

Mapping the Educational Impacts of the Pomodoro Technique: A PRISMA-Guided Systematic Review

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ABSTRACT

This study aims to systematically analyze the effectiveness of implementing the Pomodoro Technique in education during the period from 2016 to 2026. It employs a Systematic Literature Review (SLR) following the PRISMA protocol. An initial set of 200 articles retrieved through Publish or Perish was systematically screened, yielding 21 relevant articles for analysis and synthesis. The findings identify five major categories of the Pomodoro Technique's impact: learning outcomes (28.57%), cognitive focus and attention stability (28.57%), time management (19.05%), specialized learning contexts (19.05%), and technology integration (4.76%). The findings indicate that structured study intervals, consisting of 25 minutes of focused study followed by a 5-minute break, may help reduce cognitive fatigue, alleviate academic boredom, and minimize mathematical anxiety (math anxiety). Furthermore, this technique may support time management and improve students' concentration during learning activities. The review highlights the potential of the Pomodoro Technique as an effective learning support strategy. Therefore, integrating this technique into instructional modules and e-learning platforms should be considered to optimize students' attention spans, enhance learning effectiveness, and strengthen learner autonomy throughout the learning process.



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INTRODUCTION

The advancement of the digital era and the continuous transformation of contemporary learning environments present distinct, complex challenges to students' concentration endurance and learning self-regulation (Husna et al., 2026). The massive influx of digital information, combined with a high reliance on personal electronic devices during both classroom and home study sessions, frequently triggers severe cognitive fatigue and continuous attention fragmentation among learners (Kaya & Yavuz, 2025; Saputra et al., 2026). This pervasive psychological condition directly correlates with heightened rates of academic procrastination and substantially diminishes the efficiency of information processing during study tasks. Such impairments become particularly pronounced in academic disciplines that demand sustained focus, complex problem-solving, high levels of critical thinking, and deep mathematical or analytical reasoning (Mahanal et al., 2022; Wantoro et al., 2025).

To address these growing concentration endurance obstacles, the implementation of structured, time-bound management strategies has emerged as an increasingly attractive pedagogical approach for modern educators and instructional designers. Among various self-regulatory strategies, the Pomodoro Technique has proven exceptionally adaptive, offering a simple yet rigorous framework that divides intensive study sessions into 25-minute intervals of uninterrupted focus interspersed with deliberate,

brief 5-minute restorative breaks (Rafliyanto & Mukhlis, 2023). From a theoretical standpoint, this periodic and structured allocation of effort aligns closely with the principles of Spaced Learning and Cognitive Load Theory. By enforcing routine short breaks, the human brain is provided dedicated, predictable windows to consolidate newly acquired information into long-term memory while restoring working memory capacity to prevent overwhelming cognitive overload (Ismail et al., 2022).

Over the past decade spanning 2016 to 2026, the trend of integrating the Pomodoro Technique into formal and informal educational environments has escalated significantly across diverse geographic regions and academic levels. A expanding body of empirical literature has explored the multifaceted benefits of this interval-based strategy, ranging from improving foundational literacy and reading skills in primary education settings to optimizing overall learning stamina and retention among higher education students (Firmansyah & Rais, 2023; Hatmoko et al., 2024). Furthermore, in response to modern educational technology, this technique has increasingly been paired with specialized digital media and mobile applications featuring timer locks and distraction-blocking mechanisms, thereby minimizing social media interruptions and maintaining cognitive flow during complex problem-solving exercises (Tong et al., 2025).

Despite the growing publication of primary research regarding the Pomodoro Technique, most existing literature remains fragmented and partially focused on narrow variables or specific demographic contexts. Many empirical studies evaluate isolated outcomes such as direct gains in test scores or overall academic achievement while neglecting the psychological mechanisms underlying these improvements; conversely, other studies focus exclusively on affective or cognitive variables like attention span, academic boredom, or subject-specific anxiety without linking them to broader pedagogical frameworks (Moyo, 2023; Siswanto, 2025). Consequently, a comprehensive, multi-dimensional synthesis and systematic mapping regarding the broader distribution of research foci, cross-category effectiveness, and practical strategies for integrating the Pomodoro Technique holistically into educational curricula remains noticeably scarce (Rafliyanto & Mukhlis, 2023; Septiani et al., 2022).

To effectively bridge this critical gap in the literature, a rigorous Systematic Literature Review (SLR) guided by established international reporting standards is urgently required. Utilizing a standardized SLR methodology, specifically following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol, guarantees that the identification, preliminary screening, eligibility evaluation, and qualitative synthesis processes proceed with complete transparency, methodological rigor, and analytical precision (Kristiawan et al., 2026; Page et al., 2021). Through such a systematic framework, global research trends published over the 2016–2026 decade can be meticulously organized, mapped, and translated into clear thematic clusters that clarify how time-management interventions influence learning across different domains.

Therefore, this SLR study aims to systematically synthesize and critically analyze the empirical implementation of the Pomodoro Technique in educational contexts from 2016 to 2026. This review categorizes the existing literature into five primary thematic impact domains: learning outcome effectiveness, cognitive focus stability, time management and self-regulation, special learning contexts, and supporting digital technology integration. Ultimately, the synthesis aims to provide meaningful theoretical insights into modern curriculum development while offering practical, actionable guidelines for educators, curriculum planners, and e-learning developers seeking to design adaptive, structured, and cognitively sustainable learning pathways for students.

RESEARCH METHODS

The literature collection and screening process in this study was guided by the PRISMA protocol to ensure selection transparency through the identification, screening, eligibility, and inclusion stages (Page et al., 2021). The PRISMA flow diagram was utilized to quantitatively display the ratio of accepted and rejected articles. In addition to mapping the literature flow, this study evaluated the annual trend of publication volume, its relevance to mathematics instructional materials, target journals, and

co-occurrence network analysis. The complete PRISMA flow sequence is presented in the following figure.

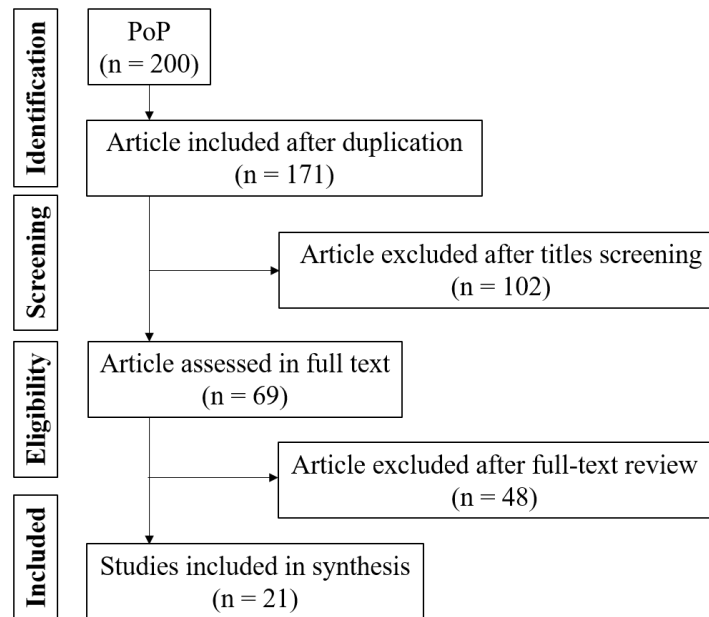


Figure 1 Illustrates the PRISMA Flow Diagram

A Systematic Literature Review (SLR) regarding the implementation of the Pomodoro Technique in education from 2016 to 2026 was conducted using the PRISMA flow diagram. The process initiated at the identification stage by gathering 200 articles via Publish or Perish (PoP), which were subsequently screened for duplicates, leaving 171 articles. In the screening stage, selection based on titles excluded 102 articles, leaving 69 articles to be assessed for eligibility through full-text review. From this assessment, 48 articles were excluded for not meeting the inclusion criteria, ultimately leaving 21 relevant articles at the included stage to be synthesized for analyzing the application of the Pomodoro Technique in enhancing students' focus and learning effectiveness.

The literature synthesis process in this Systematic Literature Review (SLR) yielded 21 selected articles examining the effectiveness and impact of implementing the Pomodoro Technique in education. Each article was thoroughly analyzed to identify its primary contributions toward enhancing students' cognitive focus, time management, and learning outcomes. The profile details, research focus, summary of key findings, and publication access links for all selected literature are systematically presented in the table below.

Tabel 1 Summary of Literature Review on the Implementation of the Pomodoro Technique in Education

Article number	Author and Year	Summary of Key Findings
1	Kisno (2020)	Structured implementation of Pomodoro intervals effectively enhanced students' reading comprehension and maintained independent learning rhythm during online instruction
2	Septiani et al., (2022)	Demonstrated a significant increase in descriptive text writing scores; structured breaks assisted in organizing ideas and reducing cognitive fatigue during writing
3	Ismail et al. (2022)	Helped students mitigate Zoom fatigue, enhanced self-regulation, and sustained learning motivation during synchronous online lectures
4	Rafliyanto & Mukhlis (2023)	Optimized memory retention and conceptual understanding of religious materials through spaced learning interspersed with periodic breaks

5	Chalimah et al. (2023)	Rural students expressed highly positive perceptions; the technique established disciplined learning habits free from academic pressure
6	Valentina et al. (2024)	Improved concentration stability in comprehending content-heavy Social Studies curricula while preventing classroom boredom
7	Ardilah & Affandi (2025)	Significantly reduced academic boredom and heightened primary students' enthusiasm during reading and writing activities
8	Yohana et al. (2025)	Effectively facilitated Higher-Order Thinking Skills (HOTS) writing tasks; 25-minute intervals provided sustained focus without triggering stress factors
9	Damayanti et al. (2024)	The synergy between Pomodoro intervals and relaxational audio induced alpha brain states, reduced anxiety, and boosted Biology learning motivation
10	Nugroho & Ghufro (2026)	Confirmed that undergraduate attention spans were maintained at optimal levels without experiencing sharp declines toward the end of lectures
11	Qomariyah & Maghfiroh (2026)	Achieved significant classical mastery growth by breaking complex subject matter into manageable time chunks
12	Lestari et al. (2026)	Reduced careless errors and reinforced concentration endurance during civic education discussions
13	Selviani et al. (2026)	Observed behavioral shifts toward orderly and focused student engagement following the adoption of 25/5-minute cycles
14	Sakinah et al. (2026)	Strict time boundaries significantly curtailed off-task and non-academic student behaviors during classroom instruction.
15	Owen & Watts (2026)	Mid-lecture Pomodoro breaks significantly elevated both behavioral and emotional student engagement levels
16	Biwer et al. (2023)	Structured Pomodoro breaks stabilized student effort regulation more effectively compared to self-determined rest intervals
17	Göksu et al. (2026)	Proved that systematically scheduled short breaks preserve positive affective states and prevent cumulative mental fatigue
18	Sofiyana (2022)	Combining Pomodoro time-boxing with content chunking improved overall academic performance and student self-efficacy
19	Iyengar et al. (2024)	Pomodoro cycles supported academic authors and researchers in consistently advancing manuscript drafts without experiencing burnout
20	Muriyatmoko et al. (2022)	Android application development proved effective in restricting non-essential screen time and protecting learning flow from digital distractions
21	Ogut (2025)	Identified that structured time allocations consistently enhanced long-term memory retention for complex medical concepts

Based on the mapping presented in the table above, it is evident that the majority of the literature confirms the efficacy of the Pomodoro Technique in enhancing cognitive focus and academic performance. These findings demonstrate that structured 25/5-minute intervals consistently reduce mental fatigue, alleviate academic anxiety, and foster self-regulated learning across diverse educational levels. The synthesis of these articles serves as the substantive foundation for formulating the thematic discussion analysis in the subsequent section.

RESULTS AND DISCUSSION

Research on the Pomodoro Technique spanning from 2016 to 2026 demonstrates a distribution predominantly focused on learning outcomes and students' cognitive focus and attention.

Tabel 2 Distribution of Reviewed Articles Based on Thematic Categories

Thematic Category	Total	Percentage (%)	Associated Article Numbers
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Learning Effectiveness and Academic Outcomes	6	28.57%	1, 2, 8, 11, 18, 21
Focus, Attention Levels, and Cognitive Load	6	28.57%	6, 7, 10, 12, 13, 14
Time Management and Self-Regulation	4	19.05%	3, 16, 17, 19
Technology Integration and Supporting Devices	1	4.76%	20
Application in Demographic Contexts and Special Learning Settings	4	19.05%	4, 5, 9, 15

The quantitative distribution reveals that learning effectiveness and cognitive focus constitute the primary research domains, jointly representing over half of the synthesized literature (57.14%). Meanwhile, structured time management and specialized educational settings account for equal secondary proportions (19.05% each), highlighting the versatile applicability of the technique across diverse learning environments. Conversely, technology integration remains a relatively under-researched area (4.76%), signaling a critical gap and opportunity for future empirical studies on digital Pomodoro interventions.

1. Learning Effectiveness and Academic Outcomes

This category comprises 6 articles (28.57% of the total 21 studies) examining the direct impact of implementing the Pomodoro Technique on improving students' learning achievement, specific skill acquisition, and material retention. Research within this domain measures key performance indicators ranging from reading comprehension and text writing quality to conceptual mastery in religious education and long-term memory retention in complex anatomical studies.

Table 3 Learning Effectiveness and Academic Outcomes

Associated Article Numbers	Focus
1	This study investigates the application of the Pomodoro Technique to enhance students' English reading comprehension and ability during the remote learning period forced by the COVID-19 pandemic
2	This research evaluates the impact and effectiveness of utilizing the Pomodoro Technique on improving the overall quality and composition of students' descriptive text writing
8	This paper examines how the implementation of the Pomodoro Technique influences students' writing performance while analyzing variations across different levels of critical thinking skills
11	This study measures changes in ninth-grade students' learning outcomes in Islamic Religious and Character Education following the systematic implementation of the Pomodoro Technique in the classroom
18	This investigation explores the enhancement of self-regulated 'how to learn' skills and their broader direct impacts on students' academic performance and overall learning motivation
21	This scoping review assesses the efficacy of using the Pomodoro Technique during study sessions to improve the retention and recall of complex anatomy lesson material

The literature synthesized within this domain consistently demonstrates that the structured interval framework of the Pomodoro Technique acts as a catalyst for academic improvement across diverse educational disciplines. By segmenting complex learning tasks such as language skills, critical writing, religious concepts, and anatomical memorization into time-boxed sessions, the technique enhances information processing and long-term material retention while mitigating cognitive overload. Ultimately, these findings affirm that implementing structured time-management cycles significantly elevates both skill acquisition and overall academic performance across various educational levels.

2. Focus, Attention Levels, and Cognitive Load

This category comprises 6 articles (28.57% of the total 21 studies) that focus on evaluating changes in students' cognitive-psychological aspects during learning, such as concentration duration, attention span, and academic boredom. The synthesized findings demonstrate that Pomodoro interventions effectively maintain attention stability across primary, secondary, senior high school, and higher education levels.

Table 4 Focus, Attention Levels, and Cognitive Load

Associated Article Numbers	Focus
6	This study explores the implementation of the Pomodoro Technique to enhance junior high school students' learning focus and concentration in Social Studies (IPS) subjects
7	This research evaluates the effectiveness of the Pomodoro Technique in mitigating academic boredom during literacy learning sessions among elementary school student
10	This investigation analyzes the impact of applying the Pomodoro Technique on improving the attention span of Educational Technology university students from the Class of 2023 at UNY
12	This paper examines how the integration of the Pomodoro Technique in Civic Education (PPKn) classes contributes to increasing high school students' overall learning concentration
13	This case study assesses the practical implementation of the Pomodoro Technique in boosting students' study focus during Social Studies instruction at SMP Negeri 7 Kota Bengkulu
14	This research analyzes the execution and effectiveness of the Pomodoro Technique in strengthening the classroom learning concentration of eighth-grade students

The empirical evidence compiled under this category establishes that the Pomodoro Technique serves as a robust cognitive-psychological regulator across elementary, secondary, and tertiary educational levels. By interspersing focused 25-minute study intervals with brief rest periods, the technique systematically counteracts attention decay, minimizes careless errors, and alleviates academic boredom during demanding tasks. Consequently, these synthesized studies confirm that structured time-boxing optimizes cognitive load management, thereby sustaining attention spans and stabilizing student concentration throughout variable instructional sessions.

3. Time Management, Structured Breaks, and Self-Regulation

This category includes 4 articles (19.05% of the total 21 studies) discussing the influence of Pomodoro time intervals in facilitating student self-regulation and structured study patterns. Research within this cluster compares the systematic Pomodoro break scheme (25 minutes of study, 5 minutes of rest) against self-regulated breaks, evaluating its efficiency in sustained academic tasks and scholarly writing.

Table 5 Time Management, Structured Breaks, and Self-Regulation

Associated Article Numbers	Focus
3	This study analyzes the application of the Pomodoro Technique in Zoom-based virtual classrooms to evaluate its impact on students' motivation and online study time management
16	This research investigates effort regulation mechanisms by comparing the structural efficiency of structured Pomodoro breaks against unstructured, self-regulated break strategies
17	This experiment compares the effects of systematic short Pomodoro breaks and self-directed breaks on students' subjective fatigue levels and actual learning outcomes

19	This article explores the feasibility and effectiveness of adapting the Pomodoro Technique to streamline academic publishing workflows and accelerate research task completion
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These synthesized studies collectively demonstrate that the strategic enforcement of structured intervals serves as a crucial regulatory mechanism for managing academic workload and cognitive stamina. By transitioning from ad-hoc, self-directed rest to fixed interval boundaries, learners and researchers can more effectively regulate effort, prevent digital burn-out, and maintain psychological well-being during prolonged scholarly tasks. Consequently, these findings validate the Pomodoro framework not merely as a simple time-boxing exercise, but as a deliberate self-regulation strategy that optimizes task completion and guards against cumulative mental fatigue across both virtual and publication workflows.

4. Technology Integration and Supporting Devices

This category comprises 1 article (4.76% of the total 21 studies) focusing on the software-based media or infrastructure development designed to support the execution of the Pomodoro Technique. This study represents an educational technology engineering approach aimed at facilitating study session management and controlling screen-time exposure.

Table 6 Technology Integration and Supporting Devices

Associated Article Numbers	Focus
20	This study details the implementation and operation of the Pomodoro Technique combined with lockscreen features within the Android-based Locktimer application to effectively regulate screen time usage

The empirical focus of this study highlights the crucial role of mobile application architecture in reinforcing time-management discipline and mitigating digital distractions during study sessions. By embedding automated time-boxing constraints alongside system-level lockscreen controls, the application converts the theoretical principles of the Pomodoro Technique into an active, device-enforced intervention. Consequently, these technical findings demonstrate that software-driven boundary enforcement effectively safeguards learning flow, limits non-academic screen exposure, and establishes a secure digital environment necessary for sustained cognitive engagement.

5. Application in Demographic Contexts and Special Learning Settings

This category includes 4 articles (19.05% of the total 21 studies) examining the implementation of the Pomodoro Technique combined with specific pedagogical methods or socio-cultural contexts. Research subjects within this cluster vary widely, ranging from religious instruction and study habits in rural communities to higher education student engagement and the integration of collaborative Pomodoro sessions with Qur'anic murottal recitations.

Table 7 Application in Demographic Contexts and Special Learning Settings

Associated Article Numbers	Focus
4	This study explores the application and optimization of the Pomodoro Technique to enhance teaching and learning practices within Islamic Education settings
5	This research investigates students' perceptions regarding the implementation of the Pomodoro Technique and its effect on building English learning habits at an English course in Ukir Village
9	This paper evaluates the combined impact of the collaborative Pomodoro Technique and background Qur'anic Murottal audio on boosting student motivation during Biology lessons

15	This study analyzes how integrating Pomodoro-style structured class breaks influences higher education student engagement during academic lectures
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The literature within this domain demonstrates the remarkable adaptability of the Pomodoro Technique across diverse socio-cultural contexts and specialized instructional frameworks. By harmonizing structured time-boxing with localized habits, spiritual soundscapes like Qur'anic Murottal, or formal higher education lecture structures, the technique transcends simple productivity management to become a flexible pedagogical tool. Ultimately, these findings affirm that when tailored to specific demographic and environmental conditions, Pomodoro-based interventions effectively foster active engagement, reduce academic anxiety, and sustain positive learning habits across varied educational populations.

6. Discussion

The systematic analysis of 21 reviewed studies demonstrates that the Pomodoro Technique serves as an effective pedagogical intervention across diverse disciplines, primarily by regulating cognitive load and enhancing academic achievement. As synthesized in the findings, structured time-boxing directly elevates core performance metrics, such as reading comprehension, written composition, and conceptual retention (Aprilia et al., 2025; Lavrenteva & Orland-Barak, 2023; Sa'id et al., 2026). These outcomes align closely with Cognitive Load Theory, which posits that human working memory possesses a finite capacity that requires deliberate management to prevent cognitive overload during complex information processing (Sweller et al., 2019). By segmenting dense material into discrete 25-minute intervals, learners are better equipped to consolidate schema without experiencing cognitive exhaustion. In the context of future mathematics education, where students frequently grapple with multi-step problem solving, spatial reasoning, and abstract proofs, implementing structured interval study could prove transformative (Astiwi & Siswanto, 2026; Widyastuti et al., 2026). Mathematical tasks demand high working-memory capacity; thus, applying Pomodoro cycles allows students to process complex algorithmic steps incrementally, preventing early fatigue and fostering deeper conceptual retention (Kisno, 2020; Septiani et al., 2022).

Beyond general academic performance, the empirical synthesis reveals a strong positive effect on sustaining student attention span, stabilizing focus, and mitigating academic boredom across elementary, secondary, and tertiary settings (Dekker et al., 2020; Petrucco & Agostini, 2023). Traditional, continuous instructional blocks often trigger rapid attention decay, leading to off-task behavior and decreased engagement during demanding lessons. The scheduled 5-minute rest intervals in the Pomodoro framework act as cognitive "resets" that replenish attentional resources and stabilize focus over extended academic periods (Nugroho & Ghufro, 2026; Rafliyanto & Mukhlis, 2023). This cognitive stabilization is particularly vital for future mathematics instruction, which is historically associated with elevated levels of student frustration and passive disengagement. Integrating Pomodoro-style breaks during intensive problem-solving workshops can maintain students' analytical focus, reduce careless calculation errors, and sustain active engagement when tackling abstract algebraic or geometric concepts (Cirillo, 2018; Yohana et al., 2025).

A pivotal finding of this synthesis lies in the superiority of structured, externally enforced breaks over self-regulated rest in optimizing student effort regulation and time management. When left to self-regulate break timing, learners frequently experience "break procrastination" or take poorly timed interruptions that disrupt state-of-flow and increase subjective fatigue. In contrast, the systematic 25/5-minute Pomodoro boundary provides a predictable temporal structure that stabilizes motivation and prevents digital burnout (Damayanti et al., 2024). In future mathematics learning, where self-regulation is a primary predictor of success in self-directed problem-solving, structured interval management can provide a crucial scaffolding mechanism (Suryatama et al., 2026; Wibowo et al., 2026). Scaffolding mathematical tasks into predictable temporal units helps students develop stronger metacognitive control, enabling them to pace themselves through complex problem sets rather than rushing through calculations or abandoning challenging problems prematurely (Pacheco et al., 2021; Susetyawati & Siswanto, 2026).

Furthermore, the integration of educational technology and digital boundary management evidenced by application-based Pomodoro software demonstrates how technology can actively protect learning flow from digital distractions (Rochmat et al., 2025; Saputra et al., 2026). Unregulated mobile

phone usage and screen-time fragmentation pose significant threats to deep focus, particularly during independent study sessions (Subakti et al., 2026; Tarso et al., 2024). By embedding automated lockscreen constraints and timer mechanics, software-driven interventions turn theoretical productivity rules into active, machine-enforced study guards (Suminar et al., 2024; Yogyanto et al., 2024). As future mathematics classrooms increasingly transition toward digital learning platforms, hybrid problem-solving software, and intelligent tutoring systems, software-enforced Pomodoro timers offer a powerful tool. Integrating automated time-boxing directly into digital mathematics software can protect students from digital multitasking, ensuring that online practice sessions yield maximum cognitive engagement and procedural fluency (Hardi et al., 2026; Siswanto et al., 2026).

The contextual adaptability of the Pomodoro Technique across cultural modalities, socio-economic environments, and auditory enhancements further emphasizes its versatility as a pedagogical strategy (Kisno, 2020; Valentina et al., 2024). Combining interval timing with soothing audio environments, such as Qur'anic Murottal or relaxation soundscapes, induces alpha brainwave states that alleviate anxiety and boost learning motivation (Damayanti et al., 2024). This multi-sensory synergy highlights that time-boxing works not only through mechanical temporal constraints, but also by reshaping the psychological state of the learner (Rafliyanto & Mukhlis, 2023). Applied to mathematics education a discipline disproportionately impacted by mathematics anxiety combining structured Pomodoro cycles with calming ambient audio or collaborative peer structures presents a promising avenue. Such hybrid approaches can lower physiological stress during high-stakes problem-solving tasks, replacing feelings of dread with an organized, low-anxiety environment conducive to logical reasoning.

The synthesis also underlines the effectiveness of time-boxing when paired with content chunking and Higher-Order Thinking Skills (HOTS) instruction (Nurlaily et al., 2021; Purwaningsih et al., 2026). When complex tasks are decomposed into bite-sized units, students experience enhanced self-efficacy and improved classical mastery. This is particularly salient for advanced mathematical tasks such as calculus, proofs, and statistical modelling which require sustained critical thinking without triggering cognitive overload (Hidayati et al., 2026; Rohana et al., 2024). In future mathematics curricula, lesson design can explicitly map complex mathematical competencies directly onto Pomodoro intervals. For instance, a single 25-minute "pomo" can be dedicated exclusively to problem decomposition, followed by a break, and a subsequent "pomo" focused on formula derivation or verification, thereby operationalizing HOTS instruction into actionable temporal steps (Qomariyah et al., 2023).

Finally, while the extant literature provides robust evidence across various humanities and general education subjects, it reveals a clear empirical gap regarding domain-specific applications in STEM and mathematics classroom (Lestiana et al., 2022; Limori et al., 2025). Most current studies focus on language acquisition, general concentration, or social sciences, leaving the precise cognitive mechanics of Pomodoro-driven mathematical problem-solving largely under-explored. Future research must address this gap through empirical and experimental designs that investigate how structured interval timing impacts mathematical reasoning, spatial visualizations, and error rates across diverse student demographics (Jablonski & Ludwig, 2022). Establishing domain-specific guidelines for integrating the Pomodoro Technique into mathematics instruction will be essential for transforming traditional time-management practices into a rigorous, evidence-based instructional methodology for 21st-century STEM education.

CONCLUSION

Based on the results of the Systematic Literature Review (SLR) utilizing the PRISMA protocol across 21 indexed articles (2016–2026), it can be concluded that the implementation of the Pomodoro Technique contributes significantly to academic learning outcomes and student concentration maintenance, with both domains dominating at 28.57% each. These findings demonstrate that structured time management strategies (25 minutes of study and a 5-minute break) effectively reduce cognitive fatigue, overcome academic boredom, and minimize math anxiety when students face complex problem-solving materials. The practical implications of this research underscore the importance for mathematics educators to integrate Pomodoro intervals into teaching modules, e-learning platforms, and active learning models such as Problem-Based Learning (PBL) to optimize attention spans and foster sustainable self-regulated learning among students.

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