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INNOVATION OF DIFFERENTIATIONAL LEARNING STRATEGIES IN SCIENCE LEARNING FOR STUDENTS WITH SPECIAL NEEDS

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Abstract

This study was conducted to explore the application of differentiation learning strategies and inclusive approaches for students with special needs in Elementary Schools. This study is motivated by the importance of creating a friendly learning environment and supporting the development of students with special needs so that they can develop according to their potential. The research method used is a qualitative study with a phenomenological approach, where data was obtained through in-depth interviews with three key informants, namely educators and inclusive program managers at schools. The data collected were analyzed thematically to identify patterns of implementation of differentiation learning strategies and implementation of inclusive policies. The results of the study indicate that (1) Teachers have implemented differentiation learning strategies optimally, learning methods and materials are adjusted to the needs and competencies of students with special needs; (2) Special programs; Maintenance Class and Inclusive Learning are applied to provide additional support for students, including the use of special aids and accompanying teachers; (3) The humanist philosophy approach is also the basis for creating an inclusive learning environment, which is demonstrated through respect for individual uniqueness and student character development. Evaluation of this approach is carried out periodically to ensure its suitability to student needs. In addition, collaboration with parents and the community is considered very important in supporting the implementation of inclusive programs.

Keywords: Differentiated Learning, Inclusive Education, Students with Special Needs, Elementary School

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INTRODUCTION

The innovation of differentiated learning strategies in science education for students with special needs addresses several critical aspects of inclusive education (Villa & Thousand, 2005) by tackling existing barriers, establishing clear objectives, introducing novel approaches, and emphasizing the broader significance of these strategies (Bender, 2012). Many students with special needs face significant obstacles in traditional learning environments, often leading to disengagement and underachievement; in Indonesia alone, approximately 1.5 million children with disabilities are enrolled in mainstream schools, yet many struggle to keep pace with their peers due to the lack of tailored instructional methods (National Council for Special Education). This highlights the urgent need for effective teaching strategies that accommodate diverse learning needs. The primary goal of implementing differentiated instruction (DI) is to create a more inclusive and effective learning environment by adjusting materials, methods, and evaluations to align teaching with the unique abilities and characteristics of each student (Bondie et al., 2019; Roberts & Inman, 2023). Beyond improving academic performance, DI fosters a sense of belonging among students, addressing both cognitive and emotional needs. Unlike traditional one-size-fits-all teaching methods, differentiated learning strategies employ techniques such as flexible grouping, tiered assignments, and choice boards that cater specifically to the diverse needs of students with special needs (Puspitarini & Hanif, 2019; Saleem et al., 2022). For instance, research has shown that implementing DI in science classes led to improved engagement, motivation, and academic outcomes (Liu et al., 2020). Moreover, the significance of these strategies extends beyond academics; tailored educational practices enhance student participation, improve social interactions, and create a more satisfying classroom environment (Bender, 2012). Thus, the integration of differentiated learning strategies in science education represents not merely an instructional adjustment but a vital step towards building an inclusive educational framework where every student can thrive.

The application of differentiated learning strategies in science classes is increasingly relevant in the context of national educational policies and global trends towards inclusive education, as it aligns with efforts to address diverse learning needs while supporting equitable access to quality education. National policies in countries like Indonesia emphasize the importance of inclusive education, mandating schools to integrate students with disabilities; for example, the Indonesian government has set a target to ensure that at least 20% of students with special needs are enrolled in mainstream education by 2025 (Ministry of Education and Culture, Indonesia). This is consistent with global commitments to inclusive education as a fundamental right, as outlined in the United Nations Convention on the Rights of Persons with Disabilities. Globally, there is a growing recognition of the need for personalized and differentiated instruction to address individual learning differences effectively (UNESCO, 2021). Teachers are encouraged to adopt innovative pedagogical frameworks such as TPACK

(Technological Pedagogical Content Knowledge) and HOTS (Higher Order Thinking Skills) to improve teaching practices (Pulukadang et al., 2023; Wakhidah & Hanifah, 2023). These frameworks not only support academic achievement but also foster creativity and collaboration among educators, creating a dynamic learning environment (Haelermans, 2022; Smale-Jacobse et al., 2019). This research highlights the necessity for teachers to actively develop and implement differentiated learning strategies tailored to the varying abilities of their students. By equipping educators with the tools and frameworks for effective differentiation, the potential for improved academic outcomes and personal growth among students, particularly those with special needs, becomes significantly enhanced (Keuning & van Geel, 2021; Tomlinson & Imbeau, 2023).

Several recent studies emphasize the importance of this approach. Research by Cash, (2017) shows that differentiated learning combined with HOTS can increase students' cognitive engagement through challenging tasks (Gregory & Chapman, 2012) but in accordance with the individual's developmental level. This study highlights that the application of HOTS in science learning is very effective in improving students' analytical skills, especially for those with diverse learning styles. Research by Anderson & Kyzar (2022) underlines the importance of TPACK in integrating technology into science learning, which allows students with special needs toaccess materials in a more interactive and individualized way. In addition, research by Lindner et al. (2019) shows that the use of differentiated learning tailored to students' contexts in inclusive classrooms can increase emotional and social engagement, helping students with special needs feel more accepted and actively involved in the learning process. These studiesreinforce the idea that differentiated learning accompanied by HOTS and TPACK approaches not only helps students understand the material better but also encourages an inclusive and collaborative learning atmosphere.

Differentiated learning strategies in Natural Science (Science) learning for students with special needs occur through adjustments to learning methods, materials, and media to suit the needs, abilities, and learning styles of each student (Landrum & McDuffie, 2010). This process allows teachers to provide a more personalized approach by grouping students based on their specific needs and providing additional support, such as learning aids, simplified materials, or special mentoring. This strategy is implemented because of the importance of providing equal opportunities for all students (McDonnell & Hardman, 2009), including those with physical, cognitive, or developmental disabilities (Turk et al., 2020), to learn and develop to their potential. This strategy contributes to the creation of an inclusive and responsive learning environment, where students with special needs can better follow the learning, feel valued, and accepted in the learning community. In addition to increasing students' motivation and active participation in science learning, this strategy also develops social skills through positive interactions in the classroom. The uniqueness of this study lies in the integration of the national

curriculum with a differentiation strategy based on Higher-Order Thinking Skills (HOTS) and the Technological Pedagogical Content Knowledge (TPACK) framework, which not only meets the diverse needs of students with special needs but also encourages the development of critical thinking and problem-solving skills. With the implementation of TPACK, teachers are prepared to effectively integrate technology, pedagogy, and content, creating an engaging and relevant learning process with the goals of 21st-century education, while presenting a holistic model that connects theory and practice in inclusive science education.

Students with special needs have diversity in the types and levels of needs that require a flexible and adaptive learning approach. In science learning, which often has complex and abstract concepts, they need more concrete or visual methods so that the material can be understood more easily. Differentiated learning strategies help overcome this challenge by adjusting methods, materials, and assessments according to the needs of individual students, allowing them to learn more optimally. This study was conducted to evaluate the extent to whichthe implementation of this differentiation strategy is in line with the curriculum and inclusive education policies in Elementary Schools. The results are expected to reveal how differentiation strategies are implemented in science learning for students with special needs, the reasons for their implementation, and the resulting implications, namely the creation of a more inclusiveand responsive learning environment, where each student can participate and develop according to their potential in an atmosphere that supports and respects diversity.

Observations in several schools show that the implementation of inclusive education is still diverse. Although some schools have identified students with special needs who study with other students, not all have special teachers to support them. The assessment process also requires adjustment, with KKTP (criteria for achieving learning objectives) that differ between students with special needs and other students. Differentiated learning strategies are expectedto not only improve students with special needs' understanding of science concepts, but alsocreate an inclusive classroom atmosphere, where all students feel supported and valued.

METHODS

This study uses a qualitative approach with a case study design to gain an in-depth understanding of the experiences of students with special needs in science learning with differentiated learning strategies in Elementary Schools. Case studies allow for thorough exploration in real-life contexts through various data sources, including interviews, observations, and document analysis (Cleland et al., 2021; Schoch, 2020). This research was conducted at SDN Gadang 2 Banjarmasin, a school known for implementing differentiated learning strategies. This location was chosen because it has good best practices in implementing differentiated learning, thus becoming a role model for inclusive education. In addition, this school accommodates a variety of students with special needs, thus providing a variety of things to explore

how differentiation can meet individual learning needs. Data collection involved in-depth interviews, participant observation, and document analysis to gain a comprehensive understanding of the phenomenon. By focusing on the perspectives of students, teachers, and other stakeholders, this qualitative approach aims to reveal detailed and contextual insights into the implementation of differentiated learning strategies in an inclusive elementary school environment.

This study involved science teachers and parents or guardians of students as the main subjects. The selection of subjects was carried out through purposive sampling to ensure direct involvement and relevance of their experiences to the phenomenon being studied (Campbell et al., 2020; Schoch, 2020). Research informants included teachers and inclusive education support staff who played an active role in the learning process, selected based on their contribution to supporting students' needs. The focus of this study was students with various types of special needs, such as learning disabilities, developmental disorders, and other needs. The science teachers who were the subjects of the study had practical experience in implementing differentiated learning strategies, providing rich insights into the implementation and challenges faced in the field. The parents or guardians of students involved were those who actively supported the learning process at home and collaborated with teachers, providing important perspectives on the impact of differentiation strategies on child development. This study involved six respondents, who were selected to provide comprehensive and in-depth data related to the implementation of differentiated learning for students with special needs.

Data collection in this study was conducted through in-depth interviews, group interviews, and participant observation to gain a deep and contextual understanding of the implementation of differentiation learning strategies in science learning for students with special needs. In-depth interviews were used to explore individual teacher experiences in detail, while group interviews were utilized to explore collective perspectives, facilitating discussions among teachers on best practices, challenges, and relevant solutions, although this method has the risk of bias due to group dynamics, such as the dominance of certain participants or social pressure, which was overcome by careful discussion management by the facilitator. Participant observation was conducted to directly observe the implementation of differentiation strategies in inclusive classes, with a duration of 1-2 hours per session three times, including observations of science learning activities in the classroom and discussions between teachers in designing learning strategies. The data obtained were analyzed through an open coding approach with steps including identifying initial themes, grouping similar codes, and compiling broader thematic categories to support thematic analysis and comprehensive interpretation, as well as transparency and reproducibility of data supported by the use of analysis software such as NVivo. Next, the findings were interpreted using theoretical triangulation, including differentiated learning theory that guided the analysis of the adaptation of teaching strategies

to the needs of diverse students, as well as inclusive education theory that was used to assess the extent to which the strategies reflected the principles of inclusivity in learning in elementary schools (Taherdoost, 2022).

The validity of the data were guaranteed through triangulation techniques, which included triangulation of sources, methods, and theories. Source triangulation compared data from various informants and related documents (Ismunandar et al., 2023). Method triangulation combined the results of interviews, observations, and document analysis to ensure consistency of findings. Theory triangulation evaluated the results of the study with relevant theoretical concepts, such as differentiation learning theory and inclusive education theory. Data were analyzed inductively with an open coding approach, thematic analysis, and comprehensive interpretation to find the main themes about differentiation learning strategies in science subjects for students with special needs. This approach aims to explore the core experiences of participants and identify important elements that support inclusive and adaptive learning according to their needs.

RESULTS AND DISCUSSION

This study shows various effective strategies for adapting differentiated learning to support students with special needs. One of them is the use of observation sheets and portfolios in process-based evaluation, which successfully increased student comfort and engagement. Other findings reveal the success of adapting materials using visual media, such as pictures and concrete objects, although its implementation is still constrained by limited technological facilities. Small group-based strategies have also been shown to increase student participation, but face obstacles such as lack of adequate time allocation and understanding of other students in supporting their friends with special needs. In the research area, teachers use creativity in using simple teaching aids to overcome the limitations of existing resources. This situation is different from countries with better facilities and teacher training, where the implementation of differentiation strategies is more optimal. This study emphasizes the importance of designing solutions that are in line with local needs while encouraging cooperation between countries to share experiences and best approaches in implementing inclusive education. The interview results table below presents the main themes that emerged from this study.

Table 1. Differentiated Learning Strategies

Source of Informant	Data Finding	Code
P1, P2, P3, P4, P5, P6	Teachers adapt science materials using visual media such as pictures, videos, and concrete objects (example: using pictures of the water cycle and plants in the process of photosynthesis).	Adaptation of Material: Visualization and Concretization
P1, P2, P3, P4, P5, P6	Teachers use individual and small group guidance techniques for students with special needs. This increases student participation and involvement in discussion and practicum activities.	Adaptation of Method: Individual and Small Group Guidance
P1, P2, P3, P4, P5, P6	Process-based evaluation is implemented using observation sheets and portfolios so that students with special needs do not feel pressured by formal assessments.	Adaptation of Evaluation: Process-Based Assessment
P1, P2, P3, P4, P5, P6	The school provides support for inclusive policies and provides space for teachers to innovate in implementing differentiated learning.	Policy Support: Implementation of Inclusive Education
P1, P2, P3, P4, P5, P6	Teachers utilize additional visual media, such as simple teaching aids, and ask for additional support from the principal to obtain more complete facilities.	Material Adaptation: Use of Teaching Aids

The research findings indicate that the adaptation of differentiated learning through visualization and concretization of materials greatly supports the understanding of students with special needs. In class observations, students appeared more focused when the teacher used images and videos, such as the water cycle and the process of photosynthesis, which made it easier for them to understand abstract concepts in a more real way. Information from interviews with P1 and P3 also showed that students showed higher enthusiasm when these media were used, especially because they helped students with visualization needs to understand complex materials. In addition, the individual and small group guidance strategies implemented by the teacher were proven to increase student engagement. In an interview with P4, it was stated that several students who were previously passive began to participate more actively in group discussions after being given special guidance. This is in line with observation notes showing that students are more confident when working in small groups directed by the teacher, allowing them to learn according to their abilities without pressure from other students.

The process-based evaluation strategy using portfolios and observation sheets is an effective method in reducing student stress in facing formal assessments. Based on interviews with P2 and P5, this evaluation provides space for students to show their continuous development without feeling burdened by traditional exams. One example that was revealed was a student portfolio containing the results of simple experiments in science class, which

showed the students' learning progress more measurably. In addition, inclusive policy support from the school also played an important role in encouraging teachers to innovate, such as providing creative space for teachers to design differentiation-based learning. However, interviews with P6 revealed that there were still obstacles in procuring more sophisticated technological facilities, so teachers had to use simple tools to continue to support the learning process. Overall, although this strategy had a significant positive impact, further support was needed from the school to expand access to more modern learning media and teacher training in implementing differentiation strategies comprehensively.

Table 2. Inclusive Class Support Programs

Source of Informant	Data Finding	Code
P1, P2, P3, P4, P5, P6	Teachers adapt materials using visual media (pictures, videos, teaching aids) to help students with special needs understand science concepts.	Use of visual media
P1, P2, P3, P4, P5, P6	The use of individual and small group guidance methods helps students with special needs to be more focused and actively involved in learning.	Individual and group guidance
P1, P2, P3, P4, P5, P6	The combination of material adaptation and small group guidance methods has been shown to increase the focus and understanding of students with special needs on the material being taught.	Increased understanding
P1, P2, P3, P4, P5, P6	Process-based evaluation using observation sheets and portfolios makes students more confident because they do not feel burdened by formal assessments.	Process-based evaluation
P1, P2, P3, P4, P5, P6	The inclusive policies implemented by the school allow teachers to innovate in teaching, so that adaptation of materials, methods, and evaluations is more flexible.	Flexibility of innovation

Based on the findings presented in the table, this study identified several inclusive classroom support programs that were effective in helping students with special needs. Teachers adapted materials using visual media such as pictures, videos, and open-ended aids to explain difficult-to-understand science concepts in an abstract way. In interviews with P1 and P3, students reported that they found it easier to understand the concept of the air cycle after watching a short video that described the process in detail. Classroom observations also showed an increase in student enthusiasm during learning sessions with visual aids, where they were seen to be more active in asking questions related to the material. In addition, individual and small group guidance methods had a positive impact on the engagement of students with special needs in learning. As explained by P4 in the interview, students who were previously reluctant

to participate began to show interest when they received special attention in small groups, which helped them feel more comfortable and confident in understanding the material.

The use of a combination of material adaptation and small group guidance methods has been shown to improve students' understanding of the material being taught. Teachers, as explained by P5, combine visual media with discussion groups to strengthen students' understanding, so that they not only memorize but are also able to apply the concepts learned. In addition, process-based evaluation through observation sheets and portfolios makes students feel more confident because they do not have to face the pressure of formal exams. In the teacher's notes, students who were previously anxious about exams began to feel comfortable because the evaluation process put more emphasis on their individual development. The inclusive policies implemented in schools also allow teachers to innovate in adapting materials, methods, and evaluations to be more flexible. As mentioned by P6, this space for innovation is very helpful for teachers in creating learning that is appropriate to the needs of students with special needs despite limited facilities. Overall, these findings indicate that adaptive approaches and small policies are key to creating an inclusive learning environment and supporting students with special needs.

Table 3. Implementation of Differentiated Learning Strategies

Source of Informant	Data Finding	Code
P1, P2, P3, P4, P5, P6	Students feel more confident and accepted when given support and approaches that are appropriate to their needs.	The Effect of Support on Students' Self-Confidence
P1, P2, P3, P4, P5, P6	Open communication between teachers and parents helps create an environment conducive to inclusive learning.	Komunikasi Terbuka Sekolah dan Orang Tua
P1, P2, P3, P4, P5, P6	Ensure that differentiated learning strategies are applied flexibly according to the needs of students with special needs in an inclusive environment.	Flexibility in Learning Approaches

The findings of this study indicate that the implementation of differentiated learning strategies has a positive impact on the self-confidence and self-acceptance of students with special needs. In interviews with P1 and P2, students who were given support through approaches that were tailored to their needs, such as individual tutoring and the use of visual media, reported feeling more confident in following lessons. For example, students who were initially hesitant in answering class questions became more active participants after using pictures and videos that illustrated the concepts they were learning. In addition, the implementation of open communication between teachers and parents has also been shown to play an important role in creating an environment that supports inclusive learning. As expressed

by P4, regular meetings between teachers and parents provide space for both parties to discuss the needs and development of children, which helps teachers adjust teaching methods to better suit the characteristics of each student. This good communication also strengthens parents' trust in the methods applied in schools, which in turn supports the success of the learning process.

In addition, flexibility in implementing different learning approaches according to students' needs has also been shown to be key to the success of differentiated learning strategies. Teachers, as described by P5, often adapted their teaching methods to students' responses to the material, using a variety of techniques such as small groups, project-based learning, or more interactive use of technology, depending on the student's level of understanding. In classroom observations, for example, when students showed difficulty understanding a concept, teachers quickly switched to a simpler approach or provided direct assistance in small groups to ensure the student's understanding. This approach suggests that flexibility in instructional strategies, both in terms of methods and use of materials, is essential to creating an inclusive learning environment that is responsive to the needs of each student. Overall, these findings emphasize the importance of dynamic adaptation in instruction to support the success of students with disabilities in inclusive classrooms.

This study was conducted to explore the application of differentiation learning strategies in science learning for students with special needs at SDN Gadang 2 Banjarmasin. The main findings indicate that the success of differentiation learning strategies depends on three main factors: material adaptation, methods, and evaluation. The harmonious relationship between these three factors can improve the understanding of students with special needs in inclusive classes. Based on these findings, some further discussions regarding the key aspects in implementing this differentiation strategy can be carried out.

In this study, the use of visual media such as images, videos, and teaching aids are one of the main strategies used by teachers to help students with special needs understand complex science concepts. This strategy is in line with research conducted by Harsa et al., (2020), which states that the use of visual media in learning has a positive impact on the understanding of students with special needs, because it can make it easier for them to construct the meaning of the concepts taught. The use of concrete teaching aids such as physical objects also facilitates students to better understand abstract concepts, an approach that is in line with the findings expressed by Gerber et al., (2024), who emphasized the importance of adapting materials in inclusive education to accommodate the diversity of students' learning needs.

The findings of this study highlight the importance of more structured and specific training for teachers to improve their skills in implementing differentiated learning methods. Individual and small group tutoring methods have been shown to be effective in increasing the participation and engagement of students with special needs in the learning process. This is relevant to research conducted by Michaelsen et al., (2023), which shows that small group-based

teaching allows students to be more focused and active in learning, and provides opportunities for teachers to pay more attention to students who need special support. This training should include a deep understanding of the needs of students with special needs, as well as mastery of individual and small group tutoring techniques. Teachers also need to be equipped with the skills to use educational technology that is appropriate to the limitations that exist in schools. In addition, this training is important to teach how to adapt teaching materials and assessments to be more flexible and responsive to the various needs of students. The implementation of inclusive policies in other schools also requires clear policy support and consistent implementation. Schools need to have clear guidelines on how to adapt the curriculum, provide appropriate facilities, and implement evaluation mechanisms that ensure that students with special needs receive appropriate attention. One thing that needs to be encouraged is a policy related to the allocation of special time for small group guidance or the use of more interactive visual media to ensure that all students have equal access to quality education.

This finding is also in line with the inclusive education policy in Indonesia as stated in the Regulation of the Minister of Education and Culture No. 70 of 2009 concerning Inclusive Education. The policy emphasizes the importance of developing a curriculum that is accessible to all students and implementing various teaching methods that are appropriate to the characteristics of each student. The results of the study showing the success of the use of small group guidance and adaptation of visual materials support the principle of the policy that encourages various learning approaches. Learning with this approach is also in line with the Universal Design for Learning (UDL) principle which emphasizes the importance of diversity in teaching methods to meet the needs of various types of students (Griful-Freixenet et al., 2020). The use of adaptive and flexible strategies in differentiated learning, as found in this study, will strengthen the implementation of inclusive policies in schools in Indonesia, as well as provide better opportunities for all students to learn optimally.

This study also found that the implementation of process-based evaluation, such as the use of observation sheets and portfolios, helps students with special needs to be more confident and involved in learning without feeling pressured by formal assessments. This supports the findings of research by (Xu et al., 2023), which states that process-based assessment provides space for students to demonstrate their abilities in a more flexible and in-depth way. This evaluation not only measures the final results, but also pays more attention to the development of each student individually, which is an important element in inclusive education (Kefallinou et al., 2020).

The success of learning strategies is highly dependent on policy support implemented by both schools and the government. The findings of this study indicate that inclusive policies at SDN Gadang 2 Banjarmasin provide opportunities for teachers to innovate in adapting materials, methods, and evaluations. The existing policy support is in line with the findings of

Lavonen & Salmela-Aro (2022), which emphasize that inclusive education policies strongly support the implementation of adaptive and flexible learning strategies. This policy creates a more conducive environment for inclusive learning, while giving teachers the freedom to design approaches that are more appropriate to the needs of students with special needs. However, this study has limitations, one of which is the small scale limited to one school, which affects the ability to generalize the findings widely. Therefore, further research is needed to see how this differentiation learning strategy can be applied in other schools, especially in schools with more limited resources. Further research can also explore more practical and efficient approaches to overcome facility limitations, as well as their impact on the academic achievement of students with special needs in various types of schools.

The results of this study provide important implications for the development of inclusive education in Indonesia. These findings indicate that although challenges in teaching science to students with special needs remain, especially related to limited resources and teacher training, the implementation of differentiation learning strategies can significantly overcome these obstacles. The success of this strategy emphasizes the importance of three main factors that support each other: adaptation of materials, methods, and evaluation. Therefore, it is important to continue to improve teacher competence through special training in inclusive education and provide adequate resources, such as visual aids and simple laboratories, so that differentiation learning strategies can be implemented optimally.

CONCLUSION

Based on the findings and discussions in this study, it can be concluded that the implementation of differentiation learning strategies that emphasize adaptation of materials, methods, and evaluation has proven effective in improving the understanding of science concepts in students with special needs at SDN Gadang 2 Banjarmasin. The use of visual media and concrete teaching aids by teachers helps students understand difficult concepts, while individual and small group guidance methods provide opportunities for students to participate more actively in the learning process. This approach deepens students' understanding and allows them to receive materials that are appropriate to their needs. The success of using visual media, small group guidance, and process-based assessment can be seen as part of efforts to implement inclusive policies at the classroom level. Assessment of the sustainability and effectiveness of the implementation of this strategy is essential to ensure that all students, including those with special needs, have equal and quality access to education.

In addition, process-based evaluation applied using observation sheets and portfolios provides space for students to show their progress without feeling burdened by formal assessments. This not only increases the confidence of students with special needs but also allows teachers to evaluate student development more comprehensively. The application of

process-based evaluation is in line with the principles of inclusive education which emphasize more holistic and in-depth assessments, and appreciate the progress of each individual student. However, this study has limitations related to its small scale, because it only focuses on one school with a limited number of participants. Therefore, the results of these findings may not be generalizable widely without considering the conditions and characteristics of other schools or areas. Further research with larger and more varied samples is needed to test whether these findings can be applied in a wider range of educational contexts.

The success of implementing this differentiated learning strategy also depends heavily on the support of inclusive policies and environments. Inclusive policies implemented in schools provide teachers with the freedom to innovate in adapting learning to suit students' needs. This support allows for innovation in the use of materials, methods, and evaluations that are more appropriate to the characteristics of students with special needs. Therefore, to optimize the success of this strategy, it is important to improve teacher training in inclusive education and provide more adequate resources, such as teaching aids and other supporting infrastructure. Recommendations related to policy include the importance of developing structured training programs for teachers in the field of inclusive education, as well as allocating a special budget for the provision of visual aids and other supporting resources in inclusive schools. This will ensure that each school can provide learning that is more adaptive and responsive to the needs of students with special needs.

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