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The Role of Professional Teachers in Enhancing Students' Learning Outcomes through the Gasing Kabataku Strategy

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ABSTRACT

Purpose – This study aimed to explore the implementation of the GASING KABATAKU (Gampang, Asyik, Menyenangkan) method as an innovative approach to improve students' arithmetic skills and motivation in mathematics at MTs Negeri 14 East Jakarta. The study addresses the persistent issues of low numeracy and math anxiety among junior high school students in Indonesia.

Methodology – An action research design was employed, involving 17 sessions split into two stages: teacher training and student implementation. Participants included mathematics and general subject teachers, along with seventh-grade students. The GASING KABATAKU intervention involved kinesthetic and visual learning activities, such as movement, songs, and manipulatives. Data were collected through pre- and post-tests, classroom observations, and teacher reflections. Quantitative data were analyzed descriptively, while qualitative data explored student engagement and motivation.

Findings – The study found significant improvement in arithmetic achievement, with mean scores increasing from 60 to 85, and mastery levels rising from 55% to 90%. Qualitative observations indicated higher student motivation, reduced math anxiety, and increased classroom participation. The GASING KABATAKU method effectively enhanced both conceptual understanding and enthusiasm for learning.

Novelty – This research integrates kinesthetic and rhythmic strategies into mathematics instruction, offering a replicable model for teacher professional development.

Significance – The findings benefit mathematics educators, curriculum developers, and policymakers aiming to improve numeracy skills and foster student motivation in mathematics.

Keywords: Arithmetic learning; Gasing method; Innovative pedagogy; Mathematics education; Motivation; Numeracy; Student engagement; Teacher training.

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1. Introduction

A professional teacher is expected to possess various competencies as mandated in Law of the Republic of Indonesia No. 14 of 2005 on Teachers and Lecturers. The regulation emphasizes that teachers, as agents of change within society, must master four key competencies—pedagogical, personal, social, and professional—acquired through professional education. These competencies form the foundation of effective teaching and are aligned with the principles of lifelong learning (Supriatna, 2018). According to Government Regulation No. 19 of 2017, which amends Government Regulation No. 74 of 2008 on Teachers, the development of these competencies is essential to ensure teachers' readiness in facing educational transformations in the 21st century (Ministry of Education and Culture, 2017). Teachers must, therefore, continually improve their professionalism through reflective practices, curriculum innovation, and adaptive pedagogical approaches (Darling-Hammond & Hyler, 2020). As facilitators of learning, teachers are responsible not only for transmitting knowledge but also for cultivating students' curiosity, creativity, and critical thinking—skills crucial in preparing them to navigate complex global challenges (Zhao, 2012).

Learning constitutes a core component of the educational process, involving several essential elements such as students, teachers, curriculum, learning environment, and supporting facilities. Each of these elements plays a complementary role in determining learning effectiveness (Ornstein & Hunkins, 2018). When one component fails to function effectively, it disrupts the holistic learning system and results in diminished student outcomes. The interdependence of these elements underscores the importance of systemic educational planning that integrates curriculum, pedagogy, and assessment (Gagne et al., 2021). In this regard, teachers play a central role in creating meaningful learning experiences that encourage active participation and engagement (Biggs & Tang, 2011). A conducive learning environment—both physically and psychologically—stimulates curiosity, enhances motivation, and supports deeper understanding (Ryan & Deci, 2020). Thus, effective learning requires synergy between structure and interaction, between instruction and discovery.

In daily teaching practice, challenges often arise in delivering mathematics lessons effectively, particularly in selecting appropriate instructional methods. Mathematics is frequently perceived by students as abstract, monotonous, and intimidating, leading to mathematics anxiety and low self-efficacy (Ashcraft & Krause, 2007). These negative perceptions hinder motivation and impede cognitive engagement in problem-solving tasks (Boaler, 2016). At MTs Negeri 14 East Jakarta, the issue manifests in the form of low achievement in fundamental arithmetic operations—multiplication, division, addition, and subtraction—known collectively as KABATAKU. Although these operations have been introduced since primary school, many students struggle to perform them fluently and confidently. This phenomenon aligns with findings by Hidayati and Nurdin (2022), who revealed that mastery of basic arithmetic is a significant predictor of later mathematical

achievement. Weaknesses at this foundational level can cause a domino effect, impeding students' ability to grasp higher-level mathematical concepts such as algebra and geometry.

A preliminary survey conducted by the author at MTs Negeri 14 East Jakarta revealed that mathematics teachers predominantly apply teacher-centred learning models, characterised by lecture-based instruction and limited student interaction. Such methods often fail to accommodate diverse learning styles and discourage exploratory learning (Trigwell & Prosser, 2018). Consequently, students become passive listeners, demonstrating limited curiosity and engagement during lessons. This finding aligns with the work of Lestari and Yudhanegara (2020), who emphasised that active learning environments significantly improve students' problem-solving abilities and conceptual understanding in mathematics. Teacher-centred models, while efficient for content delivery, often neglect metacognitive development—an essential component of mathematical reasoning (Flavell, 1979; Schoenfeld, 2016).

In response to these pedagogical challenges, the researcher, as a mathematics teacher, seeks to implement an active learning approach through an innovative instructional method known as GASING KABATAKU—an acronym for Gampang, Asyik, dan Menyenangkan (Easy, Fun, and Enjoyable). This approach integrates the GASING learning model (developed by Yohanes Surya) with KABATAKU arithmetic operations, emphasising hands-on activities, mental calculation, and joyful learning. Previous studies have demonstrated that the GASING method enhances numerical fluency and reduces students' anxiety toward mathematics (Surya, 2019; Fitriyani & Handayani, 2021). The present study, titled "Improving Arithmetic Learning Outcomes among Seventh-Grade Students at MTs Negeri 14 East Jakarta through the GASING KABATAKU Strategy," investigates how this method, grounded in active learning principles (Bonwell & Eison, 1991), can foster engagement, motivation, and achievement in arithmetic learning.

The study aims to contribute to both theory and practice by offering insights into the design of culturally contextualised, engaging mathematics learning experiences for middle school students. The integration of GASING KABATAKU is expected to create a dynamic classroom atmosphere where students learn through exploration and play while achieving measurable learning improvements (Prince, 2004). The findings are anticipated to benefit mathematics educators seeking practical pedagogical frameworks to enhance learning outcomes in arithmetic, as well as policymakers interested in reforming mathematics instruction in Indonesian schools.

2. Methods

2.1. Research Design and Participants

This study employed an action research design to explore the implementation of the GASING KABATAKU method in improving arithmetic learning outcomes among seventh-grade students at MTs Negeri 14 East Jakarta. The intervention involved both teachers and students over a period of 17 sessions, divided into two stages: (1) teacher training and (2) student implementation.

The teacher training program was conducted face-to-face from 10 to 19 July 2024. It involved not only mathematics teachers but also teachers from other subjects such as science (IPA), social studies (IPS), and language. The training sessions were facilitated by a mathematics teacher who had previously completed a certified GASING training program. Teachers acted as students during the training and practised the techniques collaboratively.

The student implementation stage was carried out from 11 to 30 July 2024 and 1 August 2024, where teachers worked in two alternating teaching teams. Students were taught basic arithmetic operations—multiplication, division, addition, and subtraction—through the GASING KABATAKU method. The approach emphasised learning through movement and songs, making mathematics learning more interactive and enjoyable.

2.2. The GASING KABATAKU Method

The *GASING KABATAKU* method stands for *Gampang, Asyik, dan Menyenangkan* (Easy, Fun, and Enjoyable). It is a mathematics learning strategy that simplifies abstract concepts through visualisation, logic, and kinesthetic engagement.

Core Principles:

- Simple (Gampang): Concepts are introduced in a straightforward way using visual and manipulative aids.
- Enjoyable (Asyik): Games, challenges, and group discussions make the learning process engaging.
- Pleasant (Menyenangkan): The positive atmosphere helps reduce math anxiety and builds confidence.

Learning Stages:

1. Introduction: Students are introduced to fundamental arithmetic concepts using visual tools.
2. Comprehension: Teachers emphasize logical connections between concepts (e.g., multiplication as repeated addition).
3. Practice: Students complete progressive exercises from simple to complex.
4. Speed Training: Students practice to improve fluency and automaticity in solving arithmetic problems.
5. Evaluation: Students are assessed through diverse problem types to measure mastery and application.

2.3. Data Collection and Analysis

Data were collected through:

- Pre-test and post-test evaluations of arithmetic skills.
- Observation sheets to monitor classroom engagement and student motivation.
- Teacher reflections and interviews to capture qualitative insights.

The improvement in students' performance was analyzed by comparing the mean scores before and after the intervention. Descriptive analysis was used to summarize motivational and behavioural changes.

3. Results and Discussion

3.1. Quantitative Findings

The implementation of the GASING KABATAKU method yielded significant improvements in students' arithmetic performance.

Table 1 – Improvement in Arithmetic Performance

Indicator	Before Implementation	After Implementation
Mean Score	60	85
Mastery Level (≥KKM)	55%	90%

The implementation of the GASING KABATAKU intervention produced clear and practically meaningful gains in students' arithmetic performance. As shown in Table 1, the group mean score improved from 60 (pre-test) to 85 (post-test), representing a 25-point increase. The proportion of students meeting the Minimum Mastery Criterion (KKM) rose from 55% to 90%, an absolute improvement of 35 percentage points. These improvements indicate that the intervention had a substantial impact on both average performance and mastery rates.

Although full inferential statistics (e.g., paired t tests, effect-size indices) require raw score distributions and standard deviations, the magnitude of the observed changes suggests educationally large gains consistent with other active, manipulative-based interventions in mathematics (e.g., meta-analytic evidence on manipulatives and active learning showing positive impacts on achievement).

The observed increase in mean scores and KKM attainment suggests that GASING KABATAKU supports both conceptual understanding and procedural fluency. The combination of multisensory stimuli (visuals, manipulatives), rhythmic/musical elements, and movement likely contributed to improved encoding, retrieval fluency, and on-task engagement — mechanisms supported by prior research on manipulatives and music-integrated mathematics instruction.

3.2. Qualitative Findings

Observations revealed that students became more enthusiastic and actively participated in class activities. They were more willing to engage in peer discussions, volunteer to solve problems on the board, and express greater confidence in handling arithmetic operations. Teachers also reported a noticeable increase in classroom interaction and positive attitudes toward mathematics.

Key observed benefits:

1. Increased Motivation and Participation. Students displayed higher rates of voluntary participation (raising hands, board work), greater enthusiasm in group tasks, and more sustained attention during lessons. These behavioural shifts mirror findings from active learning research, which reports increased engagement and ownership of learning when instruction is student-centred and participatory.
2. Reduced Mathematics Anxiety. The use of songs, movement, and low-stakes group challenges appeared to lower students' affective barriers to mathematics. This aligns with intervention studies showing that movement or music integrated into math lessons can reduce anxiety and create a safer affective climate for problem solving.

3. Enhanced Conceptual Understanding and Logical Thinking. The visual and manipulative components supported learners' internalization of operations (e.g., seeing multiplication as repeated addition), leading to deeper conceptual connections and more strategic problem-solving approaches. Meta-analytic evidence demonstrates that concrete manipulatives often aid conceptual development, particularly when instruction explicitly links manipulatives to symbolic representations.

These findings are consistent with prior studies (e.g., *Suryanto & Putra, 2022*; *Hanifah et al., 2023*) showing that active learning approaches and kinesthetic strategies can significantly boost mathematical reasoning and motivation.

3.3. Challenges Encountered

Despite the demonstrably positive outcomes of the GASING KABATAKU implementation, several significant challenges emerged throughout the instructional process. These obstacles highlight the complexity of translating innovative pedagogical designs into classroom practice and provide valuable insights for future refinements. The four key areas of challenge identified in this study were heterogeneous prior knowledge, time constraints, insufficient teaching aids, and initial resistance to new methods.

1. Heterogeneous Prior Knowledge

A major challenge encountered during implementation was the diversity of students' prior knowledge and mathematical readiness. The classroom consisted of students with varying levels of arithmetic fluency, from those who had already mastered basic operations to those still struggling with fundamental concepts such as number sense and place value. Learners with weak foundational understanding required more scaffolding and individual attention to grasp the new concepts introduced through GASING KABATAKU. This challenge is consistent with prior research showing that student heterogeneity often complicates instructional differentiation, particularly in mathematics learning, where cumulative conceptual progression is essential (Tomlinson, 2014; Sfard, 2019).

To address this, differentiated instruction and pre-teaching modules are recommended. Differentiation allows teachers to tailor learning experiences according to students' readiness, interest, and learning profile (Hall, Strangman, & Meyer, 2019). Similarly, scaffolding strategies, such as guided practice and peer mentoring, can help bridge learning gaps for slower learners (Vygotsky, 1978). Future implementations of GASING KABATAKU could integrate diagnostic assessments and tiered activities to ensure equitable access to learning outcomes.

2. Time Constraints

Another notable barrier was the time limitation within the school timetable. The GASING KABATAKU method involves a structured progression through multiple learning stages—introduction, comprehension, practice, speed training, and evaluation. Each stage demands sufficient time for explanation, reinforcement, and reflection. However, the standard instructional time allocation per mathematics lesson was insufficient to conduct the full cycle in depth. As a result, teachers often condensed activities, which may have reduced opportunities for conceptual consolidation and repeated fluency practice.

This limitation reflects a well-documented issue in educational innovation: time pressure and curricular overload hinder sustained active learning (Fullan, 2016; Darling-Hammond et al., 2020). Effective implementation of student-centred strategies like GASING requires curricular flexibility and institutional support to accommodate iterative, experiential learning. Incorporating GASING as part of an extended remedial or enrichment program could allow for greater depth of engagement and consolidation.

3. Insufficient Teaching Aids

The implementation also faced challenges due to limited availability of teaching aids and manipulatives. GASING emphasises visualisation and kinesthetic engagement, requiring concrete tools such as counters, number cards, or fraction blocks. However, resource limitations meant that students often had to share materials, which diluted hands-on interaction and slowed down lesson flow. Empirical research underscores that manipulatives enhance understanding of abstract mathematical concepts by bridging the gap between concrete and symbolic reasoning (Carbonneau, Marley, & Selig, 2013; Uttal et al., 2020).

The effectiveness of manipulatives depends not only on their availability but also on teachers' pedagogical content knowledge for their use (Moyer-Packenham & Westenskow, 2013). Therefore, teacher professional development programs should emphasise material-based instruction and guide how to maximise engagement with limited resources. Investment in low-cost, reusable teaching aids or digital alternatives (e.g., virtual manipulatives) can further strengthen implementation feasibility, particularly in resource-constrained schools.

4. Initial Resistance to New Methods

Finally, both students and teachers exhibited initial resistance to the GASING KABATAKU method. Some learners perceived the approach—characterised by games, movements, and songs—as informal or "not serious," while a few teachers expressed discomfort transitioning from traditional, lecture-based instruction to a participatory model. This phenomenon aligns with the literature on educational change and teacher identity, where shifts from teacher-centred to student-centred pedagogies often generate uncertainty and scepticism (Hargreaves & Fullan, 2020; Opfer & Pedder, 2011).

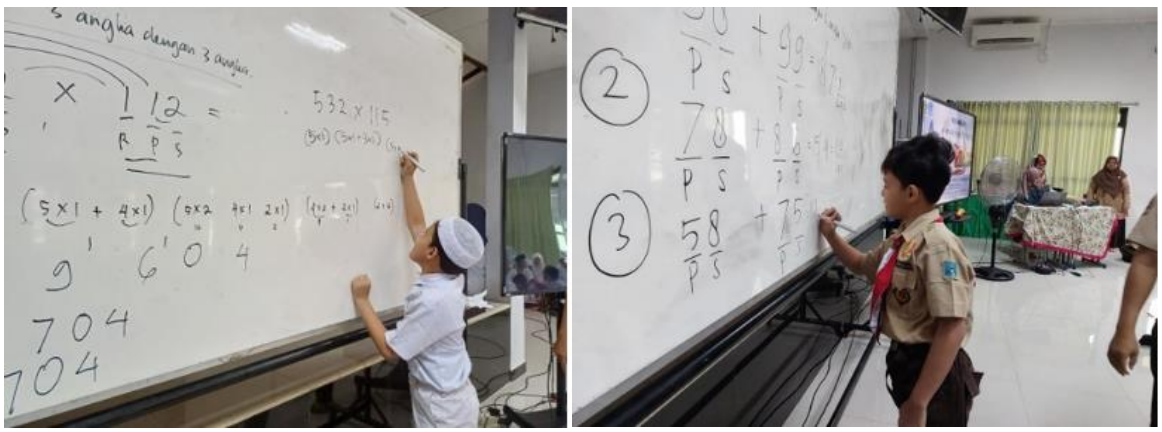

Figure 1. Student Activity of GASING KABATAKU Method

To mitigate this, orientation sessions and professional development should be integrated into the introduction of GASING-based learning. Explicitly communicating the

cognitive and emotional rationale behind the method helps both teachers and students internalise its purpose (Guskey, 2002). Building a school-wide culture of reflective practice and peer mentoring also promotes smoother adoption of innovative teaching models (Timperley, 2011). Gradual integration—starting with pilot classes and expanding based on feedback—can reduce resistance and ensure sustained engagement.

These challenges underscore that the success of pedagogical innovations such as GASING KABATAKU depends not only on instructional design but also on contextual factors, including institutional support, teacher preparedness, and cultural acceptance. Addressing these systemic barriers through targeted training, policy support, and adaptive planning will be crucial for the method's long-term scalability and sustainability in diverse educational environments.

3.4. System Performance: Educational Impact

From a systems perspective, GASING KABATAKU functioned as an effective pedagogical innovation that (a) shifted practice toward learner-centred instruction, (b) improved measurable learning outcomes, and (c) positively changed classroom affective climate. The approach coheres with evidence that combining active learning, manipulatives, and embodied/musical strategies yields educational benefits in mathematics (achievement, engagement, reduced anxiety). Consequently, GASING KABATAKU shows promise as a scalable model for Indonesian madrasahs and similar contexts, provided implementation supports are in place (materials, teacher development, timetable allowances).

4. Conclusions

The GASING KABATAKU mathematics training method proved to be an innovative and effective approach for teaching arithmetic, particularly for seventh-grade students struggling with basic concepts. By fostering a fun and interactive learning environment, students developed a better understanding, confidence, and creativity in problem-solving.

The findings highlight that students with higher engagement levels demonstrated stronger creativity and cognitive performance. Thus, the method not only improved arithmetic skills but also enhanced students' motivation and critical thinking.

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Conflict of Interest

The author declares no conflict of interest related to this research.

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