

Analysis of Student Learning Style in IPAS Learning with a Differentiated Learning Approach as an Optimization of the *Merdeka* Curriculum at Elementary School

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Abstract

This study aims to determine the role of learning styles in differentiated learning in IPAS learning as an optimization of the *Merdeka* curriculum. The number of informants in this study was four, consisting of one fourth-grade teacher and three fourth-grade students. This type of research uses descriptive qualitative methods, data collection through interviews with grade IV teachers and three students with different learning styles, observation in learning, learning style questionnaires to grade IV students, and documentation. Data validity test using triangulation techniques and sources. Data analysis techniques follow the Miles and Huberman procedure, which has three methods: data reduction in the context of this study in the form of interview results, observations, and learning style questionnaire results, presentation of data from the reduction results presented in the form of descriptive tables and narratives, the last is concluding. The findings of the analysis show that learning styles have a significant effect on the achievement of learning objectives through a differentiated approach. Several learning styles were identified after being given a learning style questionnaire to class IV students. The results show that the majority of students have a visual learning style (58%), kinesthetic learning style (28%), and auditory learning style (18%). By applying the four aspects and steps of differentiated learning, learning is more focused and enjoyable for students. This can increase students' motivation and engagement in learning and help them achieve better academic results. This research contributes to developing more effective learning strategies in the independent curriculum. Differentiated learning serves as a bridge to create a learning experience that suits students' interests and needs by customizing methods based on learning styles. It also helps improve the effectiveness of the learning process by paying attention to each student's learning preferences.

Keywords: IPAS Learning, Learning Style, Differentiated Approach, *Merdeka* Curriculum

Abstrak

Penelitian ini bertujuan untuk mengetahui peran gaya belajar dalam pembelajaran berdiferensiasi pada pembelajaran IPAS sebagai optimalisasi kurikulum merdeka. Jumlah informan dalam penelitian ini adalah empat orang, yang terdiri dari satu orang guru kelas IV dan tiga orang siswa kelas IV. Jenis penelitian ini menggunakan metode kualitatif deskriptif, pengumpulan data melalui metode wawancara dengan guru kelas IV dan tiga siswa dengan gaya belajar berbeda, observasi dalam pembelajaran, angket gaya belajar kepada siswa kelas IV, dan dokumentasi. Uji keabsahan data menggunakan triangulasi teknik dan sumber. Teknis analisis data mengikuti prosedur Miles dan Huberman yang terdapat tiga teknik; reduksi data dalam konteks penelitian ini berupa hasil wawancara, observasi, dan hasil angket gaya belajar, penyajian data dari hasil reduksi dipaparkan berupa tabel dan narasi deskriptif, yang terakhir

penarikan kesimpulan. Temuan analisis menunjukkan bahwa gaya belajar berpengaruh signifikan terhadap pencapaian tujuan pembelajaran melalui pendekatan berdiferensiasi. setelah diberikan angket gaya belajar kepada siswa kelas IV, teridentifikasi beberapa gaya belajar siswa. Hasilnya menunjukkan bahwa mayoritas siswa memiliki gaya belajar visual (58%), gaya belajar kinestetik (28%), dan gaya belajar auditori (18%). Dengan menerapkan keempat aspek dan langkah-langkah pembelajaran berdiferensiasi, pembelajaran tidak hanya lebih terarah tetapi juga lebih menyenangkan bagi siswa. Hal ini dapat meningkatkan motivasi dan keterlibatan siswa dalam proses belajar, serta membantu mencapai hasil akademis yang lebih baik. Penelitian ini memberikan kontribusi penting dalam pengembangan strategi pembelajaran yang lebih efektif dalam kurikulum merdeka. Pembelajaran berdiferensiasi berfungsi sebagai jembatan dalam menciptakan pengalaman belajar yang sesuai dengan minat dan kebutuhan siswa dengan menyesuaikan metode berdasarkan gaya belajar dan membantu meningkatkan efektivitas proses belajar dengan memperhatikan preferensi belajar masing-masing siswa.

Kata kunci: Pembelajaran IPAS, Gaya Belajar, Pendekatan Berdiferensiasi, Kurikulum Merdeka

INTRODUCTION

The Merdeka curriculum is an approach that emphasizes various methods and strategies in the learning process (Latifa et al., 2023). This curriculum offers a more flexible approach, allowing education implementers, especially teachers and principals, to design and implement the learning process according to existing conditions. With the principle of "self-learning", teachers can develop a curriculum more responsive to the specific needs of students and their potential (Novianto & Abidin, 2023). Teachers no longer follow rigid guidelines in curriculum development and consider students' local context, interests, and abilities. Thus, the Merdeka Curriculum aims to create a more inclusive and empowering learning environment which allows students to develop optimally (Syahrir et al., 2024). The Merdeka Curriculum also encourages using technology and media in the learning process. The Merdeka Curriculum will create more innovative, student-focused teaching methods (Langoday et al., 2024). However, the implementation of the Merdeka Curriculum still faces several obstacles, such as the lack of resources and teacher knowledge in designing a curriculum that suits the needs of students, as well as the need for strict supervision to prevent irregularities in its implementation (Sutrisno et al., 2023).

One of the prominent aspects of the Merdeka Curriculum program is the integration of science and social studies subjects, which are then unified into IPAS at the primary school level. This merger is done by considering that students at the elementary school level tend to pay more attention to concrete things (Ikhsani & Alfiansyah, 2023). Teachers have the flexibility to use various learning methods or approaches according to the diverse needs of students (Thana & Hanipah, 2023). One is the differentiated approach in the context of Merdaka Belajar, a learning strategy that adjusts methods, materials, and evaluations according to students' needs, interests, and abilities (Purwowododo & Mufidah, 2024). The main objective is to provide space for each student to learn according to their potential and learning style so that the learning process becomes more inclusive and effective. The differentiated learning approach allows students to choose the method that best suits their style and needs to feel freedom in the learning process (El Moutawaqil & Susanto, 2024).

Differentiated learning is an effective method to accommodate differences among students (Sulistianingrum et al., 2023). The primary purpose is to create a pleasant learning atmosphere, maintain student motivation, and help students understand the material well to feel a sense of achievement in the learning process (Kusumaningpuri, 2024; Setyo Adji Wahyudi et al., 2023). Applying various learning systems is expected to meet student's diverse needs and potential and effectively support student development and growth in the learning environment. This approach

aims to create a more inclusive and empowering educational experience so students can develop according to their abilities. Different learning styles also affect student learning outcomes. Therefore, students, teachers and parents need to know students' learning styles to achieve the desired learning outcomes (Digna & Widyasari, 2023). Learning style is an approach that describes the way each individual learns, namely how they focus on the process and understand new and complex information through various perceptions (Arsyad & Villia, 2022).

According to (Rafiska & Susanti, 2023), there are three types of learning styles, namely: (1) visual learning style, (2) auditorial learning style, and (3) kinesthetic learning style. Visual learning style is a learning process where students use their vision to absorb learning material; auditorial learning style is a learning process where students use their hearing to absorb learning material; and kinesthetic learning style is a learning process where students understand learning material by utilizing all types of movements (Sari et al., 2023). By knowing students' learning styles, teachers will find it easier to carry out strategies in the learning process, especially in IPAS learning; students will find it easier to capture information because, in addition to being practised, students will also respond, so that all learning styles and student needs can be met (Siswanto et al., 2024). In line with (Rosa et al., 2024), learning adapted to learning styles is considered more effective than traditional teaching methods in motivating students to learn science and science-related subjects.

Based on the results of interviews and initial observations, researchers found several problems, including variations in student learning styles, learning approaches that are only sometimes effective, and differences in students' academic abilities. These problems indicate that particular strategies are needed so students can successfully complete tasks in the learning process. The results of interviews with grade IV teachers revealed that there are obstacles faced when using a differentiated approach in the learning process: compiling teaching modules takes quite a long time. This is due to adjusting learning materials and methods for students with different abilities.

This research is motivated by several previous researchers; the first is (Setyo Adji Wahyudi et al., 2023). It is known that learning IPAS in class V SDN 008 Samarinda Seberang using a three-step differentiated approach can improve student learning ability. Second, research (Hasanah & Surakarta, 2024) showed that a differentiated approach to IPAS learning in grade IV can increase student motivation and learning outcomes, create positive relationships between students and teachers, and appreciate differences despite challenges. Third, research (Avandra, 2022) shows that learning IPAS in grade IV SDN 09 Balai Satu with a differentiated approach can improve students' critical thinking skills. Fourth, (Kusumaningpuri, 2024) shows that differentiated learning encourages teachers to think creatively in designing methods that accommodate the strengths and weaknesses of learners, thus increasing student interest and achieving learning objectives. This approach also deepens teachers' understanding of implementing an independent curriculum in IPAS learning, making planning, implementation, and evaluation easier. Although studies have discussed the implementation of differentiated learning, this study has similarities with previous studies on the theme, method, and research time. However, this study differs in the differentiated learning approach related to learning styles, its optimization in an independent curriculum, and different research locations.

Based on the discussion, this study aims to analyze students' learning styles in IPAS learning and apply a differentiated learning approach to optimize the self-directed curriculum. Therefore, the novelty of this research lies in the results based on the analysis of students' learning styles and the emphasis on specific classes, which are to be an added value and novelty in the research. Another novelty of the research results is optimizing an independent curriculum to implement differentiated learning in IPAS subjects. The results of this research on student learning styles are expected to be a guideline for implementing differentiated learning.

METHOD

This research uses descriptive qualitative research methods with data validity testing of source and method triangulation. Data collection is done using interviews, observations, questionnaires, and documentation. This study aims to analyze students' learning styles in IPAS learning by applying a differentiated learning approach to optimize the Merdeka Curriculum. This research was conducted in class IV of SDN Pulorejo III, where interviews were conducted with the class IV teacher and three students who have different learning styles. The interviews followed the guidelines that had been prepared to ensure that all data obtained were in line with the research objectives. Meanwhile, observations are performed directly in the classroom to get accurate information; researchers will observe and record student information during the learning process. Then, the researcher collected relevant documentation from recording observations and activities in the learning process and from the student learning style questionnaire results. The data analysis technique refers to the method proposed by Miles and Huberman this Analysis involves three processes simultaneously: data reduction, data presentation, and conclusion drawing (Febriani et al., 2023) . The researcher chose the Miles and Huberman approach because it is very effective in understanding the complex dynamics of qualitative research. With this approach, researchers can reduce, present, and conclude data systematically and accurately (Zakariah et al., 2020). Data analysis becomes more structured, strengthening the argument and increasing the credibility of the research.

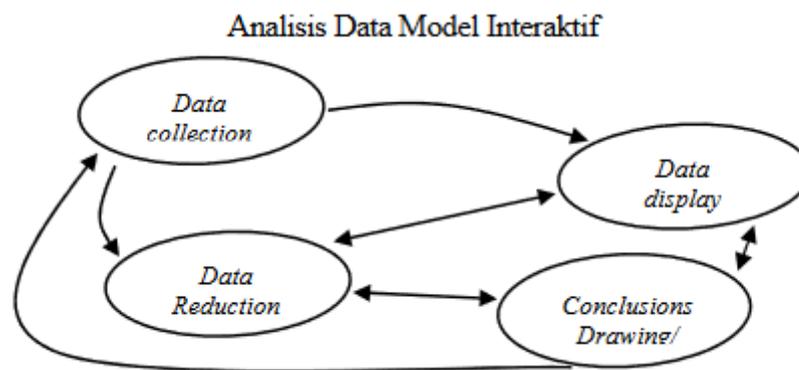


Figure 1. Three steps of data presentation (Zulfirman, 2022).

Data reduction means summarizing, selecting essential points, focusing on important things, identifying themes and patterns, and discarding information that is deemed unnecessary (Gee & Harefa, 2021). Data reduction is conducting research directly into the field by observing learning and student characteristics and conducting interviews with class teachers according to the guidelines that have been prepared. The data presentation method refers to the various ways to present and organize data to make it easier to understand and analyze (Fadli, 2021). Researchers use tables to facilitate comparison and Analysis. Data that has undergone a reduction process will be presented in narrative form to provide an overall picture of the student's learning conditions. This presentation involves grouping information into themes that align with the research objectives. Once the data is presented, the researcher will conclude. Triangulation techniques and sources were used to check the validity of the data. The triangulation technique checks and combines data obtained from interviews, observations, questionnaires, and documentation. Meanwhile, source triangulation checks and combines informants obtained from interviews with several informants and the results of student learning style questionnaires.

Table 1. Student learning style instrument questionnaire lattice

No.	Aspects	Indicator	Answer
1.	Visual Learning	1. How to learn by reading	

Style	2. Likes to take notes 3. Read quickly and diligently 4. Easily remember what is seen rather than what is heard 5. Not bothered by noise	A
2. Auditory Learning Style	1. How to learn by listening 2. Difficulty in writing/recording but good at telling stories 3. Read aloud 4. Easily remember what is discussed/explained rather than what is seen 5. Easily distracted by noise	B
3. Kinesthetic Learning Style	1. How to learn happily with the practice model 2. Lots of writing without rereading 3. Reading with the finger as a pointer 4. Recalling by writing information many times 5. Unable to sit still for long periods 6. Often answers questions followed by body movements	C

Source: Modification of (Sugianto, 2021).

RESULT AND DISCUSSION

This research was conducted at SDN Pulorejo III by conducting interviews with fourth-grade teachers as the primary informants and fourth-grade students as additional informants to find out whether the learning designed by the teacher is by the understanding and needs of students and providing learning style questionnaires to students to find out the learning style of each student. This research focuses on implementing differentiated learning by considering students' learning styles in optimizing the independent curriculum in IPAS learning. The main objective is to analyze whether the teaching methods teachers use are based on the understanding and needs of students.

The interview results with the fourth-grade teacher at SDN Pulorejo III show that she analyzed students' needs through diagnostic assessments at the beginning of the school year. In addition, teachers also conduct ongoing observations to identify student behaviour patterns. In designing teaching modules for IPAS subjects, teachers determine the dimensions of the Pancasila Student Profile, define learning objectives, design assessments, and fill in the predetermined format. Furthermore, teachers first identify student needs, adjust learning materials and methods, and present the material enthusiastically and cheerfully in implementing learning. Polite language and humour are also used to keep the learning atmosphere fun. For assessment, teachers use formative assessment on an ongoing basis with instruments that include assessment of skills, attitudes, and knowledge and summative assessment at the end of learning.

The challenges faced by teachers in implementing differentiated learning include several essential aspects. First, time constraints are a significant obstacle, as planning and organizing differentiated learning for each student requires more time and intensive preparation. This is often difficult to do, especially in classes with many students. Limited resources are also a challenge, as not all schools have access to the necessary materials and tools to support differentiated learning.

On the other hand, implementing differentiated learning also positively impacts students. One of them is that students become more connected to the material and motivated to learn. Students feel more cared for and supported when learning is tailored to individual needs. If the majority of students have a visual learning style, visual media such as images, photos, and videos can be an effective alternative. In addition, teachers can design more effective learning so students find the learning process easier and more enjoyable. This enjoyable learning contributes to increased student engagement in learning activities.

Table 2. Student learning style questionnaire result

No.	Student Learning Style	Number of Student
1.	Visual	Six students
2.	Auditorial	Two students
3.	Kinesthetic	Three students

Table 3. Interview results of students with different learning style

Student Learning Style	Student Initials	Student Interview Result
Visual	DST	Teachers often show pictures or videos, making the learning process more enjoyable and exciting so DST students can receive the material well.
Auditorial	KA	In IPAS, learning is often divided into groups, making it easier for DST students to obtain information when they feel the material is unclear. In groups, they can explain to each other.
kinesthetic	FDF	Using actual teaching aids or materials can facilitate FDF students' understanding. In addition, experimental activities in IPAS learning provide new experiences. Outdoor learning also helps preven

The results of the questionnaire regarding the learning styles of fourth-grade students of SDN Pulorejo III show that most students have a visual learning style (58%), kinesthetic learning style (28%), and auditory learning style (18%). In an IPAS lesson on cultural diversity in grade 4, students with visual learning styles were asked to draw six major islands in Indonesia, students with auditory learning styles were asked to write and sing folk songs, and students with kinesthetic learning styles were asked to make a bouquet that reflected the diversity of regional cultures. With this differentiated learning approach, students can actively participate according to their learning style, making learning more effective and fun. This approach also encourages a deeper understanding of Indonesia's cultural diversity.

Researchers conducted interviews with three students representing each learning style. Students with a visual learning style whose initials are DST stated that in IPAS learning, using projectors to visualize images or videos can often make learning more enjoyable. Students can more easily understand the concepts by displaying the material visually. This visualization helps explain information more clearly and keeps students' attention, making learning more dynamic and less tedious. The student's statement aligns with the definition of visual learning style, which is learning by seeing; for them, vision has a crucial role.

Meanwhile, students with auditory learning styles whose initials are KA revealed that, often, there are group work activities that can facilitate students' understanding of the material. When discussing, students exchange ideas with each other and explain concepts that have yet to be

understood; this interaction not only increases individual understanding but also builds social skills and communication skills. The student's statement aligns with understanding the auditory learning style: learning by listening. Students with an auditory learning style can manage their learning success through hearing. Finally, a student with a kinesthetic learning style with the initials FDF explained that IPAS learning is more varied because it often uses actual teaching aids and materials, and there are usually experimental activities that allow students to be more actively involved in the learning process. In addition, thanks to the games and outdoor activities often interspersed in the learning process, IPAS learning is not boring. The students' statements align with the definition of kinesthetic learning style, which is learning through movement, activity, and touch. Children with a kinesthetic learning style can understand the material by moving, touching and doing various activities.

Students' statements are by the characteristics of learning styles according to the results of research (Dariyani et al., 2022). Students with visual learning styles in differentiated learning in IPAS subjects easily understand information through pictures, readings, illustrations, or diagrams. Students tend to remember information presented visually; they think using images and utilize visual elements, such as graphs, picture books, and videos, to accelerate learning. Students with auditory learning styles in differentiated learning of IPAS subjects easily capture information through hearing, such as through the interactive lecture method. In addition, they also like to be in groups because they can easily understand the material by discussing it with friends. They tend to enjoy learning by listening to music; students with this learning style learn faster through oral discussion and by paying attention to the explanation from the teacher. In differentiated learning of IPAS subjects, students with kinesthetic learning styles enjoy doing physical activities and hands-on experiences such as experiments and making products. They usually find it challenging to sit still for a long time as they have a strong urge to move and explore their surroundings.

Based on the results of interviews and direct observation of students in learning, it is found that learning styles significantly influence the success of the learning process, especially when using a differentiated learning approach to optimize the Merdeka Curriculum. With the characteristics of students' different learning styles, it can be seen that learning with a differentiated approach is proven to be effective in accommodating various student learning styles, which is in line with the definition of differentiated learning as a strategy that adapts teaching to the needs and characteristics of individual students. Differentiated learning is a bridge to creating learning experiences that suit students' interests and needs by customizing learning methods and materials based on individual learning styles. This approach facilitates a more profound understanding and creates an inclusive learning environment responsive to the diversity of learner characteristics. Different learning styles among students require varied approaches from teachers so that each student can learn in a way that works best for them. By understanding and recognizing each student's learning style, teachers can deliver information more appropriately and engagingly, making it easier for students to understand the material. This will improve students' understanding of the material and help them achieve learning objectives more effectively and efficiently. Therefore, educators need to continue to develop knowledge of students' learning styles as part of their teaching strategies to maximize the learning process and its outcomes (Suwartiningsih, 2021).

This is in line with Howard Gardner's eight student intelligences: linguistic intelligence, logical-mathematical intelligence, visual-spatial intelligence, kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence. The questionnaire results show that most students have a visual learning style (58%) with characteristics of having visual-spatial intelligence. This can be seen from the definition of spatial intelligence, which is the ability to think in images and absorb, transform, and recreate various aspects of the visual-spatial world (Nuraini et al., 2022). Students with a kinesthetic learning style (28%) have the characteristics of gesture intelligence, which is seen in their ability to use gestures to express ideas

and emotions (Imrah Dewi et al., 2021). Then, students with auditory learning styles (18%) have the characteristics of musical intelligence, which is seen from intelligence in creating, expressing, and enjoying music and sound. Students with this intelligence are more accessible to teach by integrating musical elements into the learning process, their proper brain ability will help them understand the subject matter more quickly when accompanied by music (Fitria, 2023) and have linguistic intelligence characteristics seen in children who can speak well, like to tell stories, and diligently listen to or read, showing signs of high linguistic intelligence (Thambu et al., 2021).

In line with Carol A. Tomlinson, an active educator since 1995, put forward the idea of teaching that considers individual student differences in her book "How to Differentiate Instruction in Mixed-Ability Classrooms" (Munawaroh, 2023). This concept became known as "differentiated learning". In the differentiated learning approach, teachers provide materials considering each student's readiness level, interests, and learning styles. In addition, teachers can also adjust the lesson content, learning process, learning outcomes, and the environment in which students learn (Munawaroh, 2023).

Differentiation is a process in learning where students learn subject matter according to their abilities, interests and needs (Mulyawati et al., 2022). Differentiated learning, four steps can be taken to make learning more effective and optimal (Rosiyani et al., 2024). The first step is Analysis, which is analyzing and recognizing the characteristics of students exactly. This is done through mapping student needs using diagnostic assessment. The second step is Design, which means preparing or planning the learning process that will be carried out according to student needs, which is outlined in a teaching module. The third step is Implementation, which is the Implementation or application of plans that have been prepared in learning activities known as differentiated learning, according to the student readiness level. The fourth step is Evaluation, which means the teaching carried out is evaluated as a basis for improvement in the following learning process.

In differentiated learning, teachers can control four aspects teachers can control four aspects: content, process, product, and classroom environment or climate; teachers have the authority to determine how these four elements will be applied in classroom learning (Naibaho, 2023; Yuni yati et al., 2023). Teachers also have the ability and opportunity to customize the learning environment and climate and the content, process, and product in each class (Gusteti & Neviyarni, 2022; Muslimin et al., 2022; Wahyuningsari et al., 2022). The first is content. Content is the material taught by the teacher. Some strategies teachers can use to differentiate the content students learn include presenting a variety of materials, offering mini-lessons, using learning contracts, presenting materials with different learning modalities, and providing various support systems.

Second is process. In this section, the term "process" refers to activities carried out by students in the classroom. These activities must have meaning for students as a learning experience, not activities irrelevant to the studied material. Numbers do not assess activities carried out by students but through qualitative assessment in the form of feedback notes regarding attitudes, knowledge, and skills that still need improvement. In addition, meaningful activities for students in the classroom must also be tailored to their readiness, interests, and learning profile (style).

Third is product. The product is usually the result of the learning process that shows students' ability to demonstrate their knowledge, skills and understanding after completing a unit of study or even after studying the material for a semester. The product has a summative rating and is considered necessary. Product completion requires more time and a deeper understanding than the material taught. Therefore, products are often worked on not only in class but also outside of class. Product implementation can be done individually or in groups. If the product is done in groups, the grading system will be organized based on each team member's contribution to completing the product. Fourth is learning environment. The learning environment includes the physical space in the school and the classroom or place where students study. To motivate students, the environment must be tailored to their learning preferences, interests, and desires.

Applying these various methods shows how important it is to understand and accommodate different learning styles to increase student motivation and engagement in learning (Halimah, 2023). The role of teachers is vital in creating the learning expected by the Merdeka Curriculum, especially in IPAS learning (Anggraini et al., 2022). When facing challenges in implementing differentiated learning, teachers need to understand the concept deeply (Cahyono, 2023). The socialization of the independent curriculum implementation must be improved, especially in schools in regions where teachers need direct assistance in the implementation process. After understanding the concept, teachers can apply it independently in learning. In addition, support and guidance from all relevant parties, such as school principals, supervisors, education offices and government, are essential to achieve the goals of this curriculum development.

CONCLUSION

Based on the research and discussion results, differentiated learning is strongly influenced by students learning styles, which become a bridge in optimizing the independent curriculum. In the context of learning, a differentiated approach has proven effective in accommodating students' various learning styles, which aligns with the definition of differentiated learning as a strategy that adapts teaching to the needs and characteristics of individual students. In differentiated learning, learning methods and materials based on learning styles are adjusted to make the learning process more effective. In addition, in the continuity of learning, the role of the teacher is vital as a facilitator who adapts content, methods, products, and learning environments according to student characteristics. This differentiated approach can increase student motivation and engagement despite challenges such as limited time and resources.

Limited resources, both in terms of learning materials and technology support, can affect the effectiveness of differentiated learning implementation. The successful implementation of differentiated learning depends on support from school principals, education offices, and teacher mentoring. With adequate support, the implementation of an independent curriculum can be improved. Therefore, support from various parties, including school principals and education offices, and teacher assistance in implementing the independent curriculum is needed to achieve the expected educational goals. The limitation of this study is that it focuses on students' learning styles and the implementation of differentiated learning without considering other factors that may affect the effectiveness of learning, such as students' socio-economic conditions and parental support, and is only conducted in one school, SDN Pulorejo III. Therefore, future researchers should conduct research in several schools with different characteristics to obtain more representative and generalizable result.

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