

The Use of Technology in Education: A Systematic Literature Review

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Abstract

The integration of digital technology into learning has increased access and flexibility in learning, but it has also created cognitive challenges that affect students' learning behaviors. This study aims to analyze the characteristics of technology use on learning behavior, examine the role of multitasking in the learning process, and evaluate its implications for academic achievement. The method used is a Systematic Literature Review (SLR) of 16 articles from 2016 to 2026, selected using the PRISMA protocol through strict inclusion and exclusion criteria. The analysis was conducted using quantitative descriptive methods to identify trends in the findings, and was reinforced with bibliometric analysis to map relationships between concepts and current research trends. The results indicate that the most dominant indicator in learning behavior is Self-Regulated Learning (SRL), followed by self-efficacy and motivation as determinants of successful navigation in digital environments. Regarding the phenomenon of multitasking, the use of smartphones and social media was identified as the primary trigger of attention fragmentation, which increases students' cognitive load. Key implications for academic achievement indicate that success is not merely measured by exam scores but is highly dependent on active engagement and self-regulation skills in strategically utilizing personalized scaffolds.

Keywords: Academic achievement, multitasking, learning behavior, self-regulated learning

Abstrak

Integrasi teknologi digital ke dalam pembelajaran telah meningkatkan akses dan fleksibilitas dalam belajar, tetapi juga menciptakan tantangan kognitif yang memengaruhi perilaku belajar siswa. Studi ini bertujuan untuk menganalisis karakteristik penggunaan teknologi pada perilaku belajar, meneliti peran multitasking dalam proses belajar, dan mengevaluasi implikasinya terhadap prestasi akademik. Metode yang digunakan adalah Tinjauan Pustaka Sistematis (SLR) dari 16 artikel dari tahun 2016 hingga 2026, yang dipilih menggunakan protokol PRISMA melalui kriteria inklusi dan eksklusi yang ketat. Analisis dilakukan menggunakan metode deskriptif kuantitatif untuk mengidentifikasi tren dalam temuan, dan diperkuat dengan analisis bibliometrik untuk memetakan hubungan antara konsep dan tren penelitian saat ini. Hasil menunjukkan bahwa indikator yang paling dominan dalam perilaku belajar adalah Pembelajaran Mandiri (Self-Regulated Learning/SRL), diikuti oleh efikasi diri dan motivasi sebagai penentu keberhasilan navigasi di lingkungan digital. Mengenai fenomena multitasking, penggunaan smartphone dan media sosial diidentifikasi sebagai pemicu utama fragmentasi perhatian, yang meningkatkan beban kognitif siswa. Implikasi utama bagi prestasi akademik menunjukkan bahwa keberhasilan tidak hanya diukur dari nilai ujian, tetapi sangat bergantung pada keterlibatan aktif dan

keterampilan pengaturan diri dalam memanfaatkan dukungan pembelajaran yang dipersonalisasi secara strategis.

Kata Kunci: *Capaian akademik, kebiasaan belajar, multitasking, regulasi diri*

Introduction

In the digital age, technological advancements have transformed the way students access, manage, and construct knowledge. This is evidenced by the emergence of platforms such as Moodle, AI-powered learning assistants, and social media, which have now become an integral part of the modern learning ecosystem (Saputra, et al., 2025; Saqr, et al., 2024). These technologies enable more flexible and adaptive learning by providing personalized scaffolds that help students understand the material according to their individual needs (Hariyanto, Kristianingsih, F. X. D., & Maharani, 2025; Zulyani et al., 2024). However, behind this convenience, the digital learning environment also demands adequate cognitive readiness and behavioral regulation. According to Wulansari(2025), a high flow of information has the potential to increase cognitive load if not balanced by the ability to manage attention and employ effective learning strategies. Therefore, the use of technology must be understood not only as a pedagogical innovation but also as a context that demands adaptation of learning behaviors to ensure the learning process remains optimal.

In the midst of the use of technology in learning, technology often appears as a "double-edged sword". On one hand, it aids learning, but on the other, it becomes a powerful source of distraction. For instance, the phenomenon of media multitasking such as the habit of checking social media or replying to messages during a lecture has become a common sight (Murti, et al., 2026; Yani, et al., 2025). Cognitively, this habit of shifting focus (context switching) drains mental energy and fragments attention (Callejas-Aguilera, et al., 2019). This condition leads to a decline in the quality of information processing. Students tend to achieve only superficial understanding rather than deep conceptual understanding, due to the limitations of cognitive capacity in managing multiple demands simultaneously.

Although research on the use of technology in learning has advanced rapidly, there are still aspects that have not received adequate attention. Many previous studies have tended to focus solely on technical evaluations and the effectiveness of platform usage. One such study is by Sharma & Mishra (2024), which focuses its analysis on the functional satisfaction of e-learning systems. The psychological dimensions of students in balancing learning aids and sources of distraction have not been thoroughly examined within an integrated framework. Additionally, the study by Zhang et al. (2024) also only highlights the impact of social media. These studies have not explained how self-regulation can mitigate these negative impacts in an educational context. This is crucial to explore further due to variations in academic achievement. Some students are still able to achieve optimal performance despite exposure to technology, while others experience a decline in learning quality due to

failure in managing cognitive load (Marwan, et al., 2021).

This disparity indicates that studies on technology use in learning have not fully addressed the internal factors determining learning success, particularly regarding the mechanisms of Self-Regulated Learning. Indriana & Laksmiwati (2025) state that self-regulation functions as a control system enabling students to manage attention, set goals, and adjust learning strategies within a digital environment rife with distractions. Without these abilities, the presence of technology actually has the potential to increase cognitive load and trigger ineffective learning behaviors, such as unguided multitasking (Fitria, et al., 2025). It is important to understand that differences in academic achievement among students are not solely determined by access to technology. The primary determining factors lie in an individual's ability to adaptively manage their learning process, including the ability to control impulses, maintain focus, and strategically utilize technology to achieve academic goals.

Based on this, this study was conducted using a systematic literature review approach to integrate relevant empirical findings. The study aims to analyze how the use of technology in learning influences students' learning behaviors, examine the role of multitasking in the learning process, and evaluate the implications of both on academic achievement. Specifically, this study is formulated into three main questions: (1) how do the characteristics of technology use in learning influence students' learning behaviors; (2) how does multitasking emerge and function within the context of technology-based learning; and (3) how does the interplay between technology use, learning behaviors, and multitasking impact students' academic achievement. The results of this study are expected to provide a more comprehensive understanding and serve as a foundation for designing learning strategies that are more adaptive to the dynamics of learning in the digital age.

Literature Review

Learning Behavior

Learning behavior theory explains that learning behavior is not just a student's activity in receiving learning materials, but is a process that involves habits, motivations, learning strategies, and individual interactions with their learning environment. In the context of education, learning behavior includes learning discipline, time management, participation in learning, the ability to manage information, and the use of effective learning strategies to achieve learning goals (Mirela et al., 2026; Usman, O., & Maharani, 2020). This theory emphasizes that learning behavior is influenced by internal factors such as interests, motivation, and self-regulation abilities, as well as external factors such as learning methods, school environment, family support, and the use of technology in learning. Through this theory, it can be understood that positive learning behavior is able to increase student involvement, concept understanding, and optimal learning outcomes. In addition, learning behavior theory also helps explain how students' interaction patterns with

the learning environment can form sustainable learning habits and support the development of competencies in the 21st century.

Academic Achievement

Academic achievement refers to complex performance measurements, including knowledge, material mastery, and the development of students' scientific literacy (Zheng, Z., & Mustappa, 2022). Academic achievement is usually seen as a reflection of a student's natural potential (talent) and intellectual ability (Al-Abyadh, M., & Abdel Azeem, 2022). In practice, the assessment of students' academic achievement can be carried out through four components which are interrelated units. The four components include tests, measurements, assessments and evaluations (Artama, et al., 2023). Assessment of academic achievement in the field of science, assessment for learning requires the participation of teachers, students' peers, and students (Leenknecht, et al., 2021). The assessment does not focus on cognitive abilities, but needs to examine other abilities, such as skills and performance, and even explore more deeply human attitudes and behaviors, interpersonal, intrapersonal, emotional, and so on (Brown, 2022).

Self-Regulation System

The theory of the regulatory system explains that regulation is not only understood as a collection of written rules, but as a system that involves many parties, mechanisms, and relationships that are complexly interrelated (Sarjito, 2024). In its application to the halal industry, regulations cover various aspects such as certification standards, quality control, and supporting policies that require integrated management between the government and related stakeholders. Through this theory, it can be understood that synergy between institutions and standard alignment have an important role in creating regulations that are more effective, coordinated, and able to support optimal policy implementation.

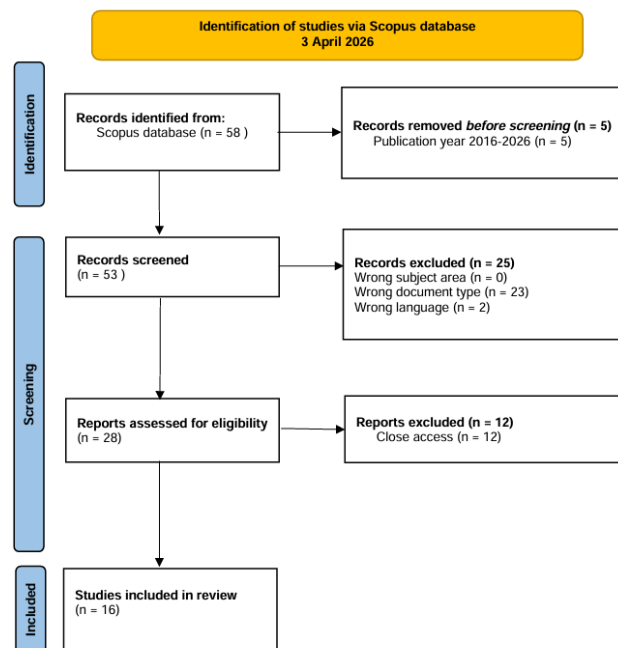
Methods

Data Source

This study employs the Systematic Literature Review (SLR) method, adhering to the PRISMA guidelines, as this framework offers clear and widely recognized reporting standards in scientific research to enhance the transparency and consistency of the review process. Compared to other approaches, PRISMA provides a more systematic and structured literature selection process, ensuring that every stage from literature search to article selection can be logically traced and minimizing potential bias in source selection. Additionally, the use of PRISMA makes the review process more accountable and easily replicable by other researchers, thereby strengthening the validity of the resulting synthesis (Febrianti, 2024).

In this study, the literature selection stages followed the main PRISMA flow,

which includes identification, screening, eligibility, and inclusion. Each stage was conducted sequentially to ensure that the selected articles were truly relevant and met the research criteria. This process flow is visualized in Figure 1 to provide a clear overview of the literature selection mechanism employed.



1.
Figure 1. Stages of a Systematic Literature Review Using the PRISMA Approach

Identification

The identification stage was conducted by searching for articles in the Scopus database using the title, abstract, and keywords fields. The literature search was performed on March 14, 2026, at 9:27 PM WIB using a combination of keywords based on Boolean operators (AND, OR), namely: ("digital technology" OR "educational technology" OR "ICT") AND ("learning behavior" OR "student behavior" OR "self-regulation" OR "study behavior") AND ("multitasking" OR "media multitasking") AND ("academic performance" OR "academic achievement" OR "learning outcomes"). This strategy was designed to identify conceptually relevant literature focusing on the role of digital technology in shaping learning behavior, multitasking practices, and their implications for academic achievement. Additionally, the use of varied terminology allows for a broader and more representative scope of literature reflecting current research developments.

Screening & Eligibility

The screening and eligibility phase was conducted by applying inclusion and exclusion criteria to ensure the quality and relevance of the articles. The criteria used include: publication period (2020–2026), document type (journal articles), language (English), subject area (education, psychology, and social sciences), and topic

alignment with the research focus specifically, the relationship between digital technology, learning behavior/multitasking, and academic achievement. Additionally, only articles with full-text access were included in the analysis. This process aims to filter out literature that is truly relevant and supports a comprehensive analysis. Details of the criteria are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria

Aspect	Inclusion Criteria	Exclusion Criteria
Publication Period	Articles published between 2016 and 2026	Articles published outside the 2016–2026 period
Publication Type	Empirical research articles published in Scopus-indexed scientific journals	Non-journal articles (proceedings, books, book chapters), review articles, editorials, and publications not indexed in Scopus
Publication Language	Articles written in English or Indonesian	Articles written in languages other than English or Indonesian
Subject Area	Articles fall within the social sciences, specifically education, educational psychology, and educational technology/ICT	Articles outside the social sciences that lack direct relevance to an educational context
Research Subject	The research subjects are students at the elementary, secondary, or higher education levels	Research subjects outside of students (e.g., teachers, workers, or the general population without an educational context)
Research Findings	Articles examine the use of digital technology (including educational technology or ICT), learning behavior (including self-regulation), and multitasking (including media multitasking) and their relationship to academic performance, academic achievement, or learning outcomes	Articles that do not explicitly discuss the relationship between digital technology, learning behavior/multitasking, and academic achievement
Article Availability	Articles are available in full text and are open access	Articles are available only as abstracts or are not fully accessible

Inclusion & Data Analysis

The inclusion phase yielded 16 articles that met all selection criteria. The analysis was conducted using quantitative descriptive methods to identify: the distribution of research topics, subject characteristics (e.g., college students and school students), and the relationship between digital technology use, learning behaviors, and academic achievement. Additionally, the analysis highlights how multitasking practices in a learning context influence learning outcomes and academic performance. The synthesis results are presented in tabular form to facilitate the identification of patterns, trends, and research gaps.

Bibliometric Analysis

In addition to descriptive analysis, this study also employs a bibliometric approach to map research trends and relationships among concepts. The analysis was conducted using Biblioshiny and VOSviewer through the following steps:

1. Data preprocessing: Data extraction was performed from the title, abstract, and keywords sections of the selected articles to generate a bibliometric dataset ready for analysis.
2. Wordcloud: The word cloud visualization shows that dominant terms in the research include educational technology, students, learning, self-regulated learning, and motivation. This indicates that the research focus is not only on technology but also on behavioral and self-regulation aspects in the learning process.
3. Keyword Network: Visualization using VOSviewer shows the development of research trends from 2023 to 2024. In the early phase, research focused more on basic concepts such as self, process, and relationship. Subsequently, the focus shifted to technology, learning, and engagement. In the most recent period, research began to emphasize academic performance, behavior, and education, indicating increased attention to concrete impacts on academic outcomes.

Results

Based on the selection process, 16 articles were identified that met all inclusion criteria. A summary of the publication characteristics of these articles is presented in Table 2. The selected articles were then analyzed using a bibliometric approach to identify patterns of keyword occurrence, inter-topic relationships, and research trends in the study of digital technology, learning behavior, and academic achievement.

Table 2. Distribution of Article Characteristics from the Review

Author	Title	Key Finding
Wang & Dolah (2024)	A Framework for Facilitating Experiential Learning in Cultural Tourism	The “interactive scenario-based learning” framework effectively enhances cultural understanding through digital applications.
Cojhter & Licardo (2025)	Systematic Analysis of Research Studies on Students’ Self-Management Supported by the Use of Digital Technology in Primary Education	Digital technology and game-based learning enhance self-management, engagement, and emotional competence among elementary school students.
Tsai & Li (2024)	Enterprise Implementation of Educational Technology: Exploring Employee Learning Behavior in E-Learning Environments	Learning goal orientation and validation positively influence learning outcomes through the mediation of self-regulated learning.
Sáiz-Manzanares et al. (2023)	Application and Challenges of Eye-Tracking Technology in Higher Education	Eye-tracking technology can capture extensive data on the learning process and distinguish patterns of students’ cognitive effort.

Andreevich (2020)	The Impact of E-Learning and Social Parameters on Students' Academic Performance	There is a statistically significant correlation between socio-behavioral parameters and academic performance in e-learning.
Aida (2023)	Impact of E-Learning Orientation, Moodle Usage, and Learning Planning on Learning Outcomes in On-Demand Lectures	Intensive use of Moodle features and timely learning planning have a positive effect on learning outcomes.
Rasool et al. (2025)	Perceptions of generative AI in teaching and learning: A UTAUT and TPACK model-based study of teachers and students	Students and faculty acknowledge the benefits of AI for personalization, but express concerns about data privacy and content accuracy
Zamecnik et al. (2022)	Exploring non-traditional learner motivations and characteristics in online learning: A learner profile study	Six unique profiles of online learners were identified, distinguished by motivation, demographics, and digital engagement.
Romero et al. (2021)	Moodle and Socrative quizzes as formative aids in teaching theory in a chemical engineering course	Although there were no significant differences in exam scores, the use of digital quizzes enhanced motivation and fostered a self-directed learning environment.
Hai et al. (2022)	An Empirical Investigation of University Students' Behavioral Intention to Adopt Online Learning: Evidence from China	Self-efficacy and self-directed learning significantly influence students' intention to use online learning.
Javellana et al. (2026)	Gamifying Academic Achievement in Mathematical Physics Through Student Feedback on Leaderboard Performance Tracking	Leaderboards increase motivation among high-achieving students but trigger stress among lower-ranked students.
Dai et al. (2025)	Exploring the role of social media in mathematics learning: effects on self-efficacy, interest, and self-regulation	Social media enhances interest and self-regulation in mathematics learning, which indirectly builds self-efficacy.
Torrington et al. (2024)	Elementary students' self-regulation in computer-based learning environments: How do self-report measures, observations, and teacher ratings relate to task performance?	Students' written explanations of self-directed learning strategies are the best predictors of digital task performance.
Solak & Lok (2026)	Exploring the Role of Artificial Intelligence Tutors in Enhancing Motivation and Learning Behavior in Language Learners	AI tutors reduce language learning anxiety and create a non-judgmental practice environment.
Almakky (2025)	The Impact of Smartphone Usage on Academic Performance Among Students at King Abdulaziz	Smartphone addiction has a small negative impact on grades; senior students are better able to regulate

	University, Saudi Arabia: A	smartphone use than freshmen.
	Subgroup Analysis Based on Year	
	of Study and Field of	
	Specialization	
Lim et al. (2024)	How Do Students Learn with	AI-personalized scaffolds influence
	Real-time Personalized Scaffolds?	learning behavior in real-time and
		improve essay performance.

The results of the word cloud analysis using Biblioshiny are shown in Figure 2. Based on the word cloud, the most frequently occurring keywords include educational technology, students, learning, self-regulated learning, motivation, online learning, and academic performance. In addition, terms such as artificial intelligence, blended learning, and computer-aided instruction also begin to appear, indicating the variety of contexts in which technology is used in learning.

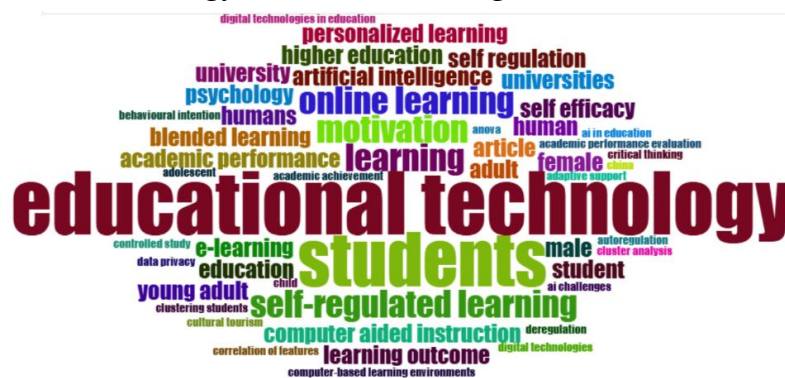


Figure 2. Results of bibliometric analysis using Biblioshiny

An overlay visualization was then performed using VOSviewer (Figure 3). The analysis results show the evolution of research trends from 2023 to 2024. In the early period (around 2023), the dominant keywords included self, process, relationship, and student, marked in blue-violet. In the subsequent period (green), an increase began to be seen in keywords such as technology, learning, engagement, research, and outcome, indicating a growing focus of research on the integration of technology into the learning process. In the most recent period (2024, yellow), the dominant keywords include academic performance, behavior, education, and learner. This indicates that current research places greater emphasis on academic achievement and learning behavior in the context of digital technology use.

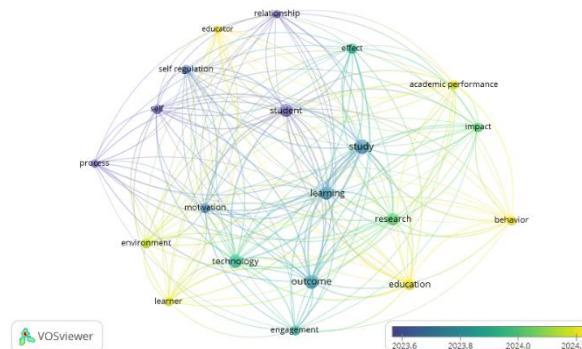


Figure 3. Research trend overlay using VosViewers

Discussion

Learning Behavior in the Context of Technology Integration in Education

The distribution of research focus on learning behavior in the use of technology is presented in Table 3. The analysis results indicate that the most dominant indicator of student learning behavior is Self-Regulated Learning (SRL) (37.5%). This behavior reflects students' cognitive ability to plan and monitor their learning processes in a digital environment. The effectiveness of SRL activities has been shown to increase through the use of real-time personalized scaffolding, which allows students to receive instant guidance tailored to their level of understanding (Lim, et al., 2024). In line with this, Azhary et al. (2021) state that self-regulated learning plays a crucial role in digital learning as it enables students to determine what needs to be done, the learning strategies to employ, and the learning objectives to be achieved.

Table 3. Distribution of Studies on Learning Behaviors

Learning Behavior Indicators	Number of Articles	Percentage (%)
Self-Regulated Learning	6	37,5
Motivation & Self-Efficacy	4	25,0
Platform Engagement (AI, Apps)	4	25,0
Cognitive Behavior Patterns (Eye-tracking)	2	12,25

Theoretically, these manifestations of learning behavior are highly dependent on an individual's goal orientation. Students with a learning goal orientation tend to demonstrate better adaptation to e-learning systems (Tsai, C. Y., & Li, 2024). This is because they view technology as a means of developing competencies, not merely as a way to fulfill academic obligations. This aligns with findings that students' intentions and consistency in using digital platforms are strongly influenced by their level of self-efficacy; a strong belief in one's ability to manage technology is a key prerequisite for self-regulation mechanisms to function optimally in achieving learning outcomes (Hai, et al., 2022; Chen, et al., 2023).

The bibliometric results via the word cloud in Figure 2 show strong consistency with the findings from the previous table. The term “self-regulated learning” stands out prominently and is located near the keyword “motivation.” The presence of these two terms underscores that learning behavior in the digital age is not merely a matter of technical interaction with devices, but a psychological process involving self-regulation and self-efficacy (Hai, et al., 2022). This indicates that students capable of articulating their learning strategies independently have a greater likelihood of success in computer-based learning environments. Such metacognitive abilities serve as a primary predictor of academic performance, particularly when students are faced with learning platforms that demand a high degree of independence (Torrington, et al., 2024).

Causes of Multitasking in the Era of Technology Use in Learning

The distribution of findings regarding the factors and impacts of multitasking is presented in Table 4. Analysis results indicate that students’ tendency to multitask during digital learning processes is identified as a significant barrier to attention. Student multitasking is triggered by smartphone use and intensive interaction with social media, which disrupts academic focus (Almakky, 2025). These disruptions occur because unregulated device use increases cognitive load and triggers stress, particularly within competitive learning systems that utilize features such as leaderboards (Malayao et al., 2026). Students distracted by smartphones often exhibit reduced inhibitory control, making it extremely difficult for them to filter out digital distractions even while in the classroom (Sáiz-Manzanares, et al., 2023).

Table 4. Distribution of Studies on the Causes of Multitasking in Learning

Multitasking Indicators	Number of Articles	Percentage (%)
Mobile Phone Use & Digital Addiction	2	12,5
Social Media Distractions	1	6,25
Emotional Distractions (Gamification / Stress)	2	12,5
Cognitive Load & Attention	2	12,5

These findings are reinforced by the word cloud results (Figure 2), which highlight the words “human” and ‘psychology’ as crucial aspects related to technology user behavior. The appearance of the word “students” at the center of the graph, surrounded by various digital stimuli, confirms that multitasking is a phenomenon inherent to the profile of modern students. These findings confirm that multitasking is not merely a matter of tool usage but is closely linked to academic maturity. Senior-level students tend to be more capable of effectively regulating their multitasking behavior compared to first-year students who are still in the adaptation phase toward digital self-directed learning.

Implications of Technology Use in Learning on Academic Achievement

The implications of technology use on students’ academic achievement are

presented in Table 5. The analysis shows that the most dominant achievement indicators with strategic implications are exam scores and assignment performance (31.25%), followed by self-efficacy (25%). These findings suggest that the success of technology integration is not measured solely by cognitive metrics but also by the strengthening of students' psychological aspects. A study by Supriatna et al. (2025) states that psychological aspects influence students' level of learning motivation and perseverance in participating in the learning process. Additionally, Yusuf et al. (2026) note in their literature review that the successful integration of technology in learning must take psychological factors into account.

Table 5. Distribution of Implications for Learning Outcomes in the Era of Technology Use

Learning Outcome Implication Indicators	Number of Articles	Percentage (%)	Notes
Exam Scores & Assignment Performance	5	31,25	Technology must provide rapid feedback to improve the quality of learning outcomes in real time.
Self-Efficacy	4	25,0	Increasing students' self-confidence is key to achieving digital learning independence
Conceptual Understanding	2	12,5	Technology plays a crucial role in visualizing abstract concepts that are difficult to grasp through conventional methods.
Writing Quality	1	6,25	The use of assistive tools (AI/scaffolding) implies an improvement in students' logical thinking structures.

In technology-based learning, academic achievements identified through instant feedback mechanisms, such as the use of AI tutors, suggest that technology must function as an emotional support capable of reducing learning anxiety (Solak, E., & Lok, 2026). This role is far more crucial than merely serving as a tool for delivering static content, as academic outcomes have been shown to improve when technology facilitates real-time task refinement (Lim, et al.,2024). However, technology does not automatically guarantee optimal academic success. The key implication is that the effectiveness of learning outcomes heavily depends on the degree of students' active engagement within digital platforms. This indicates that technology will only serve as a catalyst for achievement if supported by students' self-efficacy in managing their learning process (Hai, et al., 2022).

Visually, the word cloud in Figure 2 provides strong confirmation through the placement of the terms "academic performance" and "learning outcome" as primary terminology. The presence of the keyword "self-efficacy" appearing alongside these terms provides a theoretical implication that students' self-confidence in managing technology is a crucial predictor or prerequisite before optimal learning outcomes can

be achieved (Hai, et al., 2022). This indicates that internal motivation and self-confidence in mastering digital tools serve as the primary foundation determining the extent to which technology can contribute to academic achievement.

The results of the literature review indicate that the use of technology in learning has profound implications for students' cognitive management and learning behavior. The availability of digital devices and sophisticated tools such as AI tutors, while offering personalized learning, poses a significant challenge due to the high potential for distractions that can disrupt attention. These findings confirm that academic success in the digital age no longer depends solely on access to technology, but rather on self-regulated learning to manage cognitive load and mitigate multitasking behavior. Theoretically, the link between self-efficacy and attention control suggests that without strong self-confidence in managing distractions, technology can actually hinder conceptual understanding and disrupt the concentration required for complex academic tasks.

Based on these implications, recommended strategies include developing instructional designs that explicitly integrate metacognitive skill training into the curriculum so that students can independently manage digital distractions. Educators should utilize technology in a targeted manner, for example, by providing personalized scaffolding or interactive quizzes that maintain students' active engagement without overburdening their working memory capacity. Additionally, institutions need to create a learning environment that supports self-regulation, whether through wise device usage policies in the classroom or by providing digital resources oriented toward learning outcomes. Synergy between strengthening individual psychological aspects and optimizing technological features is the key to transforming the potential for distraction into an opportunity for optimal academic achievement.

Conclusion

The results of a Systematic Literature Review of 16 relevant articles indicate that the interaction between learning behavior, multitasking practices, and technology use is a crucial phenomenon that systematically determines the quality of academic achievement in the digital age. Analysis demonstrates that learning effectiveness is significantly influenced by the dominance of Self-Regulated Learning (SRL), where weak self-regulation and high intensity of simultaneous media multitasking trigger attention fragmentation and increased cognitive load. Empirically, this condition directly impacts a decline in academic achievement, both through low test scores and the weakening of cognitive functions such as inhibitory control, thereby scientifically confirming that this dynamic is not merely a behavioral disturbance but a cognitive-structural issue affecting the quality of information processing. In practical terms, educators need to integrate learning strategies by providing personalized scaffolds and strengthening students' metacognitive awareness in technology use to mitigate distractions. Meanwhile, recommendations for future research are directed toward

developing self-regulation-based intervention models, particularly for first-year students who have a higher level of vulnerability compared to senior students, to gain a more comprehensive understanding of the dynamics of digital learning.

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