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# THE GASING METHOD HAS SUCCESSFULLY IMPROVED NUMERATION RATIO IN VARIOUS REGIONS OF INDONESIA

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**Abstract**

Numeracy skills have become a highly crucial foundational competence in responding to the demands of the 21st century, particularly in the development of mathematical literacy and problem-solving abilities. However, the numeracy achievement of students in Indonesia remains relatively low, as indicated by reports from PISA and the National Assessment. This study aims to analyze the effectiveness of the Gasing Method (Gampang, Asyik, dan Menyenangkan / Easy, Fun, and Enjoyable) in improving students' numeracy skills across various regions in Indonesia. The research employed a quantitative approach using a pre-experimental one-group pretest–posttest design. The sample consisted of 203 participants from four regions: Mesuji Regency, Karanganyar Regency, Bojonegoro Regency, and Bandar Lampung City. Data were collected through numeracy test instruments (pretest and posttest) and analyzed using descriptive statistics and a Two-Way ANOVA test with SPSS. The results indicate a significant improvement in numeracy skills across all regions, where the average pretest scores were in the low to moderate categories and subsequently increased sharply to nearly the maximum scores in the posttest. The Two-Way ANOVA analysis confirms that the implementation of the Gasing Method has a significant effect on improving numeracy skills (Sig. < 0.001), with an $R^2$ value of 0.688, indicating a strong contribution of the model to the increase in scores. These findings provide empirical evidence that the Gasing Method is effective, adaptable across diverse regional contexts, and relevant as a learning strategy to strengthen numeracy skills in Indonesia.

***Keywords: Gasing Method, Numeracy, Mathematics, Learning***

## INTRODUCTION

Numeracy skills constitute one of the fundamental competencies in 21st-century learning, as they form the basis for the development of mathematical literacy, problem solving, and decision making in everyday life. In Indonesia, the results of various national assessments indicate that students' numeracy skills remain relatively low, as evidenced by Indonesia's performance in the Programme for International Student Assessment (PISA), which is below the OECD average in the mathematics domain (Putrawangsa & Hasanah, 2022). This condition highlights the urgency of innovating instructional methods to improve numeracy starting from the basic education level. One approach that has recently gained widespread attention is the Gasing Method (Gampang, Asyik, dan Menyenangkan / Easy, Fun, and Enjoyable), developed by Prof. Yohanes Surya. This method emphasizes a gradual, concrete, and enjoyable learning process, enabling students to understand mathematical concepts deeply without pressure (Msiren et al., 2025). In contrast to conventional approaches that predominantly focus on memorization, the Gasing Method provides interactive learning experiences through visualization, number games, and step-by-step exercises that enhance conceptual understanding (Astuti & Wiyanti, 2024). The effectiveness of the Gasing Method has been reflected in its implementation across various regions in Indonesia. The program "Pandai Berhitung dengan Metode Gasing" has been implemented in Mesuji Regency, Karanganyar Regency, and Bojonegoro Regency, focusing on foundational skills such as pre-division concepts, addition, multiplication, subtraction, and division. This program is designed to accelerate students' basic arithmetic abilities through a concrete symbolic approach that gradually leads to mathematical abstraction. The success of this program is evident in the improvement of students' independent calculation skills and self-confidence (Mesuji Regency Education Office, 2023; Karanganyar Regency Government, 2024).

In addition, numeracy training using the Gasing Method has also been conducted in Bandar Lampung City under the program "Nalom Ngitung Makai Metode Gasing", which covers materials on number confidence (Bilang PeDe), integers, fractions, and decimals. The implementation of this training demonstrates that the Gasing Method is not only effective for basic operations but also for more complex mathematical concepts such as fractions and decimals through the principle of "understanding the concept first, then calculating quickly" (Bandar Lampung Education and Culture Office, 2024). This finding reinforces the view that systematic, enjoyable, and constructive approaches can improve students' numeracy achievement more effectively than conventional methods (Koskinen & Pitkäniemi, 2022).

The successful implementation of these programs across different regions illustrates that the Gasing Method is not merely a model for rapid arithmetic calculation, but a comprehensive strategy for strengthening numeracy. These programs demonstrate significant improvements in students' calculation skills, learning enthusiasm, and self-confidence, as well as strong support from local governments and educational policymakers (Setiawati, 2025). The consistency of successful Gasing Method implementation underscores the need for more systematic research to examine its effectiveness scientifically and to compare outcomes across regions. Based on this background, the purpose of this study is to analyze the effectiveness of the Gasing Method in improving students' numeracy skills in various regions of Indonesia.

## LITERATURE REVIEW

### Gasing Method

The Gasing Method (Gampang, Asyik, dan Menyenangkan / Easy, Fun, and Enjoyable) is a mathematics learning approach developed by Yohanes Surya, with the main principle of facilitating students' understanding of mathematical concepts in a gradual and enjoyable manner (Kurniawan & Latifatunnisa, 2024). The core focus of this method lies in delivering learning materials progressively from concrete to abstract representations, ensuring that students truly comprehend the meaning of numbers and mathematical operations before emphasizing computational speed (Indriani et al., 2025). In practice, the Gasing Method emphasizes the use of manipulatives, game-based activities, and systematic repetitive exercises, thereby creating a positive and engaging learning environment for students (Sariningsih et al., 2025). This approach aligns with constructivist perspectives, which argue that mathematics learning should be grounded in concrete experiences before abstract understanding is developed.

Several studies have demonstrated that the Gasing Method is effective in improving mathematics learning outcomes, particularly basic arithmetic skills. According to Kurniawan and Latifatunnisa (2024), the use of the Gasing Method significantly enhances students' speed and accuracy in addition, subtraction, multiplication, and division compared to traditional instructional methods. One of the strengths of this method lies in its step-by-step understanding strategy, which facilitates comprehensive mastery of the material through structured teacher-led instruction and systematic practice designed to build organized mathematical thinking patterns (Nubatonic et al., 2023). This approach is highly relevant to national numeracy learning objectives that prioritize conceptual understanding and logical reasoning skills.

Furthermore, the Gasing Method demonstrates flexibility across educational levels, from early childhood education to junior secondary school, and is applicable not only to basic arithmetic skills but also to more advanced concepts such as integers, fractions, and decimals. This is evident in the "Nalom Ngitung Makai Metode Gasing" training program in Bandar Lampung, which targets competencies in number confidence (Bilang PeDe), integers, fractions, and decimals (Bandar Lampung Education and Culture Office, 2024). Its alignment with the Merdeka Curriculum, which emphasizes differentiated and experience-based learning, positions the Gasing Method as an effective alternative within national numeracy improvement programs (Kemendikbudristek, 2023). With these advantages, the Gasing Method is considered a promising solution to address numeracy gaps among students in Indonesia.

### Computational Skills

Computational skills constitute an essential component of numeracy competence in basic education, as they form the foundation for the development of mathematical thinking, logic, and problem-solving abilities (Pratiwi et al., 2024). Computational ability extends beyond mere calculation skills to include an understanding of number concepts, mathematical operations, patterns, and the application of these concepts in real-life situations (Rakhmawati & Mustadi, 2022). According to Imroah and Riganti (2024), computational skills should be cultivated through a conceptual approach so that students not only memorize procedures but are also able to apply computational concepts in everyday contexts, including measurement, comparison, and estimation. Within the context of Indonesia's

Merdeka Curriculum, numeracy literacy is defined as the ability to understand, use, and communicate mathematics across diverse situations (Kemendikbudristek, 2022). The limitations of Indonesian students' computational skills are reflected in both national and international assessment results. Indonesia's PISA reports indicate that the majority of students remain at a basic level of mathematical proficiency and experience difficulties in applying computational concepts to solve everyday problems (OECD, 2019). One contributing factor to this low performance is mathematics instruction that tends to be outcome-oriented and focused on formula memorization rather than conceptual understanding (Hussein & Csíkos, 2023). This condition underscores the need for innovative instructional methods that are more interactive, enjoyable, and concept-focused, such as the Gasing Method.

## METHOD

This study employed a quantitative approach with a pre-experimental one-group pretest–posttest design to analyze the effectiveness of the Gasing Method in improving students' numeracy skills across various regions in Indonesia. This approach was selected to directly measure changes in numeracy ability before and after the training intervention, thereby illustrating the impact of the Gasing Method on students' performance improvement. The research sample consisted of 203 participants who took part in the Pandai Berhitung Gasing Method Program in four regions: Mesuji Regency, Karanganyar Regency, Bojonegoro Regency, and Bandar Lampung City. A purposive sampling technique was applied, with the inclusion criteria being elementary to lower secondary school students who fully participated in the program. The primary research instrument was a numeracy test (pretest and posttest) covering aspects of addition, subtraction, multiplication, division, integers, fractions, and decimals, aligned with the Gasing training modules implemented in each region.

The research data were analyzed using both descriptive and inferential statistics. Descriptive statistics were employed to describe the mean scores, standard deviations, minimum values, and maximum values before and after the intervention. Meanwhile, a Two-Way ANOVA was used to examine the effects of the learning program and the testing stages (pretest–posttest), as well as the interaction between the two, on students' numeracy scores. The use of Two-Way ANOVA aimed to ensure that improvements in numeracy did not occur by chance, but rather resulted significantly from the implementation of the Gasing Method. All data processing was conducted using SPSS software, ensuring that the analytical results are measurable, reliable, and scientifically accountable.

## RESULTS AND DISCUSSION

The results of this study present a quantitative data analysis on the effectiveness of the Gasing Method in improving participants' numeracy skills across four program implementation regions. All data were analyzed to examine differences before and after the training (pretest–posttest), as well as to identify variations in effectiveness across program types and regions. The data presented include participant distribution, Two-Way ANOVA results, and a summary of the mean score statistics for each region. The following interpretation explains how the Gasing Method contributes to numeracy improvement and addresses the research objectives. Before examining the numeracy score outcomes, it is important to review the distribution of program participants to ensure adequate sample representation from each implementation region. The data below show the number of participants who took part in the Gasing Method training in Mesuji Regency, Karanganyar Regency, Bojonegoro Regency, and Bandar Lampung City. This distribution provides an overview of respondent representation and serves as the basis for interpreting the numeracy improvement results in each respective region. The frequency distribution of participants is presented in the table below.

**Table 1.** Participant Frequency Data by Region

| Regional Name | Frequency | Percentage |
|---|---|---|
| Mesuji Regency | 63 | 31.03% |
| Karanganyar Regency | 64 | 31.53% |
| Bojonegoro Regency | 32 | 15.76% |
| Bandar Lampung City | 44 | 21.67% |
| **Total** | **203** | **100%** |

Table 1 shows that Karanganyar Regency has the largest number of participants (31.53%), followed by Mesuji Regency (31.03%), Bandar Lampung City (21.67%), and Bojonegoro Regency (15.76%). This proportion indicates that the majority of respondents came from regions where numeracy training programs were implemented more intensively and targeted broader participant groups. The relatively balanced distribution between Mesuji and Karanganyar suggests comparable program implementation in terms of participant involvement. Meanwhile,

Bojonegoro had a smaller number of participants, which should be taken into consideration when interpreting score variations and data variance. To statistically examine the effectiveness of the program, a Two-Way ANOVA test was conducted. This analysis aimed to assess the effects of program type and the pretest–posttest implementation on numeracy scores, including the interaction between the two factors. The test was employed to ensure that improvements in numeracy did not occur by chance but were significantly influenced by the Gasing Method training. A summary of the ANOVA test results is presented in the table below.

**Table 2.** Two-Way Anova Output

**Tests of Between-Subjects Effects**

Dependent Variable: Skor

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 1667520.647[a] | 9 | 185280.072 | 488.784 | .000 |
| Intercept | 8809798.176 | 1 | 8809798.176 | 23240.991 | .000 |
| Program_Type | 151288.422 | 4 | 37822.106 | 99.778 | .000 |
| Test | 1445902.504 | 1 | 1445902.504 | 3814.413 | .000 |
| Program_Type * Test | 95080.760 | 4 | 23770.190 | 62.708 | .000 |
| Error | 756230.557 | 1995 | 379.063 | | |
| Total | 11385913.000 | 2005 | | | |
| Corrected Total | 2423751.204 | 2004 | | | |

a. R Squared = .688 (Adjusted R Squared = .687)

The ANOVA results indicate that the model is significant overall (F = 488.784; Sig. = .000), demonstrating that score variation is influenced by the variables examined in the study. The variables “Program Type” (F = 99.778; Sig. = .000) and “Test” (pretest–posttest) (F = 3814.413; Sig. = .000) are both significant, indicating that the Gasing Method has a significant effect on improving numeracy and that its impact varies across different program types. The interaction effect “Program Type × Test” is also significant (F = 62.708; Sig. = .000), suggesting that changes in scores before and after the training differ depending on the type of instructional material provided.

The R-squared value of .688 indicates that the model has strong explanatory power, meaning that 68.8% of the variance in numeracy scores is accounted for by the factors included in the model—providing strong evidence of the effectiveness of the Gasing Method across different regions. Subsequently, the analysis focuses on participants’ score gains from Mesuji Regency. These data describe chanes in numeracy scores across various program types, such as pre-division concepts (Bakal Kubagi), addition, multiplication, subtraction, and division. This information is essential for examining improvements in competency within each foundational mathematics topic. A summary of the numeracy achievement results for Mesuji Regency is presented in the table below.

**Table 3.** Average Score of Mesuji Regency Participants Using the Gasing Method

| Program Type | Test | Mean | N | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| I Will Share | Pretest | 23.7302 | 63 | 17.48198 | 0 | 60 |
| | Postest | 85.873 | 63 | 8.54493 | 70 | 100 |
| | Total | 54.8016 | 126 | 34.07287 | 0 | 100 |
| Addition | Pretest | 54.6032 | 63 | 25.38894 | 0 | 100 |
| | Postest | 90.1587 | 63 | 10.23783 | 70 | 100 |
| | Total | 72.381 | 126 | 26.27329 | 0 | 100 |
| Multiplication | Pretest | 11.4444 | 63 | 19.1419 | 0 | 83 |
| | Postest | 94.3333 | 63 | 8.07825 | 83 | 100 |
| | Total | 52.8889 | 126 | 44.10773 | 0 | 100 |
| Subtraction | Pretest | 31.5873 | 63 | 23.70561 | 0 | 100 |
| | Postest | 93.6508 | 63 | 9.38454 | 80 | 100 |
| | Total | 62.619 | 126 | 35.9595 | 0 | 100 |
| Distribution | Pretest | 10.7937 | 63 | 17.16162 | 0 | 60 |
| | Postest | 86.0317 | 63 | 9.92548 | 60 | 100 |
| | Total | 48.4127 | 126 | 40.26736 | 0 | 100 |
| Total | Pretest | 26.4317 | 315 | 26.2535 | 0 | 100 |
| | Postest | 90.0095 | 315 | 9.89257 | 60 | 100 |
| | Total | 58.2206 | 630 | 37.48425 | 0 | 100 |

Table 3 shows a significant improvement from the pretest to the posttest across all program types. The overall mean pretest score of participants from Mesuji Regency was 26.43, while the mean posttest score increased sharply to 90.00. The most pronounced improvements were observed in the multiplication component (from 11.44 to 94.33) and the division component (from 10.79 to 86.03), indicating that the Gasing Method is highly effective in addressing difficulties in more complex arithmetic operations. The lower standard deviations in the posttest scores indicate more consistent outcomes among participants after the training. While the minimum pretest score reached as low as 0, the minimum score after the intervention increased substantially, illustrating the inclusiveness of the method in accommodating participants with diverse initial ability levels.

**Table 4.** Average Score of Participants in Karanganyar Regency using the Gasing Method

| Program Type | Tes | Mean | N | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| I Will Share | Pretest | 20.5556 | 63 | 12.51164 | 0 | 50 |
| | Postest | 91.3281 | 64 | 10.55004 | 40 | 100 |
| | Total | 56.2205 | 127 | 37.34607 | 0 | 100 |
| Addition | Pretest | 56.4063 | 64 | 19.22029 | 0 | 100 |
| | Postest | 96.7188 | 64 | 6.91322 | 70 | 100 |
| | Total | 76.5625 | 128 | 24.82815 | 0 | 100 |
| Multiplication | Pretest | 19.6875 | 64 | 17.17961 | 0 | 90 |
| | Postest | 91.4063 | 64 | 9.4057 | 80 | 100 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | 55.5469 | 128 | 38.55273 | 0 | 100 |
| Subtraction | Pretest | 40 | 64 | 18.17027 | 0 | 70 |
| | Postest | 93.4375 | 64 | 11.57704 | 40 | 100 |
| | Total | 66.7188 | 128 | 30.81848 | 0 | 100 |
| Distribution | Pretest | 13.4375 | 64 | 10.72288 | 0 | 40 |
| | Postest | 89.6875 | 64 | 13.56568 | 40 | 100 |
| | Total | 51.5625 | 128 | 40.16575 | 0 | 100 |
| Total | Pretest | 30.047 | 319 | 22.4746 | 0 | 100 |
| | Postest | 92.5156 | 320 | 10.84226 | 40 | 100 |
| | Total | 61.3302 | 639 | 35.88381 | 0 | 100 |

The mean pretest score in Karanganyar Regency was 30.05 and increased to 92.52 in the posttest. All types of learning materials demonstrated strong improvements, particularly in addition (from 56.40 to 96.71) and subtraction (from 40.00 to 93.43). The stability of the posttest scores is reflected in the low standard deviations, indicating a more even distribution of participant achievement. Maximum scores of 100 in most subject areas further reinforce the evidence that the Gasing Method is not only effective but also capable of elevating students' achievement to an optimal level. This trend is consistent with the results from Mesuji Regency, strengthening the conclusion that the effectiveness of this method is replicable across different regions.

**Table 5.** Average Score of Participants in Bojonegoro Regency using the Gasing Method

| Program Type | Test | Mean | N | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Confident Number | Pretest | 67.1875 | 32 | 18.18088 | 15 | 95 |
| | Postest | 97.5 | 32 | 7.51343 | 60 | 100 |
| | Total | 82.3437 | 64 | 20.58603 | 15 | 100 |
| Integers | Pretest | 81.5625 | 32 | 22.87545 | 20 | 100 |
| | Postest | 99.375 | 32 | 3.53553 | 80 | 100 |
| | Total | 90.4688 | 64 | 18.5532 | 20 | 100 |
| Fractions | Pretest | 56.875 | 32 | 19.58233 | 10 | 100 |
| | Postest | 98.75 | 32 | 4.21212 | 80 | 100 |
| | Total | 77.8125 | 64 | 25.35267 | 10 | 100 |
| Decimal | Pretest | 68.4375 | 32 | 20.17814 | 20 | 100 |
| | Postest | 99.375 | 32 | 3.53553 | 80 | 100 |
| | Total | 83.9062 | 64 | 21.20326 | 20 | 100 |
| Total | Pretest | 68.5156 | 128 | 21.88336 | 10 | 100 |
| | Postest | 98.75 | 128 | 4.98028 | 60 | 100 |
| | Total | 83.6328 | 256 | 21.9153 | 10 | 100 |

Bojonegoro Regency exhibited a relatively high mean pretest score (68.51) compared to the other regions, indicating a stronger initial level of numeracy competence. Nevertheless, the improvement remained substantial, with the mean posttest score reaching 98.75. All types of learning materials showed sharp increases, particularly in fractions (from 56.87 to 98.75) and decimals (from 68.43 to 99.37). The combination of high initial scores and substantial gains suggests that the Gasing Method is not only effective for participants with lower initial abilities but also capable of fostering improvement among high-achieving participants, reflecting an accelerated learning effect. The s tability of posttest scores further indicates consistent mastery of the material following the intervention.

**Table 6.** Average Score of Participants in Bandar Lampung City using the Gasing Method

| Program Type | Tes | Mean | N | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|---|
| I Will Share | Pretest | 44.7917 | 48 | 21.08641 | 0 | 80 |
| | Postest | 97.5 | 48 | 4.25266 | 80 | 100 |
| | Total | 71.1458 | 96 | 30.50866 | 0 | 100 |
| Addition | Pretest | 75 | 48 | 30.4575 | 0 | 100 |
| | Postest | 97.5 | 48 | 6.68437 | 70 | 100 |
| | Total | 86.25 | 96 | 24.67686 | 0 | 100 |
| Multiplication | Pretest | 60.2083 | 48 | 27.01375 | 0 | 100 |
| | Postest | 95 | 48 | 9.22531 | 70 | 100 |
| | Total | 77.6042 | 96 | 26.62586 | 0 | 100 |
| Subtraction | Pretest | 71.0417 | 48 | 24.25394 | 0 | 100 |
| | Postest | 97.9167 | 48 | 5.81939 | 70 | 100 |
| | Total | 84.4792 | 96 | 22.14164 | 0 | 100 |
| Distribution | Pretest | 32.7083 | 48 | 17.71399 | 0 | 70 |
| | Postest | 94.375 | 48 | 15.56131 | 0 | 100 |
| | Total | 63.5417 | 96 | 35.15317 | 0 | 100 |
| Total | Pretest | 56.75 | 240 | 29.08399 | 0 | 100 |
| | Postest | 96.4583 | 240 | 9.24777 | 0 | 100 |
| | Total | 76.6042 | 480 | 29.3213 | 0 | 100 |

The mean pretest score in Bandar Lampung City was 56.75 and increased significantly to 96.46 in the posttest. Improvements were consistently observed across all program components, particularly in multiplication (from 60.20 to 95.00) and division (from 32.70 to 94.37). The small variation in posttest scores indicates that the method was effective in equalizing achievement among participants with diverse initial ability levels. The fact that participants achieved scores close to the maximum across all categories further strengthens the evidence that the Gasing Method is capable of improving numeracy rapidly, effectively, and equitably across different educational levels and student backgrounds.

**Discussion**

The results of this study provide strong evidence that the Gasing Method is effective in improving students' numeracy skills across various regions in Indonesia. Findings from all program locations Mesuji Regency, Karanganyar Regency, Bojonegoro Regency, and Bandar Lampung City demonstrate significant improvements between pretest and posttest scores, with average numeracy gains exceeding 200% for most types of arithmetic operations. This consistent pattern of improvement aligns with the study by Manurung et al. (2025), which emphasizes that the step-by-step learning process embedded in the Gasing Method is able to build a solid cognitive foundation before students progress toward abstract understanding. Moreover, the more homogeneous distribution of posttest scores compared to pretest scores indicates that the method not only enhances individual abilities but also equalizes numeracy competence among participants despite differences in initial skill levels—supporting the principle of equity in national education quality (Parwati et al., 2024). The Two-Way ANOVA analysis further demonstrates that the Gasing Method intervention has a statistically significant effect on numeracy improvement, both directly and through the interaction between program type and testing stage. The high F values and significance levels below 0.001 confirm that the observed gains in numeracy did not occur by chance but were the result of the instructional treatment. These findings are consistent with the research of Irshid et al. (2023), which highlights that conceptual and gradual learning approaches have a significant impact on improving basic mathematical cognition.

Furthermore, the high $R^2$ value (0.688) indicates that a substantial proportion of the variance in numeracy scores is explained by the implementation of the method, reinforcing the conclusions of Khan and Khan (2021) regarding the strength of concrete visual learning models in enhancing early arithmetic skills. Variations in achievement across regions indicate that the Gasing Method is adaptive and effective both in areas with low initial scores, such as Mesuji and Karanganyar, and in areas with higher initial scores, such as Bojonegoro. The significant progress observed in regions with lower baseline abilities provides evidence that computational skills can be developed through appropriate instructional stimuli, supporting Vygotsky's theory of the zone of proximal development through intensive scaffolding (Yousif, 2025). At the same time, continued improvement among participants with relatively high initial abilities suggests that the method is scalable and effective as an accelerated learning strategy (Azmi, 2024). This phenomenon challenges the assumption that mathematical ability is a fixed trait and demonstrates that appropriate pedagogical interventions can significantly enhance numeracy achievement.

The consistency of improvement across all mathematical subtopics such as addition, subtraction, multiplication, division, integers, fractions, and decimals indicates that the method not only enhances computational speed but also strengthens comprehensive conceptual understanding of mathematics. According to Peters (2020), numeracy competence extends beyond arithmetic operations to include understanding numerical relationships, making estimations, and solving problems in real-world contexts. In this study, participants' success in more complex topics such as fractions and decimals supports this assumption, confirming that the Gasing Method facilitates a transition from procedural to conceptual understanding, a transition that often becomes a major barrier in traditional mathematics instruction (Devi, 2024). Overall, the findings of this study reinforce the argument that the Gasing Method represents an effective, inclusive, and adaptive pedagogical approach to improving numeracy across diverse regional contexts in Indonesia. The success of the program in four different regions, each with distinct participant profiles and learning contexts, demonstrates that this method can be replicated as a national model for numeracy enhancement in line with the Merdeka Belajar policy direction (Devi, 2024). Integrating the Gasing Method into national numeracy literacy programs may serve as a key strategy to strengthen students' foundational mathematics skills, accelerate progress toward international assessment standards, and prepare a generation capable of logical, systematic thinking and ready to face the challenges of the digital era.

## CONCLUSION

The results of this study indicate that the Gasing Method significantly improves participants' numeracy skills across the four research regions. The mean posttest scores in all regions increased sharply compared to the pretest scores, both in basic arithmetic skills (addition, subtraction, multiplication, and division) and in more complex numeracy concepts such as fractions and decimals. The Two-Way ANOVA statistical analysis reinforces these findings, demonstrating a significant effect of the instructional method and the testing stages on students' achievement, with significance values below 0.001 and a model contribution of 68.8%. Overall, the Gasing Method has been proven to be effective and inclusive for participants with diverse initial ability levels. These findings have important implications for improving the quality of numeracy instruction in Indonesia. The effectiveness of the Gasing Method demonstrates that a gradual, concrete, and enjoyable learning approach can address common barriers found in traditional mathematics instruction, which tends to emphasize rote memorization. Furthermore, the successful implementation across different regions indicates that this method is relevant for large-scale application as a national strategy to support the Merdeka Belajar program and to enhance students' numeracy assessment outcomes. Thus, the Gasing Method may serve as an innovation-based instructional model that promotes optimal learning outcomes and equitable development of mathematical competence. Based on the research results, it is recommended that schools and local governments integrate the Gasing Method more broadly into numeracy strengthening programs. Teacher training and technical assistance to ensure instructional competence in applying this method are urgent needs. In addition, future studies may adopt more rigorous experimental designs, expand regional coverage, and incorporate long-term measurements to assess the consistency of outcomes and the transfer of learning to other academic contexts. Collaboration with educational institutions and learning communities is also essential to broaden the program's impact and to enhance the overall quality of numeracy instruction at the national level.

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