Nur et al. GHAITSA: Islamic Education Journal (2026) Vol. 7 No. 1
https://doi.org/10.62159/ghaitsa.v7i2.2151

GHAITSA
Islamic Education Journal

RESEARCH

Received: April 20, 2026 Revised: May 14, 2026 Accepted:May 21, 2026

Developing the PAI-BMTS Model: Integrating Metacognition and Spiritual Reflection in Islamic Education

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Abstract

This study addresses a persistent challenge in Islamic Religious Education (IRE), where learning often emphasizes textual knowledge while providing limited opportunities for reflection and value internalization. The study aimed to develop and evaluate the Pendidikan Agama Islam Based on Metacognitive Thinking Skills (PAI-BMTS) model, which integrates cognitive, metacognitive, and spiritual dimensions within a unified learning framework Using Educational Design Research (EDR), the model was developed and tested across four Indonesian secondary schools involving 300 students and five Islamic Education teachers. Quantitative data were analyzed using Aiken's V, Cronbach's alpha, and paired-sample t-tests, while qualitative data were examined through thematic analysis. The findings indicate that the model achieved strong content validity (Aiken's V = 0.75–0.91) and high reliability (α = 0.922). Significant improvements were found in students' understanding of Islamic Religious Education, metacognitive awareness, and learning strategies ($p < 0.001$; Cohen's $d > 1.6$). Qualitative evidence revealed a shift from memorization-oriented instruction toward reflective learning supported by muhasabah practices. The study contributes a Metacognitive Spiritual Pedagogy framework that conceptualizes learning as a metacognitive–spiritual loop linking knowledge, reflection, and personal transformation

Keywords: Metacognitive Thinking Skills; Islamic Education; Reflective Learning; Spiritual Pedagogy; Design-Based Research

Introduction

Global changes in education are moving quickly. This requires rethinking how people learn and understand knowledge (Saini et al., 2025; M. S. I. Taufikin et al., 2024; Zalli, 2024). Education cannot focus only on passing along information; it should encourage reflection, self-control, and ethics (Flavell, 1979; Giménez, 2025; Krek & Zabel, 2017). Studies show that 21st-century learning blends critical thinking with human elements like meaning, values, and well-being (Biesta, 2020; Voogt & Roblin, 2012). Yet, in religious education, especially Islamic Religious Education (IRE), the gap between modern reasoning and traditional spirituality remains. Many classrooms focus on reading texts and rules. So, Islamic values have not become a lived part of daily life. This causes a gap between knowledge and practice.

Despite ongoing curriculum reforms, Islamic Religious Education (PAI) in many Indonesian secondary schools continues to be dominated by content transmission, memorization, and teacher-centered instruction. Classroom learning frequently emphasizes the mastery of religious concepts and normative rules, while providing limited opportunities for students to engage in critical reflection, self-regulation, and value internalization. As a result, students may demonstrate conceptual understanding of Islamic teachings without necessarily developing reflective awareness or translating those values into everyday behavior. This condition highlights the need for pedagogical approaches that connect religious knowledge with metacognitive reflection and personal transformation.

Several studies in the past five to seven years have addressed this challenge through different approaches. Research on metacognitive learning confirms that being aware of thinking processes significantly improves both learning quality and self-directed learning (Chandaka & Manivasakan, 2025; Musullulu et al., 2025; Veenman, 2017). Research on self-regulated learning shows that the abilities to plan, monitor, and evaluate oneself are key to effective learning (Panadero, 2017). In religious education, reflective and dialogic methods can strengthen the internalization of values (Bakti et al., 2025; Halstead, 2004; T. Taufikin, Nurhayati, & Harun, 2025). Other studies highlight the importance of meaningful experiences in character education (Lickona, 2013) and constructivism's role in building knowledge through interaction and reflection (Fosnot, 2023). However, research trends still separate the cognitive, metacognitive, and spiritual dimensions. Most studies examine metacognitive processes or character education in isolation, giving limited attention to how they interact within Islamic educational practice.

Metacognition, introduced by Flavell (1979), highlights awareness of thinking in learning. Zimmerman (1989, 2008) emphasized self-regulation as key to learning success. Dewey (Dewey, 1974) viewed reflection as linking experience with meaning. In Islamic tradition, Al-Ghazzali proposed muhasabah—a deep self-evaluation for character formation (Ghazzali, 1993). Examining these frameworks reveals overlapping elements: awareness, reflection, and transformation. Yet, this overlap has not been formalized into an operational, validated pedagogical model. Constructivism (Piaget, 1952) and reflective practice (Baweja, 2021) also suggest that meaningful learning requires active engagement and self-awareness. There is strong potential for integration, but it remains unrealized in systematic, contextually grounded learning designs.

Taken together, prior studies have demonstrated the value of metacognitive learning, self-regulated learning, reflective pedagogy, and character education. However, these strands of scholarship have largely developed in parallel. Existing research rarely examines how metacognitive regulation and spiritual reflection interact within a unified instructional design for Islamic Religious Education. Furthermore, limited attention has been given to developing and empirically validating an integrated pedagogical model through iterative design-based processes. Consequently, a need remains for a learning framework that systematically connects cognitive regulation, reflective awareness, and spiritual value internalization within authentic classroom contexts.

Based on this context, this study aims to develop and test the PAI-BMTS (Pendidikan Agama Islam Based on Metacognitive Thinking Skills) learning model, which fully integrates cognitive, metacognitive, and spiritual dimensions. Specifically, this study addresses the following questions: (1) how to design a learning model capable of developing critical thinking awareness while fostering the internalization of Islamic values, (2) to what extent the model's validity and practicality hold in real-world contexts, and (3) how effective the model is in enhancing metacognitive awareness and facilitating value transformation. This study employs an Educational Design Research approach to ensure alignment between theoretical constructs and empirical implementation. The theoretical

contribution of this study lies in the development of the Metacognitive Spiritual Pedagogy framework, which integrates cognitive regulation with spiritual reflection. Its practical contribution is a learning model applicable to teachers, while its social contribution is strengthening religious character through reflective, meaningful learning. Thus, this study underscores the importance of applying appropriate methods to bridge the gap between knowledge and awareness in contemporary religious education.

Method

Research Design

This study employs a mixed-methods approach within the framework of Educational Design Research (EDR) to iteratively bridge theoretical construction and empirical validation (McKenney & Reeves, 2018; Medina & Avi, 2021). This design was chosen because it aligns with the research objectives: to design, test, and refine the PAI-BMTS learning model until it is both conceptually sound and effective in practice. Method integration was conducted in a convergent manner, where qualitative data (learning experiences, reflections, classroom dynamics) and quantitative data (pretest–posttest scores, instrument reliability) were analyzed in parallel and synthesized during the interpretation phase. The EDR structure followed five phases: initial investigation, design, prototype construction, evaluation and revision, and large-scale implementation.

Table 1 EDR Phase

Phase	Activities	Outputs
Initial Investigation	Observation, interview, document analysis	Needs analysis
Design	Framework and syntax design	Draft PAI-BMTS
Prototype Construction	Module, LAS, assessment tools	Prototype I
Evaluation & Revision	Expert validation and FGD	Prototype II
Large-scale Implementation	Classroom implementation	Final Model

Research Setting & Context

The study was conducted at four secendary schools in East Kalimantan (SMA Negeri 4 Samarinda, SMA Negeri 7 Samarinda, SMA Negeri 1 Bontang, dan SMA Negeri 1 Tenggarong). They were chosen using purposive sampling. Criteria included institutional readiness, teachers' openness to innovation, and diverse student backgrounds. The school's context is in transition. The curriculum requires higher-order thinking and character growth, but teaching remains text-based. This situation is suitable for testing a model that merges cognitive, metacognitive, and spiritual elements.

Participants / Data Sources

Participants were 300 students in grades 10–11 and 5 PAI teachers (see table 2). Sampling used purposive methods. Teachers had at least three years of experience and were willing to try the model. Students took part in the full sequence, and schools allowed repeated implementation. Data sources included: classroom observations, teacher interviews, metacognitive questionnaires, student reflection journals, and instructional materials (modules, LAS, teaching aids).

Table 2 Informants and Characteristics

School	Students	Teachers
SMA 4 Samarinda	75	1
SMA 7 Samarinda	75	1
SMA 1 Bontang	75	1

SMA 1 Tenggarong	75	2
Total	300	5

Data Collection Procedures

Data collection took place over approximately 10 months, covering the design phase through to widespread implementation. Techniques used: (1) structured observation to assess the implementation of the L3M syntax and the dynamics of interaction; (2) semi-structured interviews to explore teachers' perceptions regarding the clarity of the syntax, barriers, and role changes; (3) Likert-scale questionnaires to measure metacognitive awareness (planning, monitoring, evaluating) and learning strategies; (4) document analysis of student reflection journals to capture the depth of self-reflection; and (5) pre-test–post-test to measure changes in learning outcomes.

Table 3 Instruments and Objectives

Technique	Instrument	Objective	Triangulation Strategy
Observation	Syntax implementation checklist	Assess implementation fidelity	Cross-validated with reflection journals and interviews
Interviews	Semi-structured interview guide	Explore teachers' perceptions and lived experiences	Compared with observational data
Questionnaire	Metacognitive scale	Measure quantitative changes in metacognitive ability	Tested for validity and reliability
Documents	Reflection journals	Examine depth of students' self-reflection	Thematic analysis across cases
Tests	Pre-test and post-test instruments	Identify changes in learning outcomes	Analyzed using inferential statistical methods

Data Analysis

Qualitative data were analyzed using Thematic analysis followed three stages. First, open coding was conducted to identify meaningful units related to learning awareness, reflection, metacognitive regulation, and value internalization. Second, similar codes were grouped into broader categories such as planning, monitoring, self-evaluation, reflective awareness, and behavioral change. Third, categories were synthesized into overarching themes representing students' metacognitive and spiritual development. To enhance trustworthiness, coding results were reviewed by two researchers and discrepancies were discussed until agreement was reached (Braun & Clarke, 2019; Squires, 2023). Quantitative data were analyzed using SPSS, including content validity testing (Aiken's V), reliability assessment using Cronbach's alpha ($\alpha = 0.922$), and pre-test–post-test comparison using a paired-samples t-test. The reliability threshold was established at $\alpha \geq 0.70$, indicating acceptable internal consistency. The obtained reliability coefficient ($\alpha = 0.922$) demonstrates excellent reliability. Integration of qualitative and quantitative findings was conducted at the meta-inference stage to ensure the coherence and robustness of the overall conclusions.

Qualitative validity was ensured through credibility (source–method triangulation, limited member checking), transferability (rich contextual descriptions), dependability (audit trail), and confirmability (researcher reflexivity) (Marlina et al., 2024). Quantitative validity is ensured through construct validity and adequate statistical tests; high reliability ($\alpha = 0.922$) reinforces measurement consistency. All participants signed informed consent. Identities were protected through anonymity, and data were securely stored. Research permission was obtained from the relevant institutions. Participation was voluntary, with the right to withdraw at any time without consequences. The pre-experimental design without a control group limits the ability to make absolute causal inferences. The geographical context is focused on a single province, so generalizations require caution.

However, the depth of the context and the EDR iterations provide strong ecological validity and high practical relevance.

Results

Based on an integrated analysis of qualitative and quantitative data, this study identified three main findings that directly address the research questions and demonstrate the significant contribution of the PAI-BMTS model to the transformation of Islamic Religious Education learning.

Table 4 Three Main Findings of the Study

No.	Focus of Findings (RQ)	Core Finding	Key Indicators
1	RQ1: Model Design	The PAI-BMTS model was systematically constructed as an integrative framework combining cognitive, metacognitive, and spiritual dimensions through the L3M syntax (Gentle, Touching, Inspiring, Transforming).	Theoretical alignment, robustness of syntactic structure, and integration of instructional tools
2	RQ2: Validity and Practicality	The model demonstrates strong content validity (Aiken's V = 0.75–0.91) and high practical applicability in real classroom settings.	Expert judgment validation, focus group discussions (FGD), and implementation feasibility
3	RQ3: Model Effectiveness	The model significantly improves students' metacognitive awareness and facilitates deeper internalization of Islamic values.	Pre–post score gains, reflective journal depth, and observable shifts in learning behavior

These three findings indicate that the PAI-BMTS model is not only conceptually and operationally feasible but also transformative for the learning process and outcomes. These findings serve as the basis for a more in-depth analysis of each aspect, which will be elaborated upon in the following section.

Design of the PAI-BMTS Model

The first finding of this study confirms that the design of the PAI-BMTS model did not emerge from a theoretical construct detached from reality, but rather is grounded in a keen empirical analysis of Islamic Religious Education (PAI) learning practices in the classroom. In other words, this model is an articulation of living needs—a response to the tension between curriculum demands that emphasize critical and reflective thinking and learning practices that remain predominantly textual, normative, and teacher-centered. During the initial investigation phase, classroom observations, teacher interviews, and analysis of learning documents consistently revealed the absence of a metacognitive dimension as a conscious framework in learning.

Interviews with teachers revealed that the learning process is directed more toward the delivery of content than the development of students' thinking awareness. "Learning has so far been more focused on delivering content. Students are rarely encouraged to think about how they understand the lesson." This finding is reinforced by classroom observations showing a one-way interaction pattern in which the teacher serves as the center of information, while students act as passive recipients. Learning activities are dominated by note-taking and concept repetition, with little room for exploration, reflection, or self-evaluation. An analysis of instructional materials (lesson plans and teaching modules) also indicates that metacognitive indicators such as planning, monitoring, and evaluating have not been explicitly formulated.

Table 5 Preliminary Findings

Aspect	Empirical Conditions
Learning Pattern	Predominantly teacher-centered
Learning Focus	Emphasis on memorization and textual comprehension
Metacognitive Dimension	Not systematically integrated into the learning process
Reflection Activities	Minimal and not structured

These conditions directly affect the quality of students' learning experiences. Students understand the material procedurally but lack awareness of how they learn. Consequently, the knowledge acquired tends to be superficial and does not become internalized values.

Based on these findings, the PAI-BMTS model was developed with the primary objective of integrating the three main dimensions of learning: cognitive, metacognitive, and spiritual. This integration is embodied in the L3M syntax: gentle, touching, inspiring, and transforming. This syntax is not merely a sequence of learning steps but forms an architecture of consciousness that develops gradually.

The gentle stage serves as the initial affective and cognitive foundation, where students are guided to build learning readiness and awareness of learning objectives. At this stage, the teacher creates a safe and open atmosphere so that students are ready to engage actively.

The touchpoint stage guides students toward conceptual understanding and learning strategy planning. Here, the metacognitive dimension begins to be activated, particularly through planning. Students not only understand the material but also begin to realize how they will learn it.

The stimulating stage becomes a space for exploration and dialogue. Students are encouraged to discuss, test their understanding, and monitor their thought processes. This stage represents the monitoring dimension of metacognition, where awareness of thinking develops through social interaction and critical reflection.

The transforming stage is the core of this model. At this stage, students engage in deep reflection (*muhasabah*) to evaluate their understanding while connecting it to real life. Evaluation is not merely cognitive; it also touches on values and behavior. Findings from the initial implementation indicate that this syntax can significantly transform the dynamics of learning. PAI Teacher said: "With this model, students are more active. They don't just listen; they start thinking and discussing."

In addition to the syntax, the model's design is reinforced by the development of integrated learning tools. Instructional modules are designed around metacognitive activities, featuring prompt questions that encourage reflection and self-awareness. Student Activity Sheets (LAS) are structured progressively to facilitate the thinking process from planning through evaluation.

Instructional materials are developed contextually by linking PAI content to students' real-life experiences. This approach aims to strengthen the internalization of values, ensuring that learning does not stop at conceptual understanding. Assessment instruments are also designed authentically to measure cognitive, metacognitive, and spiritual dimensions simultaneously. Thus, assessment becomes an integral part of the learning process, not merely a tool for measuring outcomes.

Theoretically, this model's design is grounded in the integration of several key theories: metacognitive thinking skills (Flavell), self-regulated learning (Zimmerman), constructivism (Piaget), reflective learning (Dewey), and Islamic education (Al-Ghazali). This integration yields a learning framework that is not only systematic but also transformative.

Key findings from the initial results indicate that the PAI-BMTS model has been successfully developed as a learning design that: first, it is grounded in real, empirical classroom needs. Second, fully integrates cognitive, metacognitive, and spiritual dimensions. Third, possesses a systematic and easily implementable operational syntax. Fourth, it is supported by structured and contextual

learning materials. PAI-BMTS model design not only offers pedagogical innovation but also presents a new paradigm for Islamic Religious Education learning oriented toward awareness, reflection, and value transformation.

Validity and Practicality of the PAI-BMTS Model

The findings of this study confirm that the quality of a pedagogical innovation is determined not only by the strength of the idea but by its ability to withstand both conceptual and practical tests. In this context, the PAI-BMTS model demonstrates two crucial dimensions: robust validity and proven practicality. These two dimensions do not stand alone but reinforce each other through a multi-layered evaluation process involving experts, practitioners, and direct classroom implementation.

The model's validity is tested through expert assessment by a panel comprising experts in Islamic Religious Education, instructional design experts, and field practitioners. This process is not merely administrative but serves as a critical space to test the alignment between the model's theoretical constructs and their operationalization. Analysis using Aiken's V index indicates that all components of the model fall within the valid-to-highly valid range (0.75–0.91), indicating a high level of expert agreement regarding the relevance and clarity of the constructs.

Table 6 Aiken's V Index for the PAI-BMTS Model

No.	Evaluation Aspect	Aiken's V	Category
1	Clarity of the model's rationale	0.857	Valid
2	Alignment with metacognitive theory	0.893	Valid
3	Integration of Islamic values	0.857	Valid
4	Clarity of learning objectives	0.821	Valid
5	Alignment of objectives with reflective thinking	0.821	Valid
6	Alignment of objectives with Islamic character	0.821	Valid
7	Clarity of learning syntax	0.857	Valid
8	Integration of learning stages	0.857	Valid
9	Depth of reflection (*muhasabah*)	0.821	Valid
10	Teacher's role as a facilitator	0.893	Valid
11	Student activities	0.821	Valid
12	Dialogic interaction	0.857	Valid
13	Learning environment	0.821	Valid
14	Learning tools	0.857	Valid
15	Learning media and resources	0.786	Valid
16	Metacognitive assessment instrument	0.821	Valid
17	Alignment of assessment indicators	0.857	Valid
18	Reflection rubric	0.857	Valid
19	Model innovation	0.821	Valid
20	Potential for widespread implementation	0.821	Valid

The table 6 shows that the model's validity is not only high in one aspect but is consistent across all core components. Specifically, the highest score aligns with metacognitive theory and the teacher's role as a facilitator (0.893), indicating that the model possesses a strong theoretical foundation and a clear pedagogical direction.

These quantitative findings are reinforced by the Focus Group Discussion (FGD) results, which provide deeper insights into the figures. Experts not only assess the model as valid but also view it as an innovation with transformative potential. "This model's strength lies in integration. It does not separate thinking and values but unites them within the learning process." (Religious Education Expert). "It's syntactic structure is clear, but what is most important is the direction of its reflection." (Instructional Design Expert)

However, validity does not mean the model is without criticism. The validators provided important feedback regarding simplifying the syntax and adjusting the learning time. These notes indicate that the quality of the model is not measured solely by the perfection of its design, but by its ability to be continuously refined.

From a practical standpoint, the findings reveal an interesting dynamic. In the early stages of implementation, teachers faced challenges understanding the relatively new syntax. "At first it felt complex, because I had to change my usual teaching methods." (PAI Teacher 2). However, this complexity was temporary. As the implementation process repeated, teachers began to find a rhythm in using the model. The syntax that initially seemed complex evolved into a structure that systematically guided learning. "After trying it a few times, it actually became easier because the flow was clear." (PAI Teacher 4)

Classroom observations at the advanced stage showed a significant improvement in the model's implementation. All stages of the syntax could be executed more smoothly, and teachers could adapt strategies to classroom conditions. This indicates that the model is adaptive rather than rigid. Practicality is also reflected in the developed learning materials. Instructional modules, LAS, and assessment instruments are designed with a systematic and user-friendly structure. Teachers do not need to start from scratch but can implement the model immediately with minimal adjustments.

Furthermore, the model's practicality is not merely measured by ease of use but by its ability to transform pedagogical practices. Teachers no longer function as mere conveyors of information but as facilitators of the thinking process. This shift is evident in classroom interactions that have become more dialogic and reflective. Students begin to engage actively, while teachers guide the thinking process rather than merely provide answers. Thus, the model's practicality is not merely technical but transformational.

The main findings from the second set of results can be summarized as follows: first, PAI-BMTS model demonstrates high validity and consistency across all components. Second, the model has gained theoretical and practical legitimacy from experts and practitioners. Third, the model's practicality has improved through repeated implementation. Fourth, the model is adaptable to diverse learning contexts. Fifth, the model can transform the teacher's role and classroom dynamics. These findings indicate that PAI-BMTS is not merely a conceptually sound model but also works effectively in practice. This is where pedagogical innovation finds its meaning: when it is not merely understood, but implemented and changes the way we learn.

The Effectiveness of the PAI-BMTS Model—Effects and Transformation

The third finding highlights the most defining dimension of the PAI-BMTS model: not merely an improvement in cognitive achievement, but a shift in the quality of the learning experience toward reflective awareness and self-transformation. Effectiveness is analyzed through two complementary lenses—quantitative indicators that show measurable changes and qualitative evidence that reveals the internal mechanisms of those changes. Thus, the results do not stop at "whether there was an improvement," but answer "how the improvement occurred" and "what changed within the learner."

Quantitatively, the one-group pretest–posttest design across three implementation phases (small group, limited field, and large-scale) showed a consistent upward trend across three domains: content understanding, metacognitive awareness, and learning strategies. A shift in score distribution from low–moderate to high occurred in nearly all participants, indicating that the model works across classroom contexts.

Table 7 Summary of Pretest–Posttest Results (Aggregate)

Variable	Pretest (Mean ± SD)	Posttest (Mean ± SD)	Δ (Gain)	t (paired)	p-value	Interpretation
Islamic Religious Education Understanding	67.84 ± 8.91	81.26 ± 7.34	+13.42	21.37	<0.001	Significantly increased
Metacognitive Awareness	2.71 ± 0.41	3.62 ± 0.38	+0.91	18.95	<0.001	Significantly increased
Learning Strategies	2.65 ± 0.46	3.58 ± 0.40	+0.93	19.12	<0.001	Significantly increased

Note: Metacognitive awareness and learning strategies were measured using a 4-point Likert scale (range 1–4). Sample size: N = 300 students. Statistical significance was determined using paired-sample *t*-tests with $\alpha = 0.05$.

An increase in the mean, accompanied by a high t-value and a p-value < 0.001, indicates that the change is not a statistical coincidence but a stable effect. To clarify the magnitude of the impact, effect sizes (Cohen's d) were calculated, showing a large category across all variables.

Table 8 Effect Sizes (Cohen's d)

Variable	Cohen's d	Category
PAI Understanding	1.63	Large
Metacognitive Awareness	1.98	Large
Learning Strategies	1.91	Large

The observed improvements suggest that the PAI-BMTS model is associated with meaningful gains in students' understanding, metacognitive awareness, and learning strategies. However, because the study employed a one-group pretest–posttest design, these findings should be interpreted as evidence of promising effectiveness rather than definitive causal impact. These findings are reinforced by the high instrument reliability (Cronbach's Alpha = 0.922), which ensures measurement consistency.

However, the true strength of these findings goes beyond the numbers. Qualitative data reveals deeper layers of meaning regarding how these changes occurred. Classroom observations show a shift from procedural responses toward reflective reasoning. Students no longer merely answer questions but begin to formulate reasons, question assumptions, and connect concepts to their experiences. "Now they don't just answer; they explain why. Discussions have come alive." (Religious Education Teacher).

Student reflection journals reveal the emergence of self-awareness previously unseen in conventional learning. The Student said: "I'm starting to realize how I learn and what I need to improve. This lesson made me look at myself, not just the material." These quotes indicate that metacognitive development extends beyond learning strategies to self-reflection. This is where muhasabah functions as a transformative mechanism—linking knowledge with awareness and action.

A phased analysis across three implementation phases reveals a coherent developmental pattern. In the initial phase (n = 12), changes were evident in engagement and foundational awareness. In the second stage (n = 30), improvements occurred in self-monitoring and self-evaluation skills. In the third stage (n = 300), the model's effects were widely confirmed with consistent results across various schools. This pattern indicates that the model's effectiveness is not incidental but stable and replicable.

Changes also occurred in the pedagogical dimension. Teachers experienced a shift in role from content deliverers to facilitators of thinking processes. This transformation is reflected in more

dialogic teaching practices, the use of open-ended questions, and an emphasis on reflection. Religious Education Teacher said "My role has changed. I guide more than I explain."

The transformation of the teacher's role has direct implications for the classroom ecology: interactions become two-way, participation increases, and learning shifts from control toward collaboration. This reinforces the finding that the model's effectiveness is systemic—affecting students, teachers, and classroom dynamics simultaneously.

The most crucial finding lies in the integration of metacognition and spirituality. Data shows that metacognitive processes (planning, monitoring, evaluating) transform into value-oriented reflective practices. This integration can be mapped as follows: first: planning, awareness of intention: students set learning goals with an awareness of meaning. Second: monitoring, reflection on the process: students observe and test their understanding reflectively. Third: evaluating, self-reflection: students assess themselves and formulate behavioral changes. This integration forms a metacognitive–spiritual loop, a recurring cycle that connects knowledge, awareness, and transformation. In this cycle, learning does not stop at the acquisition of knowledge but continues into self-formation.

Thus, the main findings from the third set of results can be summarized as follows. First, the PAI-BMTS model produces significant improvements in students' understanding, metacognitive awareness, and learning strategies ($p < 0.001$; $d > 1.6$). Second, these quantitative gains are accompanied by qualitative transformations in the ways students think, reflect, and make meaning of their learning experiences. Third, muhasabah serves as a central mechanism that connects cognitive development with behavioral change. Fourth, the implementation of the model reshapes the teacher's role and classroom ecology toward a more dialogic, participatory, and reflective learning environment.

The effectiveness of the PAI-BMTS model extends beyond measurable academic outcomes. Its primary contribution lies in cultivating deeper awareness and reflective capacity among learners. This achievement goes beyond conventional indicators of success, as learning becomes a transformative process that influences how students think, feel, and engage with themselves and their surroundings.

Discussion

The findings of this study provide empirical evidence that the PAI-BMTS model can support the integration of cognitive, metacognitive, and spiritual dimensions within Islamic Religious Education. Rather than discussing these dimensions separately, the results demonstrate how they interact within a structured pedagogical framework. Three major findings emerged from the study: the successful development of an integrative learning model, its strong validity and practicality, and its potential to enhance students' metacognitive awareness and reflective engagement.

The first finding concerns the design of the PAI-BMTS model. The results indicate that the integration of metacognitive regulation and spiritual reflection can be operationalized through the L3M syntax (gentle, touching, inspiring, and transforming). This finding is consistent with previous studies showing that metacognitive learning strategies improve learners' ability to plan, monitor, and evaluate their learning processes (Panadero, 2017; Veenman, 2017). However, unlike most previous studies that focused primarily on cognitive regulation and academic achievement, the present study extends this perspective by incorporating spiritual reflection as an integral component of the learning cycle. In this respect, the findings support earlier arguments regarding the educational value of reflective practices in Islamic education (Bensaid et al., 2021; Halstead, 2004; T. Taufikin, Nurhayati, & Harun, 2025), while offering a more structured pedagogical mechanism through which reflection can be implemented in classroom practice.

The second finding relates to the validity and practicality of the model. The consistently high Aiken's V scores and positive responses from teachers suggest that the model possesses strong conceptual coherence and practical applicability. These findings are comparable to previous Educational Design Research studies that reported the importance of iterative refinement in achieving alignment between theoretical constructs and classroom implementation (McKenney & Reeves, 2018). Similar to earlier design-based studies, teachers initially perceived the innovation as demanding because it required changes in established instructional practices. However, repeated implementation improved familiarity with the learning syntax and increased implementation fidelity. This finding confirms previous research indicating that pedagogical innovations often require adaptation periods before becoming fully integrated into routine teaching practices (Darling-Hammond, 2017; Fullan, 2016; T. Taufikin, Nurhayati, Muzakki, et al., 2025). The present study extends this literature by demonstrating that metacognitive–spiritual learning designs can remain practical even within conventional secondary-school settings.

The third finding concerns the effectiveness of the model. Quantitative results showed significant improvements in students' understanding of Islamic Religious Education, metacognitive awareness, and learning strategies. These results are broadly consistent with previous empirical studies reporting positive relationships between metacognitive awareness and learning performance (Chandaka & Manivasakan, 2025; Panadero, 2017; Veenman, 2017). However, the qualitative findings suggest that the observed changes extend beyond academic performance. Students reported greater self-awareness, deeper reflection, and stronger connections between learning content and personal experience. In this regard, the present findings differ from many metacognitive intervention studies that primarily evaluate cognitive outcomes. The PAI-BMTS model appears to facilitate both cognitive development and reflective self-understanding, indicating a broader educational impact.

An important contribution of this study is the identification of muhasabah as a mechanism connecting metacognitive processes with value internalization. Previous research has emphasized the role of reflection in supporting learning and personal growth (Dewey, 1974; Panadero, 2017; Taufikin et al., 2026). Similarly, studies within Islamic educational traditions have highlighted the importance of muhasabah for moral and spiritual development (Ghazzali, 1993; Halstead, 2004; T. Taufikin et al., 2026). The present study brings these perspectives together by showing how reflective self-evaluation can function simultaneously as a metacognitive process and a spiritual practice. This finding extends existing literature by providing empirical evidence that reflection may operate not only as a strategy for improving learning performance but also as a pathway for personal transformation.

The findings also reveal changes in classroom interaction patterns and teacher roles. Teachers increasingly acted as facilitators of dialogue and reflection rather than transmitters of information. This result is consistent with studies emphasizing learner-centered and reflective pedagogies as catalysts for active engagement and deeper learning (Biesta, 2020; Khun-Inkeeree et al., 2020). However, the present study further suggests that such pedagogical shifts can contribute to the development of a more reflective classroom culture in Islamic Religious Education. The transformation observed was therefore not limited to students but also involved changes in teachers' instructional practices and classroom ecology.

Although the findings indicate promising outcomes, they should be interpreted cautiously. The one-group pretest–posttest design limits the ability to attribute observed improvements exclusively to the intervention. Other contextual factors may also have influenced the results. Nevertheless, the convergence of quantitative improvements and qualitative evidence across multiple implementation

phases strengthens confidence in the practical value of the model. Future studies employing quasi-experimental or experimental designs across broader educational contexts are needed to further examine the effectiveness and generalizability of the PAI-BMTS model.

Overall, this study contributes to the growing body of research on reflective and transformative learning by demonstrating that metacognitive regulation and spiritual reflection can be integrated within a single pedagogical framework. Rather than replacing existing metacognitive approaches, the PAI-BMTS model extends them by incorporating value-oriented reflection and *muhasabah* as mechanisms for fostering both learning and personal transformation.

Conclusion

This study developed and evaluated the PAI-BMTS (Pendidikan Agama Islam Based on Metacognitive Thinking Skills) model as an integrative approach to Islamic Religious Education. The findings answer the three research questions of this study. First, the PAI-BMTS model was successfully designed by integrating cognitive, metacognitive, and spiritual dimensions through the L3M learning syntax (gentle, touching, inspiring, and transforming). Second, the model demonstrated satisfactory validity and practicality, as reflected in strong expert validation results and positive implementation experiences across participating schools. Third, the model was associated with significant improvements in students' understanding of Islamic Religious Education, metacognitive awareness, and learning strategies, accompanied by qualitative evidence of deeper reflection and value internalization. This study also contributes to the development of Metacognitive Spiritual Pedagogy by demonstrating how metacognitive regulation and spiritual reflection can be integrated within a single instructional framework. The findings suggest that reflective learning supported by muhasabah can strengthen both learning processes and personal development.

Several limitations should be acknowledged. The study employed a one-group pretest–posttest design without a comparison group, limiting causal interpretation of the findings. In addition, the research was conducted within a specific regional context, which may restrict broader generalization. For practice, PAI teachers are encouraged to incorporate structured metacognitive reflection and muhasabah activities into classroom learning to promote deeper student engagement and value internalization. Future researchers may further examine the effectiveness of the PAI-BMTS model using quasi-experimental or experimental designs across more diverse educational settings and learner populations.

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