbols, leading to boredom with the subject. This

indicates that they had not yet grasped the basic concepts or learning objectives of the Mathematics lessons. The ultimate goal of Mathematics education is to enable students to understand concepts and solve problems creatively, innovatively, and with confidence. The role of Mathematics in the Indonesian curriculum has evolved in line with governmental interests, including efforts to improve standings in international assessments like PISA in previous years.

a. Findings from Observations

From the observations, it was found that the Mathematics learning activities in the 4th grade at SDN 104186 Tanjung Selamat involved several strategies, such as assigning different tasks according to students' abilities, presenting content through varied methods, and using diverse learning media. Furthermore, student involvement in differentiated Mathematics lessons also showed improvement, which was reflected in their enthusiasm during learning activities and their active participation when given tasks or assignments. Additionally, students appeared more confident in expressing their opinions and creative ideas.

b. Content Differentiation

There are several aspects involved in content differentiation, including student readiness, student interests, and student learning profiles. In terms of readiness, there are indicators, as explained by Faiz (2022), which include "equalizer buttons" that can determine the level of students' readiness. In this study, the researcher refers to the Concrete-Abstract and Slow-Fast perspectives. The researcher chose these two perspectives because the learning process requires a contextual approach. This means that the teacher provides material with explanations that are tangible, relevant, and happening in the real world.

In terms of the Slow-Fast perspective, it was observed that some students were able to think quickly and effectively, while others took longer to process and respond to instructions. This variation in thinking speed further emphasizes the importance of differentiated instruction in accommodating diverse learning paces among students. The teacher needs to adjust the learning experience to ensure that each student, regardless of their pace or cognitive processing speed, can understand and engage with the material effectively.

Referring to the observations, the teacher conducted an interest mapping during the delivery of the material, ensuring that the content was presented with an urgency to engage students in the subject matter. The teacher then sparked students' interest by presenting the material in the most engaging way possible and delivering it smoothly, with the aim of motivating students to actively participate in the learning process. The teacher's role is crucial in transforming students' existing interests into a meaningful learning experience, with the ultimate goal of achieving effective and significant learning outcomes.

According to Handayani & Irawan (2020), the teacher's role in motivating students is vital

to encourage their willingness and enthusiasm to learn. This is in line with Fitriyani's (2018) research, which suggests that differentiated instruction requires the teacher to select the appropriate methods, models, and strategies that will effectively motivate students in the learning process. These efforts contribute to fostering a positive learning environment and enhancing student engagement.

In this case, the teacher creates a mapping of students' learning needs, referring to the learning profile indicators to determine which methods are most suitable for each student. The mapping conducted by the teacher resulted in learning profiles based on factors such as students' domicile, culture, and learning styles. This study then analyzes the questionnaire created by the teacher to determine the students' learning styles, specifically auditory, visual, and kinesthetic. Based on the distribution of the questionnaire given to 25 students, the following results were obtained: nine students showed a tendency toward auditory learning, eleven students preferred visual learning (through images), and ten students favored kinesthetic learning. From the results of the questionnaire distribution, it can be concluded that students exhibit a variety of learning styles, with each individual having distinct preferences. This also highlights the teacher's crucial role in accommodating these diverse learning styles, ensuring that the learning experience is tailored to meet the needs of each student.

According to Aiman Faiz (2022), teachers play a crucial role in determining students' learning style tendencies and providing explanations based on the results of the learning style assessment. The distribution of this questionnaire is valuable in allowing students to recognize and reflect on their awareness of their learning styles, which can lead to improvements in the learning process tailored to each student's learning style. In line with previous research by Mufida (2017), understanding children's learning styles according to their individual needs is essential for enhancing the potential of each student, as every child has unique abilities. Additionally, it is important to provide students with the freedom to learn according to their individual potential, fostering an environment that supports their growth and development.

c. Process Differentiation

In process differentiation, the teacher plays a crucial role in analyzing learning activities, whether they occur individually or in groups. According to Faiz (2022), process differentiation consists of the following key elements: 1) Tiered Activities: The teacher provides materials in a gradual manner, considering the differences in students' abilities and readiness to understand the content. 2) Questioning Strategies: Teachers should provide guiding questions to encourage students to explain the content being discussed, helping to deepen their understanding of the material. 3) Time Allocation: Adequate time should be allocated for students to complete tasks, taking into account their learning pace. 4) Learning Style Development: Teachers need to develop

learning activities that cater to students' visual, kinesthetic, and auditory learning preferences, allowing students to engage with the material in the way that suits them best. 5) Group Classification: Students should be grouped based on their abilities, potential, and interests, ensuring that each group receives tasks that are appropriately challenging and engaging. By implementing these strategies, teachers can effectively differentiate the learning process to meet the diverse needs of students, ensuring that each learner has the opportunity to succeed and grow.

After the students' learning needs are identified, the teacher then designs the learning plan by creating teaching modules that align with these needs. In this study, the 4th-grade teacher ensures that the curriculum is adapted to match the students' readiness to learn. The selected material for this study is the addition and subtraction of integers. To accommodate the diversity of students' learning styles, the teacher provides a learning video using YouTube as a teaching aid. The video material, which includes images and the application of norms, is specifically designed to cater to students with a visual learning style, helping them better understand the content through visual representation. This approach demonstrates the importance of aligning teaching materials and strategies with students' individual learning preferences to enhance engagement and comprehension, especially when dealing with complex mathematical concepts like integer addition and subtraction.

Furthermore, the video includes audio, which is aimed at students with an auditory learning style. For kinesthetic learners, the teacher asks students to practice behaviors such as greeting elders, shaking hands, and walking in front of elders. Based on an interview with the 4th-grade teacher, P1, it was shared that "The learning video uploaded on YouTube is distributed via a link to the class WhatsApp group, with the goal of allowing students to review the material using this medium." This provides students with diverse learning resources in alignment with Ki Hajar Dewantara's educational philosophy, as cited by Suparlan (2016). The concept of *among* in Dewantara's philosophy refers to managing and nurturing the abilities that children already possess in order to help them solve problems, while also granting them the freedom to think independently. This approach emphasizes the importance of providing students with opportunities to explore and reinforce their learning through various means, fostering both their autonomy and deeper understanding.

In the process of differentiated instruction, the teacher groups students based on indicators such as speaking, reading, and writing skills. The goal is to collaborate with students' interests, fostering cooperation during the learning process. This approach aligns with the previous research by Nurzaki Alhafiz (2019), which states that in process differentiation, there is the management of information or ideas regarding how students communicate the material, as well as the

critical role of selecting learning choices for students. This management process is facilitated by the teacher, who determines the individual learning needs of each student. By considering these needs and interests, the teacher is able to create an environment where students work together, enhancing both their engagement and their ability to process and express the material in diverse ways. This collaborative approach helps to ensure that all students are supported according to their unique learning profiles, ultimately leading to a more effective learning experience.

d. Product Differentiation

In product differentiation, the focus is on guiding students regarding what they are expected to learn. The product allows the teacher to assess how well students have mastered the material. The products created by students are diverse, ranging from observational notes, videos, recordings, to collages. This stage aims to explore students' understanding in a tangible form through their creations, which reflect the material they have learned. This approach is aligned with Faiz's (2022) explanation regarding the products generated by students to assess the challenges presented to them and stimulate creativity in learning. The teacher must pay attention to the indicators when guiding the students in creating their products, ensuring that the products align with the material being taught. Additionally, Faiz (2022) further elaborates on the teacher's role in determining the achievement of indicators, the products produced, and planning the lessons accordingly, while also evaluating the impact generated by the creation of these products. By allowing students to produce creative works that reflect their understanding, teachers can better gauge their comprehension and provide a more personalized learning experience that encourages critical thinking and creativity.

Therefore, this study aligns with the theory, as the fact in the field shows that the teacher divides students into diverse learning groups based on their abilities, with guidance on the material regarding societal norms. The indicator established is students' understanding of the types of norms that exist in society and their application. In the creation of these products, students demonstrated enthusiasm because they had prior planning and were given freedom. This freedom enabled students to maximize their potential in creating products according to their learning styles and interests. As a result of differentiated products, students produced a variety of works in the class based on their interests, such as making collages, writing resumes, creating drawings with text, and even recording videos. Based on these findings, the researcher concludes that when students are given the freedom to choose according to their interests and potential, they will show their creativity in unique and diverse ways. This emphasizes the importance of allowing students to express their learning in a manner that aligns with their personal strengths and preferences, ultimately enhancing their engagement and creativity.

Based on the author's observations, product differentiation is considered one of the

more challenging types of differentiation because it requires consideration of each student's interests and creativity. Teachers sometimes feel uncertain in determining this type of differentiation due to the diversity of students and the varying approaches needed for each student. In previous research related to product differentiation, Puspitasari et al. (2020) highlighted that in product differentiation, it is important to consider learning groups because students possess both differences and similarities in their learning interests, which influence the creation of products as part of the learning objectives. This emphasizes the complexity of implementing product differentiation, as it requires teachers to manage a balance between guiding students according to their unique needs and interests, while ensuring that the learning goals are still met. Despite the challenges, when successfully implemented, product differentiation can lead to highly creative and individualized student outcomes, enriching the overall learning experience.

2. Factors Influencing the Implementation of Differentiated Instruction in Mathematics Learning

a. Effective Teaching Strategies

The teacher uses a variety of differentiated teaching strategies, such as the use of learning media, assigning different tasks, and organizing groups, which allow students to learn according to their needs and ability levels. According to the results from an interview with the 4th-grade teacher regarding the implementation of differentiated instruction in Mathematics at SDN 104186 Tanjung Selamat, the following insights were obtained. The 4th-grade teacher involved in the implementation of differentiated instruction stated that they had experience in selecting and adapting learning materials based on students' needs. They also participated in training and workshops to improve their skills in applying differentiated instruction. This shows that teachers are committed to enhancing their teaching practices by continuously learning and applying new strategies to ensure they can meet the diverse learning needs of their students effectively. This effective use of differentiated teaching strategies allows for a more personalized approach to learning, ensuring that each student has the opportunity to engage with the material in a way that suits their learning style and abilities.

Some of the challenges faced in implementing differentiated instruction include limited resources such as time and energy, limited classroom space, and a lack of support from parents and the community. Despite these challenges, the teacher employs several strategies in differentiated instruction: 1) Choosing and Adapting Learning Materials**:** The teacher selects and adapts learning materials that align with the needs of students, ensuring that the content is appropriate for each student's level of understanding. 2) Assigning Different Tasks and Activities**:** The teacher provides tasks and activities that vary according to students' abilities, allowing each student to work at their own pace and skill level. 3) Providing Individual Feedback**:** The

teacher offers individualized feedback to each student, helping them improve and understand the material more effectively. 4) Encouraging Collaborative Learning**:** The teacher also encourages students to learn collaboratively, allowing them to work together, share ideas, and learn from one another. These strategies are designed to overcome the challenges of differentiated instruction, aiming to provide a learning environment that supports diverse learning styles and abilities, ultimately helping all students succeed.

The implementation of differentiated instruction in the 4th-grade class at SDN 104186 Tanjung Selamat has shown positive results in improving student learning outcomes. Students who received differentiated instruction demonstrated an increase in both academic performance and social skills. Parental Involvement in Learning**:** Parental involvement in differentiated instruction at SDN 104186 Tanjung Selamat remains limited. However, some parents who were involved in the learning process expressed that they felt supported by the differentiated instruction approach and expressed their continued support for its ongoing implementation in the school. This suggests that while parental engagement may not be widespread, those who are involved see the value in differentiated instruction and recognize its positive impact on their children's learning experience. This highlights the importance of fostering greater parental involvement and collaboration between the school and families to further enhance the effectiveness of differentiated instruction and create a supportive learning environment for students.

b. Active Student Involvement

In differentiated instruction, students become more engaged in the learning process because they are given the opportunity to work with their peers in groups or work independently on tasks tailored to their individual needs. Below is **Table 2**, which presents the results of interviews with 4th-grade students from SDN 104186 Tanjung Selamat regarding their experiences in Mathematics learning, their perceptions of the implementation of differentiated instruction, the advantages and disadvantages of differentiated instruction, and the relationship between the lessons and daily life.

Table 2. Student Perceptions of Differentiated Learning

No.	Indicator	Student Statements
1.	Experience in Mathematics Learning	Students stated that they enjoy learning Mathematics because the material is interesting and useful for daily life. They also feel that their Mathematics teachers always present the material in an easy-to-understand way.
2.	Perception of Differentiated Instruction	Students expressed that they are happy with the implementation of differentiated instruction in class. They feel that with differentiated instruction, they can learn according to their own abilities and interests. Students also feel that differentiated instruction helps them focus better and understand the material more

		effectively.
3.	Advantages and Disadvantages of Differentiated Instruction	Students stated that the advantage of differentiated instruction is that it helps them understand the material better. Additionally, they feel that the opportunity to learn according to their own abilities and interests is beneficial. However, students also mentioned that a disadvantage of differentiated instruction is sometimes it is difficult to get help from the teacher when they face difficulties in learning.
4.	Relationship Between Learning and Daily Life	Students stated that the material learned in Mathematics is closely related to their daily lives. For example, when studying the values of Pancasila, they feel that these values help them become better individuals and contribute to society. Furthermore, students believe that by understanding Mathematics well, they can become better citizens and more attentive to the environment around them.

This feedback highlights the positive impact of differentiated instruction on student engagement and learning outcomes, as well as the connection between classroom learning and real-life applications. Although there are some challenges, such as accessing teacher support, the overall perception of differentiated instruction is favorable, as it caters to students' individual needs and interests.

In conclusion, the factors mentioned above play a crucial role in the successful implementation of differentiated instruction in Mathematics at the 4th-grade level at SDN 104186 Tanjung Selamat. By applying effective teaching strategies, encouraging active student involvement, addressing students' needs, and creating a conducive learning environment, differentiated instruction can be carried out optimally. The efforts made by the teacher have resulted in positive responses from the students, such as increased enjoyment and excitement in the learning process, leading to the creation of various products. Students are better able to recognize and assess their own abilities, as the teacher acts as a mediator, guiding and directing the students in their learning journey. This approach not only enhances students' academic performance but also fosters a deeper self-awareness and confidence in their learning abilities.

According to previous research by Yanti et al. (2022), the impacts that students can observe and feel from differentiated instruction include improved attitudes and behaviors, increased enthusiasm for learning, and the development of their inherent potential. Furthermore, a study by Main Sufanti (2022) outlines some challenges that teachers will face in the future. First, teachers need to have the knowledge to understand the diversity of students in order to design differentiated instruction effectively. Teachers will also need sufficient time to create engaging learning

materials. Second, teachers should prepare and design formative and diagnostic assessments before the start of lessons. These assessments aim to map out the diversity of students and the level of achievement of each student. Third, teachers must have a high level of creativity, particularly in using multimedia and learning resources. The application of media should align with the varied methods used to accommodate students' learning styles—whether visual, auditory, or kinesthetic. This approach ensures that all students are catered to, fostering a more inclusive and effective learning environment.

D. Conclusion

Differentiated instruction in Mathematics, as implemented in the 4th-grade class at SDN 104186 Tanjung Selamat, has brought positive changes and significant impacts for both teachers and students. The implementation follows three key stages:

1. Content Differentiation

This stage involves mapping students' learning interests, ensuring that the content aligns with each student's needs and preferences.

2. Process Differentiation

This focuses on the delivery of the material, adjusting the teaching methods according to the students' learning styles, including visual, auditory, and kinesthetic types. It also includes selecting appropriate media to support the lesson.

3. Product Differentiation

This results in students producing diverse learning products, as they are given the freedom to create work that reflects their understanding and aligns with the theme of the lesson.

The researcher observes that the key factors contributing to the successful implementation of differentiated instruction in Mathematics at SDN 104186 Tanjung Selamat include the use of effective teaching strategies and active student engagement. Teachers employ a variety of strategies such as using different learning media, assigning varied tasks, and grouping students based on their abilities. This enables students to learn according to their individual needs and skill levels. Meanwhile, students are more engaged in the learning process because they are given opportunities to work with their peers in groups or independently on tasks tailored to their needs. In summary, differentiated instruction has proven to be an effective approach in enhancing student involvement and academic performance in Mathematics, while also addressing the diverse learning styles and needs of students.

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F. References

Ardianti, Y., & Amalia, N. (2022). Kurikulum Merdeka: Pemaknaan Merdeka dalam Perencanaan Pembelajaran di Sekolah Dasar. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *6*(3), 399–407. https://doi.org/10.23887/jppp.v6i3.55749

Dr. Umar Sidiq, M.Ag & Dr. Moh. Miftachul Choiri, M. (2019). Metode Penelitian Kualitatif di Bidang Pendidikan. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9). http://repository.iainponorogo.ac.id/484/1/METODE%20PENELITIAN%20KUALITATIF%20DI%20BIDANG%20PENDIDIKAN.pdf

Faiz, A., Pratama, A., & Kurniawaty, I. (2022). Pembelajaran Berdiferensiasi dalam Program Guru Penggerak pada Modul 2.1. *Jurnal Basicedu*, *6*(2), 2846–2853. https://doi.org/10.31004/basicedu.v6i2.2504

Fitra, D. K. (2022). Pembelajaran Berdiferensiasi dalam Perspektif Progresivisme pada Mata Pelajaran IPA. *Jurnal Filsafat Indonesia*, *5*(3), 250–258. https://doi.org/10.23887/jfi.v5i3.41249

Fitriyani, P. (2018). Pendidikan Karakter Bagi Generasi Z. *Knappptma*, *7*(Maret).

Gaurifa, M., & Darmawan Harefa. (2023). Development Of A Cartesian Coordinate Module To The Influence Of Implementing The Round Club Learning Model On Mathematics Student Learning Outcomes. *Afore : Jurnal Pendidikan Matematika*, *2*(2), 45-55. https://doi.org/10.57094/afore.v2i2.1130

Gaurifa, M., & Darmawan Harefa. (2024). Learning Mathematics In Telukdalam Market: Calculating Prices And Money In Local Trade. *Afore : Jurnal Pendidikan Matematika*, *3*(2), 97-107. https://doi.org/10.57094/afore.v3i2.2305

Handayani, S. D., & Irawan, A. (2020). Pembelajaran matematika di masa pandemic covid-19 berdasarkan pendekatan matematika realistik. *Jurnal Math Educator Nusantara: Wahana Publikasi Karya Tulis Ilmiah Di Bidang Pendidikan Matematika*, *6*(2), 179–189. https://doi.org/10.29407/jmen.v6i2.14813

Handiyani, M., & Muhtar, T. (2022). Mengembangkan Motivasi Belajar Siswa melalui Strategi Pembelajaran Berdiferensiasi: Sebuah Kajian Pembelajaran dalam Perspektif Pedagogik-Filosofis. *Jurnal Basicedu*, *6*(4), 5817–5826. https://doi.org/10.31004/basicedu.v6i4.3116

Harefa, D., & Fatolosa Hulu. (2024). Mathematics Learning Strategies That Support Pancasila Moral Education: Practical Approaches For Teachers. *Afore : Jurnal Pendidikan Matematika*, *3*(2), 51-60. https://doi.org/10.57094/afore.v3i2.2299

Harefa, D., & I Wayan Suastra. (2024). Mathematics Education Based On Local

Wisdom: Learning Strategies Through Hombo Batu. *Afore : Jurnal Pendidikan Matematika*, *3*(2), 1-11. https://doi.org/10.57094/afore.v3i2.2236

Marlina. (2019). Panduan Pelaksanaan Model Pembelajaran Berdiferensiasi di Sekolah Inklusif. 1–58.

Mufida. (2017). 912-Article Text-1935-1-10-20180219.pdf.

Muspiroh, N. (2016). Peran kompetensi sosial guru dalam menciptakan efektivitas pembelajaran. *Jurnal Pendidikan Sosial & Ekonomi*, *4*(2), 1–19. http://www.syekhnurjati.ac.id/jurnal/index.php/edueksos/article/view/655

Mutolib, A., Rahmat, A., Harefa, D., Nugraha, S., Handoko, L., Sululing, S., Laxmi, & Nurhayati, S. (2025). Volcanic disaster mitigation based on local wisdom: A case study from a local community in the Mount Galunggung, Indonesia. *BIO Web of Conferences*, *155*. https://doi.org/10.1051/bioconf/202515502002

Pane, R. N., Lumbantoruan, S., & Simanjuntak, S. D. (2022). Implementasi Pembelajaran Berdiferensiasi Untuk Meningkatkan Kemampuan Berpikir Kreatif Peserta Didik. *BULLET: Jurnal Multidisiplin Ilmu*, *1*(3), 173–180.

Puspitasari, V., Rufi'i, & Walujo, D. A. (2020). Pengembangan Perangkat Pembelajaran dengan Model Diferensiasi Menggunakan Book Creator untuk Pembelajaran BIPA di Kelas yang Memiliki Kemampuan Beragam. *Jurnal Education and Development Institut*, *8*(4), 310–319.

Putriana Naibaho, D. (2023). Strategi Pembelajaran Berdiferensiasi Mampu Meningkatkan Pemahaman Belajar Peserta Didik. *Journal of Creative Student Research (JCSR)*, *1*(2), 81–91.

Sarie, F. N. (2022). Implementasi Pembelajaran Berdiferensiasi dengan Model Problem Based Learning pada Siswa Sekolah Dasar Kelas VI. *Tunas Nusantara*, *4*(2), 492–498. https://doi.org/10.34001/jtn.v4i2.3782

Sri Yanti, N., Montessori, M., & Nora, D. (2022). Pembelajaran IPS Berdiferensiasi di SMA Kota Batam. *Ranah Research: Journal of Multidisciplinary Research and Development*, *4*(3), 252–256. https://doi.org/10.38035/rrj.v4i3.498

Sugiyono (Ed.). (2019). *Metode Penelitian Kuantitatif dan Kualitatif dan R & D* (Cetakan ke). Alfabeta, CV.

Sugiyono. (2022). *Metode Penelitian & Pengembangan Research And Development*. Alfabeta.

Suparlan, H. (2016). Filsafat Pendidikan Ki Hadjar Dewantara Dan Sumbangannya Bagi Pendidikan Indonesia. *Jurnal Filsafat*, *25*(1), 56. https://doi.org/10.22146/jf.12614

Suwartiningsih, S. (2021). Penerapan Pembelajaran Berdiferensiasi untuk Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran IPA Pokok Bahasan Tanah dan Keberlangsungan Kehidupan di Kelas IXb Semester Genap SMPN 4 Monta Tahun Pelajaran 2020/2021. *Jurnal Pendidikan Dan*

Pembelajaran Indonesia (JPPI), 1(2), 80–94. https://doi.org/10.53299/jppi.v1i2.39

Yani, D., Muhanal, S., & Mashfufah, A. (2023). Implementasi Assemen Diagnostic Untuk Menentukan Profil Gaya Belajar Siswa Dalam Pembelajaran Diferensiasi Di Sekolah Dasar. *Jurnal Inovasi Dan Teknologi Pendidikan JURINOTEP, 1*(3), 241–360. https://doi.org/10.46306/jurinotep.v1i3

Yestiani, D. K., & Zahwa, N. (2020). Peran Guru dalam Pembelajaran pada Siswa Sekolah Dasar. *Fondatia, 4*(1), 41–47. https://doi.org/10.36088/fondatia.v4i1.515

Zein, M. (2016). Peran guru dalam pembelajaran bahasa arab. *Jurnal Inspiratif Pendidikan, 5*(2), 274–285.