

A Multi-Dimensional Review of Academic Learning Strategies in Indonesia: Pedagogical, Technological, and Institutional Factors

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ARTICLE HISTORY

Received : 2025-11-21

Revised : 2026-04-23

Accepted : 2026-04-27

KEYWORDS

Digital learning

Learning strategies

Multi-dimensional perspective

Self-regulated learning

Strategic planning



ABSTRACT

Educational transformation in Indonesia demands learning strategies that are not only effective, but also responsive to deep disparities in access, pedagogy, and institutional capacity. Yet the existing scholarship remains fragmented, typically examining self-regulated learning, technology integration, active pedagogy, or quality assurance as separate interventions rather than as interdependent forces within a broader educational ecosystem. Addressing this gap, this systematic literature review synthesizes 22 empirical studies published between 2020 and 2025 and analyzes academic learning strategies across primary, secondary, and tertiary education in Indonesia using the PRISMA-guided SLR approach. The review identifies five recurring and interconnected dimensions: self-regulated and metacognitive learning, digital and technology-enhanced learning, active and student-centered pedagogy, institutional and quality assurance strategies, and socio-emotional and motivational support. The findings show that self-regulated learning is the most dominant and consistently effective strategy for strengthening autonomy, self-efficacy, and academic performance, while digital innovation and institutional readiness act as critical enabling conditions for broader pedagogical improvement. However, the effectiveness of these strategies is strongly conditioned by contextual barriers, particularly teacher preparedness, infrastructural inequality, and persistent gaps between policy design and classroom practice. The originality of this study lies in its multi-dimensional IMRAD-based synthesis, which reframes academic learning strategies as an interconnected system operating across individual, instructional, and institutional levels. This study contributes a more holistic framework for research, policy, and practice, with wider implications for developing countries seeking equitable, context-sensitive, and sustainable educational reform.

1. Introduction

Education in the 21st century stands at a critical intersection of rapid technological advancement and persistent structural inequality. Indonesia reflects a tension between expanded access and uneven learning outcomes, persisting despite decade-long gains in enrollment and participation. The shift toward adaptive and context-sensitive pedagogy in Indonesia, as reflected in the Merdeka Curriculum and the Emancipated Curriculum (EC), underscores the importance of aligning instructional practices with the diverse needs of learners in an increasingly dynamic local and global landscape (Muslimin & Khan, 2024;

Nihayah et al., 2023). Empirical studies on these reforms point to both notable progress and ongoing challenges, particularly in areas such as limited resources, varying levels of teacher preparedness, and the need for stronger and more consistent policy support. These issues directly affect the realization of inclusive and equitable education, with broader implications for initiatives such as MBKM, differentiated curricula, and school-based management across both public and private educational sectors (Muslimin & Khan, 2024; Nihayah et al., 2023; Saputri et al., 2024; Zaenab et al., 2024).

Across the literature, a consistent theme emerges that emphasizes the value of student-centered and flexible pedagogical approaches, alongside the strengthening of teacher professionalism, as key drivers of improved learning outcomes. At the same time, factors such as decentralization, governance structures, and curricular alignment play a significant role in shaping how these reforms are implemented in practice (Muslimin & Khan, 2024; Nihayah et al., 2023; Subkhan, 2020; Zaenab et al., 2024). While some scholars highlight teacher autonomy and continuous professional development as essential enablers of successful reform, others point out that limited autonomy and uneven infrastructure can impede effective implementation. This contrast highlights the need for clearer operational guidelines and sustained institutional support. Ultimately, the successful implementation of the Merdeka EC depends on the integration of coherent policy frameworks, ongoing capacity-building efforts, and adaptable teaching practices that are responsive to local educational contexts (Muslimin & Khan, 2024; Nihayah et al., 2023; Zaenab et al., 2024).

Indonesia's education policy prioritizes adaptive learning to achieve equitable, high-quality outcomes across varied contexts and constraints. Research consistently identifies context-sensitive approaches as central to advancing equity and quality (Arnab et al., 2025; Irawan et al., 2024; Muafiah et al., 2025; Rosyidah & Rindaningsih, 2024). Inclusive education remains a core pillar, shaped by leadership, teacher readiness, curriculum accessibility, and resource allocation, while persistent challenges such as training gaps, infrastructural limitations, and socio-cultural barriers demand coordinated responses across policy, school, and community levels (Panda & Meher, 2023; Muafiah et al., 2025; Rosyidah & Rindaningsih, 2024). Community-engaged, frugal, and co-creative strategies further help bridge urban-rural divides and support sustainable, locally relevant learning in Southeast Asia (Arnab et al., 2025). The literature therefore calls for adaptable, SDG-aligned policies, targeted resource distribution, and stronger teacher professional development to advance inclusive, high-quality education for all Indonesians (Panda & Meher, 2023; Irawan et al., 2024; Muafiah et al., 2025; Rosyidah & Rindaningsih, 2024). At the same time, technology integration has become central, offering transformative potential while risking deeper inequalities when unevenly implemented, making academic learning strategies increasingly vital as both conceptual and practical means to strengthen teaching and learning across diverse settings (Moher et al., 2009).

The urgency of this transformation is further intensified by the growing reliance on digital technologies in language education. Recent studies demonstrate that Indonesian pre-service teachers require enhanced technological competence and

sustained professional development to effectively utilize emerging tools such as artificial intelligence in classroom settings (Hastomo et al., 2024). At the same time, digital learning initiatives have been shown to strengthen students' motivation and digital literacy (Nuryadi & Widiatmaka, 2023), while mobile learning applications contribute positively to learning outcomes through ICT integration (Budiarto et al., 2024). Despite these promising developments, the implementation of such innovations is far from uniform. Structural limitations, including infrastructural disparities, shifting curriculum policies, and sociocultural diversity, continue to complicate the adoption of effective learning strategies across Indonesia's educational system.

A growing body of literature has explored various academic learning strategies aimed at improving student outcomes; however, the findings remain fragmented and context-dependent. Self-regulated learning (SRL), for instance, has been widely recognized as a key mechanism for fostering learner autonomy and academic success (Donker et al., 2014; Masrul & Ayu, 2023). These studies highlight the importance of metacognitive awareness, self-efficacy, and independent learning behaviors.

Nevertheless, the effectiveness of SRL in Indonesia is often constrained by limited teacher preparedness and insufficient institutional support. Similarly, strategic planning has been identified as a crucial factor in enhancing educational performance by aligning institutional goals with classroom practices (Endo et al., 2025; Bantilan et al., 2023). Yet, the translation of strategic frameworks into practical teaching remains inconsistent, particularly in institutions with limited leadership capacity and weak management systems. Beyond cognitive strategies, recent research has expanded the scope of learning strategies to include digital innovation, socio-emotional dimensions, and culturally responsive pedagogy. Microlearning, for example, has emerged as a flexible and engaging approach that accommodates modern learners' preferences for concise and accessible content (Marianal et al., 2025). However, its implementation is hindered by unequal access to digital infrastructure, particularly in rural and underdeveloped regions. In parallel, intrinsic motivation and academic resilience have been shown to significantly influence learning outcomes, with emotionally supported students demonstrating greater engagement and persistence (Kamberi, 2025; Nuha et al., 2024). Furthermore, culturally responsive teaching practices that integrate local wisdom into instruction have been found to enhance student engagement and identity formation (Albantani & Madkur, 2018). Despite these advancements, the literature reveals a critical gap: most studies examine these strategies in isolation, without offering an integrated understanding of how they interact within Indonesia's complex educational ecosystem.

This fragmentation highlights a clear niche for the present study. While previous research has provided valuable insights into specific strategies such as SRL, digital learning, and strategic planning, there remains a lack of comprehensive synthesis that connects these approaches across different educational levels and contexts. Moreover, limited attention has been given to the underlying factors that determine the success or failure of these strategies, particularly in relation to cultural diversity, policy dynamics, and infrastructural constraints. This study addresses this gap by offering a systematic and integrative analysis of academic learning strategies within Indonesia, bridging micro-level classroom practices and macro-level institutional and policy frameworks.

The significance of this study lies in its potential to contribute both theoretically and practically to the field of education, particularly in English language teaching and broader pedagogical contexts. By systematically examining existing research, this study aims to identify not only effective strategies but also the persistent barriers that hinder their implementation, such as disparities in teacher readiness, unequal access to resources, and gaps between policy and practice. The study seeks to provide a nuanced understanding of how learning strategies can be adapted to Indonesia's diverse educational landscape, thereby supporting the development of more inclusive, culturally responsive, and sustainable educational practices.

To achieve this, the present study employs a systematic literature review approach guided by the PRISMA framework (Moher et al., 2009), ensuring methodological rigor and transparency. The study explores, analyzes, and synthesizes academic learning strategies implemented across primary, secondary, and tertiary education in Indonesia. Particular attention is given to how these strategies address key challenges, including technological integration, cultural diversity, and curriculum reform. Through this comprehensive analysis, the study aims to generate evidence-based insights that can inform policy decisions, curriculum development, and instructional practices. By bringing these dimensions into one analytical frame, the study contributes a more holistic understanding of how educational strategies function in settings characterized by both innovation and inequality. In this sense, the study strengthens the conceptual basis for future educational research and offers a more grounded interpretation of how strategy implementation should be understood in relation to Indonesia's diverse educational realities (Masrul & Ayu, 2023; Huda et al., 2025; Yusuf et al., 2024; Dinata & Huwae, 2023).

Ultimately, this study is expected to contribute to the advancement of more inclusive, context-responsive, and sustainable educational practices in Indonesia. Its broader implication lies in encouraging policymakers, educators, and researchers to view

academic learning strategies not as isolated interventions, but as interrelated components of educational transformation. By doing so, the study supports ongoing efforts to improve educational quality, reduce inequality, and promote more adaptive forms of learning in a rapidly changing national context.

2. Method

2.1 Research Design

This study employed a qualitative systematic literature review (SLR) to synthesize empirical evidence on academic learning strategies within the Indonesian formal education context. The review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2009), ensuring transparency, rigor, and reproducibility throughout the research process. The SLR design enabled a structured integration of findings across diverse educational levels, including primary, secondary, and tertiary education. This approach was particularly appropriate for identifying patterns, variations, and contextual factors influencing the effectiveness of learning strategies in Indonesia.

2.2 Data Collection Procedures

The data collection process followed a systematic multi-stage procedure in accordance with PRISMA guidelines (Moher et al., 2009). A comprehensive literature search was conducted across multiple academic databases, including Google Scholar, ERIC, ScienceDirect, Scopus, Garuda, and ResearchGate, to ensure broad and inclusive coverage of relevant studies.

The search utilized combinations of keywords such as "*learning strategies*," "*self-regulated learning*," "*digital learning*," "*technology integration*," "*microlearning*," and "*Indonesian education*." The search scope covered publications from 2020 to 2025 to reflect recent developments and current practices in Indonesian education.

To ensure reliability and minimize bias, the screening process was conducted independently by multiple reviewers. The selection process consisted of identification, screening, eligibility assessment, and final inclusion.

2.3 Inclusion and Exclusion Criteria

To ensure the methodological rigor and relevance of the selected studies, clearly defined inclusion and exclusion criteria were applied. These criteria were designed to filter studies that directly address academic learning strategies within the Indonesian formal education system.

The inclusion criteria prioritized peer-reviewed empirical studies, including qualitative, quantitative,

mixed methods, experimental, and case study designs. Only studies published in English or Bahasa Indonesia were considered to ensure both international relevance and contextual specificity.

Importantly, only primary empirical studies were included in this review. Secondary studies, such as

systematic literature reviews, meta-analyses, and theoretical or conceptual papers, were excluded to ensure that the synthesis was grounded in original research evidence. The detailed criteria used in the selection process are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria for Study Selection

Criteria	Inclusion	Exclusion
Type of Publication	Peer-reviewed journal articles and credible academic publications	Editorials, opinion papers, blogs, and non-peer-reviewed sources
Language	English and Bahasa Indonesia	Languages other than English or Bahasa Indonesia
Time Frame	Published between 2020 and 2025	Studies published before 2020
Focus	Studies examining academic learning strategies in Indonesian formal education	Studies not related to learning strategies or outside formal education contexts
Methodology	Primary empirical studies (qualitative, quantitative, mixed methods, experimental, case study)	Secondary studies (systematic reviews, meta-analyses), theoretical or conceptual papers

This systematic filtering process ensured that the selected studies were both contextually relevant and methodologically robust.

2.4 Study Selection Process

The study selection process followed the PRISMA framework (Moher et al., 2009) to ensure transparency and systematic filtering. Initially, a total of 124 records were identified through database searching. After removing duplicates (n = 28), 96 records remained for the screening stage.

During the screening process, 52 studies were excluded due to irrelevant titles and abstracts. The

remaining 44 articles were assessed for eligibility through full-text review. At this stage, 22 studies were excluded for the following reasons: (1) not focusing on learning strategies, (2) not conducted in the Indonesian context, and (3) not representing primary empirical research.

This process ensured systematic filtering and transparency in study selection. Finally, 22 studies met all inclusion criteria and were included in the systematic review. The complete selection process is illustrated in Figure 1.

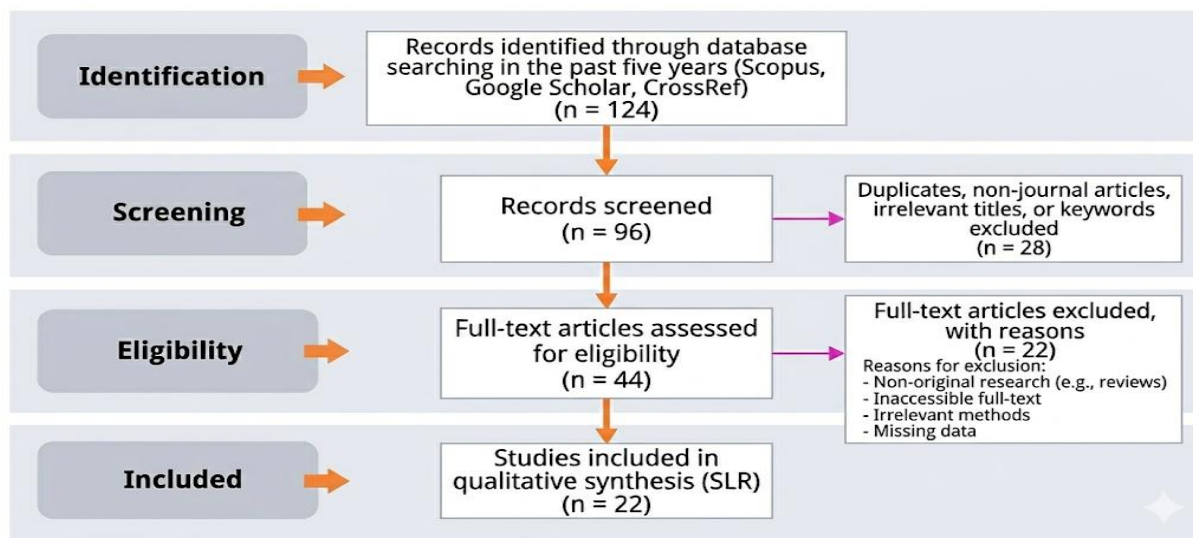


Figure 1. PRISMA Flow of Study Selection

2.5 Data Extraction and Unit of Analysis

A structured coding framework was developed to ensure consistency and accuracy in data extraction across all selected studies. The extracted data included author(s) and year of publication, research methodology, educational level, focus of study, and key findings. In addition, particular attention was given to identifying the types of learning strategies, implementation contexts, and reported outcomes.

In this review, the unit of analysis was the selected studies rather than individual participants. Collectively, the included studies represent diverse stakeholders within Indonesian education, including students, teachers, lecturers, and educational institutions across multiple levels.

To enhance reliability, a cross-checking procedure was implemented during both the study selection and data extraction stages. Multiple reviewers independently examined the studies and applied the coding framework. Any discrepancies were discussed and resolved through consensus to ensure consistency and minimize subjective bias.

2.6 Data Analysis

Data were analyzed using thematic analysis to identify patterns, relationships, and recurring themes across the selected studies. The analysis followed an *inductive approach*, allowing themes to emerge from the data rather than being predetermined.

The process involved several stages, including initial coding, categorization, and iterative comparison across studies. Through this process, five major thematic categories were identified: self-regulated learning, digital and technology-enhanced learning,

institutional and quality assurance strategies, motivation and academic resilience, and contextual or active learning approaches.

This analytical approach enabled the integration of diverse findings into a coherent framework, highlighting both the strengths and limitations of academic learning strategies in the Indonesian educational context.

2.7 Methodological Rigor

To ensure the trustworthiness of the review, several strategies were implemented. First, adherence to PRISMA guidelines (Moher et al., 2009) ensured transparency and reproducibility. Second, clearly defined inclusion and exclusion criteria minimized selection bias. Third, independent multi-reviewer screening and coding enhanced reliability through cross-validation.

Finally, the use of systematic coding procedures and inductive thematic analysis strengthened the validity of the findings by ensuring that the results were grounded in empirical evidence. These measures collectively ensured that the review meets established standards for rigorous systematic literature reviews.

3. Results

3.1 Overview of Included Studies

A total of 22 empirical studies were included in this systematic review, representing diverse research designs, educational levels, and learning strategy implementations across the Indonesian educational context. The characteristics and contributions of these studies are summarized in Table 2.

Table 2. Empirical Studies on Academic Learning Strategies in Indonesia

Author(s) & Year	Research Design	Learning Strategy Focus	Context of Study	Key Contribution to Learning
Wahyuni et al. (2025)	Mixed Methods	Self-regulated learning strategies	English as a Foreign Language learners	Identifies moderate use of self-regulated learning with emphasis on basic and social strategies
Abidin et al. (2025)	Qualitative Case Study	Technology-based learning strategies	Islamic boarding schools	Demonstrates increased student motivation and engagement through digital tools
Saputra et al. (2025)	Qualitative	Active learning strategies	Arabic education	Enhances engagement, understanding, and problem-solving through interactive learning
Siregar et al. (2025)	Quantitative Survey	Technology integration in learning	Islamic education institutions	Shows positive teacher perception toward technology use in improving comprehension

Author(s) & Year	Research Design	Learning Strategy Focus	Context of Study	Key Contribution to Learning
Huda et al. (2025)	Mixed Methods	Digital learning strategies	Indonesian education system	Highlights the role of digital tools in improving motivation and learning quality
Dewi et al. (2024)	Qualitative	Language learning strategies	Higher education	Improves communication skills, critical thinking, and student interaction
Iskarim et al. (2024)	Quantitative	Institutional readiness strategies	Higher education	Indicates preparedness for quality assurance implementation
Yusuf et al. (2024)	Qualitative	Quality assurance strategies	Higher education	Emphasizes institutional improvement through structured quality management
Masrul & Ayu (2023)	Quantitative	Self-regulated learning in writing	Higher education	Improves academic writing performance and self-efficacy
Al-Sindi et al. (2023)	Mixed Methods	Technology integration strategies	Classroom pedagogy	Increases engagement but reveals digital divide challenges
Dinata & Huwae (2023)	Quantitative	Self-regulated learning and resilience	Higher education	Demonstrates positive relationship between learning regulation and resilience
Suweta (2023)	Qualitative	Technology curriculum implementation	Secondary education	Supports creative and flexible learning under Kurikulum Merdeka
Subroto et al. (2023)	Mixed Methods	Digital learning implementation	Indonesian education system	Identifies opportunities and barriers in digital transformation
Maimun & Kholid (2023)	Case Study	Cognitive and affective learning strategies	Higher education	Shows interplay between emotional and cognitive processes in learning
Mursidi (2022)	Research & Development	Institutional quality assurance model	Higher education	Develops a validated model for improving institutional quality
Nugroho et al. (2022)	Experimental	Self-regulated learning in online learning	Higher education	Demonstrates significant improvement in academic performance
Ma'arif et al. (2022)	Case Study	Experiential and value-based learning	Islamic higher education	Identifies diverse strategies including experiential and emotional approaches
Ramadhani & Laili (2021)	Quantitative	Self-regulated learning and achievement	Higher education	Establishes positive correlation with academic success
Suhandoko (2020)	Quasi-experimental	Self-regulated learning intervention	Higher education	Confirms effectiveness of structured intervention on performance
Umah (2020)	Mixed Methods	Self-regulated learning and procrastination	Higher education	Shows reduction in procrastination through strategy application
Anisa et al. (2020)	Correlational	Self-efficacy and learning strategies	Higher education	Highlights strong influence of self-efficacy on achievement

Author(s) & Year	Research Design	Learning Strategy Focus	Context of Study	Key Contribution to Learning
Al-Farisi (2020)	Survey	Learning strategies and procrastination	Secondary education	Identifies mediating role of procrastination in learning outcomes

The studies demonstrate a wide methodological distribution, including qualitative, quantitative, mixed-methods, experimental, and quasi-experimental approaches. Most studies are situated in higher education contexts, with a smaller proportion conducted in secondary and religious education settings.

A key pattern emerging from the dataset is the dominance of learner-centered approaches, particularly those emphasizing self-regulated learning processes, digital learning environments, and active instructional strategies. For instance, self-regulated learning consistently shows strong positive relationships with academic performance, self-efficacy, and resilience (Masrul & Ayu, 2023; Dinata & Huwae, 2023; Ramadhani & Laili, 2021). Similarly, digital learning strategies are widely reported to enhance engagement and flexibility, although they remain constrained by infrastructural disparities (Huda et al., 2025; Subroto et al., 2023; Al-Sindi et al., 2023).

Beyond individual learning processes, several studies highlight the importance of institutional and systemic dimensions, including quality assurance mechanisms and organizational readiness (Iskarim et al., 2024; Yusuf et al., 2024; Mursidi, 2022). At the same time, socio-emotional factors such as motivation, resilience, and affective engagement emerge as critical mediators influencing learning success (Anisa et al., 2020; Umah, 2020).

Overall, the dataset reflects a multidimensional understanding of academic learning strategies, where effectiveness is shaped by the interaction between cognitive, technological, pedagogical, and institutional factors.

3.2 Thematic Classification of Learning Strategies

To provide a structured synthesis, the identified learning strategies were categorized into five major themes through iterative thematic analysis, as presented in Table 3.

Table 3. Thematic Synthesis of Academic Learning Strategies in Indonesian Education

Theme	Context of Implementation	Key Findings
Self-Regulated and Metacognitive Learning Strategies	Higher education, language learning	Enhances autonomy, academic performance, and self-efficacy; requires scaffolding and learner readiness
Digital and Technology-Enhanced Learning	Schools and higher education	Increases engagement and flexibility; constrained by digital divide and infrastructure limitations
Active and Student-Centered Learning Strategies	Language and religious education	Promotes interaction, critical thinking, and problem-solving through participatory approaches
Institutional and Quality Assurance Strategies	Higher education	Strengthens educational quality and system effectiveness; limited by implementation capacity
Socio-Emotional and Motivational Factors in Learning	Across educational levels	Supports resilience, persistence, and deep learning; lacks structured institutional support

3.3 Thematic Analysis of Learning Strategies

3.3.1 Self-Regulated and Metacognitive Learning Strategies

Self-regulated and metacognitive learning strategies emerge as the most dominant and consistently supported approaches across the reviewed studies. These strategies emphasize learners' ability to plan, monitor, and evaluate their own learning processes, thereby fostering autonomy and deeper cognitive engagement. Across multiple empirical contexts, this approach is strongly associated with improved academic performance, increased self-efficacy, and enhanced learner independence (Masrul & Ayu, 2023; Nugroho et al., 2022; Suhandoko, 2020).

In addition to cognitive benefits, self-regulated learning also contributes to important behavioral and psychological outcomes. Several studies report that students who apply self-regulation strategies demonstrate lower levels of academic procrastination and higher levels of resilience when *مواجهة* academic challenges (Umah, 2020; Al-Farisi, 2020; Dinata & Huwae, 2023). Furthermore, the interaction between self-regulation and self-efficacy highlights the role of internal psychological readiness as a key determinant of successful learning (Anisa et al., 2020).

To further clarify how this strategy is operationalized across studies, Table 4 presents the models and corresponding empirical evidence identified in this review.

Table 4. Models of Self-Regulated and Metacognitive Learning Strategies and Supporting Studies

Models	Studies
Self-regulated learning in academic writing	Masrul & Ayu (2023)
Self-regulated learning in online learning environments	Nugroho et al. (2022)
Self-regulated learning intervention models	Suhandoko (2020)
Self-regulated learning and academic achievement	Ramadhani & Laili (2021)
Self-regulated learning and academic procrastination	Umah (2020); Al-Farisi (2020)
Self-regulated learning and academic resilience	Dinata & Huwae (2023)
Self-regulated learning and self-efficacy	Anisa et al. (2020)

The evidence synthesized in Table 4 reveals that self-regulated and metacognitive learning strategies are not implemented as a single uniform model, but rather as a multidimensional framework applied across various learning contexts. These models collectively demonstrate that self-regulation functions as a central mechanism linking cognitive processes (e.g., planning and monitoring), behavioral control (e.g., time management and task persistence), and affective dimensions (e.g., motivation and self-efficacy).

A key insight emerging from this synthesis is that the effectiveness of self-regulated learning lies in its integrative nature, rather than in isolated instructional techniques. For instance, its role in academic writing (Masrul & Ayu, 2023) reflects cognitive structuring, while its impact on procrastination (Umah, 2020; Al-Farisi, 2020) highlights behavioral regulation. Similarly, its relationship with resilience (Dinata &

Huwae, 2023) and self-efficacy (Anisa et al., 2020) underscores its psychological dimension.

However, the findings also reveal a critical limitation. Despite strong empirical support, the successful implementation of self-regulated learning is highly dependent on contextual conditions. Many learning environments in Indonesia still rely on teacher-centered practices, limiting opportunities for students to develop autonomy. Moreover, students often lack prior training in self-regulation, which reduces the effectiveness of these strategies when applied without guidance.

This suggests that self-regulated learning should not be treated merely as a student responsibility, but as a structured pedagogical approach that requires explicit instruction, continuous scaffolding, and supportive institutional environments. Without these conditions, the potential of self-regulated learning remains underutilized despite its strong theoretical foundation.

3.3.2 Digital and Technology-Enhanced Learning

Digital and technology-enhanced learning emerges as a significant and rapidly evolving strategy within the Indonesian educational context. These approaches emphasize the integration of digital tools, online platforms, and technology-mediated instruction to support flexible, accessible, and student-centered learning environments. Across the reviewed studies, digital learning is consistently associated with increased student engagement, improved motivation, and enhanced accessibility to learning resources (Huda et al., 2025; Subroto et al., 2023).

Several studies highlight that technology integration enables more interactive and adaptive learning experiences, particularly in higher education and curriculum innovation contexts (Siregar et al., 2025; Suweta, 2023). In addition, classroom-based digital strategies promote active participation and

facilitate more dynamic instructional delivery (Al-Sindi et al., 2023). These findings indicate a clear shift from traditional instructional models toward more flexible and technology-driven learning ecosystems.

However, despite its potential, the implementation of digital learning strategies remains uneven. Persistent challenges such as limited infrastructure, unequal access to digital devices, and insufficient digital literacy among both teachers and students significantly constrain effectiveness. These issues are particularly evident in under-resourced and rural educational settings, where technological integration is often inconsistent and fragmented.

To illustrate how digital learning strategies are operationalized across empirical studies, Table 5 presents the models and corresponding research evidence.

Table 5. Models of Digital and Technology-Enhanced Learning and Supporting Studies

Models	Studies
Digital learning strategies in Indonesian education systems	Huda et al. (2025)
Digital learning implementation and transformation challenges	Subroto et al. (2023)
Technology integration in classroom instruction	Al-Sindi et al. (2023)
Technology integration in Islamic education	Siregar et al. (2025)
Technology-supported curriculum implementation (Kurikulum Merdeka)	Suweta (2023)
Technology-based learning in Islamic boarding schools	Abidin et al. (2025)

The synthesis presented in Table 5 indicates that digital and technology-enhanced learning strategies function as a transformational layer within the educational system, influencing both instructional practices and broader learning environments. Unlike self-regulated learning, which operates primarily at the individual level, digital learning extends across multiple levels, including classroom pedagogy, curriculum design, and institutional innovation.

A key insight is that digital learning enhances not only access but also learning flexibility and personalization. For example, technology-based instruction enables students to engage with content beyond traditional classroom boundaries, while also supporting diverse learning styles and pacing (Huda et al., 2025; Subroto et al., 2023). In curriculum contexts, such as the implementation of Kurikulum Merdeka, digital tools further facilitate creative and student-centered learning practices (Suweta, 2023).

However, the findings also reveal a structural contradiction. While digital learning is often promoted as a solution for educational improvement, its effectiveness is highly dependent on infrastructural and human capacity factors. The presence of a digital divide creates unequal learning opportunities, where students in well-resourced environments benefit significantly more than those in disadvantaged contexts. Additionally, limited teacher readiness in digital pedagogy reduces the potential of technology integration to move beyond surface-level usage.

This suggests that digital learning should not be viewed merely as a technological innovation, but as a system-dependent strategy that requires alignment between infrastructure, teacher competence, and pedagogical design. Without this alignment, digital learning risks becoming an additive tool rather than a transformative educational approach.

3.3.3 Active and Student-Centered Learning Strategies

Active and student-centered learning strategies represent a pedagogical shift from teacher-dominated instruction toward participatory and experiential learning processes. These strategies emphasize student engagement, interaction, and the development of higher-order thinking skills through collaborative and context-based learning activities. Across the reviewed studies, active learning is consistently associated with improved comprehension, critical thinking, and problem-solving abilities (Saputra et al., 2025; Dewi et al., 2024).

In particular, these approaches are widely implemented in language and religious education contexts, where interaction, discussion, and real-life application play a central role in learning. Students are encouraged to actively construct knowledge rather than passively receive information, resulting in more meaningful and sustained learning experiences.

Furthermore, experiential and value-based learning approaches enable students to connect academic content with real-world contexts, enhancing both cognitive and affective engagement (Ma'arif et al., 2022).

Despite these benefits, the implementation of active learning strategies remains uneven. Traditional instructional practices, rigid curricula, and limited teacher training often restrict opportunities for meaningful student participation. In many cases, active learning is applied superficially without fully transforming the underlying pedagogical approach. This indicates that the success of student-centered strategies depends not only on classroom activities but also on broader curricular flexibility and teacher readiness. To illustrate how these strategies are applied across different contexts, Table 6 presents the models and corresponding empirical studies.

Table 6. Models of Active and Student-Centered Learning Strategies and Supporting Studies

Models	Studies
Active learning strategies in language education	Saputra et al. (2025)
Language learning strategies in higher education	Dewi et al. (2024)
Experiential and value-based learning approaches	Ma'arif et al. (2022)
Cognitive and affective learning strategies	Maimun & Kholid (2023)

The synthesis in Table 6 indicates that active and student-centered learning strategies function as a pedagogical bridge between knowledge acquisition and meaningful learning experiences. Unlike purely cognitive approaches, these strategies integrate interaction, experience, and reflection, allowing students to engage with learning content at deeper levels.

A key insight is that these strategies promote learning as a process of construction rather than transmission. For example, interactive language learning (Saputra et al., 2025; Dewi et al., 2024) enables students to actively negotiate meaning, while experiential approaches (Ma'arif et al., 2022) connect theoretical knowledge with lived experiences.

Additionally, the integration of cognitive and affective strategies highlights the importance of emotional engagement in sustaining learning (Maimun & Kholid, 2023).

However, the findings also reveal a critical limitation. The effectiveness of student-centered strategies is highly dependent on instructional transformation rather than isolated activity design. In

contexts where teaching remains structured around rigid curricula and teacher authority, active learning tends to be implemented at a surface level without significantly impacting learning outcomes.

This suggests that active and student-centered learning should be understood as a systemic pedagogical shift, requiring alignment between curriculum design, teacher professional development, and classroom practice. Without such alignment, these strategies risk becoming performative rather than transformative.

3.3.4 Institutional and Quality Assurance Strategies

Institutional and quality assurance strategies represent the macro-level dimension of academic learning, focusing on how organizational structures, policies, and management systems shape the effectiveness of learning processes. Unlike classroom-based strategies, these approaches operate at the institutional level and influence the overall quality, consistency, and sustainability of educational practices.

Across the reviewed studies, institutional readiness and quality assurance mechanisms are identified as critical factors in ensuring effective learning implementation. These strategies contribute to improving educational standards, strengthening organizational performance, and supporting the integration of innovative learning approaches (Yusuf et al., 2024; Mursidi, 2022). In addition, institutional readiness plays a key role in determining whether educational innovations, including digital learning and student-centered approaches, can be successfully adopted (Iskarim et al., 2024).

Furthermore, these strategies emphasize the importance of structured systems such as planning, monitoring, and evaluation processes in maintaining educational quality. Institutions that implement systematic quality assurance frameworks tend to

demonstrate better alignment between educational goals, curriculum design, and instructional practices.

However, despite their strategic importance, the implementation of institutional strategies often faces significant challenges. Limited managerial capacity, insufficient training for educational leaders, and weak monitoring systems reduce the effectiveness of these approaches. In many cases, institutional policies are not fully translated into classroom practices, creating a gap between policy formulation and actual implementation.

To illustrate how institutional and quality assurance strategies are operationalized across studies, Table 7 presents the models and corresponding empirical evidence.

Table 7. Models of Institutional and Quality Assurance Strategies and Supporting Studies

Models	Studies
Institutional readiness for quality assurance implementation	Iskarim et al. (2024)
Quality assurance strategies in higher education	Yusuf et al. (2024)
Development of quality assurance models	Mursidi (2022)

The synthesis in Table 7 indicates that institutional and quality assurance strategies function as a structural foundation that enables or constrains the effectiveness of other learning strategies. Unlike student-level or classroom-level approaches, these strategies shape the broader conditions under which teaching and learning occur.

A key insight is that institutional quality is not merely an administrative concern, but a determinant of pedagogical success. For example, quality assurance systems ensure that learning strategies are consistently implemented, evaluated, and improved over time (Yusuf et al., 2024). Similarly, institutional readiness determines whether innovations can be effectively integrated into existing systems (Iskarim et al., 2024).

However, the findings also reveal a persistent gap between institutional intention and practical implementation. While policies and frameworks are often well-designed, their impact is limited by insufficient leadership capacity, lack of monitoring mechanisms, and weak alignment with classroom realities. This suggests that institutional strategies alone are insufficient unless they are accompanied by effective translation into pedagogical practice.

Therefore, institutional and quality assurance strategies should be understood as enabling

mechanisms rather than standalone solutions. Their effectiveness depends on how well they are integrated with teacher practices, curriculum design, and student learning processes. Without this integration, institutional reforms risk remaining symbolic rather than transformative.

3.3.5 Socio-Emotional and Motivational Factors in Learning

Socio-emotional and motivational factors constitute a critical dimension of academic learning strategies, extending beyond cognitive processes to include psychological readiness, emotional engagement, and behavioral persistence. Within the reviewed studies, these factors are consistently identified as key determinants of students' ability to sustain learning, overcome challenges, and achieve academic success.

Empirical evidence demonstrates that motivation, self-efficacy, and emotional regulation significantly influence students' engagement and performance. Learners with higher levels of self-efficacy tend to exhibit stronger academic achievement and more effective use of learning strategies (Anisa et al., 2020). Similarly, motivation plays a central role in shaping students' willingness to engage in learning tasks and persist in the face of difficulties (Umah, 2020).

In addition, academic resilience emerges as a crucial factor that enables students to cope with pressure, adapt to challenges, and maintain consistent performance over time (Dinata & Huwae, 2023). These findings indicate that successful learning is not solely dependent on cognitive ability or instructional design, but also on students' emotional and psychological capacity to engage with the learning process.

Despite their importance, socio-emotional and motivational dimensions remain underdeveloped in

many educational settings. Limited institutional support, lack of structured interventions, and minimal integration of psychological support systems reduce the effectiveness of these factors in enhancing learning outcomes. This suggests that current educational practices tend to prioritize cognitive achievement while underestimating the role of emotional and motivational development.

To illustrate how these factors are conceptualized across empirical studies, Table 8 presents the models and corresponding research evidence.

Table 8. Models of Socio-Emotional and Motivational Factors in Learning and Supporting Studies

Models	Studies
Self-efficacy and learning strategies	Anisa et al. (2020)
Motivation and academic procrastination	Umah (2020)
Academic resilience in learning	Dinata & Huwae (2023)

The synthesis presented in Table 8 highlights that socio-emotional and motivational factors function as a driving force underlying all learning strategies. While cognitive and instructional approaches provide structure, these factors determine the extent to which students are able to engage, persist, and succeed in learning activities.

A key insight is that these factors operate as internal regulators of learning behavior. For instance, self-efficacy influences students' confidence in completing tasks (Anisa et al., 2020), while motivation determines the level of effort and persistence invested in learning (Umah, 2020). Academic resilience further strengthens this process by enabling students to recover from setbacks and maintain progress (Dinata & Huwae, 2023).

Importantly, these findings suggest that socio-emotional factors are not separate from other learning strategies, but rather interconnected with and supportive of them. For example, self-regulated learning relies heavily on motivation and self-efficacy, while active learning requires emotional engagement and participation. This indicates that cognitive and affective dimensions of learning are deeply intertwined.

However, the findings also reveal a significant gap. Despite their critical role, socio-emotional and motivational factors are often treated as secondary or implicit components within educational systems. The lack of structured support mechanisms, such as counseling services or motivational interventions, limits their potential impact.

This suggests that effective academic learning strategies must move beyond purely cognitive approaches and adopt a holistic perspective, integrating emotional, motivational, and psychological support into the learning process.

4. Discussion

A central highlight of this systematic review is that academic learning strategies in the Indonesian educational context cannot be understood as singular or isolated practices; rather, they operate as a multidimensional and interdependent system shaped by cognitive, technological, pedagogical, institutional, and socio-emotional forces. The key finding emerging from the reviewed studies is the persistent prominence of self-regulated and metacognitive learning as the most consistently influential strategy in improving academic performance, learner autonomy, and self-efficacy (Masrul & Ayu, 2023; Nugroho et al., 2022; Suhandoko, 2020). This pattern suggests that students' ability to plan, monitor, and evaluate their own learning remains a foundational mechanism for academic success in Indonesia. More importantly, the evidence indicates that self-regulation is not merely an individual learning preference, but a strategic capacity that allows students to respond more effectively to educational demands and shifting learning environments. Its strong association with reduced procrastination and stronger resilience further confirms that self-regulated learning functions across cognitive, behavioral, and emotional dimensions of learning (Umah, 2020; Al-Farisi, 2020; Dinata & Huwae, 2023).

Another important finding is the growing role of digital and technology-enhanced learning as a transformative force within Indonesian education. The reviewed studies consistently show that the integration of digital tools can increase learning flexibility, improve engagement, and expand access to instructional resources, especially in higher education and innovation-oriented learning environments (Huda et al., 2025; Subroto et al., 2023; Al-Sindi et al., 2023).

This trend reflects a broader pedagogical transition from fixed and teacher-dominated models toward more adaptive and technology-mediated forms of learning. The same transition is also evident in the rise of active and student-centered learning strategies, which emphasize participation, interaction, and the construction of knowledge through experience and collaboration (Saputra et al., 2025; Dewi et al., 2024; Ma'arif et al., 2022). Taken together, these findings point to a significant reorientation in Indonesian education, where effective learning is increasingly associated with student agency, instructional flexibility, and responsiveness to contemporary educational challenges.

However, the findings also demonstrate that the effectiveness of these strategies is never determined solely by their conceptual strength. Their implementation is deeply conditioned by the institutional and contextual realities in which they are embedded. Institutional and quality assurance strategies emerge in this review as critical enabling mechanisms that shape the broader educational environment and influence the sustainability of pedagogical change (Yusuf et al., 2024; Mursidi, 2022; Iskarim et al., 2024). In theory, such strategies are expected to ensure coherence between educational goals, curriculum structures, and classroom practice. In practice, however, the literature reveals a recurring tension between policy formulation and pedagogical implementation. Institutional frameworks may be well designed, yet their impact often remains limited when leadership capacity, monitoring systems, and professional support structures are weak. This suggests that educational improvement in Indonesia depends not only on what strategies are promoted, but also on how effectively institutions translate policy into practice.

A further key finding of this review is the substantial role of socio-emotional and motivational factors in shaping learning effectiveness. Motivation, self-efficacy, and resilience are repeatedly identified as internal conditions that influence students' engagement, persistence, and ability to cope with academic challenges (Anisa et al., 2020; Umah, 2020; Dinata & Huwae, 2023). This finding is particularly important because it broadens the understanding of academic learning beyond purely cognitive or instructional terms.

Learning, as the reviewed studies suggest, is equally a psychological and emotional process. Students do not succeed only because they are exposed to effective strategies, but also because they possess or develop the motivational and emotional resources needed to sustain those strategies over time. Yet despite their significance, these dimensions remain underrepresented in many formal educational frameworks, which still tend to prioritize measurable performance outcomes over holistic learner development. This imbalance points to an enduring conceptual gap within educational practice, where emotional readiness is often acknowledged indirectly but rarely positioned as a central strategic concern.

At the same time, the review reveals several important gaps in the current literature. One of the most visible limitations is the concentration of research on self-regulated learning, particularly in higher education and language-related contexts, while other disciplinary areas and educational levels remain less explored (Masrul & Ayu, 2023; Ramadhani & Laili, 2021). This uneven distribution limits the broader generalizability of current knowledge and suggests that the field still lacks a fully representative picture of how academic learning strategies function across Indonesia's wider formal education system. In addition, many existing studies focus on short-term effectiveness in specific instructional settings, with limited attention to questions of sustainability, scalability, and long-term impact (Nugroho et al., 2022; Suhandoko, 2020).

Similar gaps are evident in digital learning research, where technology is frequently celebrated as an educational solution, yet insufficiently examined in relation to socioeconomic inequality, geographical disparity, and infrastructural limitations that shape actual implementation across Indonesian contexts (Subroto et al., 2023; Huda et al., 2025). Institutional studies also tend to remain relatively conceptual, with limited empirical evidence tracing how organizational strategies directly influence classroom learning processes (Yusuf et al., 2024; Iskarim et al., 2024).

Against these limitations, the novelty of the present study lies in its integrative and multi-level reading of academic learning strategies. Rather than treating self-regulation, digital pedagogy, active learning, institutional quality assurance, and socio-emotional support as independent variables, this study synthesizes them as interconnected dimensions of a broader educational ecosystem. This is an important contribution because it shifts the discussion from fragmented strategy-based analysis toward a systemic understanding of learning effectiveness.

By doing so, the review offers a more context-sensitive interpretation of Indonesian education, highlighting that the success of any learning strategy depends on the alignment of learner readiness, pedagogical design, technological access, and

institutional capacity. In this sense, the study contributes not only to theoretical synthesis, but also to the development of a more realistic framework for understanding educational transformation in unequal and diverse learning environments.

The implications of these findings are substantial for educators, policymakers, and researchers. For educators, the review underscores the importance of structured support for self-regulated learning, particularly in contexts where students are not yet accustomed to autonomous or reflective learning practices (Masrul & Ayu, 2023; Suhandoko, 2020). For policymakers and institutional leaders, the findings stress the need to align curriculum reform and policy innovation with classroom realities through teacher development, effective monitoring, and equitable resource distribution (Yusuf et al., 2024; Iskarim et al., 2024).

In terms of digital learning, the evidence clearly indicates that technological integration must be accompanied by stronger digital literacy, pedagogical preparedness, and efforts to reduce the digital divide if it is to function as a transformative rather than merely additive intervention (Subroto et al., 2023; Huda et al., 2025). Equally, the review calls attention to the need for stronger socio-emotional support systems within formal education, given that motivation, self-efficacy, and resilience are indispensable to sustained learning and long-term academic development (Anisa et al., 2020; Dinata & Huwae, 2023).

Future research should therefore move beyond narrow and short-term examinations of isolated strategies and instead investigate how multiple learning dimensions interact across varied Indonesian educational contexts. There is a clear need for longitudinal and large-scale studies that examine the sustainability of self-regulated learning interventions and their long-term effects on academic development (Nugroho et al., 2022; Suhandoko, 2020).

Further research is also needed in underexplored contexts such as primary education, vocational education, rural and remote schools, and non-language subject areas, where the dynamics of strategy implementation may differ significantly from those reported in higher education settings (Masrul & Ayu, 2023; Ramadhani & Laili, 2021). In addition, future studies should examine integrated models that connect cognitive, technological, and socio-emotional strategies within specific institutional environments, while also addressing infrastructural and policy constraints more directly (Subroto et al., 2023; Iskarim et al., 2024). Such research would be especially valuable for developing context-responsive educational frameworks capable of supporting equitable and sustainable learning improvement across Indonesia.

5. Conclusion

From a critical and integrative standpoint, this study highlights that academic learning strategies in Indonesia function as a dynamic and interdependent ecosystem rather than as isolated pedagogical techniques, with self-regulated learning emerging as the most robust and consistently effective driver of learner autonomy, academic performance, and resilience, while digital learning and institutional readiness act as essential enabling conditions that shape the scalability and sustainability of pedagogical innovation. The key findings reveal that although student-centered, technology-enhanced, and socio-emotional strategies significantly enrich engagement and learning quality, their effectiveness is persistently mediated by contextual constraints such as infrastructural inequality, teacher preparedness, and the enduring disconnect between policy and classroom practice.

The novelty of this study lies in its multi-dimensional synthesis, which reconceptualizes learning strategies across cognitive, pedagogical, technological, institutional, and affective domains into a unified analytical framework, thereby moving beyond fragmented perspectives toward a systemic understanding of educational transformation. The implications are both theoretical and practical: the study underscores the necessity of aligning instructional design with institutional capacity, strengthening teacher professional development, and embedding socio-emotional support as a central component of learning, particularly in diverse and unequal educational contexts. Consequently, future research should prioritize longitudinal and context-sensitive investigations that examine the interaction of these dimensions across underexplored settings such as primary and vocational education, rural and remote regions, and non-language disciplines, while also developing integrated models that bridge policy, pedagogy, and technology to support more equitable, sustainable, and context-responsive educational practices in Indonesia

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