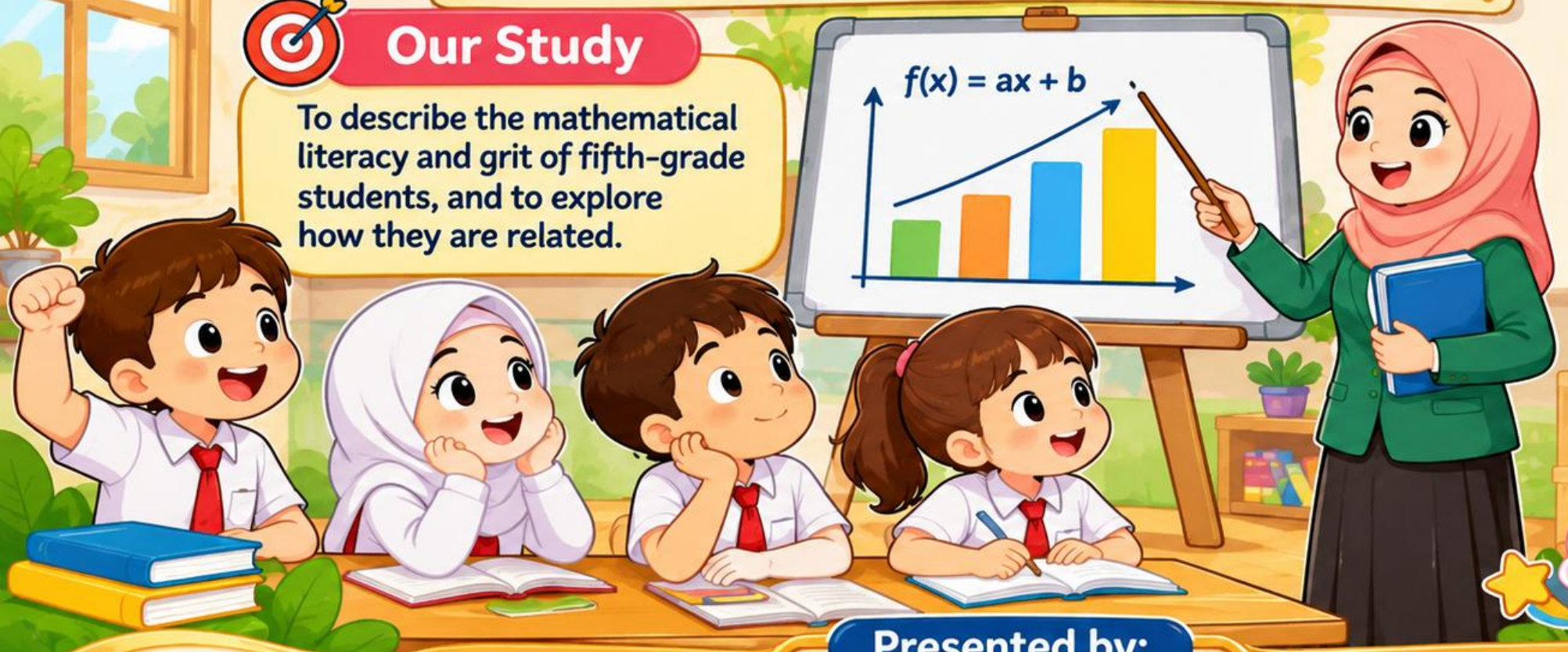
ICEE 2026

Mathematical Literacy and Student Grit

A Case Study of Fifth Grade Elementary School

Our Study

To describe the mathematical literacy and grit of fifth-grade students, and to explore how they are related.



Why It Matters?

- Mathematical literacy is a key 21st-century competence.
- Grit helps students persevere and succeed in learning mathematics.
- Together, they can build stronger problem-solving skills!

Let's support our students to learn, persist, and grow!

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Background



A 21st-Century Competence

Mathematical literacy: reasoning with and using mathematics to solve real-life problems.



Still a Challenge in Indonesia

PISA 2022: **below** the international average and **declining**; students tend to memorise procedures.



Grit Matters in Mathematics

Grit = passion and perseverance for long-term goals (Duckworth et al., 2007).



Research Aims

- Describe the **mathematical literacy** of Grade 5 students
- Describe students' level of **grit**
- Explore how the two are **related**

Why are students motivated, yet struggle to reason?

Method Penelitian

Qualitative Descriptive



Metode kualitatif deskriptif berdasarkan konteks nyata di kelas.

35 Grade-5 Students



Peserta didik kelas V sebanyak 35 siswa.

Public Primary School, 2025/2026



SD Negeri dengan kurikulum Merdeka tahun ajaran 2025/2026.

Purposive Sampling



Pemilihan sampel secara purposif.

Instrumen Penelitian

Literacy Test



Soal kontekstual berdasarkan framework OECD.

Grit Questionnaire



Adaptasi dari Duckworth: consistency & perseverance.

Observation



Partisipasi, keaktifan dan ketekunan di kelas.

Interviews



Wawancara mendalam dengan guru dan siswa terpilih.

Analisis Data (Miles & Huberman)



Triangulasi (sumber & teknik)

Results

Mathematical Literacy Is Still Low

Mastery Rate



Only **2** of **35** students reached the minimum mastery criteria; **94%** did not.

Main Difficulties

- Understanding contextual problems
- Mathematical reasoning
- Non-routine, multi-step problems

Literacy Scores (0–100)



> Students compute **without relating the numbers** to the problem. Classwork is mostly routine and closed-ended, focused on the product rather than the process.

Mathematical literacy at Grade 5 is **still low**, with many students struggling to solve real-life mathematical problems.

Results:
Grit Is Moderate to Good

Consistency of Interest





of students show high, consistent interest and motivation to learn mathematics.

Perseverance of Effort



Still depends on external support; students give up on long, difficult tasks.

Grit Questionnaire



- ☑ Consistency of Interest
- ☑ Perseverance of Effort

Students' grit is in the moderate to good category.

Teacher's View:



Students are motivated but not yet ready to cope with failure. Positive feedback keeps them trying.

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Discussion

Motivated, Yet Not Yet Literate

The Gap

Interest and motivation are **fairly high**, yet reasoning and linking mathematics to real life **remain weak.**

Why it Happens

Abstract, procedural learning; **routine**, closed-ended tasks; **little reflection** on strategies.

What Can Help?

1. **RME**
2. **PBL & PjBL**
3. **Scaffolding & Reflection**

Grit is a strong potential: with contextual, challenging and reflective learning, students learn to see mistakes as **opportunities.**

Conclusion

Mathematical Literacy, Grit, and Learning

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Mathematical Literacy

Grade 5 mathematical literacy is **low**: students struggle to model contextual problems and use algorithms without understanding.



Grit

Grit is fairly good: **consistent**, but perseverance **weakens** when problems become challenging.



Both Can Grow Together

RME, PBL and PjBL, and scaffolding with **reflective practice** can help.



Key Takeaway

Both can grow together through **RME, PBL and PjBL,** scaffolding and reflective practice.



Thank You

Terima kasih

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