

Management Of The Implementation Of Differentiated Learning By The Principal At Sd Negeri 004 Nongsa Batam City

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ABSTRACT

Differentiated learning is an approach that responds to the diversity of learners' readiness, interests, and learning profiles, but its implementation at the elementary school level still faces challenges related to consistency. This study aims to analyze the management of the implementation of differentiated learning by school principals at SD Negeri 004 Nongsa Batam City. The research uses a qualitative approach with a case study design. Participants consisted of nine purposively selected informants, including school principals, curriculum coordinators, elementary and high grade teachers, operators or administrative staff, and representatives of school committees or parents. Data were collected through limited non-participant observations, semi-structured interviews, and documentation studies. Data analysis was carried out interactively through data condensation, data presentation, and conclusion verification using NVivo. The credibility of the findings was maintained through triangulation of sources and techniques, as well as member checks to informants. The results of the study show that the management of the implementation of differentiated learning runs through six interrelated dimensions, namely internal policies, academic coaching, coordination, supervision, resource utilization, and strengthening school relationships. However, implementation faces operational challenges such as large number of students, limited teachers' time, and diverse parental understanding. The conclusion of this study is that the management of the implementation of differentiated learning requires strong instructional leadership and systematic school management in order to become a sustainable academic culture in all elementary school learning groups.

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Introduction

Differentiated learning occupies a strategic position in the agenda to improve the quality of basic education because the classroom is populated by students with non-uniform readiness, interests, experiences, and support needs. This approach directs teachers to use information about learning needs as the basis for adjusting content, processes, products, and learning environments, while maintaining essential learning objectives (Dinana et.al., 2024). Thus, differentiation is not a separation of the curriculum for each student, but responsive and measurable pedagogical decision-making. The literature confirms that its success depends on the use of diagnostic and formative assessments, flexible grouping, variation of learning strategies, and follow-up on learning evidence (Smale et.al., 2019). The Independent Curriculum Orientation is in line with the principles of learning that favor students and provide space for teachers to design learning according to the stage of student development (Hunaepi & Suharta, 2024). However, curriculum flexibility only produces meaningful changes when translated into consistent, documented classroom practices. However, curriculum flexibility only produces meaningful changes when translated into consistent, documented classroom practices, and supported by adequate school governance. Therefore, differentiated learning needs to be understood as a school academic program, not a teacher's initiative in the classroom.

The study of differentiated learning focuses on the competence of teachers in mapping students' needs, choosing strategies, managing classes, and evaluating learning outcomes (Smets & Struyven, 2020). The study is important because teachers are decision-makers in learning. However, the application of differentiation is influenced by organizational conditions. The availability of planning time, collaboration forums, policies, access to media and teaching materials, and supervision mechanisms affect teachers' ability to translate learning data into pedagogical actions (O'Connor & Park, 2023). Therefore, school principals play a role in connecting students' needs, teachers' professional capacity, and school support systems. From the perspective of instructional leadership, the principal does not stop at administrative management, but rather sets academic direction, coordinates the curriculum, nurtures teachers, monitors learning, and builds a conducive learning climate (Firdaus et.al., 2022). This role makes the management of the implementation of differentiation a collective process that includes planning, organizing, implementing, monitoring, evaluation, and follow-up. Systematic management is needed so that the variety of learning services does not depend on the experience or readiness of teachers, but develops into sustainable and accountable institutional practices in elementary schools.

State of the art shows two currents of contemporary study. This stream examines differentiated learning through teacher readiness, classroom management, the use of assessments, and its impact on student engagement and learning outcomes. The second stream examines the instructional leadership of school principals related to teacher professional development, teaching quality, and learning quality. Both streams affirm the importance of instructional leadership, but the connection between the two in the level of school program management is still not widely studied (Kwan, 2020). The management of the implementation of differentiation requires school principals to translate the vision of learning that is in favor of students into policies, role sharing, competency strengthening, coordination, supervision, resource allocation, and partnerships with parents and committees (Hariyati et.al., 2023). In this framework, success is not enough to be measured by the existence of the term differentiation in the teaching module, but by the continuity between student needs mapping, teacher decisions, organizational support, and learning follow-up (Tajik, 2024). This perspective expands the analysis from teacher practice to the capacity of schools in ensuring adaptive, fair, and accountable learning services for all students in a real way.

The need for management at the education unit level is evident at SD Negeri 004 Nongsa Batam City. This school implements the Independent Curriculum and serves 751 students in 19 study groups, so that the average class contains 39 to 40 students with diverse learning needs. In these conditions, teachers use initial assessment and observation, learning grouping, assignment variation, assistance for students who do not understand the material, faster enrichment for students, and the use of learning media (Ardenlid et.al., 2025). The principal directs the implementation through academic meetings, curriculum coordination, discussion of teaching tools, coaching, and classroom supervision. However, the intensity and consistency of the implementation of differentiation are not even between classes (Nawas, 2023). Limited teachers' time, practical training needs, large number of students, diversity of abilities, and understanding of parents who are not yet uniform are problems that need to be managed. This condition places schools as a relevant case to understand how school principals integrate policies, coaching, coordination, supervision, resources, and partnerships to maintain the sustainability of differentiated learning according to the needs of students.

The research gap of this research lies in the limitations of the study explaining the management of the implementation of differentiated learning by school principals at the elementary school level. Previous studies focused on teacher readiness and strategy, classroom management, and learning outcomes; while instructional leadership studies relate it to teacher performance, professional development, school culture, or learning quality. As a result, there is not much explanation of the mechanisms that link academic policy, the use of diagnostic assessments, curriculum coordination, teacher coaching, supervision, resource support, and stakeholder partnerships for sustainable differentiation. *The novelty* of this research is in the form of understanding differentiation management as a school support architecture that links students' learning needs with teacher capacity and organizational decisions. The empirical novelty lies in the case study of SD Negeri 004 Nongsa Batam City, an A-accredited elementary school with a large service scale and heterogeneous classes. This study identifies practices, examines the integration of school principals' actions, supporting conditions, operational obstacles, and their implications for strengthening learning governance that is increasingly responsive and fair for students.

Based on the description, this study aims to analyze the management of the implementation of differentiated learning by the principal at SD Negeri 004 Nongsa, Batam City. The analysis is directed to understand how school principals change the student-oriented learning orientation into a planned, coordinated, implemented, monitored, and followed up school program. This research answers three problem formulations. First, how the principal plans and organizes the implementation of differentiated learning through policies, curriculum coordination, mapping learning needs, role sharing, and resource provision. Second, how the principal carries out strengthening implementation through academic coaching, facilitating teacher collaboration, supervising learning, providing feedback, and monitoring assessments and differentiation strategies in the classroom. Third, what supporting factors and obstacles affect the management of the implementation of differentiated learning, as well as how these factors are followed up to strengthen the sustainability of the program. The findings of the research are expected to contribute to education management and provide recommendations for school principals in building a learning system that is adaptive to the diversity of student needs in sustainable and measurable elementary schools.

Method

This study uses a qualitative approach with a case study design to understand the

management of the implementation of differentiated learning by school principals. This design was chosen because the phenomenon takes place in a school context and involves the linkage between policies, curriculum coordination, teacher development, supervision, resource utilization, and communication with parents (Prasetyo et.al., 2025). The research was carried out at SD Negeri 004 Nongsa, Batam City, Riau Islands Province, in April 2026. The location was chosen purposively based on three considerations: the school has implemented the Independent Curriculum with differentiated practices; the school has a large service scale, namely 751 students in 19 study groups; and the principal has carried out academic direction, coaching, coordination, and learning supervision. The context allows for the study of differentiation management processes in heterogeneous classes. The focus of the analysis includes program planning and organization, the implementation of reinforcement through coaching and supervision, and the supporting conditions, obstacles, and follow-up of implementation. The research positions the principal as the main informant, but examines program management through the experiences of implementers and stakeholders contextually.

Participants were selected purposively based on their knowledge and involvement in differentiated learning management. Nine informants participated, including the principal, curriculum coordinator, elementary and high school teachers, an operator or administrative staff, and a representative of the school committee or parents (Bouncken et.al., 2025). The principal was the main informant explaining the policy, program direction, coaching, supervision, monitoring, and resource allocation. Other informants functioned to confirm the translation of policies on curriculum coordination, learning practices, data and facility management, and family support. Data were collected through limited non-participant observations, semi-structured interviews, and documentation studies. Observations were used to record coordination, coaching, supervision, and traces of differentiation practices. The interview explored the actions, reasons, experiences, practices and follow-ups of each informant. The documents examined included KOSP, teaching modules, assessment instruments, schedules, assignments, meeting minutes, supervision documents, student data, facility data, and communication documents with committees or parents. Informants were given codes R1 to R9 to maintain identity confidentiality and adequate traceability of research data.

Data analysis was carried out interactively since data collection took place through data condensation, data presentation, and conclusion verification. Interview transcripts, observation notes, and documents were organized based on sources and techniques, read repeatedly accompanied by analytical memos (Mezmir, 2020). Thematic coding was carried out through three stages. In *open coding*, the researcher coded the units of meaning: needs-based policies, diagnostic mapping, teacher coordination, coaching, supervision, time constraints, large classes, and parental support. In *axial coding*, the related codes are grouped into implementation management categories. In *selective coding*, categories are synthesized into themes that answer the focus of the research. NVivo is used as a tool to manage data, code, and evidence between sources; interpretation is still carried out by the researcher. The credibility of the findings is maintained through triangulation of sources and techniques, as well as *member checks* to informants. Interview statements are checked with observations and documents, while summary interpretations are confirmed to the relevant informants. Audit trails in the form of transcripts, memos, code matrices, and supporting documents are systematically maintained to increase the transparency of analysis and reliability of findings

Results and Discussion

The findings show that the principal's instructional leadership is manifested in determining the direction of learning, teacher coaching, supervision, coordination, and monitoring. The school sets learning expectations in favor of the students, the use of initial assessments, and the follow-up of needs. Coaching is carried out through academic meetings, discussion of teaching tools, and post-class supervision feedback. Coordination is manifested in the division of roles, teacher forums, and synchronization of diagnostic and formative assessments. Monitoring is carried out through learning progress records, teacher reflections, and follow-ups. Although it has been running, the intensity and consistency have not been evenly distributed between classes. Some teachers still need examples of practice and mentoring in designing multi-level assignments, managing flexible groups, and providing product choices. Schools realize that supervision needs to be more focused on improving learning, not completeness. Thus, instructional leadership functions as a cycle of direction, coaching, supervision, and monitoring, but it has not yet become a consistent standard in the classroom.

Table 1. Principals' Instructional Leadership Findings

Dimensions	Form of Action	Bukti Empiris
Setting the learning direction	Learning expectations in favor of students, use of initial assessments, follow-up needs	Directions in academic meetings, school policy notes
Teacher development	Academic meetings, discussion of teaching tools, post-class supervision feedback	Meeting minutes, discussion notes, teacher interview transcripts
Supervision	Examination of teaching modules, classroom observations, specific feedback	Supervision instruments, observation notes, feedback documents
Curriculum coordination	Role sharing, teacher forums, synchronization of diagnostic and formative assessments	Teacher forum schedule, task division documents, assessment instruments
Monitoring	Record of learning progress, teacher reflection, program follow-up	Student progress reports, reflection notes, follow-up plans

The management of the implementation of differentiated learning is carried out with internal policies, academic coaching, coordination, supervision, resource utilization, and strengthening school relationships. The policy stipulates the use of initial assessments, strategy variations, and follow-ups for students who have not achieved learning objectives. Academic coaching is directed at increasing teacher capacity through collaborative forums, sharing tools, and practice reflection. Coordination is manifested in synchronization of schedules, division of tasks, and agreement on diagnostic assessment instruments. Supervision is used as a means of improvement through specific feedback on strategies, media, and student mentoring. The utilization of resources includes the allocation of collaboration time, the use of Digital Interactive Boards, and the provision of supporting teaching materials. Strengthening relationships can be seen from communication with parents and committees regarding learning objectives and home support consistently. However, management faces operational challenges. Large number of students, limited teachers' time, and diverse parental understanding affect the consistency of implementation. Schools need to strengthen follow-up mechanisms so that policies do not stop at direction, but are seen in learning practices.

Table 2. Findings of Differentiated Learning Implementation Management

Management Components	Mechanism	Bukti Empiris
Internal policies	The use of initial assessments, variations of strategies, follow-up for students has not reached the goal	School policy documents, teaching modules, assessment instruments
Academic coaching	Collaboration forums, device sharing, practice reflections	Teacher forum minutes, teaching tool bank, reflection notes
Coordination	Schedule synchronization, task sharing, diagnostic assessment instrument agreement	Academic schedules, assignment letters, standardized assessment instruments
Supervision	Specific feedback on strategy, media, and student mentoring	Supervision notes, feedback documents, transcripts of post-supervision discussions
Resource utilization	Allocation of collaboration time, use of Digital Interactive Boards, provision of supporting teaching materials	Collaboration schedule, inventory of facilities, collection of teaching materials
Strengthening school relationships	Communication with parents and committees regarding learning goals and home support	Parent meeting minutes, communication letters, activity documentation

Supporting factors include the Independent Curriculum, A accreditation, quality culture, principal support, teacher collaboration, availability of facilities, and support from parents and committees. The Independent Curriculum provides space for teachers to tailor activities, materials, and assessments to the development of participants. Quality culture and leadership support create a climate that allows teachers to try new strategies. Collaboration between teachers lowers the burden on individuals designing learning and improves the quality of decisions. Facilities such as Digital Interactive Boards, diverse teaching materials, and adequate classrooms facilitate a variety of processes and products. Parent and committee support strengthens the continuity of learning at school and at home. Inhibiting factors include large number of students, wide diversity of abilities, limited teachers' time, practical training needs, and uneven parental understanding. Schools follow up on barriers through rescheduling activities, simplification of assessment instruments, assistance in the preparation of multi-level assignments, and intensive communication. Thus, the implementation of differentiation is determined by the interaction of school capacity, internal policies, and operational conditions that require continuous management.

Table 3. Supporting and Inhibiting Factors for the Implementation of Differentiated Learning

Category	Factors	Impact on Implementation	School Follow-Up
Supporters	Independent Curriculum	Flexibility to adapt activities, materials, and assessments to the development of participants	Optimization of curriculum space in lesson planning
Supporters	A accreditation and quality culture	A climate that allows teachers to try new strategies without fear of being blamed	Strengthening a culture of reflection and sharing of good

			practices
Supporters	Principal support	Clear directions, directional supervision, resources available	Consistency of monitoring and follow-up of the program
Supporters	Teacher collaboration	Individual burden is reduced, the quality of pedagogical decisions is improved	Scheduling regular and structured collaboration forums
Supporters	Availability of facilities	Digital Interactive Boards, diverse teaching materials, adequate classrooms facilitate a variety of processes and products	Maintenance and optimal use of existing facilities
Supporters	Parent and committee support	Continuity of learning at school and home	Intensive communication about goals and forms of support at home
Inhibitors	Large number of students	Teachers' individual attention is limited, differentiation is more difficult	Strategic grouping and utilization of peer tutors
Inhibitors	Diversity of width capabilities	The needs for mentoring and enrichment vary widely	Provision of multi-level tasks and product selection
Inhibitors	Teacher time constraints	Limited device setup and assessment time	Simplification of instruments and sharing of tools between teachers
Inhibitors	Practical training needs	Teachers need concrete examples and technical assistance	Workshops focused on multi-level tasks and flexible groups
Inhibitors	Parents' understanding is not even	In-house support is inconsistent	Intensive communication and simple guidance for parents

The theoretical framework of this research centers on the instructional leadership of the principal in managing the learning program, which is brought together with the concept of differentiated learning. Instructional leadership is understood as the action of the principal to set academic direction, manage learning programs, build teacher capacity, supervise, coordinate curriculum, monitor learning progress, and build a work climate that supports learning. In Hallinger and Murphy's framework, the dimension of managing learning programs becomes the intersection of instructional leadership and differentiation management. Differentiated learning is understood as a proactive response to the diversity of learners' readiness, interests, and learning profiles through the adjustment of content, processes, products, and learning environments, while maintaining essential goals (Hallinger & Hosseingholizadeh, 2020). Differentiation is not a separation of the curriculum for each student, but evidence-based pedagogical decision-making. Differentiation management requires the connection between academic policy, diagnostic mapping, teacher coordination, coaching, supervision, resource allocation, and partnerships with

parents. This framework allows for consistent analysis between problem formulation, instruments, data collection techniques, and the focus of differentiation implementation management.

The findings of the study show that the principal's instructional leadership in the implementation of differentiated learning is realized through the determination of learning directions, teacher coaching, supervision, curriculum coordination, and monitoring of results. The principal sets learning expectations in favor of the students, the use of initial assessments, and the follow-up of learning needs. Coaching is carried out through academic meetings, discussion of teaching tools, and post-class feedback (Hallinger & Hosseingholizadeh, 2020). Supervision includes the examination of teaching modules and classroom observation to ensure the suitability of learning plans and practices. Coordination is manifested in the division of roles, teacher forums, and synchronization of diagnostic and formative assessments. Monitoring is carried out through records of learning progress, teacher reflection, and follow-up. Although it has been running, the intensity and consistency are not even between classes. Some teachers still need examples of practice and mentoring in designing multi-level assignments, managing flexible groups, and providing product options. Principals realize that supervision needs to be more focused on improving learning, not administrative completeness. Thus, instructional leadership functions as a cycle of direction, coaching, supervision, and monitoring, but has not yet become a consistent operational standard in the classroom.

The principal's instructional leadership in the learning direction setting dimension shows that the school has built a shared understanding of the importance of learning that is in favor of the learner. These expectations translate into directions for teachers to use the initial assessment as the basis for adjusting strategies, media, task difficulty levels, and forms of assistance to students. These findings are in line with the Hallinger and Murphy framework that places the definition of school mission as the first dimension of instructional leadership. In the context of differentiated learning, the mission does not stop at the statement that learning should be on the student's side, but needs to be translated into clear expectations about the recognition of learning needs, the use of assessment results, strategic adjustments, and different follow-ups according to student development (Koimah et.al., 2024). Thus, the direction of the school becomes a guideline for class decisions, not just an institutional slogan listed in the school's vision and mission document formally and administratively.

In the teacher coaching dimension, principals use academic meetings, discussion of teaching tools, and post-supervision feedback as the main mechanisms of capacity building. Coaching is not provided uniformly because teachers' levels of understanding, experience, and readiness for differentiation are not the same. The results of supervision and professional discussions are used to determine forms of support, such as demonstration of simple strategies, assistance in preparing assessments, sharing teaching tools, peer observation, or more specific training. This approach is in line with He, Guo, and Abazie's findings on the importance of instructional leadership for teacher professional development (Gu et.al., 2025). In differentiated learning, principals need to accommodate the diversity of teachers just as teachers accommodate the diversity of students. Coaching that is responsive to teacher readiness is a prerequisite for differentiation to be not only understood conceptually, but actually implemented in daily classroom learning practices in a continuous and systematic manner in schools.

Academic supervision in this study was positioned as a means of improvement, not a document examination. Principals observed the relationship between students' initial data, learning objectives, strategies, assignment forms, media, mentoring, and assessment. Feedback was directed to examples that teachers could do, then monitored at subsequent

meetings or supervisions. This pattern makes supervision function as a professional learning cycle, rather than an annual administrative ritual. These findings reinforce the argument that instructional leadership works through modeling, monitoring, and professional dialogue as Southworth explains. In the context of differentiation, supervision helps ensure that the variety of activities that teachers design are genuinely relevant to learners' needs, not just a diversity of activities without a clear direction of learning (Mohammed & Alwan, 2025). Thus, supervision is an important instrument to maintain the quality of the implementation of differentiation at the grade level consistently and continuously.

Curriculum coordination and monitoring of learning outcomes complement the instructional leadership cycle in managing differentiated learning. Coordination is realized through role sharing, teacher forums, and synchronization of diagnostic and formative assessments so that learning needs data can be discussed and used collectively, not just collected. Monitoring is carried out through learning progress records, teacher reflections, and program follow-ups that ensure that students who have not achieved learning goals receive reinforcement, mentoring, or assignment adjustments accordingly (Schildkamp et.al., 2020). These findings show that instructional leadership is not enough only in the formulation of academic vision, but must be realized in the practice of coaching, supervision, and the real presence of principals in the learning process. Although the cycle of direction, coaching, supervision, and monitoring has been running, the consistency of implementation between classes still needs to be strengthened through clearer and more sustainable operational standardization in all classes in schools.

Analysis of the principal's instructional leadership findings shows that the implementation of differentiated learning at SD Negeri 004 Nongsa Batam City has gone through an interrelated cycle of direction, coaching, supervision, coordination, and monitoring. However, consistency of implementation between classes is still a major challenge that needs to be overcome. Principals need to strengthen operational standardization mechanisms so that differentiated learning does not only depend on the initiative and individual readiness of teachers, but also becomes a systematic and sustainable school academic culture. Strengthening written policies, differentiation technical guidelines, and more structured monitoring mechanisms are urgent needs to ensure equitable implementation across all classes. Thus, the principal's instructional leadership not only functions as a director, but also as a systemic driver that ensures the sustainability of differentiated learning as a school academic program that is responsive to the diversity of student needs.

The management of the implementation of differentiated learning by the principal at SD Negeri 004 Nongsa Batam City is carried out through internal policies, academic coaching, coordination, supervision, resource utilization, and strengthening school relationships. The policy stipulates the use of initial assessments, strategy variations, and follow-up for students who have not achieved learning goals. Academic coaching is directed at increasing teacher capacity through collaboration forums, sharing tools, and practice reflection. Coordination is manifested in synchronization of schedules, division of tasks, and agreement on diagnostic assessment instruments. Supervision is used as a means of improvement through specific feedback on strategies, media, and student mentoring. The use of resources includes the allocation of collaboration time, the use of Digital Interactive Boards, and the provision of supporting teaching materials. Strengthening relationships can be seen from communication with parents and committees regarding learning goals and home support consistently (Jannah et.al., 2025). However, management faces operational challenges. Large number of students, limited teachers' time, and diverse parental understanding affect the consistency of implementation. Schools need to

strengthen follow-up mechanisms so that policies do not stop at direction, but are seen in learning practices.

In the internal policy dimension, the management of the implementation of differentiated learning has been directed through the Independent Curriculum, initial assessment, preparation of teaching tools, adjustment of learning strategies, and providing space for teachers to choose methods, media, forms of assignments, and learning activities according to classroom conditions. This policy is not yet fully present in the form of a separate special document, but it has been seen in the direction of the principal, the role of the curriculum coordinator, teacher coaching, supervision, and learning preparation practices. Thus, school policies are practical and operational, although they still need to be strengthened so that the implementation of differentiated learning is more systematic and equitable across all classes consistently. These findings are in line with Gibbs' perspective which asserts that the support of the principal is not always present in the form of direct technical direction, but is more manifested through the creation of supportive working conditions and the arrangement of school structures that allow teachers to implement differentiation more effectively in the classroom (Wardani et.al., 2025).

In the dimension of academic coaching and coordination, school principals use academic meetings, discussion of teaching tools, assistance in the preparation of teaching modules, and discussion of supervision results as the main mechanism for capacity building (Nguyen et al., 2023). Coaching is not provided uniformly because the level of understanding, experience, and readiness of teachers in differentiation is not the same. The results of supervision and professional discussions are used to determine forms of support, such as demonstration of simple strategies, assistance in preparing assessments, sharing teaching tools, peer observation, or more specific training. Coordination is realized through synchronization of schedules, division of tasks, and agreement on assessment instruments so that data on learning needs can be discussed and used collectively. These findings reinforce Lddeckens' finding that the implementation of differentiation requires school leadership that is able to translate policy into practice, align resources, build internal support, and ensure that learning changes actually run at the classroom level consistently and continuously across the learning cohort.

In the dimension of supervision and resource utilization, academic supervision is positioned as a means of improvement, not document examination. The principal observes the relationship between students' initial data, learning objectives, strategies, assignment forms, media, mentoring, and learning assessments. Feedback is directed to examples that teachers can do, then monitored at subsequent meetings or supervisions. Resource utilization includes the allocation of collaboration time, the use of Digital Interactive Boards, and the provision of supporting teaching materials. This pattern makes supervision function as a professional learning cycle, not an annual administrative ritual (Lahri & Ouanjli, 2025). These findings are in line with Porta's view that the implementation of differentiation is influenced by the school leadership team and school policies, so that its success is not only determined by the teacher's pedagogic ability, but also by the structural support that exists in the school environment consistently. Thus, supervision and resource utilization are important instruments to maintain the quality of differentiation implementation at the grade level.

In the dimension of strengthening school relationships, the management of the implementation of differentiated learning involves communication with parents and committees regarding learning goals and support that can be provided at home in an ongoing manner. The support of parents and committees strengthens the continuity of learning at school and at home. However, uneven parental understanding is one of the inhibiting factors that need to be followed up through intensive communication and simple

guidance for parents. These findings strengthen the argument of Darius and colleagues that in the context of Indonesian schools, differentiated learning has not always been supported by a uniform school system, so the success of its implementation is greatly influenced by how schools build internal support, develop capacity, and create an environment that encourages learning that is more responsive to students' needs systematically (Nurwahida et.al., 2026). Thus, strengthening school relationships is an integral part of managing the implementation of systematic differentiated learning.

Analysis of the findings of the implementation of differentiated learning shows that school principals have used six management dimensions, namely internal policies, academic coaching, coordination, supervision, resource utilization, and strengthening school relationships, in an integrated manner to support the implementation of differentiation. However, operational challenges such as a large number of students, limited teachers' time, and diverse understanding of parents still affect the consistency of implementation between classes. School principals need to strengthen follow-up mechanisms and operational standardization so that policies do not only stop at direction, but are really visible in daily learning practices in the classroom. Strengthening written policies, differentiation technical guidelines, and more structured monitoring mechanisms are urgent needs to ensure equitable implementation in all classes. Thus, the management of the implementation of differentiated learning does not only depend on individual teachers' initiatives, but also becomes a systematic and sustainable school academic culture in all learning groups at SD Negeri 004 Nongsa Batam City.

Factors that support and inhibit the principal in the implementation of differentiated learning at SD Negeri 004 Nongsa Batam City include the Independent Curriculum, accreditation A, quality culture, principal support, teacher collaboration, availability of facilities, and support from parents and school committees. Inhibiting factors include the large number of students, wide variety of abilities, limited teachers' time, practical training needs, and uneven understanding of parents. The Independent Curriculum provides space for teachers to adjust activities, materials, and assessments to the development of participants. Quality culture and leadership support create a climate that allows teachers to try new strategies. Collaboration between teachers reduces the burden on individuals to design learning and improve the quality of decisions. Facilities such as Digital Interactive Boards, diverse teaching materials, and adequate classrooms facilitate a variety of processes and products (Muckenthaler et.al., 2020). Parental and committee support strengthens the continuity of learning at school and home in a sustainable manner. Inhibiting factors need to be followed up through rescheduling activities, simplification of assessment instruments, assistance in the preparation of multi-level assignments, and intensive communication. Thus, the implementation of differentiation is determined by the interaction of school capacity, internal policies, and operational conditions that require management.

In terms of internal school supporting factors, the implementation of differentiated learning at SD Negeri 004 Nongsa Batam City received strong support from the implementation of the Independent Curriculum, accreditation status A, and a culture of quality that has developed. The Independent Curriculum provides space for teachers to adapt activities, materials, and assessments to the development of students, so that differentiation is no longer seen as an additional burden, but as an integral part of learning practices that favor students (Mustafiyanti et.al., 2023). The A accreditation status reflects the school's commitment to high quality standards, which encourages principals and teachers to continue to improve the quality of learning. A culture of quality built through the habit of reflection, sharing good practices, and mutual support between teachers creates a safe psychological climate for teachers to try new strategies without fear of being blamed when they encounter difficulties in the early stages of implementing differentiation in the

classroom.

In supporting factors for teacher capacity and collaboration, school principals use collaboration between teachers as a strategy to reduce the individual burden in designing differentiated learning and improving the quality of pedagogical decisions. Collaboration forums, sharing teaching tools, and joint reflection become spaces for teachers to learn from each other's experiences, especially in designing multi-level assignments, managing flexible groups, and providing product options that suit students' needs. This approach is in line with the findings of Pozas and Letzel-Alt and Langelaan and colleagues that teacher collaboration strengthens the implementation of differentiation because differentiation planning requires a lot of time and knowledge (Langelaan et.al., 2024). Thus, collaboration is an important mechanism to build teachers' collective capacity in implementing differentiated learning in a sustainable manner in schools.

On the supporting factors of external means and support, the availability of facilities such as Digital Interactive Boards, diverse teaching materials, and adequate classrooms facilitates a variety of learning processes and products (Frameiliada et.al., 2023). These facilities allow teachers to present materials through a variety of modalities, provide a choice of different activities, and provide space for students to demonstrate understanding through different forms of products. Parent and school committee support strengthens the continuity of learning at school and home through intensive communication about learning objectives and the forms of support that can be provided at home. However, uneven parental understanding is a challenge that needs to be acted upon through more intensive communication and the provision of simple guidance for parents. These findings reinforce Gibbs' argument that school leader's support and organizational conditions determine teachers' ability to effectively implement differentiation in the classroom.

In the inhibiting factors and follow-up strategies, the large number of students, the wide diversity of abilities, the limited time of teachers, the need for practical training, and the uneven understanding of parents are the main obstacles faced by schools (Insorio, 2024). Principals follow up on these obstacles through rescheduling activities to make more room for collaboration and planning, simplification of assessment instruments so as not to burden teachers, assistance in the preparation of realistic multi-level assignments for large classes, and intensive communication with parents through various channels. This strategy is in line with the findings of Grecu and Bi, Struyven, and Zhu that ready-to-use materials and policy support still require teachers' capacity to adapt according to the classroom context. Thus, the implementation of differentiation is determined by the dynamic interaction between school capacity, internal policies, and operational conditions that require continuous and systematic management in order to be truly implemented in all classrooms.

Analysis of the findings of supporting and inhibiting factors shows that the implementation of differentiated learning at SD Negeri 004 Nongsa Batam City is influenced by complex interactions between internal school factors such as the Independent Curriculum, A accreditation, quality culture, teacher collaboration, and availability of facilities, with external factors such as parental support and school committees. Although the supporting factors are quite strong, operational obstacles such as large number of students, wide ability diversity, limited teacher time, and uneven parental understanding still affect the consistency of implementation between classes. School principals need to strengthen follow-up strategies through rescheduling activities, simplification of assessment instruments, assistance in preparing multi-level assignments, and intensive communication with parents. Thus, the implementation of differentiation does not only depend on the individual capacity of teachers, but on systemic management that involves all school stakeholders in a sustainable and systematic manner in all study groups at SD Negeri 004 Nongsa Batam City.

Conclusion

Based on the case study at SD Negeri 004 Nongsa, Batam City, the management of differentiated learning implementation by the principal operates through six interrelated dimensions: internal policies, academic coaching, coordination, supervision, resource utilization, and strengthening school relationships with parents and the committee. These practices are realized through the use of initial assessments, adjustments to strategies and tasks, teacher collaboration forums, learning supervision, provision of facilities, and communication regarding learning objectives and home learning support. However, implementation remains inconsistent across classes due to large student numbers, limited teacher time, diverse student abilities, the need for practical training, and varying levels of parental understanding.

These findings indicate that the principal's instructional leadership plays a crucial role in transforming differentiated learning from individual teacher initiatives into a more directed and sustainable school academic program. Based on these findings, this study recommends that schools strengthen written policies, develop technical guidelines for differentiated learning, establish more structured monitoring mechanisms, and position supervision as a process for improving learning rather than merely administrative inspection. Schools also need to develop regular teacher collaboration forums, provide examples of tiered tasks and practical assessments, and enhance communication with parents through simple and ongoing guidance. However, these broader recommendations require further research before being applied as a general model, for instance through studies involving more schools with different characteristics and using longitudinal approaches to examine their impact on implementation consistency and student learning outcomes.

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