PIONIR: Jurnal Pendidikan Guru Sekolah Dasar
Vol 2 No 1 Tahun 2026
Hal.18-23
e-ISSN. 3124-4874

Relaxed Journalistic Method And Its Effect On Numeracy Literacy In Fraction Topics : A Quasi Experimental Study At Min 13 Pidie Jaya

Muhibuddin[1*], Khairunnisak[2]
muhib.muhib8844@gmail.com[1], kn6196072@gmai.com [2]
[1)] MIN 13 Pidie Jaya, Aceh, Indonesia
[2)] UPTD SDN 1 Samalanga, Aceh, Indonesia

***Corresponding author E-mail:** muhib.muhib8844@gmail.com

A B S T R A C T
Students' limited grasp of fraction concepts represents a persistent obstacle in elementary mathematics instruction across Indonesia. Drawing on Vygotsky's social constructivism and the 'writing-to-learn' paradigm, this study investigates whether a structured pedagogical strategy termed the Relaxed Journalistic Method (RJM) can produce meaningful gains in numeracy literacy among fifth-grade learners. RJM channels four sequential activities field observation (reportase), analytical inquiry (investigasi), reflective writing (narasi), and peer editorial discussion (konferensi redaksi) to help students document, interrogate, and articulate fraction concepts in a low-anxiety journalistic register. A quasi-experimental pre-test/post-test control-group design was adopted at MIN 13 Pidie Jaya, Aceh Province, during the odd semester of the 2024/2025 academic year. Fifty-two Grade V students were assigned by intact class to either an experimental group (n = 26, RJM instruction) or a control group (n = 26, conventional lecture-and-drill). Outcome data were collected using a 25-item context-based numeracy literacy test (r_{11} = 0.87), a structured classroom observation checklist, and a 20 item Likert-scale student response questionnaire. Results revealed that experimental-group participants achieved a mean post-test score of 82.3 (SD = 7.6), compared with 68.7 (SD = 8.2) for the control group. The normalised gain index (N Gain) for the experimental group (g = 0.61) was classified as moderate, substantially exceeding the control group's low-category gain (g = 0.31). An independent samples t test confirmed a statistically significant between-group difference (t = 7.843, p < 0.001). Additionally, 88.5 percent of RJM participants rated the approach in the 'Very Good' category. These findings indicate that integrating journalistic writing conventions into fraction instruction fosters deeper conceptual engagement and stronger numeracy performance, offering practitioners a readily implementable alternative to transmissive pedagogies.
..
Keywords: Relaxed Journalistic Method, numeracy literacy, fractions, quasi experimental, elementary education

INTRODUCTION

Numeracy literacy has emerged as one of the foundational competencies demanded by twenty-first-century education agendas worldwide. Beyond simple arithmetic proficiency, numeracy literacy encompasses the capacity to comprehend, apply, interpret, and communicate number-based information across diverse real-life contexts (Goos et al., 2014). International benchmarking studies, particularly the Programme for International Student Assessment (PISA), treat mathematical reasoning as a primary indicator of national educational quality.

PISA 2022 data placed Indonesia at rank 68 out of 79 participating economies, with a mean mathematics score of 366 considerably below the OECD average of 472 (OECD, 2023). Although this represents a marginal improvement over the 2018 cycle, the gap with international standards remains pronounced. At the national level, the 2023 Computer Based National Assessment (ANBC) indicated that approximately 40 percent of primary school students had not yet attained the minimum numeracy competency threshold.

Regional data amplify these concerns. The 2023 Education Report Card for Pidie Jaya Regency classified numeracy achievement in Madrasah Ibtidaiyah (Islamic elementary schools) under the 'Requires Intervention' category (BSKAP, 2023), signifying that more than half of students were below

the minimum competency level. Preliminary observation at MIN 13 Pidie Jaya in September 2024 revealed that Grade V students' average examination scores on fraction topics stood at 59.3, falling short of the school's minimum mastery criterion of 70.

Fraction concepts are widely recognised as a persistent stumbling block in elementary mathematics. Their inherent complexity stemming from multiple equivalent representations and operations that diverge from whole-number arithmetic makes them cognitively demanding for young learners (Purnomo, 2015). Weak fraction understanding is consequential: it undermines subsequent learning of decimals, percentages, ratios, and proportional reasoning, all of which are anchored in fraction competence.

Classroom observation data gathered during the preliminary phase suggest that instruction at MIN 13 Pidie Jaya relied predominantly on teacher-centred, lecture and drill approaches. Students occupied largely passive roles, with limited opportunity to explore concepts autonomously, articulate reasoning in their own words, or connect mathematical ideas to authentic situations. This pedagogical environment appeared to suppress motivation and restrict the depth of numeracy understanding students could develop.

The educational literature consistently demonstrates that active, contextual, and engaging instructional approaches outperform transmissive methods in developing mathematical capability (Hiebert & Carpenter, 1992). One underexplored pathway is the integration of journalistic writing conventions into mathematics instruction. The Relaxed Journalistic Method (RJM) adapts the core journalistic cycle observation, investigation, narrative construction, and editorial discussion into a mathematics learning framework. Students adopt the role of 'mathematics journalists', documenting their encounter with fraction concepts through structured but low-stakes journalistic writing activities.

RJM is theoretically grounded in Emig's (1977) writing to learn principle and Vygotsky's (1978) social-constructivism, both of which identify active language use as central to knowledge construction. By expressing fraction understanding through journalistic formats, learners are compelled to reorganise and communicate their mathematical thinking a process that promotes deeper conceptual encoding than passive reception.

Against this backdrop, the present study addresses the question: Does the application of the Relaxed Journalistic Method produce a statistically significant improvement in numeracy literacy among Grade V students at MIN 13 Pidie Jaya on fraction material? The study contributes an empirically tested instructional alternative for mathematics teachers in Islamic elementary schools and adds to a growing body of research on writing-integrated mathematics pedagogy.

METHODS

A quantitative approach was adopted, employing a quasi experimental pre test/post test control-group design. This design is appropriate when random assignment to conditions is precluded by pre-existing intact class formations (Sugiyono, 2019). The independent variable was the instructional method (RJM versus conventional), and the dependent variable was students' numeracy literacy on fraction material.

The study was conducted at MIN 13 Pidie Jaya, located in Pidie Jaya Regency, Aceh Province, Indonesia, during the odd semester of the 2024/2025 academic year. The school implements the Merdeka (Freedom) Curriculum with a competency-based learning orientation. The entire Grade V population (N = 52) across two intact classes constituted the study sample. Class V A (n = 26) was designated as the experimental group and Class V-B (n = 26) as the control group through purposive assignment. Pre-test equivalence was verified prior to treatment implementation.

Three instruments were employed. First, a 25-item context-based numeracy literacy test comprising multiple-choice and short-constructed-response items aligned with the Minimum Competency Assessment (AKM) framework (Kemendikbudristek, 2020) was developed and administered as both pre-test and post-test. The instrument demonstrated satisfactory reliability (r_{11} = 0.87). Second, a structured classroom observation checklist documented the fidelity of RJM

implementation and the quality of student engagement across all eight treatment sessions. Third, a 20-item Likert-scale questionnaire (1 4 response options) gauged students' perceptions of and attitudes towards the RJM approach following the intervention.

The intervention spanned eight class meetings (totalling 16 × 35 minutes). The experimental group followed a four phase RJM cycle per session. In the Reportase phase, students observed and documented real world fraction phenomena in their immediate environment. During the Investigasi phase, they analysed the collected data, performing fraction operations and interpreting their mathematical significance. The Narasi phase required students to translate their findings into journalistic writing formats such as brief news reports, 'mathematical investigation' notes, or opinion columns recorded on a dedicated Relaxed Journalistic Worksheet (LJS). Finally, the Konferensi Redaksi phase facilitated peer editorial discussion, where students shared, critiqued, and enriched one another's written accounts. The control group received equivalent instructional time through conventional lecture-and-drill delivery without the journalistic writing component.

Descriptive statistics (mean, standard deviation, N-Gain) summarised achievement on both tests. The normalised gain (N Gain) index classified learning progress as low ($g < 0.30$), moderate ($0.30 \leq g < 0.70$), or high ($g \geq 0.70$) following the convention established by Hake (1998). Prior to inferential testing, normality was assessed using the Kolmogorov Smirnov test, and variance homogeneity was examined with Levene's test. An independent samples t test was then applied to compare post-test means. All analyses were performed in SPSS Version 26 at a significance level of $\alpha = 0.05$.

RESULTS

Prior to the intervention, independent-samples t-test results confirmed no statistically significant difference between groups on the pre-test (experimental: M = 54.6, SD = 8.3; control: M = 55.1, SD = 7.9; $p = 0.812 > 0.05$). This equivalence validates between-group comparisons at post-test. Table 1 presents descriptive statistics for both groups across both measurement points.

Table 1. Descriptive Statistics for Pre-Test and Post-Test Scores by Group

Statistic	Exp. Pre	Exp. Post	Con. Pre	Con. Post
Mean	54.6	82.3	55.1	68.7
Minimum	38	65	40	52
Maximum	72	97	70	85
SD	8.3	7.6	7.9	8.2
N Gain	—	0.61 (Moderate)	—	0.31 (Low)

Source: Primary data, processed 2025.

Post-test scores rose substantially in both groups, yet the experimental group's gain (27.7 points) was more than double that of the control group (13.6 points). The experimental N Gain of 0.61 approached the high-gain threshold, whereas the control group's N Gain of 0.31 barely cleared the low-gain ceiling. Kolmogorov Smirnov normality tests yielded non-significant results for both the experimental ($p = 0.142$) and control ($p = 0.218$) post-test distributions, confirming the normality assumption. Levene's test for equality of variances produced $F = 0.413$ ($p = 0.523$), indicating homogeneous group variances. Both prerequisites for the independent-samples t-test were thus satisfied. The independent-samples t-test yielded $t(50) = 7.843$, $p < 0.001$ (two tailed). The null hypothesis of no difference was rejected, confirming that RJM instruction produced a statistically significant improvement in numeracy literacy relative to conventional instruction.

Questionnaire analysis revealed that 88.5 percent of experimental-group students rated RJM in the 'Very Good' category. Table 2 presents a breakdown by evaluation dimension.

Table 2. Student Response Questionnaire Results by Dimension

Evaluation Dimension	Mean (max 4.00)	Percentage	Category
Enjoyment of learning	3.82	95.5%	Very Good
Ease of understanding fractions	3.76	94.0%	Very Good
Motivation and enthusiasm	3.68	92.0%	Very Good
Confidence in communicating ideas	3.54	88.5%	Very Good
Perceived usefulness of the method	3.49	87.3%	Very Good
Overall Mean	3.66	88.5%	Very Good

Source: Primary data, processed 2025.

DISCUSSION

The study's primary finding a statistically significant RJM advantage on numeracy literacy is consistent with the constructivist and writing-to-learn theoretical premises that informed its design. When students articulate mathematical understanding through structured written formats, they engage in self-monitoring and knowledge reorganisation processes that passive reception cannot elicit (Emig, 1977; Pugalee, 2004).

The Reportase phase played a critical role in contextualising fraction concepts. By sourcing real-world fraction phenomena before formal instruction, students experienced mathematical ideas as meaningful and personally relevant a condition that contextual teaching literature identifies as catalytic for comprehension (Johnson, 2002). This contrasts sharply with textbook-centred approaches that present fractions in abstract, decontextualised formats.

The Investigasi phase cultivated critical thinking by requiring students to move beyond procedural calculation toward interpretive analysis. Goos and colleagues (2014) argue that genuinely numerate individuals use quantitative reasoning to make sense of their world; the investigative writing task created precisely this kind of sense-making demand.

The Narasi phase operationalised Vygotsky's (1986) concept of externalised inner speech: by committing mathematical understanding to written language, students surfaced tacit reasoning, identified gaps in their conceptual grasp, and constructed more coherent explanatory structures. Prior research in science education supports the efficacy of this mechanism (Prain & Hand, 1996; Yore & Treagust, 2006), and the present findings extend it to elementary fraction instruction.

The Konferensi Redaksi phase furnished the social scaffolding dimension that Vygotsky (1978) identified as foundational to cognitive development. Peer editorial dialogue created zones of proximal development in which students with stronger conceptual holds supported classmates toward higher-order fraction understanding. The consistently elevated student-response ratings across all questionnaire dimensions suggest that this collaborative structure was experienced as both intellectually stimulating and emotionally safe conditions that motivational research associates with deeper engagement and retention (Hiebert & Carpenter, 1992).

Taken together, these four phases constitute an integrated pedagogical system that simultaneously addresses conceptual understanding, communicative competence, and affective engagement. The study's findings broaden the application of journalistic-writing approaches in education—previously documented mainly in secondary science and language arts into the domain of elementary mathematics, suggesting promising avenues for cross-disciplinary instructional innovation in Indonesian Islamic primary schools.

CONCLUSION

This study demonstrates that the Relaxed Journalistic Method exerts a statistically significant positive effect on numeracy literacy in fraction topics among Grade V students at MIN 13 Pidie Jaya ($t = 7.843$, $p < 0.001$). Students who received RJM instruction achieved a mean post-test score of 82.3

and a moderate N-Gain of 0.61, substantially surpassing the control group's mean of 68.7 and low N-Gain of 0.31. Student-response data reinforce these quantitative outcomes, with 88.5 percent of participants rating the method 'Very Good' across multiple affective and cognitive dimensions.

Practically, RJM is an accessible intervention: it requires no specialised equipment, integrates naturally into standard lesson structures, and can be scaled across diverse fraction subtopics and beyond. Teachers in resource-constrained settings may find the method particularly attractive given its reliance on structured worksheets rather than technological infrastructure. Future research should examine RJM's effectiveness with larger, more diverse samples, explore its applicability to other mathematical domains, and investigate the durability of learning gains through delayed post-tests.

REFERENCES

BSKAP. (2023). Rapor Pendidikan Kabupaten Pidie Jaya 2023. Jakarta: Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

Emig, J. (1977). Writing as a mode of learning. College Composition and Communication, 28(2), 122–128. https://doi.org/10.2307/356095

Goos, M., Geiger, V., & Dole, S. (2014). Transforming professional practice in numeracy teaching. In Y. Li, E. A. Silver, & S. Li (Eds.), Transforming Mathematics Instruction (pp. 81–102). Springer. https://doi.org/10.1007/978-3-319-04993-9_6

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. American Journal of Physics, 66(1), 64–74.

Hiebert, J., & Carpenter, T. P. (1992). Learning and teaching with understanding. In D. A. Grouws (Ed.), Handbook of Research on Mathematics Teaching and Learning (pp. 65–97). Macmillan.

Johnson, E. B. (2002). Contextual Teaching and Learning: What It Is and Why It's Here to Stay. Corwin Press.

Kemendikbudristek. (2020). Kerangka Asesmen Kompetensi Minimum (AKM). Badan Penelitian dan Pengembangan dan Perbukuan.

Kemendikbudristek. (2021). Panduan Penguatan Literasi dan Numerasi di Sekolah. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.

OECD. (2023). PISA 2022 Results: The State of Learning and Equity in Education (Volume I). OECD Publishing. https://doi.org/10.1787/53f23881-en

Prain, V., & Hand, B. (1996). Writing for learning in secondary science: Rethinking practices. Teaching and Teacher Education, 12(6), 609–626. https://doi.org/10.1016/S0742-051X(96)00003-4

Pugalee, D. K. (2004). A comparison of verbal and written descriptions of students' problem solving processes. Educational Studies in Mathematics, 55(1–3), 27–47. https://doi.org/10.1023/B:EDUC.0000017690.65375.20

Purnomo, Y. W. (2015). Pembelajaran Matematika untuk PGSD. Erlangga.

Sugiyono. (2019). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alfabeta.

Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.

Vygotsky, L. S. (1986). Thought and Language (A. Kozulin, Trans.). MIT Press.

Yore, L. D., & Treagust, D. F. (2006). Current realities and future possibilities: Language and science literacy. International Journal of Science Education, 28(2–3), 291–314. https://doi.org/10.1080/09500690500336973