

DOI <https://doi.org/10.30740/jee.v9i2.382>

MAPPING THE CHARACTERISTICS OF GRADE III ELEMENTARY SCHOOL STUDENTS TO SUPPORT STUDENT-CENTERED LEARNING: A CASE STUDY IN GRADE III A AT SDN 3 ANCARAN

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Received: July 2026; Accepted: July 2026

Abstract

This study aims to comprehensively map the characteristics of Grade III A students at SDN 3 Ancaran as a foundation for implementing student-centered learning. The study is motivated by the high heterogeneity of students within one classroom, including differences in learning styles, academic abilities, learning readiness, interests, and socio-emotional development, which require adaptive and differentiated learning approaches in accordance with the Merdeka Curriculum. The findings revealed that audio-visual learning styles dominated at 70%, followed by kinesthetic at 20% and combination styles at 10%. Students' academic abilities were categorized as excellent (35%), good (45%), and requiring intensive assistance (20%). In addition, 45% of students demonstrated low self-confidence, while 25% were easily distracted during learning activities. Most students (85%) received strong family support, which positively affected their learning readiness. These findings emphasize the importance of data-driven differentiated learning that includes differentiation in content, process, product, and learning environment.

Keywords: *student characteristics mapping; student-centered learning; differentiated learning;*

Abstrak

Penelitian ini bertujuan untuk memetakan karakteristik peserta didik kelas III A SDN 3 Ancaran secara komprehensif sebagai dasar implementasi pembelajaran berpusat pada siswa. Penelitian dilatarbelakangi oleh tingginya heterogenitas peserta didik dalam satu kelas yang mencakup perbedaan gaya belajar, kemampuan akademik, kesiapan belajar, minat, dan perkembangan sosial-emosional sehingga membutuhkan pendekatan pembelajaran adaptif dan berdiferensiasi sesuai Kurikulum Merdeka. Hasil penelitian menunjukkan bahwa gaya belajar audio visual mendominasi sebesar 70%, diikuti kinestetik 20%, dan kombinasi 10%. Kemampuan akademik peserta didik terbagi menjadi sangat baik (35%), baik (45%), dan memerlukan pendampingan intensif (20%). Selain itu, 45% peserta didik memiliki kepercayaan diri rendah dan 25% mudah terdistraksi saat pembelajaran. Sebagian besar peserta didik (85%) memperoleh dukungan keluarga yang baik sehingga berdampak positif terhadap kesiapan belajar. Temuan ini menegaskan pentingnya pembelajaran berdiferensiasi berbasis data yang mencakup diferensiasi konten, proses, produk, dan lingkungan belajar.

Kata Kunci: *pemetaan karakteristik peserta didik; pembelajaran berpusat pada siswa; pembelajaran berdiferensiasi;*

How to Cite: Qutratuain. N. A.-1, Ragittia-2, Sari. A.-3, Nurlaelah. I.-⁴, & Chitaresmi, S. D.-5, Mapping the Characteristics of Grade III Elementary School Students to Support Student-Centered Learning: A Case Study in Grade III A at SDN 3 Ancaran. *JEE*, 9(2), 269–280.

INTRODUCTION

A. The Ideals of 21st-Century Learning and the Student-Centered Learning Paradigm

The 21st-century educational paradigm positions students as active agents in constructing their own knowledge, rather than passive recipients of information from teachers. This epistemological shift is rooted in the constructivist tradition, which asserts that knowledge is formed through the active process of individuals interacting with their environment (Tohari & Rahman, 2024; Agustyaningrum & Pradanti, 2022). Within the context of social constructivism, Vygotsky emphasized that students' cognitive development is strongly influenced by social interaction and guidance from more competent individuals through the mechanism of the Zone of Proximal Development (ZPD) (Tohari & Rahman, 2024).

Piaget, through his theory of cognitive developmental stages, affirmed that primary school-aged children (7–11 years) are in the concrete operational stage, where conceptual understanding is built through direct experience with real objects and physical manipulation (Agustyaningrum & Pradanti, 2022). Howard Gardner, through his theory of multiple intelligences, identified eight types of intelligence that humans possess in varying degrees. Nuangchalem (2023) empirically demonstrated that learning based on multiple intelligences significantly improves students' critical thinking skills.

Student-centered learning (SCL), as the operational manifestation of constructivism in classroom practice, requires teachers to act as facilitators who design meaningful, responsive learning experiences grounded in the individual characteristics of students (Cheng & Ding, 2020). Fitriyah and Bisri (2023) formulated that differentiated learning in elementary school is an approach that accommodates the diversity of students' learning readiness, interests, and learning profiles through adjustments in content, process, product, and learning environment. The Merdeka Curriculum explicitly mandates teachers to conduct diagnostic assessments in order to obtain a comprehensive map of students' abilities, readiness, interests, and learning profiles (Elfitra et al., 2024; Azis & Lubis, 2023).

B. The Reality of Student Heterogeneity in Grade III A at SDN 3 Ancaran

Empirical data on the student profiles of Grade III A at SDN 3 Ancaran confirms the complexity of heterogeneity within a single learning group. Among the 20 students, there is a very wide range of academic abilities: from students with extensive general knowledge and highly critical thinking, to students who still require intensive guidance in basic reading, writing, and numeracy. This diversity does not stop at the cognitive dimension, but extends to the domains of learning styles, intrinsic motivation, social-emotional conditions, interests and talents, and family background (Johnson et al., 2022; Tetzlaff et al., 2023).

Heterogeneity in family background is also notably significant. The majority of students (85%) live in the conducive and religiously oriented environment of Ancaran Village, with optimal parental support; however, some students face limited family support that directly affects their

learning readiness and motivation. Kumalasari et al. (2024) affirmed that emotional support, encouragement, and active parental involvement are strong predictors of students' learning motivation and academic achievement.

C. Research Gaps and the Urgency of Student Characteristics Mapping

Although the ideals of student-centered learning are well documented in the literature and policy, its implementation at the classroom level faces significant gaps. Huda and Kumalasari (2024) showed that student characteristics mapping conducted by teachers is often still administrative in nature and not transformed into operational pedagogical guidance. Magdalena et al. (2023) found that student profile data is rarely utilized optimally as a basis for differentiated learning.

The novelty of this research lies in its holistic and integrative approach to mapping student characteristics, simultaneously analyzing seven dimensions – learning style, academic ability, learning readiness, interests and talents, social-emotional development, self-confidence, and family support – and analytically connecting them to the implications for SCL-based differentiated learning design for Grade III elementary school Phase B of the Merdeka Curriculum.

METHOD

This study employed a descriptive qualitative approach with a single case study design. The qualitative paradigm was selected because the research objective is to obtain an in-depth and comprehensive understanding of the complexity of student characteristics within the specific context of Grade III A at SDN 3 Ancaran (Moleong, 2022; Rofiah, 2022). The case study design allows for the exploration of the phenomenon of student characteristics heterogeneity within its natural boundaries, including the surrounding social, cultural, and institutional contexts (Rijali, 2019).

The study was conducted at SDN 3 Ancaran, Ancaran District, Kuningan Regency, West Java. The research subjects were all 20 students of Grade III A, comprising 10 males and 10 females, with an average age of 8–9 years. Subject selection was carried out purposively (purposive sampling) based on the availability of complete and authentic student profile data.

Primary data were collected through participatory observation during the learning process using structured observation sheets covering indicators of learning style, participation, attention focus, and social interaction. Secondary data consisted of authentic student profile documents encompassing identity and family background data, health history, learning readiness, academic abilities (reading, writing, numeracy), learning style, interests and talents, and social-emotional development.

Data analysis employed the interactive model of Miles and Huberman, consisting of three components: (1) data reduction – the process of selecting, focusing, simplifying, and transforming raw data; (2) data display – in the form of characteristic matrices, categorization tables, and interpretive descriptive narratives; and (3) conclusion drawing and verification – the process of assigning meaning to patterns and relationships among characteristic dimensions (Moleong, 2022; Rofiah, 2022). Data validity was ensured through source triangulation.

Qutratuain. N. A.-1, Ragittia-2, Sari. A.-3, Nurlaelah. I.-4, & Chitaresmi, S. D.-5, *Mapping the Characteristics of Grade III Elementary School Students to Support Student-Centered Learning: A Case Study in Grade III A at SDN 3 Ancaran* .

RESULTS AND DISCUSSION

A. General Overview of Student Characteristics in Grade III A

Based on the analysis of student profile documents and classroom observation, a comprehensive overview of the characteristics of 20 Grade III A students at SDN 3 Ancaran was obtained. Table 1 presents a summary of the multidimensional distribution of student characteristics that forms the analytical foundation of this study.

Tabel 1. Multidimensional Characteristics Distribution of Grade III A Students at SDN 3 Ancaran (n=20)

No	Characteristic Aspect	No. of Students	Percentage	Category
1	Audio-visual learning style	14	70%	Dominant
2	Kinesthetic learning style	4	20%	Significant
3	Combination learning style (AV + Kinesthetic)	2	10%	Minority
4	Excellent academic ability	7	35%	High
5	Good academic ability	9	45%	Moderate
6	Requires intensive assistance	4	20%	Low
7	Low self-confidence	9	45%	Attention Needed
8	Easily distracted / lacks focus	5	25%	Attention Needed
9	Social skills need development	3	15%	Attention Needed
10	Suboptimal parental support	2	10%	Attention Needed
11	Excellent learning readiness	7	35%	Optimal
12	Good learning readiness	9	45%	Baik
13	Adequate learning readiness	4	20%	Needs Intervention

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

Data in Table 1 reveals a highly heterogeneous profile in Grade III A. Suryani et al. (2023) affirmed that multidimensional heterogeneity represents both a primary pedagogical challenge and an opportunity to create a rich and inclusive learning ecosystem. Tetzlaff et al. (2023) demonstrated that the multivariate interactions among student characteristics produce unique learning profiles in each individual, necessitating personalized and adaptive learning interventions.

B. Analysis of Learning Styles: Distribution, Patterns, and Pedagogical Implications

Mapping students' learning styles is the first and most fundamental component in the design of SCL-based differentiated learning. Table 2 presents the distribution of learning styles along with students' names and their strategic implications.

Tabel 2. Distribution and Learning Style Profiles of Grade III A Students

No	Learning Style	Student Name	Jml (%)	Strategic Implications
1	Audio Visual	Adiba, Adifa, Aghniya, Aila, Arsyla, M. Zakir, M. Danial, Nazma, Rizki Kamiludin, Sabila, Shireen, Shofiya, M. Rifki, M. Dzikri	14 (70%)	Infographics, video, concept maps, diagrams, interactive visual media, illustrated books
2	Kinesthetic	M. Rama, M. Wildan, Nahdia, M. Abdul Azis	4 (20%)	Physical activities, games, object manipulation, simulations, group projects
3	Combination AV + Kinesthetic	M. Rifqi Ariqin, Ahmad Azzam	2 (10%)	Variety of visual media combined with manipulative and hands-on activities

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

The dominance of audio-visual learning style at 70% carries highly significant strategic implications: the majority of Grade III A students will respond optimally to visual-based stimuli, including the use of infographics, diagrams, concept maps, instructional videos, and interactive visual media. Silvia et al. (2023) demonstrated that the combined use of mind mapping and audio-visual media significantly improves the learning outcomes of elementary school students. Alhafiz (2022) confirmed that accurately mapping learning styles is a primary prerequisite for implementing effective differentiated learning.

The four students with kinesthetic learning styles (Muhammad Rama, Muhammad Wildan, Nahdia, Muhammad Abdul Azis) demonstrate engagement patterns distinct from the audio-visual group. Classroom observation revealed that during lecture-based instruction, kinesthetic students appeared restless and had difficulty sustaining concentration. However, when learning shifted to movement-based activities, their engagement and enthusiasm increased significantly. Samrotul Puadah et al. (2024) demonstrated that differentiation strategies based on learning style effectively and significantly motivate student learning.

C. Analysis of Academic Ability: Categorization and Relationship with Learning Readiness

Academic ability is the dimension of student characteristics most directly related to learning achievement. Table 3 presents the distribution of academic abilities based on three Phase B core competencies, and Table 4 displays the categorization of students along with their profiles.

Tabel 3. Distribution of Academic Ability Based on Literacy and Numeracy Competencies

No	Category	Reading	Writing	Numeracy	Jml (%)
1	Excellent	Very Fluent	Excellent	Fluent + Multiplication	7 (35%)
2	Baik	Lancar	Baik	Fluent, multiplication with guidance	9 (45%)
3	Perlu Pendampingan	Halting / Struggling	Needs guidance	Not yet fluent	4 (20%)

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

Qutratuain. N. A.-1, Ragittia-2, Sari. A.-3, Nurlaelah. I.-4, & Chitaresmi, S. D.-5, *Mapping the Characteristics of Grade III Elementary School Students to Support Student-Centered Learning: A Case Study in Grade III A at SDN 3 Ancaran*.

Tabel 4. Grouping of Students Based on Academic Ability

No	Category	Student Name	Prominent Characteristics
1	Excellent	M. Rifqi Ariqin, Shireen Chika, Shofiya Khairunnisa, Nazma Lailaatussyarifah, Aila Zahra Nadifa, Rizki Kamiludin, M. Rifki	Critical, highly initiative, independent, mastery of all Phase B material
2	Baik	Adiba, Adifa, Aghniya, Arsyla, Ahmad Azzam, M. Zakir, M. Danial, M. Dzikri, Nahdia	Fluent in literacy and numeracy, multiplication/division still needs guidance
3	Perlu Pendampingan	M. Wildan Ainurrafiq, M. Abdul Azis, Sabila Nur Fauziah, M. Rama Dijaya	Reading still halting, basic numeracy not yet fluent, requires intensive mentoring

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

The trimodal distribution of academic ability reflects substantial heterogeneity. The group with excellent ability (35%) has already surpassed the minimum attainment of Phase B in the Merdeka Curriculum and requires an enrichment program. The good-ability group (45%), as the largest group, serves as the reference point for determining the level of learning complexity. The group that requires the most attention is the one needing intensive assistance (20%). Angelova (2025) emphasized the importance of early identification and targeted intervention to prevent the accumulation of learning difficulties.

D. Analysis of Interests and Talents: Potential for Product Differentiation

The dimension of students' interests and talents is often overlooked in conventional characteristics mapping. Yet, understanding students' interests and talents is the key to meaningful and authentic product differentiation. Table 5 presents the distribution of interests and talents along with their pedagogical implications.

Tabel 5. Distribution of Students' Interests and Talents and Product Differentiation Implications

No	Area of Interest/Talent	Student Name	Product Differentiation Implications
1	Drawing & Coloring	Adiba, Adifa, Aghniya, Aila, Nazma, Shireen, Shofiya	Products in the form of visual artworks, posters, educational comics
2	Mathematics / Numeracy	M. Rifqi Ariqin, Rizki Kamiludin	Advanced problem-solving products, challenge tasks
3	Sports / Physical Activity	M. Rama, M. Wildan, Ahmad Azzam	Demonstration, movement, and action-based presentation products
4	Reading / Literacy	Shireen, Shofiya, M. Rifki	Essays, book reviews, written reports, mini books

5	Technology / General Knowledge	M. Rifqi Ariqin, M. Zakir	Multimedia presentation products, simple research
6	Singing / Music Arts	Sabila, Arsyla, Aghniya	Thematic songs, music-based creative presentations

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

Table 5 data reveals the diversity of students' interests and talents across six main areas. This diversity directly supports the principle of product differentiation, which allows students to demonstrate competency mastery through various output formats aligned with their individual inclinations. Nuangchalerm (2023) affirmed that learning that integrates multiple intelligences through the diversification of learning products significantly increases student engagement and intrinsic motivation.

E. Analysis of Social-Emotional Development

Social-emotional development is a dimension inseparable from effective learning. Research shows that students' social-emotional conditions directly influence their capacity to engage in learning, collaborate with peers, and reach their academic potential (Coelho et al., 2023; Nuraeni et al., 2023). Table 6 presents the distribution of students' social-emotional development.

Tabel 6. Distribution of Social-Emotional Development of Grade III A Students

No	Social-Emotional Dimension	No. of Students (%)	Name & Description
1	Excellent social-emotional development	5 (25%)	M. Rifqi Ariqin, Shireen, Shofiya, Nazma, Aila — highly disciplined, good self-control, actively contributing
2	Good social-emotional development	6 (30%)	Adiba, Adifa, Aghniya, Rizki, M. Zakir, Ahmad Azzam — adequately disciplined, enthusiastic, positive social relationships
3	Adequate social-emotional development	9 (45%)	The rest — need guidance in discipline, independence, and self-regulation
4	Low self-confidence / needs reinforcement	9 (45%)	Adiba, Adifa, Aghniya, Aila, Nazma, Shireen, Shofiya, Rizki, M. Rifqi — shy to perform, reluctant to ask questions
5	Easily distracted / difficulty focusing	5 (25%)	Arsyla, M. Rama, M. Wildan, Sabila, Ahmad Azzam — easily distracted attention, restless during learning
6	Limited social skills (withdrawn)	3 (15%)	M. Rifki (withdrawn, limited socializing), Rizki (limited social interaction), M. Danial (passive)
7	Frequently absent / health issues	3 (15%)	M. Danial, Rizki Kamiludin, M. Rama — below-average attendance, need special attention

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

The most significant finding is that 45% of students exhibit low self-confidence requiring affirmative reinforcement. This condition confirms the phenomenon of dissonance between actual competence and perceived self-efficacy. Coelho et al. (2023) demonstrated that social-emotional learning program interventions focused on strengthening self-efficacy significantly improve the social-emotional competence of elementary school students. Anisah et al. (2021) identified that self-regulation ability in Grade III students is still in a developmental stage requiring structural support from the learning environment.

F. Analysis of Family Support and Learning Readiness

Family support constitutes the most influential external ecosystem for students' learning readiness and intrinsic motivation. Table 7 presents an analysis of the relationship between family support, learning readiness, and their implications for learning participation.

Table 7. Analysis of Family Support and Its Relationship with Learning Readiness

No	Family Support Category	Σ (%)	Learning Readiness	Name & Context
1	Maximum support, conducive religious environment	17 (85%)	Good–Excellent	Most students — living in the religiously oriented Ancaran Village environment, parents actively involved
2	Limited support (parent works abroad or is busy)	2 (10%)	Adequate	M. Rama (mother works abroad), M. Abdul Azis (limited support) — low motivation, frequently absent
3	Single parent, support remains optimal	1 (5%)	Baik	Nahdia Talita Sakhi — raised by father, receives full support despite absence of mother

Source: Analysis of student profile documents, Grade III A SDN 3 Ancaran, 2025

Data in Table 7 reveals a consistent pattern: students with optimal family support (85%) generally demonstrate good to excellent learning readiness. The conducive and religiously oriented environment of Ancaran Village provides a social ecosystem that supports the formation of positive learning habits. Pamungkas et al. (2022) identified that the quality of parental support significantly correlates with students' intrinsic learning motivation. These findings imply the need for an intensive communication program between teachers and families, particularly for students with limited family support.

G. Implementation of Student-Centered Learning Based on Characteristics Mapping

The synthesis of all student characteristic dimensions yields a comprehensive blueprint for differentiated learning design. Table 8 presents the differentiation strategy matrix based on dominant characteristic groups.

Tabel 8. Differentiated Learning Strategy Matrix Based on Student Profiles

Differentiation Dimension	Audio-Visual Group (70%)	Kinesthetic Group (20%)	Low Academic Group (20%)	High Academic Group (35%)
Content Differentiation	Illustrated modules, infographics, instructional videos	Manipulative materials, activity-based worksheets	Simplified content, intensive scaffolding	Enrichment material, HOTS tasks, supplementary reading
Process Differentiation	Visual discussion, mind mapping, gallery walk	Educational games, simulations, hands-on case studies	Peer tutoring, intensive teacher mentoring	Independent learning, research projects, peer tutoring
Product Differentiation	Posters, videos, concept maps, presentations	Demonstrations, movement reports, physical models	Simple products, drawing portfolios, recordings	Analytical reports, mini scientific papers, presentations
Learning Environment	Wall posters, artwork displays, reading corners	Movement space, activity zones, play corners	Seated near teacher, supportive small groups	Independent challenges, access to additional references

Source: Analysis of student profile documents and classroom observation, Grade III A SDN 3 Ancaran, 2025

The matrix in Table 8 represents the translation of student profile data into an operational and differentiated pedagogical plan. Content differentiation requires that the same material be presented in multiple representations to accommodate diverse learning styles. Sulistyosari et al. (2022) identified that the combination of group discussion, educational games, and peer tutoring constitutes an effective trio of strategies for accommodating diverse learning profiles. Nurhayati et al. (2024) affirmed that successful differentiated learning requires a conducive classroom culture in which diversity is viewed as richness rather than an obstacle.

H. Challenges for Teachers in Heterogeneous Classrooms and Solution Strategies

The heterogeneity of student characteristics confronts teachers with complex and multilayered pedagogical challenges. Concretely, the recommended solution strategies include: (1) Implementation of periodic diagnostic assessments at the start of each learning unit; (2) Development of learning corners with diverse learning resources; (3) Structured peer tutoring that leverages the potential of ZPD; (4) Differentiation of product choices with a varied learning product menu; (5) Parental learning community programs to establish intensive communication; (6) Strength-based affirmative approaches to enhance students' self-efficacy (Coelho et al., 2023).

CONCLUSION

This study successfully mapped the characteristics of Grade III A students at SDN 3 Ancaran comprehensively and integratively across seven interacting dimensions. The main conclusions of this study are as follows: (1) The audio-visual learning style dominates at 70%, requiring that interactive visual media predominate in learning design; (2) Academic ability is distributed across three groups: excellent at 35%, good at 45%, and requiring intensive assistance at 20%; (3) 45% of students exhibit low self-confidence requiring systematic affirmative reinforcement; (4) 25% of students are easily distracted, requiring active and varied learning strategies; (5) Students' interests and talents are spread across six areas that can be optimized for product differentiation; (6) 85% of students receive optimal family support, which positively correlates with learning readiness; (7) Multidimensional heterogeneity yields a differentiated learning strategy blueprint encompassing integrated differentiation of content, process, product, and learning environment.

Systematic and holistic mapping of student characteristics has proven to be a non-negotiable strategic foundation for realizing meaningful, inclusive, and responsive student-centered learning in accordance with the direction of the Merdeka Curriculum.

Recommended future research includes: (1) Development and validation of a standardized student characteristics mapping instrument; (2) Experimental research to examine the effectiveness of differentiated learning design on learning outcomes; (3) Longitudinal research to observe changes in student characteristics throughout the school year; (4) Classroom action studies implementing the recommended solution strategies.

ACKNOWLEDGMENTS

The authors wish to express gratitude to the principal and all members of the SDN 3 Ancaran community, Kuningan Regency, West Java, for granting permission and supporting the conduct of this research. Appreciation is also extended to the Grade III A students and their parents/guardians who participated in this study. This research was conducted independently without financial support from any external institution.

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