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Generative AI and Metacognition-Based Learning Strategies in Islamic Education to Enhance Students' Critical Thinking and Self-Directed Learning

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ABSTRACT

Objective: *The utilization of generative artificial intelligence (GenAI) in Islamic Education presents opportunities to provide feedback, offer varied explanations, and stimulate dialogue. However, it concurrently poses risks of dependency, misinformation, and a reduction in students' cognitive effort. This article aims to formulate Islamic Education learning strategies that integrate GenAI and metacognition to foster critical thinking and self-directed learning.* ***Method:*** *The study employs a qualitative approach through library research, examining relevant books, journal articles, policy reports, and empirical findings. Data were analyzed through source identification, thematic coding, cross-source comparison, and conceptual synthesis.* ***Results:*** *The synthesis yielded four primary findings. First, GenAI is most appropriately positioned as a dialogic partner and comparative resource, rather than as a religious authority or a substitute for educators. Second, metacognitive cycles comprising planning, monitoring, and evaluation must be embedded before, during, and after interactions with AI. Third, critical thinking can be cultivated through source verification, rational analysis, perspective comparison, and argumentation grounded in theological evidence and context. Fourth, self-directed learning emerges when students establish goals, select strategies, document their learning processes, and reflect on outcomes responsibly.* ***Novelty:*** *The article concludes that the integration of GenAI and metacognition must be founded upon pedagogical objectives, AI literacy, digital ethics, the validation of Islamic sources, and authentic assessment. Its implementation necessitates institutional guidelines, teacher facilitation, data protection, and periodic evaluation.*

INTRODUCTION

The transformation of the digital landscape allows students to rapidly acquire instructional content, illustrative examples, and solutions to academic inquiries. Generative models demonstrate the capacity to produce ostensibly coherent conversational text, simplify complex paradigms, formulate questions, and propose alternative explanations. Such accessibility presents substantial opportunities for Islamic Education, particularly when students require assistance in comprehending concepts pertaining to aqidah (theology), fiqh (jurisprudence), akhlak (ethics), Islamic cultural history, or the intersection of religious values with contemporary social issues. Nevertheless, linguistic fluency in generated outputs does not inherently equate to factual accuracy, methodological soundness, or alignment with the pedagogical context. Consequently, the integration of Generative AI (GenAI) cannot be evaluated solely by the velocity of its response generation; rather, its quality must be determined by its efficacy in deepening comprehension and reinforcing students' intellectual accountability [1].

The objectives of Islamic Education extend significantly beyond the mere acquisition of information. Islamic Education pedagogy is designed to cultivate religious knowledge concurrently with moral dispositions, spiritual attitudes, ethical reasoning, and behaviors indicative of responsibility. This orientation mandates that technological integration carefully considers both academic substance and the dimension of adab (ethical conduct). While AI can assist educators in presenting case studies, reflective inquiries, simulated dialogues, or scaffolded explanations, it inherently lacks moral agency and cannot supplant the foundational educational dynamic between teacher and student. Therefore, technology must be strategically positioned within an instructional design that preserves the teacher's pedagogical authority, safeguards spaces for critical reflection, and fosters reasoned discourse regarding Islamic values [2].

The primary challenge in Islamic Education during the information age is not a scarcity of access to learning materials, but rather the students' capacity to critically evaluate an overabundance of information. Students may retrieve Qur'anic verses, Hadith, or jurisprudential opinions from conversational AI systems without a comprehensive understanding of their original sources, contextual backgrounds, degrees of reliability, or boundaries of application. Within the realm of religious studies, a fundamental error such as incorrect source attribution can lead to profoundly misleading interpretations. Furthermore, nuanced theological and jurisprudential divergences among scholars risk being reductively synthesized into singular, seemingly absolute answers. Consequently, digital literacy within Islamic Education must encompass the competencies required to evaluate the provenance of information, verify primary references, acknowledge the inherent limitations of AI systems, and distinguish between descriptive explanations and normative judgments [3].

Critical thinking emerges as an indispensable competency in navigating this paradigm. In this context, critical thinking does not imply a baseless skepticism or the indiscriminate refutation of all propositions; rather, it involves the rigorous interpretation of information, clarification of terminology, identification of underlying assumptions, examination of evidence, comparative analysis of rationales, and the formulation of defensible conclusions. Within Islamic Education, these analytical skills can be applied to discourse surrounding digital muamalah (transactions), social media ethics, environmental stewardship, tolerance, justice, and social responsibility. While Generative AI (GenAI) can generate various arguments or case scenarios for analysis, genuine critical thinking is only actualized when students actively scrutinize and refine the AI-generated outputs, rather than passively replicating them. Preliminary empirical evidence from undergraduate experiments indicates that integrating ChatGPT into pedagogically structured activities correlates with enhancements in critical, creative, and reflective thinking skills; however, the specific context and the nature of instructional scaffolding remain decisive factors in interpreting these outcomes [4].

In addition to critical thinking, self-regulated learning constitutes a fundamental educational objective. This concept should not be conflated with solitary study or the unguided use of digital applications. Rather, self-regulation entails a student's capacity

to formulate objectives, manage time, select appropriate resources, monitor comprehension, seek assistance when necessary, and evaluate outcomes against explicit criteria. Artificial Intelligence (AI) can scaffold this process by providing sequential explanations, adaptive exercises, and guiding prompts. Nevertheless, the accessibility of instantaneous answers threatens to undermine perseverance, defer autonomous effort, and engender an illusion of competence regarding the learning material. Consequently, Generative AI (GenAI) must be coupled with self-regulatory practices that oblige students to formulate predictions, articulate their degree of certainty, explicate their reasoning, and revise their conclusions in light of empirical evidence [5].

Metacognition offers a mechanism for linking AI utilization with deliberate cognitive processing. In practice, metacognition involves an awareness of oneself as a learner, the strategies implemented, and the overarching regulation of the learning trajectory. Students can strategize their inquiries prior to engaging with AI, assess the pertinence of the generated responses during the dialogue, and subsequently evaluate the depth of their comprehension upon completion. Such strategies are imperative, as highly persuasive AI outputs may diminish a student's propensity to cross-verify information. Within instructional frameworks, educators must prompt students to articulate their pre-existing knowledge, identify knowledge gaps, specify the evidence they intend to gather, and critically highlight any dubious elements within the AI's responses. Research investigating the adoption of ChatGPT for metacognitive self-regulated learning demonstrates that while the technology is acknowledged as a beneficial educational support, its pedagogical efficacy remains contingent upon user competency and the systematic organization of the interaction [5].

International policies and guidelines emphasize that the utilization of Generative AI (GenAI) in education must be human-centric, safeguard privacy, account for the age of users, and ensure that educational objectives remain the primary driving force. Within this framework, AI is not merely a novel tool appended to traditional learning paradigms; rather, its application must be systematically evaluated based on utility, equity, transparency, security, accessibility, and its implications for student agency. Islamic Education necessitates a specific emphasis on the verification of religious texts (dalil) and their respective contexts, although the fundamental principles of data protection and human oversight remain universally applicable. Furthermore, educators must explicitly delineate the activities wherein AI assistance is permissible, specify when its utilization must be disclosed, and establish mechanisms through which students are held accountable for their final outputs [3].

Research concerning GenAI in education is advancing rapidly, yet the empirical findings remain heterogeneous. Several studies report potential opportunities, including personalized learning, enhanced access to explanations, feedback facilitation, and augmented student engagement. Conversely, other investigations highlight the risks of inaccurate responses, algorithmic bias, challenges to academic integrity, and the potential degradation of higher-order thinking skills should students become overly reliant on machine-generated outputs. Within the domain of Islamic Education, literature

addressing the integration of AI and critical thinking is beginning to emerge. However, a comprehensive framework that explicitly synthesizes GenAI, metacognition, critical thinking, self-directed learning, and Islamic educational values at the instructional strategy level has yet to be cohesively formulated. Consequently, this article positions metacognition as the pedagogical nexus bridging the generative capabilities of the technology with the intellectual agency of the students [6].

The core problematic of this research lies in the tension between the accessibility of immediate answers provided by GenAI and the educational imperative to cultivate independent, reasoned, and responsible comprehension. A discernible research gap exists in the absence of an integrated strategy that aligns GenAI utilization with specific metacognitive stages tailored for the Islamic Education context, particularly concerning the mechanisms for verifying Islamic sources and assessing learner autonomy. The urgency of this study is underscored by the critical need for educational institutions to possess practical guidelines that transcend the binary of outright prohibition or unregulated AI usage. The objective of this article is to synthesize a Islamic Education instructional strategy grounded in GenAI and metacognition, elucidate the mechanisms for fostering critical thinking, and formulate implementation and evaluation methodologies that uphold academic integrity, ethical conduct (adab), and student learning agency.

RESEARCH METHOD

This study employs a qualitative approach, specifically utilizing a library research design. This selection is predicated on the research objective, which aims to develop a conceptual synthesis regarding Generative AI (GenAI)-based Islamic Education instructional strategies and metacognition through the comparative analysis of published findings, rather than directly measuring the impact of interventions on student cohorts. Library research is operationalized as a systematic process encompassing the formulation of research questions, the identification and selection of sources, the evaluation of their relevance and credibility, the extraction of pertinent information, and the construction of cross-source interpretations. This framework mitigates the risk of producing a mere compilation of citations and compels the researcher to rigorously align empirical evidence with the conceptual questions established at the outset [7].

The data sources comprise books on methodology and instructional strategies, national and international journal articles, educational institution reports, and research reports published between 2021 and 2025. Core literature was selected from online platforms possessing distinct bibliographic identities, such as publisher websites, journal portals, library catalogs, institutional repositories, and DOI landing pages. The search keywords incorporated "generative AI in education", "ChatGPT and critical thinking", "metacognitive self-regulated learning", "AI literacy", "Islamic religious education", "Pendidikan Agama Islam", "berpikir kritis", and "kemandirian belajar". Furthermore, the search strategy utilized citation tracking to identify relevant primary sources. Literature specifically utilized to guide the research procedures includes international works on

research design and literature reviews, as well as Indonesian qualitative methodology textbooks published within the specified timeframe of the study [8].

The inclusion criteria necessitated direct relevance to Generative AI (GenAI), metacognition, self-regulation, critical thinking, Islamic education, academic integrity, or literature review methodologies. Additionally, the selected literature was primarily published between 2021 and 2025 and required verifiable bibliographic information. Priority was accorded to journal articles that transparently delineated their objectives, methodologies, contexts, and conclusions. Books were selected based on their conceptual alignment and the credibility of their publishers, whereas institutional documents were utilized to analyze governance principles and AI competencies. Conversely, sources were excluded from the primary dataset if they functioned solely as secondary citations lacking adequate metadata, constituted promotional material devoid of authorial information, or failed to substantiate the research focus. The rationale underpinning the inclusion and exclusion of sources was systematically documented in search logs to ensure the reviewability of the selection process [9].

Data collection was executed through systematic documentation and structured logging. For each selected source, the researchers recorded the bibliographic details, research objectives, study design or document classification, participant context (for empirical studies), principal findings, methodological limitations, and relevance to the conceptual variables of the current study. These data were subsequently synthesized into an extraction matrix categorized by preliminary themes: the pedagogical utility of GenAI, metacognitive practices, indicators of critical thinking, facilitation of autonomous learning, the ethical dimensions of AI utilization, and the distinct characteristics of Islamic Religious Education. This systematic approach facilitated the comparative analysis of sources with divergent orientations, such as empirical research assessing cognitive developments juxtaposed with policy frameworks outlining implementation guidelines. Rather than attributing uniform evidentiary weight to all sources, the researchers critically evaluated whether the conclusions of each article were rigorously supported by its respective research design and scope [10].

Data analysis was conducted through thematic content analysis. The initial phase involved iterative reading and the identification of statements addressing the research questions. The subsequent phase comprised categorizing codes into themes, comparing similarities and differences across sources, testing themes against contradictory evidence, and developing a conceptual model. The final synthesis focused on the interrelationships among the role of Generative AI (GenAI), metacognitive cycles, critical thinking practices, and self-directed learning within Islamic Education activities. Interpretative validity was reinforced through source triangulation, cross-verification of bibliographic details on publisher websites or via DOIs, comparison of policy documents with empirical research, and the systematic documentation of analytical decisions. This approach aligns with qualitative research orientations that emphasize process traceability and interpretative coherence, while acknowledging that literature reviews cannot directly establish causal relationships in classroom settings [8].

RESULTS AND DISCUSSION

GenAI as a Dialogic Partner Governed by Pedagogical Objectives and Islamic Education Ethics

The literature synthesis indicates that the utilization of GenAI must originate from the establishment of learning objectives rather than the mere selection of technological applications. For instance, if the instructional objective is to comprehend the principle of tabayyun (information verification), students should not merely ask a chatbot for its definition; instead, they must evaluate examples of unverified information, formulate investigative questions, and articulate why a claim necessitates verification prior to dissemination. Similarly, if the learning objective is to understand divergences in fiqh (Islamic jurisprudence) opinions, AI can be employed to propose alternative perspectives or distill complex discourses into preliminary explanations. Educators must then redirect students to authoritative sources, examine the contextual nuances, and clarify that generative responses are probabilistic model outputs requiring critical appraisal, rather than binding religious verdicts. This approach corresponds with the paradigm that AI in education should scaffold learner agency and refrain from usurping the cognitive task of meaning-making [11].

Within the framework of instructional strategy, Generative AI (GenAI) functions as a dialogic partner that assists students in formulating questions, generating alternative explanations, elucidating concepts, and providing preliminary feedback. Educators can instruct students to juxtapose simplified AI-generated explanations with textbook literature or pedagogical instruction. The resulting discrepancies serve as a foundation for critical inquiry: do these outputs contain oversimplified terminology, incomplete data, broad generalizations, or contextual inaccuracies? Consequently, this pedagogical approach shifts the student's cognitive focus from merely asking, "Did the AI answer my question?" to critically evaluating, "How robust is this response, and through what means can its validity be verified?" Literature on AI pedagogy for educational institutions underscores that such technology must be integrated into active, reflective learning processes and human interaction, rather than serving as a surrogate for the professional judgment of educators [12].

A prominent principle emerging from the academic literature is the explicit delineation of responsibilities. While GenAI may propose instructional materials or examples, students retain accountability for inquiry, verification, analytical reasoning, and the final academic deliverable. Concurrently, educators are tasked with ensuring alignment with learning outcomes, source integrity, ethical standards, and value development. At the institutional level, schools must formulate policies governing access, data privacy, and transparency of utilization. This distribution of responsibility is imperative, as chatbots are capable of generating highly articulate responses that may nonetheless harbor factual inaccuracies or inherent biases. Specifically within the context of Islamic Education, the educator's role persists as an academic and moral facilitator who bridges theoretical knowledge with practical life contexts, rather than functioning merely as an assessor of AI-generated outputs. Scholarship on AI ethics posits that robust

governance and the collective responsibility of the educational community are critical components; these safeguard against the risk that ostensibly beneficial systems might inadvertently undermine educational equity or learner agency [13].

National strategic frameworks for Islamic Education establish a foundational basis for integrating technology into the processes of knowledge acquisition and value formation. It is insufficient for Islamic Education pedagogy to merely produce students capable of reiterating definitions or generating summaries; rather, it must cultivate an applied comprehension that equips learners to navigate moral dilemmas. Consequently, educational activities facilitated by Generative AI (GenAI) should consistently be coupled with tasks involving interpretation, discussion, reflection, and practical application. For instance, should an AI generate five examples of trustworthy behavior (amanah) within digital environments, students must critically evaluate whether these examples align with the core principles of trustworthiness, assess their potential impact on other parties, and determine how the proposed actions might require contextual adaptation in concrete scenarios. Such a case-based approach prevents the AI tool from becoming an isolated focal point, ensuring it remains tethered to the overarching pedagogical objectives of Islamic Education [14].

Furthermore, students' AI literacy must encompass the understanding that GenAI operates by generating outputs derived from data patterns and algorithmic instructions; therefore, a persuasive response does not inherently equate to verified knowledge. Learners must be trained to identify potential AI hallucinations, informational incompleteness, linguistic biases, and contextual limitations. Educators can formulate "response audit" exercises wherein students are presented with an AI-generated output and tasked with categorizing its components into factual statements, interpretations, subjective opinions, and recommendations. Subsequently, each claim must be rigorously cross-examined against credible sources. This methodological step treats AI inaccuracies not as a justification for the wholesale rejection of the technology, but rather as a pedagogical instrument for enhancing information literacy. This approach aligns with the UNESCO AI competency framework, which underscores the necessity of critical evaluation, ethical considerations, technical comprehension, and accountability in both the design and utilization of artificial intelligence [15].

Generative AI (GenAI) outputs must not be regarded as primary religious references. Should an AI response incorporate Quranic verses, hadiths, classical texts, hadith numbering, scholarly rulings, or jurisprudential maxims, students are required to consult the original texts or rely on credible sources that offer traceable content and contextual explanations. In matters involving theological or jurisprudential divergence, AI-generated responses must be cross-examined against relevant scholarly literature and the instructor's clarifications. While educators are not obligated to transform every discourse into a sectarian debate, it remains imperative to prevent the model from misrepresenting diverse viewpoints as a monolithic consensus. Delineating these boundaries safeguards the substantive integrity of Islamic Education and reinforces the understanding among students that linguistic technologies hold no religious authority.

Furthermore, research on AI integration within Islamic education in Indonesia and Thailand highlights the necessity for institutional frameworks that thoughtfully integrate specific contexts, cultural values, and the indispensable role of educators [16].

Moreover, GenAI-assisted Islamic Education instruction must be grounded in a human-centered pedagogical paradigm. Students should function not as passive recipients of machine-generated outputs, but as active learners tasked with critically evaluating the credibility of information and determining appropriate courses of action. To foster this, educators may require students to document their AI usage, specifying the timing, objectives, segments utilized for inspiration, modified content, and the literature consulted for verification. Cultivating this degree of transparency offers greater educational value than merely policing texts for AI-generated patterns. The underlying objective is to instill academic accountability rather than to infringe upon student privacy. In alignment with this, UNESCO guidelines advocate for core principles such as data protection, age-appropriateness assessments, pedagogical validation, and governance mechanisms designed to ensure sustained human oversight in the application of GenAI [3].

Literature concerning student perspectives asserts that the adoption of Generative AI (GenAI) is primarily correlated with its perceived usefulness, ease of use, and the potential for academic assistance. Nevertheless, a high frequency of usage does not inherently indicate the occurrence of deep learning. Within the context of Islamic Education, students may favor brief explanations while neglecting the comprehensive study of theological evidence (dalil), or they may seek immediate resolutions to ethical dilemmas without evaluating the underlying consequences. Consequently, educators must transition student satisfaction with the application into observable learning processes, wherein students formulate higher-quality inquiries, identify inaccuracies, construct logical arguments, and engage in critical reflection. The efficacy of technology should be assessed through the quality of the learning process and the resulting educational products, rather than the quantity of prompts submitted or the rapidity of task completion [17].

A tangible pedagogical strategy to achieve this is the implementation of Socratic dialogue with AI. In this approach, students are tasked with posing an initial inquiry regarding a specific case and subsequently prompting the AI to provide a rationale and alternative viewpoints. In ensuing iterations, rather than merely extracting a definitive answer, students are required to test underlying assumptions, demand evidence, investigate potential exceptions, and analyze the ramifications of each alternative. Educators then facilitate a comparative analysis between the AI-generated dialogue and authoritative sources, guiding students to synthesize their own conclusions. Furthermore, teachers must maintain vigilant oversight to ensure the AI does not produce sensitive information or prejudiced responses. This dialogic method is pedagogically valuable provided it positions the student as the primary driver of inquiry and the critical evaluator of the generated output. Research examining the affordances

and risks of educational chatbots concludes that secure implementation demands robust pedagogical design, comprehensive user literacy, and sustained human supervision [18].

Generative AI (GenAI) can also facilitate differentiated instruction. Students experiencing difficulties in comprehending concepts may utilize the technology to request analogies, simplified examples, or step-by-step explanations, whereas more proficient students can be challenged to construct counterarguments or evaluate conflicting claims. However, differentiation does not imply that students should only engage with material that aligns with their comfort levels. Educators must ensure that all learners achieve the core objectives while encountering appropriate cognitive challenges. Students who employ AI to summarize materials must supplement these summaries with evidence of comprehension, such as articulating concepts in their own words, generating novel examples, and answering follow-up questions without AI assistance. In this context, AI functions as a temporary instructional scaffold that is progressively withdrawn as student autonomy increases, rather than a mechanism that fosters perpetual dependence on external support [19].

Consequently, the synthesis of the primary theme positions GenAI as a dialogic partner that remains subordinate to pedagogical objectives and ethical standards. This strategic framework integrates learning goals, inquiry-based tasks, source verification, operational transparency, and critical reflection. In practical application, educators may initiate this integration within a localized instructional unit such as the ethics of information dissemination to evaluate whether students can effectively distinguish AI-generated outputs from empirically valid evidence. A phased implementation allows instructors to identify student challenges and refine regulatory guidelines prior to a more extensive deployment. Ultimately, the most responsible pedagogical model is not characterized by the ubiquitous application of AI across all activities, but rather by the judicious selection of instances where AI genuinely enriches the learning process versus contexts where students must operate independently of technological aids [20].

Metacognition as a Cycle of Planning, Monitoring, and Evaluation in Islamic Education

The second literature synthesis indicates that the integration of Generative AI (GenAI) becomes significantly more meaningful when each interaction is embedded within a metacognitive cycle. This cyclical process initiates prior to the students' engagement with the AI, proceeds through the verification of generated responses, and concludes with a critical evaluation of both the acquired comprehension and the applied strategies. During the planning phase, students establish specific learning objectives, identify their prior knowledge, formulate precise questions, select comparative references, and project the criteria for a robust response. In the monitoring phase, they critically assess the relevance, consistency, and evidentiary support of the AI-generated outputs. Finally, in the evaluation phase, students determine whether their objectives were met, identify any inaccuracies, and reflect on necessary strategic adjustments. Cultivating this practice enables students to recognize learning as an actively regulated process rather than the passive reception of ready-made answers [21].

The planning phase can be operationalized through a concise "learning contract" completed before students access the chatbot. Within this framework, students articulate the specific issue they intend to comprehend, their baseline knowledge, areas of persistent confusion, the required types of sources, and the indicators of genuine conceptual mastery. For instance, when studying the topic of zakat (almsgiving), a student might establish an objective to elucidate its social function and differentiate it from other forms of sedekah (voluntary charity). The student would specify that a comprehensive response must be corroborated by pedagogical resources and logical reasoning that links theoretical concepts to practical cases. Educators can monitor these contracts to ascertain whether student inquiries are overly broad or merely solicit final answers, subsequently providing scaffolding to refine their prompts. Such pedagogical practices effectively redirect the focus from mere technological utilization to the active self-regulation of the learning process [9].

During the monitoring phase, students must consciously evaluate whether they genuinely comprehend the AI-generated responses or merely experience an illusion of understanding facilitated by the text's fluency. One effective pedagogical strategy involves requiring students to paraphrase essential concepts without consulting the AI's output, subsequently corroborating their interpretations against authoritative reference materials. Furthermore, educators can instruct learners to assess their confidence levels prior to and following the verification process, articulating the specific factors that precipitated any cognitive shifts. In instances where statements remain unverified, students should document them as open inquiries rather than relying on unfounded assumptions to bridge informational gaps. This documentation practice not only reinforces comprehension monitoring but also cultivates a tolerance for intellectual ambiguity. Ultimately, metacognition extends beyond mere introspection; it requires the translation of cognitive awareness into concrete strategic decisions [5].

The evaluation phase necessitates a comprehensive assessment of both the learning process and the final outcomes. Students must critically analyze the clarity of their initial prompts, determine whether the AI served as a constructive aid or a cognitive distraction, evaluate the adequacy of comparative sources, and ensure that their final conclusions are logically substantiated. Reflective exercises need not be extensive; rather, the emphasis must be on analytical depth. Guiding inquiries such as "Which assertions did I modify after consulting external sources?", "What knowledge gaps remain?", or "Under what circumstances should AI utilization be avoided?" compel students to critically appraise their learning methodologies. To track this developmental trajectory, educators may collect weekly reflective journals, thereby observing the learners' transition from a passive reliance on AI-generated summaries to active engagement in evidence verification. An AI-integrated educational framework that prioritizes human-technological collaboration substantiates the principle that the application of artificial intelligence must be governed by purposeful intent, continuous monitoring, and inherent learner accountability [12].

Metacognition can be facilitated through intentionally designed prompts that shift cognitive responsibility back to the student. For instance, rather than requesting comprehensive solutions, students might instruct the artificial intelligence (AI) to generate guiding questions, provide two contrasting arguments along with their underlying assumptions, or offer feedback on a draft explanation without producing the final version. Educators can supply prompt templates, such as, "Pose three questions to assist me in evaluating this case, but refrain from drawing conclusions on my behalf." Such prompts mitigate the reliance on instantaneous answers and compel students to exert cognitive effort. However, the quality of the prompt alone does not ensure metacognitive engagement if students fail to conduct subsequent verification or reflection upon receiving the AI's response. Research concerning the acceptance of AI in metacognitive self-regulated learning posits that technological scaffolding and self-regulatory competencies must be considered in tandem [5].

National literature on qualitative methodology underscores the significance of a traceable process, a principle that is equally applicable to students in documenting their cognitive trajectories. Educators can adapt this principle of traceability into learning portfolios comprising initial inquiries, AI-generated responses, verification annotations, argument revisions, and final reflections. The objective of such portfolios is not to monitor every digital activity undertaken by the student, but rather to elucidate the interconnections among processes, evidence, and conclusions. When educators evaluate final products without examining the underlying processes, students may be incentivized to submit polished, AI-generated responses. Conversely, assessing the cognitive trajectory ensures that the students' efforts and strategic approaches become integral, visible components of the educational paradigm [10].

Literature review methodology indicates that rigorous analysis necessitates comparison, relevance evaluation, and synthesis, rather than the mere accumulation of information. Learning activities within Islamic Education can integrate these principles on an age-appropriate scale: students can retrieve two distinct sources, identify their similarities and differences, assess their credibility, and subsequently formulate informed conclusions. While Artificial Intelligence (AI) can facilitate the generation of search keywords or inquiries, students must independently verify the actual existence and relevance of the retrieved sources. For example, when exploring the topic of tolerance, students might compare AI-generated explanations with established textbooks and official school documents, meticulously documenting areas of alignment alongside segments requiring correction. This pedagogical practice concurrently fosters both metacognitive skills and source literacy [7].

Educators serve as the architects of scaffolding, providing provisional instructional support. In the preliminary stages, teachers supply planning rubrics, exemplary verification logs, and curated lists of recommended sources. As students' competencies develop, this assistance can be systematically faded, allowing students to autonomously select their comparative sources and articulate the rationale behind their choices. Scaffolding remains accessible for students who require continued support; however, the

intervention is explicitly designed to cultivate their capacity for independent decision-making. This structured methodology significantly contrasts with permitting students to engage with chatbots in an unguided environment, acknowledging that mere technological access does not equate to the capacity for self-directed learning. Ultimately, the integration of Generative AI (GenAI) should facilitate students' progression from teacher-directed regulation toward refined self-regulation, while preserving essential channels for human consultation [21].

In the context of Islamic Education, metacognitive reflection must encompass ethical and spiritual dimensions without devolving into an assessment of students' personal beliefs. Students can be prompted to articulate how the principles of amanah (trustworthiness), tabayyun (verification), responsibility, and respect for others influence their engagement with Artificial Intelligence (AI). For instance, do students disclose AI assistance in their assignments? Do they verify information prior to dissemination? Do they input personal data or peers' experiences into prompts without explicit consent? Such inquiries bridge cognitive regulation with the responsible utilization of technology. The ethical framework of AI in education emphasizes that risks and responsibilities cannot be mitigated solely through technical features; rather, they must be cultivated within the culture of educational practices [22].

The evaluation of metacognitive efficacy should extend beyond perceptual questionnaires indicating that students "feel more independent." Process indicators may include the precision of goal-setting, the quality of generated questions, the frequency of source verification, the ability to articulate cognitive shifts, the alignment of strategies with tasks, and the depth of post-learning reflection. Furthermore, educators can observe whether students recognize when to seek assistance, when to cease utilizing AI, and how to navigate inadequate AI responses. Such measurements necessitate the integration of process and outcome evidence, while also accounting for variations in baseline proficiency. Research on the correlation between self-regulation and metacognition highlights the necessity of examining both constructs concurrently, rather than treating them as identical paradigms [23].

Consequently, the theme of metacognition yields a pedagogical design comprising three mandatory phases: pre-query planning, concurrent verification during interaction, and post-task reflection. While this cycle is straightforward to implement in classroom settings, its consistent application can foster intellectual discipline. AI is utilized to broaden possibilities, whereas students are tasked with managing objectives and assuming responsibility for their comprehension. Metacognition serves as a mechanism to prevent Generative AI (GenAI) from dominating the cognitive process, as students continuously evaluate the tool's utility in relation to their goals. Supported by rubrics, reflective journals, and instructor feedback, this practice can be scaled from isolated assignments to cross-topical projects within Islamic Education [15].

Cultivating Critical Thinking through Verification, Argument Evaluation, and Case-Based Dialogue

Current syntheses indicate that critical thinking does not develop merely through student exposure to Artificial Intelligence (AI) outputs; rather, it emerges when students actively engage in cognitive tasks demanding interpretation, analysis, evaluation, inference, explanation, and reflection. Within the context of Islamic Education, instructional activities can be structured around case studies highly relevant to students' daily realities. Such cases may encompass the dissemination of unverified religious information, digital content consumption, online transactions, social ethics, environmental responsibility, and ideological divergences. In this framework, AI serves as an instrumental tool to generate diverse perspectives, which students subsequently subject to rigorous critical examination. The primary pedagogical criteria dictate that students must demonstrate the capacity to articulate reasoned arguments, differentiate empirical evidence from subjective opinion, elucidate underlying assumptions, evaluate potential consequences, and revise their conclusions in light of novel evidence. Furthermore, critical assessments regarding the educational impact of AI emphasize that the enhancement of higher-order thinking skills is fundamentally contingent upon robust instructional design and the proactive mitigation of dependency risks [24].

Foundational to this pedagogical approach are verification exercises. Students are tasked with selecting an AI-generated response containing factual or theological claims and deconstructing it into discrete, verifiable propositions. This methodology requires students to identify cited references, consult original source materials when accessible, evaluate contextual fidelity, and ultimately categorize the claims as fully supported, partially supported, unsupported, or inconclusive. Educators must underscore the epistemological nuance that an "undiscovered" corroboration does not inherently signify a "demonstrably false" claim, nor should it be accepted as "verifiably true." Such verification activities are of paramount importance, as preliminary investigations into ChatGPT have highlighted its dual capacity to facilitate learning while simultaneously posing significant risks of disseminating fabricated information and cross-disciplinary inaccuracies [25].

The subsequent phase entails the rigorous analysis of arguments. Students are instructed to differentiate among primary claims, rationales, evidence, underlying assumptions, and final conclusions within AI-generated responses. Should a response deem a specific behavior unethical, students must identify the operative moral principles, the impacted stakeholders, and the extent to which the posited reasons genuinely substantiate the conclusion. Within the domain of contemporary Islamic jurisprudence (fiqh), it is imperative for students to distinguish between factual circumstances, overarching principles, subjective interpretations, and definitive rulings that necessitate specialized scholarly authority. Although AI systems can construct alternative argumentative frameworks, students must critically evaluate the logical coherence and source relevance of these outputs. This analytical paradigm ensures that students do not merely conflate persuasive rhetoric with empirical veracity [26].

Furthermore, educators may implement the pedagogical strategy of "intentionally flawed responses." This exercise entails utilizing pre-screened AI outputs that harbor specific, pedagogically benign errors or vulnerabilities. Students are subsequently tasked with detecting factual inaccuracies, unwarranted generalizations, ambiguous terminology, or unverifiable citations. The deployment of this method necessitates meticulous preparation, strictly avoiding the introduction of sensitive theological fallacies without comprehensive contextualization. Post-discussion, instructors facilitate reflective exercises to examine why such erroneous outputs often appear credible. The primary objective of this activity is neither to demean the students nor to discredit the technology, but to foster a rigorous habit of verifying the foundational premises of claims, particularly when articulated with an authoritative tone. Current literature on the pedagogical application of Generative AI (GenAI) acknowledges its advantages in facilitating personalized learning and feedback, whilst simultaneously highlighting persistent challenges concerning factual accuracy, algorithmic bias, and academic integrity [6].

Multiperspective dialogue can be employed to demonstrate that ethical issues are rarely resolved through reductive slogans. In examining the ethics of social media usage, artificial intelligence (AI) can assist in synthesizing diverse perspectives on freedom of expression, prudence, accountability, and the impact of one's actions on others. Students must critically evaluate whether each perspective is grounded in equitable reasoning, contextual awareness, and the avoidance of stereotypes. Educators should emphasize that the existence of divergent viewpoints does not equate to equal validity among all arguments; rather, arguments must be assessed based on empirical evidence, ethical principles, logical consistency, and potential ramifications. Current literature regarding the integration of ChatGPT in education advocates for a pedagogical approach that transcends mere tool utilization, suggesting instead that the capabilities and limitations of AI systems be incorporated into the core curriculum of AI literacy [27].

Case discussions should culminate in the formulation of independent arguments constructed by the students. These may take the form of short essays, oral presentations, recorded explanations, or group discussions, provided that the students articulate a clear claim, present substantive reasoning, elucidate supporting evidence, address potential counterarguments, and formulate a logical conclusion. Educators should prioritize the quality of cognitive reasoning over the linguistic similarity of student submissions to AI-generated outputs. Students who draw inspiration from AI are required to transparently disclose its usage in accordance with established institutional guidelines. This practice signifies that Islamic Education assessments value academic integrity and the cognitive process over superficially polished final products. Furthermore, scholarly discourse on academic integrity emphasizes that the ethical challenges associated with AI cannot be adequately resolved through automated detection mechanisms alone; educational institutions must explicitly define expectations regarding transparency and user accountability [28].

Critical evaluation spaces must also encompass the capacity to discern the limitations of AI-generated responses. Students may be prompted to address three core inquiries: what the model has failed to explain, what supplementary evidence is necessitated, and who possesses the domain expertise to provide further elucidation. This exercise cultivates epistemic awareness regarding the boundaries of knowledge, which is particularly relevant when Islamic Education topics intersect with complex legal, historical, or ethical paradigms. Educators assist students in differentiating between queries resolvable via general learning resources and those demanding expert articulation, rigorous discourse, or contextual comprehension. Literature examining the complementary roles of educators and ChatGPT underscores that a productive synergy does not supplant the teacher, but rather amalgamates computational capabilities with human expertise and evaluative judgment [29].

The advancement of critical thinking demands diverse pedagogical strategies rather than a singular prompting template. Inquiries can be categorized into clarification, evidence analysis, assumption identification, causal determination, alternative comparison, impact evaluation, and counterargument testing. A scaffolded methodology is recommended: at the foundational tier, educators provide a questioning framework; at the intermediate tier, students autonomously construct their prompts; and at the advanced tier, students articulate the rationale behind the relevance of their inquiries. The implementation of sequential prompting further circumvents reliance on definitive outputs by necessitating multiple iterations of student-led analysis. Empirical evidence derived from a study of Ghanaian students demonstrates measurable improvements in critical, reflective, and creative thinking competencies when ChatGPT is integrated into classroom activities as a structural component of the pedagogical approach, rather than operating merely as an answer repository [4].

Within the framework of Islamic education, it is imperative to avoid conflating critical thinking with dispositions that oppose religious values. Instead, critical inquiry should be channeled toward the meticulous comprehension of texts, prudence in formulating conclusions, the readiness to concede cognitive limitations, and the deliberation of moral implications stemming from specific actions. Educators are tasked with cultivating a discursive atmosphere that empowers students to articulate inquiries with proper decorum without the apprehension of humiliation. During academic disagreements, students must be encouraged to substantiate their arguments with valid reasoning and credible sources while preserving mutual respect. Furthermore, research examining Islamic religious education within Indonesian higher education indicates that although ChatGPT can facilitate scholarly dialogue and ideation, the risk of overreliance on pre-packaged information underscores the necessity of sustaining rigorous analytical and verification practices [30].

Effective evaluation strategies for critical thinking require the implementation of rubrics that clearly differentiate among the cognitive processes of reiterating, explaining, analyzing, evaluating, and synthesizing. At the foundational tier, learners might merely recall information; however, at more sophisticated levels of intellectual maturity, they are

expected to elucidate the interrelations among concepts, interrogate empirical evidence, recognize logical vulnerabilities in their reasoning, and recalibrate their academic positions. Assessment rubrics should assign value to the precise identification of problems, the robustness of source material, the coherence of argumentation, the integration of divergent perspectives, and the aptitude for acknowledging epistemic uncertainty. Pedagogically, instructors should deliver process-oriented feedback such as prompting students to substantiate their evidence or explicate the nexus between claims and supporting rationales rather than simply designating responses as incorrect. This evaluative approach is consistent with the broader necessity of restructuring assessments to accurately gauge human cognitive competencies that generative text models are incapable of authentically replicating [31].

Evidence regarding the relationship between Artificial Intelligence (AI) and critical thinking requires careful scrutiny. A systematic review of AI and critical thinking highlights the potential for broader access to diverse perspectives and analytical support, yet it simultaneously identifies the risk of diminished self-reflection should students become overly reliant on the technology. Consequently, this article does not posit that Generative AI (GenAI) universally enhances critical thinking. A more precise conclusion is that GenAI can act as a catalyst for critical cognitive exercises when students are compelled to verify sources, process arguments, defend their conclusions, and reflect upon their learning processes. The actual impact within Islamic Education classrooms warrants empirical investigation through field research, employing definitive indicators and methodologies appropriate for the specific school context [24].

Self-Directed Learning, Digital Etiquette, and Authentic Assessment in Strategic Implementation

The fourth theme suggests that self-directed learning must be conceptualized as learner agency accompanied by accountability. An autonomous student is not characterized by a complete absence of seeking help, but rather by the capacity to discern when assistance is necessary, select appropriate resources, and evaluate the subsequent outcomes. Although GenAI can aid in elucidating concepts or providing supplementary practice, students must retain objectives that stem from their intrinsic educational needs. Literature on Islamic Education instruction in the digital era emphasizes that technology holds value primarily when it facilitates learning interactions and intended learning outcomes; therefore, educators must structure activities to ensure that learners do not become mere passive consumers of media [32].

Learner autonomy is fostered through consistent routines. At the initiation of an instructional unit, students establish targets, anticipate potential challenges, and devise a schedule. Throughout the learning phase, they select resources, document their progress, and formulate questions when encountering impediments. Following task completion, students engage in self-evaluation by juxtaposing their results with established rubrics and identifying actionable steps for improvement. GenAI can serve as an instrument for guided practice; however, students must critically evaluate whether the application of the tool genuinely contributes to the achievement of their targets.

Scholarship on co-intelligence posits AI as a technology capable of expanding human capabilities provided it is utilized consciously; its ultimate efficacy depends heavily on the quality of the prompts generated and the ethical responsibility of the user [21].

Educators can foster student autonomy by implementing the principle of "independent effort prior to artificial intelligence (AI) assistance." Before engaging with a chatbot, students are required to document their preliminary answers or the initial efforts they have undertaken. Upon receiving AI-generated recommendations, students must juxtapose these suggestions with their original concepts and articulate any subsequent modifications. This methodological approach precludes the initial AI response from being adopted as the definitive answer. For students encountering difficulties, educators can employ scaffolding techniques by providing incremental support through guiding questions; this assistance is progressively faded as the student's proficiency increases. Such fundamental measures cultivate a sense of ownership over educational outcomes, as students can distinctly identify their intellectual contributions within the final product [12].

Digital ethics (adab) constitutes a fundamental component of autonomy within Islamic Education. It is imperative for students to uphold academic integrity when utilizing AI tools. This entails refraining from presenting entirely machine-generated texts as original work, protecting the confidential data of others, respecting intellectual property rights, and avoiding the dissemination of unverified information through technological means. Educational institutions should establish transparent guidelines delineating assignments that permit AI assistance, the permissible scope of such assistance, the mandatory disclosure of AI utilization, and tasks that require strictly unassisted execution. Rather than serving solely as punitive measures, these regulations should facilitate academic discourse on trustworthiness (amanah), equity, and accountability. Furthermore, a SWOT analysis of ChatGPT integration in Islamic education indicates that the advantages of efficiency and personalized learning must be counterbalanced with strategies to mitigate inherent vulnerabilities, including superficial comprehension, potential biases, and the risk of diminishing higher-order cognitive skills [33].

Implementation must also critically address issues of access and equity. Students possess varying levels of access to devices, internet connectivity, digital accounts, and familial support. Consequently, if high-stakes activities necessitate the use of specific applications at home, such pedagogical strategies risk exacerbating existing educational disparities. To mitigate this, educators should provide offline alternatives, facilitate shared technological sessions within the school premises, offer equivalent alternative materials, and design assessments that do not penalize students for a lack of personal technological resources. Infrastructural limitations extend beyond mere technical constraints; they are fundamentally tied to student participation and the quality of the learning experience. Therefore, Islamic Education must uphold consistent educational objectives and standards of reasoning irrespective of technological disparities, tailoring

instructional support to ensure that all students are afforded an equitable opportunity to demonstrate their competencies [20].

Authentic assessment should integrate both the final product and the developmental process. The product may encompass written explanations, case analyses, presentations, informative posters, or moral reflections. Conversely, the process involves preliminary notes, revision histories, source verification, oral discussions, and the students' articulation of their decision-making rationales. Educators are not obligated to comprehensively evaluate every digital footprint; rather, selecting relevant and proportional evidence is sufficient to maintain a pragmatic assessment framework. For instance, upon submitting a case analysis, a student could be required to orally explicate the two most pivotal claims and the specific sources utilized. This methodology ensures that students genuinely comprehend their submissions rather than merely forwarding AI-generated text. The discourse surrounding the transformation of assessment paradigms in the ChatGPT era underscores the imperative to evaluate processes, cognitive reasoning, and decision-making in a more explicit manner [31].

An exemplary implementation design may commence with the concepts of tabayyun (information verification) and media ethics. The educator introduces a scenario involving a viral religious post of unverified origin. Students document their initial responses, formulate verification inquiries, and subsequently prompt artificial intelligence (AI) to outline information-checking procedures or generate a rubric of questions to evaluate the claims. Following this, students investigate primary sources or credible platforms, identify unconfirmed elements, and formulate well-reasoned recommendations. At the conclusion of the lesson, students reflect in writing on the evolution of their perspectives, noting instances where AI proved beneficial, identifying erroneous or incomplete aspects, and outlining future methodological adjustments. This pedagogical model effectively integrates the objectives of Islamic Education, Generative AI (GenAI), critical thinking, and metacognition within a unified authentic task [34].

Within the domain of morality (akhlak) and character development, students can critically evaluate ethical dilemmas, such as the unauthorized sharing of a peer's photograph or the utilization of AI to generate derogatory content. GenAI can serve as a tool to propose alternative courses of action or formulate questions concerning potential consequences. Subsequently, students appraise these alternatives through the lens of foundational principles namely respect, responsibility, and honesty while considering the ramifications for all involved parties. The final resolution must be articulated independently by the student, with the educator providing scaffolding to ensure that the argumentation transcends superficial normative assertions. Studies in Islamic education regarding AI utilization demonstrate that while technology can enhance the learning process, moral and spiritual cultivation inextricably relies upon the active role of the educator and meaningful, contextual human interaction [35].

The role of the educator is transitioning into that of a learning experience designer, feedback provider, guarantor of source accuracy, and reflection facilitator, rather than being diminished to a mere technological operator. During instructional planning,

teachers must delineate which pedagogical components are suitable for artificial intelligence (AI) integration and which are more effectively conducted through discourse, practical application, or personal reflection. While students interact with AI, educators should interrogate the rationale for its application, the evidentiary validity of the information, and the implications of the generated responses. Following these activities, teachers are responsible for identifying misconceptions and guiding corrective actions. Furthermore, research on AI within Islamic education underscores that effective integration transcends the mere provision of technology; it necessitates pedagogical readiness, institutional frameworks, and the augmentation of teacher capacity to facilitate usage that aligns with established values [16].

Educational institutions must translate these principles into explicit governance structures. At a minimum, institutional policies should address account and privacy management, age-appropriate usage and permissions, the deployment of approved tools, the disclosure of AI assistance, student data retention, protocols for mitigating unsafe AI-generated content, and frameworks for teacher professional development. Institutional oversight should not entail the collection of data beyond what is strictly necessary. Schools must strictly prohibit the inclusion of personal data, student identifiers, academic records, or sensitive family information within public AI prompts. Overly permissive policies risk exacerbating vulnerabilities, whereas absolute prohibitions, in the absence of digital literacy education, fail to equip students with the requisite competencies to navigate contemporary digital realities. Consequently, global AI guidelines emphasize privacy, security, ethical validation, and developmentally appropriate pedagogical approaches as fundamental prerequisites [3].

Program evaluation can be effectively conducted through indicators that reflect core educational objectives. To assess critical thinking, educators should observe students' proficiencies in identifying claims, evaluating sources, constructing logical reasoning, considering alternatives, and refining conclusions. Regarding independent learning, relevant indicators may encompass goal formulation, time management, strategy selection, progress monitoring, and specific reflective practices. Furthermore, AI literacy should be evaluated based on students' competencies in articulating model limitations, safeguarding privacy, disclosing AI utilization, and verifying generated claims. Assessments should ideally compare both the processes and the final products across multiple instances rather than relying on a singular assignment. The resulting data must be utilized to enhance task design rather than merely categorizing students. Additionally, research concerning the integration of AI within Islamic education emphasizes the necessity of weighing the potential benefits, infrastructural readiness, ethical implications, and value orientations when evaluating pedagogical transformations [35].

The challenges associated with AI implementation necessitate realistic management strategies. Generative AI (GenAI) is prone to producing inaccurate information, fabricating sources, perpetuating biases, and yielding inconsistent responses to similar inquiries. Consequently, students may exploit these models to complete assignments without engaging in genuine comprehension, while educators may struggle to

differentiate between legitimate technological assistance and academic dishonesty. Effective mitigation strategies involve instructing students in source verification, formulating prompts that require specific classroom context, integrating oral discussions, requiring draft submissions, mandating AI usage declarations, and designing assignments that compel students to articulate their decision-making processes. Furthermore, educators should refrain from an over-reliance on AI detection tools, as their outputs do not constitute infallible evidence. Robust academic integrity policies should instead evaluate student conduct and the transparency of AI application based on predetermined and clearly communicated criteria [36].

Student autonomy cannot be assumed to emerge automatically simply because artificial intelligence is universally accessible. When students consistently rely on ready-made answers, they risk losing critical opportunities to experience productive struggle, test hypotheses, and learn from their mistakes. Consequently, educators must design a pedagogical balance between AI-assisted and non-AI phases. For instance, students might practice formulating arguments independently prior to utilizing a chatbot as an adversarial tester; following verification, they would rewrite their conclusions without directly copying the generated responses. Furthermore, during oral evaluations, students should articulate their reasoning and evidence without relying on digital screens. This approach preserves the advantages of digital support while safeguarding the space for intellectual effort necessary to cultivate sustainable competencies [37].

A broader implication is the necessity of viewing Generative AI (GenAI) integration as a fundamental shift in the learning ecology rather than merely a media innovation. Successful implementation requires precise alignment among task design, teacher competency, technological access, classroom culture, school policy, reference sources, and assessment systems. If assignments merely demand superficial summaries, students will effortlessly exploit text generation rather than engage in critical reasoning. Conversely, if tasks necessitate verification, dialogue, revision, and reflection, these same tools can serve as powerful intellectual stimuli. Within the context of Islamic education, such instructional design must be deeply integrated with adab (ethics), rigorous source verification, and social responsibility. Furthermore, global studies on AI application suggest that its utilization should be anchored within a comprehensive institutional strategy, rather than being dictated solely by individual teacher preferences [38].

The evaluation of AI utilization within the context of Islamic education must distinguish between positive user perceptions and demonstrable learning outcomes. Students may feel supported due to the rapid availability of explanations or the simplification of complex materials; however, this perceived assistance does not necessarily equate to the ability to articulate concepts independently. Educators should gather evidence across various assignment formats, such as initial responses prior to AI engagement, verification logs, argument revisions, oral explications, and summative reflections. This multifaceted approach ensures that evaluations are not solely reliant on final product grades or user satisfaction metrics. In Islamic Education, assessments must further incorporate the accuracy of religious comprehension, the capacity to

contextualize principles, and the ethical responsibility inherent in disseminating religious information. Studies on AI learning systems focusing on outcomes and motivation underscore the necessity of treating AI's utility as a variable subject to rigorous assessment, rather than a presumed benefit derived merely from the technology's presence [39].

Furthermore, educators must instruct students that capabilities and limitations can vary significantly across different chatbots, and even between distinct iterations of the same service. Because generative models can produce fluent responses without possessing actual human understanding, students must be cautioned against inferring that structurally sound outputs are intrinsically accurate. Comparative exercises can be implemented by posing identical inquiries to multiple systems or by juxtaposing AI-generated responses with textbooks, primary sources, and pedagogical explanations. Subsequently, students should document consistent claims, divergent assertions, information requiring further verification, and the rationales underlying their selection of more credible sources. Rather than functioning as a competition to identify the superior chatbot, this activity serves as a methodological exercise in recognizing the inherent limitations of generative systems prior to their application in academic assignments. Comparative studies of chatbots highlight the imperative for a critical stance toward system capabilities and marketing claims, dictating that pedagogical decisions must be grounded in instructional objectives, empirical testing, and professional evaluation [40].

Conceptually, the strategy synthesized in this article can be designated as the Islamic Education-GM model, representing Islamic Education integrated with Generative Artificial Intelligence (GenAI) and metacognition. Rather than serving as a standardized, experimentally validated instrument, this model functions as a preliminary framework derived from a comprehensive literature synthesis. The foundational phase involves establishing the pedagogical objectives and specific Islamic Education case studies. Subsequently, students formulate a learning plan and engage in independent inquiry. Following this, GenAI is employed to stimulate inquiry or offer alternative explanations. Students then proceed to verify the acquired information and critically evaluate the underlying arguments. Thereafter, they construct an evidence-based product. Ultimately, students engage in reflective practices concerning the quality of their acquired knowledge, learning strategies, and digital ethics. Future empirical investigations are warranted to assess the framework's efficacy, age appropriateness, and variations in learning outcomes correlated with students' prior digital experience [41].

CONCLUSION

Fundamental Finding : GenAI-integrated Islamic Education instructional strategies demonstrate strong potential to foster critical thinking and self-directed learning when metacognition is systematically embedded through planning, monitoring, and evaluation. The synthesized literature identifies four fundamental principles: alignment with Islamic Education pedagogical objectives and rigorous source verification; cyclical

metacognitive regulation; systematic analysis of claims, evidence, assumptions, and perspectives; and the development of learner autonomy through independent learning, goal setting, time management, and accountability. **Implication :** Educators should integrate AI-response auditing, case-based dialogues, metacognitive journaling, and authentic assessments into Islamic Education instruction. Students require clear guidelines on academic integrity, AI-use disclosure, data privacy, and verification of theological propositions and religious sources. Educational institutions should provide comprehensive AI-use policies, professional development, accessible alternative learning modalities, and continuous evaluation mechanisms. The proposed Islamic Education-GM model offers a conceptual framework for guiding responsible GenAI integration while strengthening students' cognitive reasoning, ethical conduct (adab), and academic responsibility. **Limitation :** The study does not include primary field data; therefore, the Islamic Education-GM model represents a conceptual framework rather than empirical evidence of GenAI's effectiveness in improving learning outcomes. Its implementation also requires consideration of students' technological accessibility, age, educational context, and varying baseline competencies. Consequently, the actual educational benefits of the proposed strategies have not yet been empirically established. **Future Research :** Future research should validate the proposed model through classroom-based experimental studies, quasi-experimental designs, or action research. These investigations may employ validated critical thinking assessments, self-regulation indicators, argumentation-quality rubrics, and qualitative interviews to evaluate learning outcomes and experiences. Research should also examine differences across educational levels, Islamic Education curricula, baseline competencies, and levels of instructional scaffolding. Comparative assessments of student performance before and after AI interventions, supported by AI-use logs, source-verification checklists, reasoning rubrics, and student reflections, may provide evidence of the model's effectiveness and adaptability.

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