

## ANALYSIS OF THE IMPLEMENTATION OF DIFFERENTIATED INSTRUCTION IN ENHANCING STUDENTS' INTEREST AND LEARNING MOTIVATION IN THE IPAS SUBJECT IN CLUSTER 3 UNDER THE COORDINATION OF THE PANGGUL SUBDISTRICT, TRENGGALEK REGENCY

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### ABSTRACT

This study aims to analyze the implementation of differentiated instruction in increasing students' interest and motivation in Science and Social Studies (IPAS) at Gugus 3, Panggul District, Trenggalek Regency. The research focuses on the aspects of implementation, strategies, and evaluation of instruction that accommodate student diversity. Using a descriptive qualitative approach, data were collected through observations, interviews, and questionnaires involving teachers and students within the Gugus 3 environment. Data analysis was conducted through reduction, display, and conclusion drawing. The results show that: (1) The implementation of instruction begins with accurate mapping of student needs through diagnostic assessment; (2) Content, process, and product differentiation strategies that integrate the local wisdom of the Panggul region significantly increase student interest (enjoyment and attention) and learning motivation (persistence and independence); (3) Process-based evaluation through constructive feedback is able to maintain the consistency of students' intrinsic motivation. In conclusion, differentiated instruction is a strategic key in creating inclusive and meaningful IPAS learning at the elementary school level.

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### INTRODUCTION

The implementation of the *Merdeka Curriculum* in Indonesia has brought about a fundamental paradigm shift in the national education system. Learning orientation now places students at the center of the learning process while simultaneously providing broader opportunities for teachers to design adaptive, creative, and

innovative instruction through their role as facilitators (Ikhsani & Alfiansyah, 2023). At the elementary school level, the subject of Natural and Social Sciences (Ilmu Pengetahuan Alam dan Sosial/IPAS) holds a strategic position in fostering scientific literacy, critical thinking skills, and students' social awareness. However, at the implementation level, the complexity of IPAS content often encounters the heterogeneous characteristics of students, particularly in schools belonging to Cluster 3 under the Coordination of the Panggul Subdistrict, Trenggalek Regency. This condition aligns with findings from other studies indicating that student diversity presents a distinct challenge in the effective implementation of IPAS learning (Evitasaki et al., 2025).

The problem is further exacerbated when learning remains dominated by a one-size-fits-all approach. Instructional patterns that do not accommodate differences in students' learning readiness tend to render some students passive, which in turn affects their low interest and motivation to explore natural and social phenomena in their surrounding environment (Lim et al., 2025). In fact, Panggul Subdistrict possesses unique geographical and sociocultural characteristics, namely coastal and agrarian environments that are rich in contextual phenomena. This environment could essentially serve as a "natural laboratory" with great potential for IPAS learning. Nevertheless, this potential is often underutilized because instruction remains confined to lecture-based methods and textual approaches that lack contextual relevance.

In this context, differentiated instruction emerges as a relevant strategy to address the needs of heterogeneous classrooms. Differentiated instruction is understood as an instructional approach that proactively adjusts the learning process to students' needs, interests, and readiness, enabling each individual to achieve learning objectives optimally. According to Gregory and Chapman (2020), a differentiated classroom provides multiple pathways for students to absorb information and develop a deep understanding of ideas through flexible adjustments. Differentiation is carried out across three main aspects: content, process, and product. Content differentiation is manifested through variations in difficulty levels and learning media; process differentiation is implemented by adjusting students' learning styles and pacing; while product differentiation offers students choices to demonstrate their understanding through various forms of work, such as posters, videos, or presentations.

In this study, the implementation of differentiated instruction is measured using comprehensive indicators, including the mapping of students' needs, content adjustment, process variation, product choices, use of diverse media, flexible goal setting, dynamic learning group arrangements, tiered assignments, learning support (scaffolding), as well as reflection and assessment based on adaptive feedback (Agusta, 2024). The novelty of this research lies in its effort to contextualize differentiation strategies by integrating local wisdom from the Panggul community as essential learning material in IPAS, an approach that remains relatively under-documented in scholarly literature, particularly within the context of school clusters in peripheral district areas.

The urgency of this research is grounded in the need to build an inclusive learning environment capable of stimulating students' active participation. If students' interest and motivation in learning IPAS are not promptly enhanced through relevant strategies, there is a risk of stagnation in literacy quality that may adversely affect the sustainability of learning outcomes at subsequent educational levels. Through differentiated content, processes, and products, teachers are expected to cultivate students' sense of ownership over their learning experiences. Intrinsic motivation that develops from learning experiences which value student diversity is regarded as a crucial foundation for long-term educational success.

In line with Carol Ann Tomlinson's perspective on the effectiveness of differentiated classrooms, numerous previous studies have demonstrated that instructional flexibility can significantly enhance student engagement (Almujab, 2023; Nisa & Busri, 2025; Bulqis et al., 2026). Nevertheless, this study seeks to go further by examining how this theory interacts with the unique dynamics of Cluster 3 Panggul, particularly when limitations in facilities and infrastructure demand greater teacher creativity in implementing process differentiation. By combining theoretical review and empirical observation, this research is expected to provide a comprehensive picture of the extent to which differentiated instruction can serve as a driving force for increasing students' interest and motivation in learning IPAS.

Based on these realities, this research is directed toward analyzing three main aspects of the

transformation of IPAS learning. The first focus is to analyze the practical implementation of differentiated instruction in classroom settings within schools in Cluster 3 under the Coordination of the Panggul Subdistrict, with the aim of stimulating students' learning interest and motivation that have previously tended to be passive. The second focus is to identify the differentiation strategies applied, including content differentiation integrating local wisdom from Trenggalek, process differentiation tailored to students' learning styles, and product differentiation as a means of accommodating diverse forms of student expression. The third focus is to evaluate the implementation of differentiated instruction, not only in terms of cognitive achievement but also through teacher reflection mechanisms and student feedback as a basis for the continuous enhancement of learning interest. In this study, learning interest is understood as students' internal tendency to actively engage in learning activities. Hidi and Renninger (2020) emphasize that interest is a psychological force that drives sustained attention toward particular content. Learning interest in the context of IPAS is characterized by students' enjoyment and attraction to the material being taught. In line with Johri et al. (2025), learning interest is evaluated through indicators such as students' attention to teachers' explanations, enjoyment of participating in learning activities, willingness to actively engage in classroom discussions, interest in IPAS materials and assignments, and learning consistency reflected in students' persistence and resistance to boredom.

Learning motivation is also a crucial variable, as it functions as both an internal and external driving force that motivates students to achieve learning goals. Schunk, Meece, and Pintrich (2021) explain that motivation involves processes that initiate and sustain goal-directed activities. In this study, learning motivation is measured through indicators including perseverance in completing tasks and overcoming difficulties, a strong desire to achieve, enthusiasm in participating in IPAS lessons, independence in seeking additional information, and openness to receiving guidance and feedback from teachers (Gymnastiar, 2024). Thus, this research positions differentiated instruction not merely as a pedagogical strategy, but as a transformational approach to building IPAS classrooms that are more contextual, inclusive, and motivating.

## METHOD

This study employed a qualitative approach using a descriptive method aimed at providing an in-depth depiction of the phenomenon of implementing differentiated instruction in the IPAS subject. The selection of this method was based on the researcher's need to understand classroom dynamics, teacher–student interactions, as well as affective changes in the form of students' interest and motivation, which cannot be adequately captured through numerical measurement alone but must be interpreted through the behaviors and perceptions of the research participants. The study was conducted in elementary schools belonging to Cluster 3 under the Coordination of the Panggul Subdistrict, Trenggalek Regency. This location was selected purposively, as schools in this area possess coastal ecosystem characteristics that are highly relevant to the development of IPAS materials based on local wisdom.

The research subjects included classroom teachers as implementers of differentiated instruction and upper-grade students (Phases B and C) as recipients of its instructional impact. To ensure data credibility, this study employed triangulation techniques for data collection, consisting of observation, interviews, and documentation. Observations were conducted using a passive participant approach to examine ten indicators of classroom differentiation implementation as proposed by Agusta (2024). In-depth interviews were carried out with teachers to explore strategies for mapping students' learning needs and the challenges encountered during implementation, while open-ended questionnaires were administered to students to collect data related to learning interest indicators as outlined by Johri et al. (2025) and learning motivation indicators as proposed by Gymnastiar (2024).

Data analysis followed the interactive model developed by Miles, Huberman, and Saldaña, which consists of three main stages: data reduction, data display, and conclusion drawing. During the data reduction stage, field data related to learning processes in Cluster 3 Panggul were selected and focused on the variables of differentiation, interest, and motivation. The data were then presented in the form of logical narratives and supporting tables to facilitate understanding of the patterns of relationships among variables. The final stage

involved drawing conclusions or verification to determine whether the implemented strategies of content, process, and product differentiation made a significant contribution to students' enthusiasm and independent learning in the IPAS subject. Data validity was ensured through prolonged engagement and peer debriefing to maintain the objectivity and trustworthiness of the research findings.

## RESULTS AND DISCUSSIONS

The following section presents field findings on the dynamics of implementing differentiated instruction in schools belonging to Cluster 3 under the Coordination of the Panggul Subdistrict. Based on data collected through classroom observations, in-depth interviews with educators, and student response questionnaires, a significant shift in the learning culture of IPAS classrooms can be observed. The implementation of the *Merdeka Curriculum* in this area is no longer perceived merely as an administrative requirement, but has begun to address substantive aspects of facilitating students' diverse potentials. Overall, the research findings indicate that the integration of differentiation strategies with the utilization of coastal environmental assets in Panggul has created a more inclusive and humane learning atmosphere. These findings are subsequently analyzed in depth based on three main pillars of the study, namely the implementation process, the instructional strategies employed, and the evaluation mechanisms applied to measure the sustainability of students' learning interest and motivation, as elaborated in the following sub-sections.

### *Implementation of Differentiated Instruction in Cluster 3 Panggul*

The results of the study show that the implementation of differentiated instruction in schools within Cluster 3 Panggul began with a comprehensive mapping of students' needs. Teachers conducted initial diagnostic assessments to identify students' levels of readiness, interests, and learning profiles (visual, auditory, and kinesthetic). This stage served as the foundation for determining instructional strategies that are responsive to the diversity of student characteristics. This practice aligns with the concept of differentiated classrooms, which emphasizes the importance of identifying individual needs before teachers modify content, process, or learning products (Gregory & Chapman, 2020). These findings are further supported by Wahyudi et al. (2023), who state that initial needs assessment is a key factor in the successful implementation of differentiated instruction in IPAS subjects within the framework of the *Merdeka Curriculum*.

In classroom implementation, teachers set flexible learning objectives and formed dynamic learning groups based on assessment results. Rather than applying uniform achievement targets simultaneously, teachers provided varying levels of learning support (scaffolding) according to the readiness of each group. This approach reflects the practice of responsive teaching in heterogeneous classrooms. For example, in learning about the water cycle, groups that had not yet mastered the basic concepts received intensive guidance through the use of visual media, while groups that had demonstrated conceptual mastery were directed to analyze the impact of deforestation on groundwater availability.

This flexibility in goal setting and scaffolding demonstrates adaptive instructional characteristics oriented toward students' needs. Rachmawati and Sutikno (2024) emphasize that integrating the TPACK approach into differentiated instruction enhances the effectiveness of IPAS learning, as teachers are able to contextualize strategies, media, and learning activities. Thus, the implementation of differentiated instruction in Cluster 3 Panggul is not merely a variation of teaching methods, but represents a systematic pedagogical practice in creating an inclusive, student-centered learning environment.

### *Differentiated Instruction Strategies in Enhancing Interest and Motivation*

The strategies implemented by teachers in Cluster 3 Panggul encompass three main dimensions integrated with local wisdom. Content differentiation was achieved by adjusting the depth of the material; teachers utilized the coastal potential of Panggul as concrete examples in ecosystem-related topics, thereby stimulating students' interest and enjoyment because the material felt closely connected to their daily lives. Process differentiation was realized through a variety of activities such as simple experiments, group discussions, and environmental observations around the school. These approaches proved effective in fulfilling indicators of students' enthusiasm and learning engagement. Finally, through product differentiation, students were given the freedom to choose the

form of their learning outputs (posters, written reports, or oral presentations). This freedom of choice had a direct impact on students' independence and perseverance in completing tasks, as they felt a sense of autonomy over the work they produced, which is a key component of intrinsic motivation.

#### **Content Differentiation and Contextual Relevance**

Content differentiation in this study was realized through the integration of coastal phenomena in Panggul into IPAS learning materials, particularly in topics related to ecosystems and the water cycle. Contextualizing the material with students' immediate environment made learning more meaningful, as it was directly connected to the realities they experience. This condition led to increased student interest and emotional engagement in the learning process. Theoretically, Hidi and Renninger (2020) explain that the development of learning interest is strongly influenced by personal relevance between learning materials and individual experiences; therefore, contextual proximity becomes a crucial factor in fostering sustained situational interest.

Luawo et al. (2025) demonstrated that content differentiation in Grade IV IPAS learning was able to enhance student engagement because the material was presented in accordance with students' needs and life contexts. In the context of Cluster 3 Panggul, the integration of the coastal environment functioned not merely as an additional illustration, but as an authentic learning resource that strengthened the affective dimension of learning. Thus, content differentiation does not only involve adjusting the level of material complexity, but also constructing learning experiences that are relevant, contextual, and meaningful for students.

#### **Process Differentiation and Active Engagement**

Process differentiation in this study was implemented through a variety of learning activities, such as experiments, group discussions, and field observations. These variations were designed to accommodate the diversity of students' learning styles while simultaneously encouraging active participation in IPAS learning. This strategy not only enriched learning experiences but also created a more dynamic and interactive classroom atmosphere.

Empirically, these findings are consistent with several studies showing that the application of learning-style-based differentiation has a positive impact on elementary students' engagement and understanding (Putri & Elizar, 2025). Other research examining the impact of differentiation on student engagement also confirms that flexibility in learning processes significantly contributes to improvements in students' emotional and cognitive involvement (Widayanti et al., 2024).

In the context of Cluster 3 Panggul, the implementation of process differentiation revealed observable changes in students' learning behavior, with students becoming more active and responsive. Students no longer displayed passive tendencies, but instead engaged directly in activities aligned with their learning needs and preferences. Therefore, process differentiation plays a strategic role in building a participatory, student-centered learning environment.

#### **Product Differentiation and Intrinsic Motivation**

Providing a variety of learning products, such as posters, written reports, and oral presentations, offered students greater autonomy in expressing their learning outcomes. Conceptually, autonomy is a key determinant in the development of intrinsic motivation, as individuals feel a sense of control over their learning processes and outcomes. Within the framework of differentiated instruction, product choices allow students to construct and represent their understanding in ways that align with their individual potentials, interests, and strengths.

Product differentiation contributes to increased student engagement and self-confidence, as students are able to demonstrate competence through forms of expression that are consistent with their individual abilities (Sari & Widjiastuti, 2024). Consistent with these findings, implementation in Cluster 3 Panggul showed that students exhibited higher levels of perseverance and independence when given the freedom to determine the form of their learning products. Thus, product differentiation functions not only as an evaluative variation, but also as a pedagogical strategy to strengthen student motivation and empowerment in the learning process.

#### **Evaluation of the Implementation of Differentiated Instruction**

The evaluation of learning in Cluster 3 Panggul indicates a paradigm shift from *assessment of learning* to *assessment for learning*. Assessment is no longer focused solely on final outcomes, but is directed toward

supporting the learning process in a continuous manner. Teachers employ flexible rubrics aligned with the forms of products chosen by students and provide constructive and specific feedback rather than merely assigning numerical scores. This approach enables students to understand the aspects they have mastered as well as the areas that still require improvement.

The evaluation results show that interventions through differentiated instruction contribute to a reduction in classroom boredom levels. Students demonstrate greater learning consistency and a more open attitude toward teacher guidance and support. At the same time, teachers routinely engage in end-of-lesson reflection to adjust strategies for subsequent meetings based on students' responses and achievements. This reflective and adaptive evaluation pattern ensures that improvements in learning interest and motivation are not temporary, but are sustained throughout the semester.

These findings reveal a linear relationship between the quality of differentiation implementation and the level of student engagement. When teachers are able to implement the ten differentiation indicators formulated by Agusta (2024), the indicators of learning interest proposed by Johri et al. (2025) and Digantoro et al. (2025), as well as the motivation indicators according to Gymnastiar (2024), show significant improvement. This confirms that differentiated instruction is not merely a variation of teaching methods, but a pedagogical strategy that positions students as active subjects in the knowledge construction process.

Overall, the findings affirm the existence of an organic correlation between the quality of differentiated instruction implementation and the strengthening of students' affective aspects in Cluster 3 Panggul. The application of the ten differentiation indicators from needs mapping to flexible assessment—encourages a transformation of students' roles from passive objects of learning into participatory subjects. Learning interest, reflected in enjoyment and attention, and motivation, manifested through perseverance and independence, do not stand as separate variables, but are direct consequences of instructional designs that respect the diversity of individual characteristics.

The utilization of local wisdom from the Panggul Subdistrict in content differentiation has also proven to function as an emotional bridge that enhances the meaningfulness of learning. IPAS materials are no longer perceived as abstract concepts, but as contextual realities relevant to students' lives. Thus, differentiated instruction strategies in this region not only represent methodological innovation, but also constitute a pedagogical necessity in responding to the challenge of learning demotivation at the elementary school level. The successful implementation demonstrates that limitations in facilities are not the primary determining factor; rather, teachers' creativity in managing differentiation of process, product, and evaluation becomes the key element in creating meaningful learning experiences oriented toward students' long-term development.

Adaptive assessment and continuous feedback in science learning have been shown to increase student engagement and motivation (Herliana et al., 2024). Therefore, evaluation in differentiated instruction functions not only as an instrument for measuring achievement, but also as an integral part of a reflective, adaptive instructional cycle oriented toward strengthening students' learning interest and motivation.

## CONCLUSIONS

Based on the results of the analysis and discussion presented, this study draws three main conclusions regarding the implementation of differentiated instruction in Cluster 3 under the Coordination of the Panggul Subdistrict. First, the implementation of differentiated instruction in the IPAS subject has shifted from a classical, uniform approach to a student-needs-based approach through accurate mapping of students' readiness and learning profiles. This transformation has created an inclusive learning environment in which each student receives appropriate support (scaffolding) in accordance with their individual capacities.

Second, differentiation strategies that integrate local coastal wisdom from Panggul across the dimensions of content, process, and product have proven effective in enhancing students' learning interest and motivation. Students demonstrate higher levels of enthusiasm and independence in exploring learning materials because they feel a sense of control over how they learn and produce their work.

Third, flexible evaluation mechanisms oriented toward the learning process (*assessment for learning*) are

able to sustain students' motivation consistently while providing opportunities for teachers to engage in continuous reflection aimed at improving the quality of instruction.

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