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Analysis of The Implementation of Differentiated Learning for Elementary School Students in Inclusive Schools: A Multi-Site Case Study

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Abstract

This study aims to examine the implementation of differentiated learning in inclusive elementary schools, particularly how teachers adapt instruction to meet students' diverse learning needs. A qualitative research method was employed using a multi-site case study approach to obtain an in-depth understanding of differentiated learning practices across three inclusive elementary schools. The findings reveal that differentiated learning in the three schools generally follows a similar process. It begins with identifying students' learning needs through initial assessment and observation, followed by adjustments to learning content, processes, and products according to students' abilities and characteristics. The learning process concludes with formative assessment, reflection, and follow-up activities, including remedial and enrichment programs. Although the implementation pattern is generally similar, differences are influenced by school characteristics, human resource availability, school policies, experience in inclusive education, and teachers' competence in adapting learning activities. Based on these findings, schools are encouraged to strengthen differentiated learning through systematic learning tools, continuous teacher professional development, enhanced collaboration among teachers, parents, professionals, and relevant institutions. Through these efforts, schools can improve the quality and effectiveness of educational services for students with diverse learning needs and support their participation and development in inclusive learning environments.

Keywords: inclusive education; differentiated learning; multi-site case study

1. Introduction

Inclusion has emerged as a paradigm oriented toward creating an educational ecosystem that is accommodating and equitable for all learners, without discrimination based on cultural background, ethnicity, social status, personality, physical condition, characteristics, or other backgrounds. Inclusion can also be understood as a philosophical perspective emphasizing that classroom ecology and social life lose their integrity when they fail to integrate all children, including those who require special assistance (Ministry of Education, Culture, Research, and Technology, n.d.).

The diversity of learners in inclusive school environments is an unavoidable reality. Variations in physical condition, character, and academic capacity have significant implications for instructional planning and learning outcomes. In facing these conditions, educators often encounter serious challenges in identifying students' characteristics and determining the most appropriate teaching methods. As an alternative solution for accommodating this heterogeneity,

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the implementation of differentiated learning can be an appropriate strategy. Conceptually, this approach is defined as a teaching model in which educators prepare and apply a range of materials, methods, and strategies customized to respond to the individual needs, characteristics, learning styles, interests, and ability levels of each learner (Nora dkk., 2024)

The implementation of differentiated learning is an appropriate strategy for implementing inclusive education in schools because teachers are required to design instruction by identifying students' needs, learning readiness, and interests (Ardi Saputra & Rizki Susilowati, 2023). To prevent frustration and failure in the learning experience, instruction needs to be aligned with the ability level, preferences, and individual needs of each learner, which Kristiyani (2021) identifies as the basic essence of differentiated learning (Andalussia, t.t.).

In differentiated learning, teachers adjust content, process, and learning products according to students' characteristics, learning readiness, and barriers in the classroom. Adjusting content, process, and products helps students understand the material more effectively, feel more comfortable, and remain motivated during learning. Content differentiation refers to adjustments to teaching materials and subject matter. Content differentiation can be difficult for teachers because they must provide learning materials at different levels of depth to meet students' needs while still following the same curriculum standards. Process differentiation refers to how students learn. Its purpose is to ensure that every student has an opportunity to learn through methods suited to their individual needs. Assessment can be applied flexibly through product differentiation, giving all students opportunities to demonstrate what they have understood from the lesson.

Differentiated learning is an approach that adjusts content, process, product, and learning environment to students' readiness, interests, and learning profiles. Therefore, diagnostic assessment and planning through the Learning Objective Flow (ATP), Learning Outcomes (CP), lesson plans (RPP), or teaching modules are required so that flexible grouping can be implemented (Aulia Hafsah Amanah et al., 2024). This differs from other approaches, such as Teacher-Centered Learning (TCL), in which the teacher dominates the explanation and students tend to be passive; TCL is often implemented through conventional lecture-based instruction (Indayani et al., 2023). Differentiated learning is classified as a learning approach because it is flexible, student-centered, and does not have a fixed instructional syntax. In contrast, because Problem-Based Learning (PBL) and Project-Based Learning (PjBL) follow structured and systematic stages, they are classified as learning models. Differentiated learning can therefore be combined with models such as PBL and PjBL to accommodate student diversity.

This study aims to analyze differentiated instructional planning adapted to respond to the needs of students with special needs in inclusive elementary schools, address classroom heterogeneity, and support equitable access to learning; analyze the iterative implementation of differentiated learning in inclusive classrooms to improve student engagement, motivation, and participation; analyze barriers to the implementation of differentiated learning before and after implementation in elementary schools; and analyze solutions to barriers encountered during implementation in order to provide recommendations for improving teaching practices that accommodate learner diversity.

2. Method

This study employed a qualitative research method with a multi-site case study approach. The approach was selected because the study required an in-depth exploration of differentiated learning implementation in three inclusive elementary schools selected as research sites. A multi-site case study in a qualitative context enables researchers to analyze variations in instructional practices, identify barriers encountered, and explore solutions implemented at each site.

Data collection used methodological triangulation by combining several data collection techniques to improve data credibility and validity. The triangulation process integrated observation, in-depth interviews, and documentation, as suggested by Denzin (2017).

Observation was conducted to directly examine differentiated learning in the classroom, including student behavior, teacher–student interaction patterns, grouping strategies, variations in content and learning media, and forms of support provided to inclusive students. Observations were conducted three times at each school according to the research schedule. This technique was effective because it enabled the researcher to capture phenomena as they naturally occurred without intervention.

In-depth interviews were conducted to explore informants' experiences, perceptions, and understanding of the planning, implementation, barriers, and solutions related to differentiated learning. Documentation was used to complement and confirm data obtained through observation and interviews. The documents collected included differentiated lesson plans (RPP), teaching modules, initial assessment sheets covering readiness, interest, and learning profile, photographs of learning activities, and student lists.

3. Results and Discussion

3.1 Result

Concept of Differentiated Learning

The term "differentiation" originates from English and refers to the process of making distinctions or recognizing differences. Differentiated learning is an instructional approach that provides equal opportunities for all students to learn according to their individual potential and needs (Lestari et al., n.d.).

Differentiated learning is a teaching approach that adjusts learning content, process, and products according to students' diverse readiness, interests, and learning styles (Tomlinson & Imbeau, t.t.). According to Tomlinson, differentiated learning is a way of adapting instruction to students' needs with the aim of maximizing each learner's potential within the given learning context. This process involves learning style, readiness, and interest (Andalussia, t.t.).

Content differentiation includes students' learning readiness, interests, and learning profiles. When mapping learning readiness, several perspectives can be used as references. Content differentiation concerns adjustments to the material or learning resources being taught. Teachers have a crucial role in identifying students' interests so that instruction can support the achievement of appropriate learning objectives.

Process differentiation focuses on the various activities students undertake during classroom learning. Considering differences in learning styles, teachers provide varied learning media. During process differentiation, teachers form groups based on indicators of speaking, reading, and writing abilities. These indicators are used to facilitate collaboration among students with different interests. The purpose of grouping is to enable students to cooperate with one another during learning.

In product differentiation, students demonstrate their understanding of learning material to the teacher. Learning products give teachers opportunities to assess students' abilities and provide a basis for subsequent instruction. Products may take various forms, including written observation reports, presentations, videos, songs, and other forms of work.

Operational Definitions

Differentiated learning planning is defined as the initial stage of developing a teaching module that involves identifying the needs of inclusive students and preparing responsive lesson plans, including grouping students according to readiness, interest, or learning style.

The implementation of differentiated learning is defined as the application of teaching modules that integrate content differentiation, such as variations in learning resources including pictures and videos; process differentiation, such as grouping based on learning styles; and product differentiation, such as varied outputs including posters or presentations in inclusive classrooms.

Barriers to differentiated learning are defined as challenges such as diverse student characteristics, differences in learning styles, insufficient teacher preparation, time constraints, high workload or pressure, and high costs that hinder implementation in inclusive schools.

Solutions for differentiated learning refer to strategies used to address challenges such as diverse student characteristics, differences in learning styles, insufficient teacher preparation, time constraints, high workload or pressure, and high costs that hinder implementation in inclusive schools.

Findings at SDN Sawojajar 1

The study was conducted at three schools: SDN Sawojajar 1 in Malang City, SDN Junrejo 1 in Batu City, and SDN 5 Bedali in Malang Regency. At SDN Sawojajar 1, learning needs were identified before instruction was implemented. Teachers examined students' abilities through observation, interviews, diagnostic assessment, and classroom learning activities. The results of this identification process were used to adjust instructional tools.

Differentiated learning at SDN Sawojajar 1 began with an introductory activity, the communication of learning objectives, and the formation of learning groups based on students' readiness. Teachers used textbooks, instructional videos, pictures, picture cards, concrete materials, LCD projectors, and worksheets adjusted to students' abilities. Product differentiation was implemented by adjusting task formats to students' abilities. Teachers did not require all students to produce identical learning products. Regular students demonstrated their learning through presentations and worksheets, whereas students with special needs demonstrated understanding through oral responses, drawings, or modified assignments.

The implementation of differentiated learning still faced several barriers. The principal explained that the main challenges were the limited number of Special Education Support Teachers (GPK) and differences in student abilities within the same classroom. The solutions implemented by the school included school policy support, teacher competence development, the use of learning media, communication with parents, and continuous evaluation.

Findings at SDN Junrejo 1

At SDN Junrejo 1, differentiated learning planning began with identifying students' learning needs through an initial assessment conducted by teachers before preparing the Deep Learning Module. Document analysis showed that teachers had mapped learning readiness, academic abilities, learning interests, and the characteristics of students with special needs as a basis for instructional planning.

Observations also showed that the learning-needs analysis was in the very good category because teachers had identified students' learning profiles before instruction began. The observation guide indicated that teachers prepared instruction based on student mapping. The indicators fulfilled included identification of learning readiness, learning interests, visual, auditory, and kinesthetic learning profiles, grouping students according to academic ability, and identification of students with special needs.

The barriers encountered during differentiated learning included limited time, limited learning media, a limited number of Special Education Support Teachers, and diverse student characteristics. To address these barriers, teachers prepared more than one instructional alternative so that learning could continue when classroom conditions changed. Teachers also modified materials, media, methods, and assessment forms according to students' abilities. At the school level, the principal supported implementation by organizing teacher training and providing a budget for the learning needs of students with special needs.

Findings at SDN 5 Bedali

At SDN 5 Bedali, differentiated learning planning in Grade IV began with identifying students' learning needs. Student ability mapping had been conducted from the time students entered the school and continued at each grade level. Information about academic development and special needs was obtained through initial assessments and communication with previous classroom teachers. This process was intended to give teachers an overview of each student's characteristics before planning instruction.

The implementation of differentiated learning began with whole-class instruction. Teachers presented material to all students using lectures, question-and-answer sessions, and introductory activities. Differentiation was more visible in individual support. Teachers provided direct guidance to students with special needs according to their individual characteristics. Learning media included books, pictures, concrete objects, and hands-on practice. Teachers reduced the use of videos because the classroom became less conducive when digital media were used.

The main barrier to differentiated learning was the large number of students with special needs who needed support from one classroom teacher without a Special Education Support Teacher. This condition required the teacher to divide attention between regular students and students with special needs simultaneously. The solution was to provide whole-class instruction followed by individual support. Assistance from other teachers was also

requested temporarily so that learning could continue in a conducive manner. In addition, the principal continued efforts to improve inclusive learning services through coordination among teachers.

3.2 Discussion

Based on cross-site analysis at SDN Sawojajar 1 in Malang City, SDN Junrejo 1 in Batu City, and SDN 5 Bedali in Malang Regency, the study found that differentiated learning implementation in inclusive elementary schools follows similar principles but differs in strategy according to each school's characteristics, human resources, policies, and student conditions. All three schools implemented differentiated learning through planning, implementation, evaluation, and efforts to address barriers arising during instruction. The differences primarily represent each school's adaptation to its own context rather than differences in educational goals.

At the planning stage, all three schools identified students' learning needs through diagnostic assessment, observation, communication with parents, and information from previous classroom teachers. The information was used to map learning readiness, interest, learning profile, and the characteristics of students with special needs before instruction was planned. Differences appeared in the development of instructional tools. SDN Junrejo 1 developed a Deep Learning Module that explicitly integrated differentiated learning with Meaningful Learning, Mindful Learning, and Joyful Learning. SDN Sawojajar 1 used teaching modules adapted to students' conditions in each class, whereas SDN 5 Bedali still used a whole-class teaching module and made modifications during instruction.

These findings are consistent with Tomlinson's theory (2017), which states that differentiated learning should begin with mapping students' learning needs as the basis for adjusting learning objectives, strategies, media, and assessment (Tomlinson, 2017).

At the implementation stage, all three schools applied three forms of differentiation: content, process, and product. Similarities were evident in the use of varied learning media, student grouping, individual support, task modification, and assessment adapted to students' abilities. All three schools also provided opportunities for students with special needs to learn together with regular students in the same classroom, thereby implementing the principle of inclusive education.

Differences in implementation were visible in the instructional strategies used. SDN Sawojajar 1 relied more heavily on peer tutoring, group discussion, and digital media such as videos and LCD projectors. SDN Junrejo 1 applied more flexible instruction through Planning A and Planning B, the use of concrete media, and instructional modifications based on students' social-emotional conditions. Meanwhile, SDN 5 Bedali emphasized whole-class instruction followed by individual support because it did not yet have a Special Education Support Teacher. These findings support Hall et al.'s view that differentiated instruction does not have one fixed implementation model. Teachers have the freedom to determine strategies, methods, media, and assessment types that best suit students' characteristics so that learning objectives can be achieved optimally.

The three schools faced relatively similar barriers: limited Special Education Support Teachers, limited instructional time, diverse characteristics of students with special needs, and limited learning media. However, the complexity of these barriers differed across schools. SDN Sawojajar 1 and SDN Junrejo 1 had support personnel, although their numbers were limited, whereas SDN 5 Bedali did not yet have a Special Education Support Teacher, meaning that all services were provided by classroom teachers. This condition required teachers to perform dual roles as instructors and support providers for students with special needs. These findings are consistent with Suprayogi, Valcke, and Godwin (2017), who showed that the effectiveness of differentiated learning is strongly influenced by school resources, teacher skills, and heterogeneous classroom conditions (Langelaan dkk., 2024). Teachers in inclusive classrooms require professional support to provide optimal services to all learners.

Nevertheless, the schools implemented solutions that included improving teacher competence through training and workshops, modifying instruction, using flexible learning media, coordinating among teachers, communicating with parents, and cooperating with the Education Office and inclusive education institutions. Although the specific forms of solutions differed among schools, they shared the same goal: providing learning services that correspond to students' needs. These findings are consistent with the concept of Inclusive Pedagogy proposed by Florian and Black-Hawkins (2011), which states that the success of inclusive education depends not only on teachers' classroom abilities but also on an inclusive school culture, principal leadership, collaboration among educators, and parental involvement in supporting learning.

Overall, the implementation of differentiated learning in the three schools followed a common pattern: identification of students' learning needs, implementation of content, process, and product differentiation, followed by formative assessment, learning reflection, and follow-up through remedial and enrichment activities. Differences in implementation were influenced more by school characteristics, the availability of human resources, school policies, experience in providing inclusive education, and teachers' competence in modifying instruction.

The success of differentiated learning in inclusive elementary schools is not determined solely by the availability of Special Education Support Teachers or complete facilities and infrastructure. It is also influenced by teachers' ability to identify students' learning needs, their flexibility in implementing differentiated instruction, school policy support, an inclusive school culture, and sustained collaboration among schools, parents, and other stakeholders. Therefore, differentiated learning is an adaptive and contextual approach. Its implementation may differ from one school to another while remaining oriented toward fulfilling every student's right to learn according to their potential, abilities, and needs

4. Conclusion

Differentiated learning in elementary schools providing inclusive education has been implemented through planning, implementation, and evaluation focused on students' learning needs. Teachers attempt to identify students' learning readiness, interests, learning characteristics, and special needs as a basis for determining appropriate strategies, media, methods, tasks, and assessments. During implementation, learning is realized through adjustments to content, process, and learning products, accompanied by strategies such as

learning groups, individual guidance, peer tutoring, remedial instruction, and enrichment so that students receive opportunities to learn according to their abilities and potential.

Nevertheless, differentiated learning implementation still faces various challenges, including an insufficient number of Special Education Support Teachers, differences in student characteristics within the same classroom, limited instructional time, and learning facilities and media that are not yet fully effective. To address these challenges, schools and teachers undertake various measures, including improving teacher competence, modifying teaching methods, utilizing various learning media, strengthening collaboration with parents, and cooperating with relevant parties to support inclusive education.

In general, the three schools share a similar mission in implementing differentiated learning: providing learning services that meet the needs of each student. The strategies used vary depending on school characteristics, student conditions, and available resources. Therefore, the success of differentiated learning depends not only on facilities or supporting resources but also on teacher competence, school policy support, and continuous cooperation among schools, parents, and stakeholders in realizing inclusive education that is fair, equitable, and high quality.

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