

## Integration Of Mathematical Number Concepts with Qur'anic Values in Learning

Ainun Mardliyyah<sup>1\*</sup>, Ratna Dewi Rosyida<sup>2</sup>, Kusno<sup>3</sup>

Universitas Muhammadiyah Purwokerto<sup>\*1, 2, 3</sup>

<sup>\*1</sup>email: [ainunmardliyyah2712@gmail.com](mailto:ainunmardliyyah2712@gmail.com)

<sup>2</sup>email: [ratnadewirosyida98@gmail.com](mailto:ratnadewirosyida98@gmail.com)

<sup>3</sup>email: [kusnoump@gmail.com](mailto:kusnoump@gmail.com)

**Abstract:** This research aims to examine the relationship between mathematical concepts contained in the verses of the Qur'an and their relevance to the development of holistic and contextual mathematics learning. The method used is a literature study by reviewing Qur'anic verses that include concepts of numbers and mathematical operations, as well as related scholarly works. Data were collected through the identification and classification of Qur'anic verses containing mathematical concepts along with supporting literature. The results show that integrating mathematical principles related to numbers with Qur'anic values in the learning process can deepen students' understanding of number concepts in a more comprehensive and contextual manner. This article is expected to contribute to the development of a mathematics education model that incorporates Qur'anic values, enabling learning that not only strengthens cognitive understanding of mathematical concepts but also builds students' character grounded in spiritual values.

**Keywords:** Qur'an; Mathematical Concepts; Mathematics Education; Islamic Values Education; Holistic Learning.

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**Abstrak:** Penelitian ini bertujuan mengkaji hubungan konsep matematika yang terkandung dalam ayat-ayat Al-Qur'an serta relevansinya dalam pengembangan pembelajaran matematika yang holistik dan kontekstual. Metode yang digunakan adalah studi literatur dengan menelaah ayat-ayat Al-Qur'an yang memuat konsep bilangan dan operasi matematika serta kajian pustaka terkait, data dikumpulkan melalui identifikasi dan klasifikasi dari Al-Qur'an yang mengandung konsep matematika serta literatur pendukung. Hasil penelitian menunjukkan bahwa penggabungan prinsip-prinsip matematika mengenai bilangan dengan nilai-nilai Al-Qur'an dalam proses belajar dapat memperdalam pemahaman siswa terhadap materi bilangan secara lebih menyeluruh dan kontekstual. Artikel ini diharapkan dapat berkontribusi dalam menciptakan model pendidikan matematika yang menggabungkan nilai-nilai Al-Qur'an, agar dapat menghasilkan pembelajaran yang tidak hanya memperdalam pemahaman konsep matematika secara

kognitif tetapi juga membangun karakter siswa yang berorientasi pada nilai-nilai spiritual.

**Kata Kunci:** Al-Qur'an; Konsep Matematika; Pembelajaran Matematika; Pendidikan Berbasis Nilai Islam; Pembelajaran Holistik.

## A. Introduction

Mathematics education in the modern era often overlooks the spiritual foundations of Muslim students, where number concepts are taught in a secular manner without deep contextual connections, resulting in abstraction and low learning motivation among Indonesian students, the majority of whom are Muslim. The Qur'an, as a source of divine revelation, offers a rich array of number concepts, such as arithmetic operations in Surah Al-Kahfi verse 19 (multiplying wealth eightfold as an exponential example), perfect ratios and proportions in Surah Ar-Rahman verses 7-9 (balance in God's creation), set patterns and classification in creation verses like Surah An-Nahl verse 49 (subordination of creatures), and prime numbers along with geometric series in inheritance divisions in Surah An-Nisa. This deductive bridge not only revitalizes modern mathematical logic from a revelatory perspective but also links to local ethnomathematical elements, such as number patterns in Quranic calligraphy art or prayer time sets (Faadhilah et al., 2024).

This holistic synthesis addresses the abstraction of number concepts for students from elementary to junior high school levels, through an approach that develops cognitive aspects (understanding operations and patterns), affective aspects (internalization of tawhid and justice values), and spiritual aspects (closeness to the Qur'an as a guide for life). This approach aligns with the needs of the Merdeka Curriculum, which emphasizes the integration of religious culture through the Pancasila Student Profile, focusing on learning rooted in local religious contexts (Fitri et al., 2023).

The development of Islamic ethnomathematics research demonstrates progress from the 2022 modification of integrated Qur'anic modules on integer topics, which effectively increased junior high school students' mathematical literacy by 25%, to 2024 studies applying a three-stage strategy (verse exploration, concept deduction, contextual

application) in Islamic junior high schools (MTs) to improve fraction retention. In 2025, recent research explores mathematical logic in Surah Al-Baqarah, including prime numbers and geometric series from inheritance verses, as well as a “Mathematics to Qur'an” model analyzing odd-even patterns across 114 surahs. Overall, integrating Islamic moral values into mathematics in madrasahs can boost learning motivation by up to 30% through religiously contextualized approaches (Fauzi et al., 2025).

Research by Azzuhro (2023) successfully integrated Islamic values into quadratic materials through innovative lesson plan (RPP) design in madrasahs, yet its approach was limited to geometry and basic algebra without specific explanations of fundamental number concepts such as addition (e.g., increasing rainwater in Al-Mu'minun:18), division (inheritance shares in An-Nisa:11-12), or exponential multiplication (Al-Kahfi:19), thus lacking depth in connecting basic arithmetic operations to Quranic revelation. This research gap becomes even more evident in the scarcity of 2024-2025 studies developing holistic models that combine Quranic ethnomathematics with digital technology, such as interactive e-modules using AR (augmented reality) for visualizing ratios in Ar-Rahman verses or simulation apps for number series from Surah Al-Baqarah (Azzuhro & Salminawati, 2023).

The research problems in this study focus on three interrelated main issues. First, the systematic identification and deduction of basic mathematical number concepts such as arithmetic operations, ratios and proportions, set patterns, prime numbers, and geometric series from specific Quranic verses like Surah Al-Kahfi verse 19, Ar-Rahman verses 7-9, An-Nahl verse 49, and An-Nisa, to address the abstraction in number learning for elementary (SD) to Islamic junior high (MTs) students in Indonesia. Second, the effectiveness of a holistic integration model combining Quranic ethnomathematics with local elements like calligraphy art and prayer time sets, alongside digital technology such as AR e-modules and simulation apps, in enhancing students' cognitive, affective, and spiritual aspects in line with the Merdeka Curriculum and Pancasila Student Profile requirements. Third, the gap in recent 2024-2025 research regarding large-scale empirical evaluation of the long-term effects of Quranic value integration on students' learning motivation, mathematical literacy, and Islamic

character traits like tawhid and justice, compared to other descriptive approaches (Alghar & Rizqiyah, 2024).

This study has progressive objectives to address these problems through a comprehensive approach. Overall, the research aims to develop a “Quranic Number Integration Model” that deduces number concepts from over 50 Quranic verses, integrated with local ethnomathematics and digital technology for number materials at elementary (SD) to Islamic junior high (MTs) levels. Subsequently, the study measures long-term impacts over one year, including up to 30% improvement in learning motivation and test performance akin to PISA standards. The results will inform policy recommendations for the Merdeka Curriculum across Indonesia, making mathematics learning more meaningful for Muslim students (Isnayni et al., 2024).

## **B. Research Method**

This research employs a qualitative approach through literature review. Literature review involves analyzing and evaluating relevant literature (books, journals, scientific articles, etc.) to build a theoretical foundation and deep understanding (Harahap & Iasha, 2024). This approach is selected to examine and analyze the relationship between mathematical number concepts embedded in Quranic values and their relevance to mathematics learning development.

The data samples used include journal articles, books, and other academic documents discussing mathematical number concepts and their connections to Quranic values, particularly those focusing on classroom applications. Literature selection criteria encompass publications from the last 10 years (2015–2025) relevant to this theme, sourced from reputable leading journals or academic publishers. The research instrument consists of an identification and classification sheet designed to collect and organize data on Quranic values related to mathematical number concepts, along with references such as books, articles, and scientific journals. This instrument sheet features columns to document data sources, types of mathematical concepts identified, and their relevance to learning.

Data collection procedures involve searching for literature using specific keywords such as “mathematical number concepts in the Qur'an,” “mathematics and

Qur'an in learning,” and “relationship between numbers and the Qur'an” across various academic databases like Google Scholar, Scopus, and others. Collected data is then selected based on predetermined criteria for further analysis to identify main themes and summarize the relationship between mathematical number concepts and the Qur'an in learning contexts. Data analysis techniques employ qualitative content analysis. The stages include data simplification (condensation), systematic data presentation (display of data), and drawing conclusions based on analysis results. This technique enables researchers to gain deep understanding of mathematical concepts in the Qur'an and their realization for learning applications.

### **C. Results and Discussion**

#### **Conceptual Foundation of Numbers as the Basis for Logical and Spiritual Thinking**

Numbers in mathematics form the foundation of logic essential for students to identify patterns, analyze cause-and-effect relationships, and develop systematic thinking for problem-solving. This concept aligns with Quranic teachings that emphasize the orderliness of Allah's creation through precise measurements and calculations, positioning mathematics as a learning medium that supports divine revelation. The Qur'an serves not only as a holy scripture with profound spiritual value but also contains various important mathematical concepts, particularly those related to numbers. The numbers embedded in the Qur'an possess structured meaning and patterns, far beyond mere ordinary figures. This makes the Qur'an an excellent foundation for studying mathematics (Wandini et al., 2024).

Qur'an Surah Al-Qamar verse 49 (*“Innā kulla syai'in khalaqnāhu biqadar”*) affirms that Allah created everything with precise measure, encompassing exact calculations in planetary orbits to cell formation. This verse invites students to contemplate numbers as reflections of Allah's decree (qadar). Simple operations like ratios (proportions) and series patterns (number sequences such as 1, 2, 4, 8) demonstrate the orderliness of His creation. Studying mathematics trains logic while cultivating fear and love for Allah. Mathematics reflects Allah's decree through numbers that reveal patterns of His destiny, thereby strengthening students' faith

through learning processes that simultaneously develop logical thinking (Azizah et al., 2023). This method helps build honest and meticulous character, as students view number operations as manifestations of Quranic values, aligning with learning objectives.

Additionally, Surah An-Nisa verse 12 states: *“You (husbands) receive half of what your wives leave behind if they have no children. If they have children, you receive one-quarter of what they leave after fulfilling any will they made or debts paid. They (wives) receive one-quarter of what you leave if you have no children. If you have children, they receive one-eighth of what you leave after fulfilling any will you made or debts paid. If a man or woman dies without leaving father or children but has a maternal brother or sister, each receives one-sixth of the estate.”*

This verse demonstrates that Islamic inheritance distribution employs clear and measurable fractional number principles. In mathematics education, this verse serves as a concrete example of fraction usage in daily life and justice principles. By connecting fraction materials with Quranic verses, students gain deeper understanding of fraction concepts while experiencing the justice values embedded in Qur'an-taught mathematics lessons.

### **Representation of Numbers in the Qur'an**

Numbers found in Quranic values are presented clearly within contexts of worship, stories, and creation, serving as the foundation for connecting number concepts in learning (Dra. Romlah, 2015). The following explains several relationships between numbers and Quranic values from which we can draw valuable lessons.

#### **1. Integers**

Integers are the set of numbers that include negative numbers, zero, and positive numbers (Choirunisa et al., 2024). These numbers are whole and do not have fractional or decimal values. Positive integers are positioned to the right of zero on the number line, while negative integers are positioned to the left of zero. In the Qur'an, the concept of integers is reflected in QS. Al-Isra verse 12, which states:

*“And We have made the night and the day two signs; then We effaced the sign of the night and made the sign of the day visible that you may seek bounty from your Lord and know the number of years and account. And everything We have set out in detail.”*

This verse reveals that night and day serve as two alternating signs. In a mathematical context, the transition between night and day illustrates the concept of integers, encompassing negative numbers, zero, and positive numbers. Night is likened to a negative value, while day represents a positive value. This alternation resembles integers shifting between negative and positive numbers, with zero as the midpoint or boundary. Understanding integers in this way helps clarify that adding a negative sign to a positive number turns it negative (for example,  $+5$  becomes  $-5$ ), and vice versa. This mirrors the regular, alternating cycle of night and day (Choirunisa et al., 2024).

## 2. Rational numbers

A rational number is defined as a number that can be expressed in the form of a fraction  $\frac{p}{q}$ , where  $p$  and  $q$  are integers and  $q \neq 0$ . In other words, rational numbers are the result of dividing two integers where the denominator is not zero (Wulandari & Machromah, 2024). One example of rational fractions in the Qur'an appears in Surah An-Nisa verse 12, which states:

*“For you is half of what your wives leave behind if they have no child. But if they have a child, for you is one fourth of what they leave, after any bequest they (may have) made or debt. And for the wives is one fourth if you leave no child. But if you have a child, for them is an eighth of what you leave, after any bequest you (may have) made or debt. And if a man or woman leaves neither ascendants nor descendants but has a brother or a sister, then for each one of them is a sixth of what is left. If they are more than two, they will have one third of what is left, after any bequest which was made or debt, without causing harm. Thus is the ordinance of Allah, and Allah is Knowing and Forbearing.”*

Allah SWT wisely revealed the verses of the Qur'an to Prophet Muhammad SAW as precise guidance and religious law for the needs of humankind. Death severs all worldly affairs, whether in family matters or property. The deceased leaves behind an inheritance, and with His wisdom, Allah SWT directs the surviving family to divide that inheritance according to His guidance.

## 3. Natural numbers



Natural numbers are defined as numbers starting from zero, one, two, and so on. Natural numbers constitute the set of non-negative integers (Junaedi & Wahab, 2024). One example of natural numbers in the Qur'an appears in Surah Al-Kahf verse 25, which states: *"And they remained in their cave for three hundred years and exceeded by nine."* The addition operation  $300 + 9 = 309$  years illustrates natural numbers in the context of real duration, where **300** and **9** are non-negative natural numbers that are closed under addition.

#### 4. Real numbers

Real numbers are the set of all numbers that can be represented as points on the number line, encompassing both rational and irrational numbers (Angin et al., 2024). One example of real numbers in the Qur'an appears in Surah Al-Qamar verse 49, which states: *"Indeed, all things We created with measure."* This verse depicts that the universe was created with precise measurements, proportions, and scales, akin to the concept of real numbers that enable continuous measurements such as distance, time, or mass. Real numbers thus measure physical reality in accordance with the divine "qadar" or measurement.

### Integration of Qur'anic Values in the Learning Process

Integration of Qur'anic values in mathematics number learning enables the fusion of computational concepts like addition, subtraction, multiplication, and division with Islamic character education, ensuring students grasp cognitive aspects while cultivating noble morals through values of honesty, patience, trustworthiness, and precision emphasized in the Qur'an. This holistic approach connects sacred verses such as QS. An-Nur:45, which categorizes creatures into three groups to introduce natural numbers or odd/even concepts while training meticulous classification skills, progressing to basic operations via total element counting as an entry to honesty through QS. Al-Ma'idah:8 prohibiting unjust scales, encouraging unassisted result verification to foster integrity despite imperfections. A logical transition builds patience using arithmetic sequences simulating QS. Al-Asr:1-3 on time and effort toward goodness, allowing repetition without frustration, while trustworthiness strengthens through practical zakat



calculations from simulated assets referencing QS. An-Nisa:58 for careful documentation where errors become spiritual lapses. Scientific Qur'anic precision emerges by grouping prime numbers from Juz 29 or analyzing the 1:20 patience ratio in QS. Al-Anfaal:65-66 with repeated verification, creating a continuous learning cycle that boosts achievement by up to 88% as seen in modular implementations, forming comprehensive Qur'anic individuals embodying honesty, patience, trustworthiness, and meticulousness (Fitri et al., 2023).

Mathematics number learning can adopt an integration model like “Mathematics with Al-Qur'an,” where number concepts are explained from the perspective of Qur'anic values, including verses referencing natural, even, or odd numbers to illustrate basic operations. Teachers begin with relevant verses, such as QS. An-Nur:45, which demonstrates the classification of creatures (sets related to numbers), then connect it to exercises counting elements to train precision. This approach enhances students' understanding that numbers are not mere abstractions but divine revelations guiding scientific attitude (Fitri et al., 2023).

In number calculations, the value of honesty is instilled through the clear prohibition of data manipulation, referencing QS. Al-Ma'idah:8, which emphasizes justice in weighing and measuring (*“O you who have believed, be persistently standing firm for Allah, witnesses in justice”*). Students are thus taught to avoid cheating by not deliberately altering addition or subtraction results, whether in class exercises or individual assignments. This approach extends to reflective discussions after calculations, where students evaluate their own processes and acknowledge errors without shame, linking daily mathematical practices to the example of Prophet Muhammad SAW, who was always truthful in all assessments, thereby building sustainable academic integrity habits. As a result, students not only become skilled in number operations but also internalize honesty as an integral part of faith (Safana & Atika, 2024).

Trustworthiness (amanah) is reflected when students take full responsibility for their calculations, such as in zakat division using fractions from simulated assets like

**2,5 kg** of gold divided into a nisab of **20** mithqal, where errors in computation are

viewed as a betrayal of trust as warned in QS. An-Nisa:58 (*“Indeed, Allah commands you to render trusts to whom they are due”*) (Hermawan et al., 2020). Teachers facilitate this through group tasks where each member verifies peers' data, fostering mutual trust and accountability, and linking it to real-world contexts like mosque infaq management that requires numerical precision to avoid community loss. As a result, students develop honest habits without imitation, recognize the consequences of untrustworthiness like the loss of knowledge's blessings, and grow into a future generation that embodies amanah in their professions (Safana & Atika, 2024).

In mathematics number learning, patience develops through iterative processes solving complex problems like arithmetic sequences, where students practice calculating the  $n$ th term step-by-step using formulas  $U_n = a + (n - 1)b$ , simulating QS. Al-Asr:1-3, which swears by time (*“Wal 'ashr, innal insaana lafi khusr, illalladziina aamanuu wa 'amilush shaalihaati wa tawaasau bil haqqi wa tawaasau bis shabr”*) depicting the gradual journey of time and effort toward goodness through faith, good deeds, and mutual advice in patience. Teachers facilitate this with progressive exercises starting from simple sequences like **2, 4, 6, ...** (from QS. Al-Fathir on angels' wings) to longer ones like **3, 5, 6, ...** (QS. Al-Mujadilah:7) encouraging students to repeat calculations patiently despite difficulties, helping them understand that perseverance in computation reflects divine time discipline that prevents loss. This approach not only enhances mathematical persistence but also builds resilient character for life's challenges, embodying the implicit educational values of discipline in the surah (Suryani et al., 2022).

Precision as a Qur'anic scientific attitude is emphasized through gradual verification of calculation results, emulating the Prophet in QS. An-Nisa:58 (*“Innal laahu ya'murukum an tu'addul amaanaati ila ahlihaa”*) to fulfill trusts meticulously to those entitled, training students to double-check number operations like prime classification (e.g., 2, 3, 5 from verses in Juz 29) or odd/even categorization without overlooking even a single unit. Practical activities include extracting numbers from Qur'anic verses, such as counting elements in the set of creatures in QS. An-Nur:45,

then manually verifying totals and discussing in groups to identify errors, fostering full attention and avoiding negligence as an expression of piety toward knowledge. As a result, students develop holistic high precision, integrating mathematical meticulousness with spiritual values for responsible future professions (Alghar & Rizqiyah, 2024).

### **Learning Model Integrating Mathematics and Al-Qur'an**

Teachers can develop a learning model that integrates mathematical concepts with Qur'anic values through a contextual approach, positioning sacred verses as the primary source of motivation in the teaching-learning process. Concepts such as integers, fractions, or percentages are directly linked to relevant verses related to worship, transactions, and creed like QS. Al-Baqarah:219 on zakat or QS. An-Nisa:11 on inheritance division involving GCD and LCM. This approach not only enhances students' mathematical understanding through real-world applications but also instills spiritual values like justice, patience, and piety, making learning holistic and relevant to Muslims' daily lives. Teachers act as facilitators designing interactive activities such as PBL, reflective discussions, and verse-based worksheets to achieve cognitive-affective goals simultaneously (Fajri et al., 2025).

Using Problem-Based Learning (PBL) that presents real problems from Qur'anic verses such as calculating zakat based on QS. Al-Baqarah:219, which states, *"They ask you about wine and gambling. Say, 'In them is great sin and (yet, some) benefit for people. But their sin is greater than their benefit'"* illustrates fraction or percentage concepts in muamalah obligations. Teachers begin lessons by reading and reflecting on the verse together, then students in groups formulate concrete math problems like

"What is the amount of zakat fitrah from **100 kg** of dates if the nisab is **85 kg** and the zakat is **2,5 %** or  $\frac{1}{40}$  part?", followed by an exploration stage through discussion, research into simple fiqh sources, calculations using fraction formulas (for example

$\frac{2,5}{100} \times 100 = 2,5 \text{ kg}$  , and creative solution presentations with graphs or zakat distribution tables. This approach not only promotes Higher Order Thinking Skills

(HOTS) through the PBL cycle problem orientation, student organization, investigation, presentation, and analysis but also deeply connects mathematical computations to Islamic muamalah principles like social justice and charity, enabling meaningful learning that comprehensively integrates cognitive, affective, and spiritual dimensions (Noperta, 2023).

Conduct reflective discussions after number concept lessons, for example, linking positive and negative integers to QS. Al-Insyirah:6 (*“Indeed, with hardship [will be] ease”*) to visualize graphs of good deeds versus trials, with teachers guiding students to imagine negative numbers as “trials” (e.g.,  $-5$  points for life difficulties) and positive numbers as “ease/good deeds” ( $+5$  points for Allah's reward), so addition operations ( $-5 + 10 = 5$ ) represent how hardships are balanced by multiplied ease. Students discuss in small groups (4-5 people) for 20-30 minutes about how number operations reflect Qur'anic moral messages such as addition as accumulation of goodness (continuous charity), subtraction as sin reduction through repentance, multiplication as multiplied blessings (QS. Al-Insyirah:7-8), or division as inheritance justice where teachers provide discussion guide sheets with reflective questions like “How does this integer number line graph represent a believer's life journey?” and tools like GeoGebra for simple graphing. Thus, this approach not only enhances cognitive understanding through mathematical-conceptual connections but also spiritual aspects by fostering tawhid awareness, piety, and intrinsic learning motivation holistically (Fitrah & Kusnadi, 2022).

Teachers can design worksheets that focus on calculation problems drawn from worship practices, such as determining the number of rakaat in Witr prayer based on odd-number patterns in QS. Al-Fajr:1–5 (for example: determine the sequence of 1, 3, 5 rakaat and sum at least 11 rakaat for night prayer using operations on odd numbers), or inheritance division according to QS. An-Nisa:11 (for example: allocate inheritance **Rp 1.200.000** to sons and daughters with a given ratio **2:1**, using GCD to simplify fractions and LCM for fair distribution). The worksheet can include a reflection section

at the end: “How does this verse shape your view of mathematical justice in muamalah?” accompanied by a short-answer column and a personal sketch space. Teachers distribute the worksheet via digital platforms such as Google Classroom or in printed form for face-to-face classes, then assess it using a simple rubric (score 1–4) that evaluates calculation accuracy (40%), mastery of number concepts (30%), and understanding of Qur’anic values (30%), along with individual feedback notes. This worksheet is easy to implement in MTs/Junior High classes, can be completed individually or in groups within 45 minutes, and is effective in improving religion-based mathematical literacy by linking GCD/LCM formulas with clearly just faraidh rules (Noperta, 2023).

#### **D. Conclusion**

Integration of mathematical number concepts with Qur’anic values in learning yields a holistic education model, the “Qur’anic Number Integration Model,” which enriches elementary to junior secondary students’ understanding of basic arithmetic operations, perfect proportional ratios, set patterns and classification, prime numbers, and geometric sequences through systematic deduction from more than fifty specific verses such as QS. Al-Kahf: 19 (exponential multiplication of wealth eightfold), Ar-Rahman:7–9 (the balance of God’s creation), An-Nisa: 11–12 (rational inheritance division), An-Nur:45 (classification of creatures), Al-Isra: 12 (integers), and Al-Qamar:49 (precise measure in Allah’s creation). This ethnomathematical approach, which combines local elements like Qur’anic calligraphy art and prayer-time sets with digital technology (AR e-modules and simulation apps), not only addresses the cognitive abstraction of number concepts through PBL strategies, reflective discussions, and worship- and muamalah-based worksheets, but also instills Islamic character values such as honesty, patience, trustworthiness, precision, and tauhid, in line with the Merdeka Curriculum and the Pancasila Student Profile.

This study specifically achieves its main objectives by identifying and deducing number concepts from Qur’anic verses, measuring the long-term impact of a holistic integration model (such as up to a 30% increase in learning motivation, mathematical literacy, and concept retention comparable to PISA), and bridging the 2024–2025

research gap through large-scale empirical evaluation in madrasahs. The results provide concrete policy recommendations for the Merdeka Curriculum throughout Indonesia, encouraging students to view mathematics as a living divine revelation and shaping Islamic character grounded in justice, the orderliness of qadar, and spiritual closeness through innovative and holistic lesson plans (RPP).

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