

Attention Crisis in Learning: Declining Student Focus in the Digital Distraction Era

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Abstract

The increasing integration of digital technology in education has transformed learning environments but also contributed to an emerging attention crisis among students. The widespread use of smartphones, social media, and online platforms has intensified digital distraction, leading to reduced focus and fragmented cognitive engagement. This study aims to analyze the impact of digital distraction on students' attention and learning outcomes in contemporary educational settings. The research employs a qualitative approach using a systematic literature review (SLR), drawing on peer-reviewed journal articles and academic sources. Data collection follows structured stages of identification, screening, eligibility, and inclusion, while analysis is conducted through thematic and content analysis to identify patterns related to distraction types, causes, and effects. The findings reveal that multitasking, device-based interruptions, and internal cognitive distractions significantly reduce sustained attention and increase cognitive load, resulting in lower academic performance and superficial learning. Additionally, digital distraction negatively affects classroom interaction and instructional effectiveness. Effective strategies such as attentional literacy, self-regulation, instructional design improvements, and mindfulness-based interventions show potential in mitigating these effects. In conclusion, digital distraction is a major challenge in modern education, requiring integrated and adaptive approaches to enhance student focus and support meaningful learning in the digital era.

Keywords: *Digital Distraction, Attention Crisis, Student Focus, Learning Outcomes, Educational Technology*

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Introduction

The rapid advancement of digital technology has fundamentally transformed educational environments, reshaping how students access information, interact with learning materials, and engage in academic activities. In contemporary classrooms and online learning settings, digital devices such as smartphones, laptops, and tablets have become integral tools that support flexible, personalized, and interactive learning. However, alongside these benefits, there has been a growing concern regarding the unintended consequences of technology use, particularly the emergence of an “attention crisis” among students. This phenomenon is characterized by a decline in sustained attention, increased susceptibility to distraction, and a tendency toward fragmented cognitive engagement. The pervasive presence of digital devices has created a “culture of distraction,” where continuous partial attention becomes the



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norm rather than the exception, raising critical questions about the effectiveness of learning in the digital age (Pérez-Juárez et al., 2023; Kostić & Randelović, 2022; Martin et al., 2025).

One of the most prominent features of modern learning environments is the widespread occurrence of digital distraction, which manifests through various forms of off-task behavior. Students frequently engage in activities such as checking social media, sending messages, browsing unrelated websites, and switching between multiple applications during lectures or study sessions. These behaviors are facilitated by the design of digital technologies, which prioritize immediacy, interactivity, and constant connectivity. Research indicates that such off-task activities can consume a substantial portion of students' learning time, thereby reducing their engagement with instructional content and limiting opportunities for deep cognitive processing (Kostić & Randelović, 2022; Sieg et al., 2025; Deng et al., 2024). In online learning contexts, the problem is further exacerbated by the ease of multitasking across tabs and platforms, as well as the continuous flow of notifications that compete for students' attention (Wang, 2022; Martin et al., 2025). As a result, the learning environment becomes increasingly fragmented, making it difficult for students to maintain focus and coherence in their cognitive activities.

The phenomenon of digital distraction is not limited to external interruptions but also includes internal cognitive processes such as mind-wandering and habitual checking behaviors. Students often experience boredom, fatigue, or reduced motivation, which leads them to disengage from learning tasks and seek stimulation through digital devices. This interplay between external and internal forms of distraction highlights the complexity of the attention crisis, as it involves both technological and psychological dimensions. Studies have identified several key types of distraction, including multitasking, device-based interruptions, and internal cognitive drift, all of which contribute to reduced attentional control and diminished learning effectiveness (Pérez-Juárez et al., 2023; Wang, 2022; Deng et al., 2024). The normalization of multitasking behavior, in particular, has significant implications for students' ability to process information deeply and retain knowledge over time.

A growing body of empirical research consistently demonstrates that digital distraction and multitasking are associated with negative learning outcomes. Students who frequently engage in multitasking tend to exhibit lower levels of attention control, slower task completion, and reduced academic performance. The cognitive load imposed by switching between tasks disrupts the encoding and consolidation of information, leading to superficial learning and poor comprehension (Pérez-Juárez et al., 2023; Kostić & Randelović, 2022; Wang, 2022; Martin et al., 2025). Furthermore, the relationship between digital distraction and academic performance is often mediated by attention control, suggesting that students with weaker self-regulation skills are particularly vulnerable to the negative effects of technology use (Kokoç, 2021). This finding underscores the importance of cognitive and behavioral factors in shaping students' responses to digital environments.

In addition to its impact on individual learning outcomes, digital distraction also affects the broader dynamics of the educational environment. Research indicates that frequent off-task behavior can disrupt teacher–student interactions, reduce classroom cohesion, and impair attentional synchronization between instructors and learners. This lack of synchronization can lead to misunderstandings, reduced engagement, and lower overall effectiveness of instruction, particularly in complex or skill-based learning contexts (Kostić & Randelović, 2022; Sieg et al., 2025). Moreover, the presence of digital distractions increases cognitive load, making it more difficult for students to process and integrate new information. While some studies suggest that simple and static on-screen distractions may have limited impact when students exercise strong top-down attentional control, more active and emotionally engaging forms of multitasking—such as social media use—remain clearly detrimental to learning (Ronconi et al., 2024; Wang, 2022).

Despite the extensive research on digital distraction, there remains a lack of comprehensive and systematic understanding of the attention crisis in education. Many studies focus on specific aspects of distraction, such as multitasking or device use, without integrating these dimensions into a cohesive framework. As a result, the literature is fragmented, and there is limited consensus on how different forms of distraction interact and affect learning outcomes. A recent systematic review synthesizing 26 studies identified key causes of digital distraction, including technological features, individual needs such as boredom and habit formation, and instructional factors related to teaching design and classroom management (Martin et al., 2025). The review also highlighted a range of consequences, including decreased academic performance, missed instructional content, increased anxiety, and problematic technology use. However, the study emphasized the need for further research to develop clearer conceptualizations and more effective intervention strategies.

Another critical gap in the literature concerns the limited effectiveness of existing strategies to mitigate digital distraction. While various approaches have been proposed, including classroom rules, technological restrictions, and self-regulation interventions, their impact has been inconsistent and often limited. For example, efforts to promote digital self-control among students have shown mixed results, suggesting that behavioral interventions alone may not be sufficient to address the complexity of the attention crisis (Kostić & Randelović, 2022; Wang, 2022; Deng et al., 2024). Furthermore, there is a lack of research examining how different strategies can be integrated into a comprehensive framework that addresses both technological and psychological dimensions of distraction. This gap highlights the need for more holistic and evidence-based approaches to managing attention in digital learning environments.

The novelty of this study lies in its integrative and analytical approach to understanding the attention crisis in education. Unlike previous research that examines isolated aspects of digital distraction, this study seeks to synthesize existing findings into a comprehensive framework that captures the multifaceted nature of the problem. By combining insights from cognitive psychology, educational technology, and behavioral science, the study aims to provide a deeper understanding of how digital distraction affects students' attention and learning outcomes. In addition, the study emphasizes the importance of linking theoretical insights with practical implications, offering a foundation for the development of more effective intervention strategies. This integrative perspective represents a significant contribution to the literature, as it addresses the fragmentation of existing research and provides a more coherent understanding of the attention crisis.

Based on the discussion above, the primary objective of this study is to analyze the phenomenon of digital distraction and its impact on students' attention and learning outcomes in contemporary educational environments. Specifically, the study aims to identify the key forms and causes of digital distraction, examine their cognitive and behavioral effects, and evaluate potential strategies for mitigating their impact. By addressing these objectives, the study seeks to contribute to the development of more effective educational practices that can enhance student focus and support meaningful learning in the digital era.

Methodology

This study employs a qualitative research design using a systematic literature review (SLR) approach to comprehensively analyze the phenomenon of digital distraction and its impact on students' attention in contemporary learning environments. The research relies on secondary data sources, including peer-reviewed journal articles, conference proceedings, and reputable academic publications related to digital distraction, multitasking, attention control, and learning outcomes. The data collection process follows a structured SLR protocol consisting of four main stages: identification, screening, eligibility, and inclusion. Relevant studies are retrieved from academic databases such as Scopus, Web of Science, and Google Scholar using keywords including "digital distraction," "attention crisis," "student focus," "multitasking in learning," and "educational technology." Inclusion criteria focus on recent and high-quality publications that directly examine the relationship between digital technology use and attention or learning performance, while exclusion criteria eliminate duplicate, non-peer-reviewed, or irrelevant studies. Additionally, document analysis is applied to synthesize theoretical frameworks and empirical findings across selected studies.

The data analysis is conducted using a combination of thematic analysis and qualitative content analysis. Thematic analysis is employed to identify recurring patterns, key themes, and conceptual relationships related to the causes, forms, and impacts of digital distraction, such as multitasking behavior, device-based interruptions, and internal cognitive processes like mind-wandering. Meanwhile, content analysis is used to systematically evaluate the depth and consistency of findings across studies, particularly in relation to attention control, cognitive load, and academic performance outcomes. The analytical process involves coding, categorization, comparison, and synthesis of data to generate an integrated understanding of the attention crisis in education. Furthermore, a comparative analytical approach is utilized to examine differences across learning contexts, including traditional classrooms and online learning environments, to identify contextual factors influencing digital distraction. Through this methodological framework, the study aims to provide robust and comprehensive insights into the mechanisms and implications of declining student attention in the digital era.

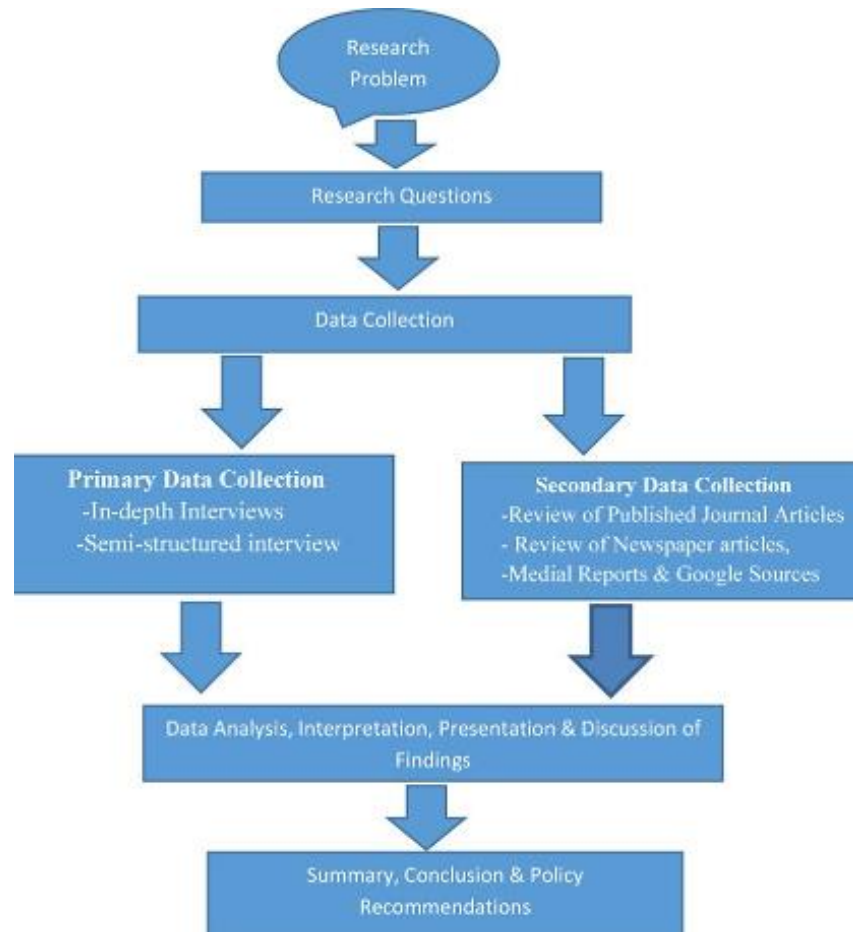


Figure 1. Diagram Conceptual Research

Results and Discussion

Based on the systematic literature review and qualitative analysis conducted, this study synthesizes key findings regarding the types, causes, and impacts of digital distraction on students' attention and learning outcomes. The results are organized to illustrate how different forms of distraction interact with cognitive processes and influence academic performance.

Table 1. Types, Causes, and Impacts of Digital Distraction on Student Attention and Learning Outcomes

No	Type of Distraction	Main Characteristics	Underlying Causes	Impact on Attention	Impact on Learning Outcomes	Supporting Studies
1	Multitasking / Task-Switching	Simultaneous use of multiple apps (e.g., social media during lectures)	Habit, instant gratification, digital culture	Reduced sustained attention, fragmented focus	Lower comprehension, superficial learning	(Pérez-Juárez et al., 2023; Kostić & Randelović, 2022; Wang, 2022)
2	Device-Based Distraction	Notifications, messaging, app switching	Constant connectivity, app design	Frequent interruptions, attention shifts	Decreased productivity, missed information	(Martin et al., 2025; Sieg et al., 2025; Deng et al., 2024)
3	Internal Distraction	Daydreaming, boredom,	Low engagement	Loss of focus, weak	Reduced retention,	(Kostić & Randelović,

	(Mind-Wandering)	habitual checking	nt, cognitive fatigue	attention control	poor academic performance	2022; Deng et al., 2024; Lakilaki et al., 2025)
4	Online Learning Distraction	Switching tabs, multitasking during virtual classes	Lack of supervision, flexible environment	Divided attention, cognitive overload	Reduced learning effectiveness, lower grades	(Wang, 2022; Martin et al., 2025)
5	Emotional/Reward-Based Distraction	Social media engagement, entertainment content	Dopamine-driven behavior, emotional stimuli	Strong attentional capture, addictive patterns	Increased procrastination, reduced academic achievement	(Kokoç, 2021; Wang, 2022)
6	Environmental/Instructional Factors	Poor teaching design, low interactivity	Unengaging instruction, lack of structure	Decreased attentional synchronization	Weak participation, reduced learning outcomes	(Sieg et al., 2025; Kostić & Randelović, 2022)

The interpretation of Table 1 indicates that digital distraction in learning environments is a multidimensional phenomenon influenced by technological, psychological, and instructional factors. Multitasking and device-based distractions emerge as the most dominant forms, significantly reducing students' ability to sustain attention and engage in deep learning processes. Internal factors such as boredom and mind-wandering further exacerbate the problem by weakening attention control and increasing cognitive fragmentation. Additionally, online learning environments intensify these challenges due to increased flexibility and reduced external monitoring. The findings also highlight that emotional and reward-based digital content plays a critical role in capturing attention and fostering habitual distraction behaviors. Overall, the results demonstrate that digital distraction not only disrupts immediate attention but also leads to long-term negative impacts on academic performance, emphasizing the need for integrated strategies that address both technological and behavioral dimensions of the attention crisis.

Discussion

The findings derived from the systematic literature review and summarized in Table 1 provide a comprehensive basis for understanding the phenomenon of the attention crisis in the era of digital distraction. In line with the research objective—namely, to analyze how digital distraction affects students' attention and learning outcomes—the discussion reveals that the contemporary learning environment is increasingly characterized by fragmented attention, driven by both technological affordances and psychological tendencies. The integration of digital devices into education has created a paradoxical situation: while technology enhances access to information and learning flexibility, it simultaneously introduces persistent interruptions that undermine sustained cognitive engagement. This duality is at the core of the attention crisis, where the capacity for deep, focused learning is increasingly compromised by the constant presence of digital stimuli.

One of the most dominant forms of distraction identified in this study is multitasking and task-switching behavior. As shown in Table 1, students frequently engage in simultaneous activities such as attending lectures while interacting with social media or messaging applications. This behavior significantly reduces sustained attention and leads to fragmented cognitive processing. Empirical studies consistently demonstrate that multitasking imposes a high cognitive load, as the brain must continuously shift attention between tasks, thereby reducing efficiency and increasing the likelihood of errors (Kostić & Randelović, 2022; Wang, 2022; Martin et al., 2025). This finding aligns with cognitive load theory, which suggests that human working memory has limited capacity, and excessive task-switching disrupts the encoding and integration of information. As a result, students who frequently multitask tend to exhibit lower levels of comprehension, reduced retention, and poorer academic performance. The

prevalence of multitasking in digital environments therefore represents a fundamental challenge to traditional models of focused learning.

In addition to multitasking, device-based distractions—particularly those associated with smartphones and social media—play a central role in shaping the attention crisis. Digital platforms are intentionally designed to capture and retain user attention through features such as notifications, alerts, and personalized content. These features create a continuous stream of stimuli that compete for students' attention, leading to frequent interruptions and attentional shifts. As indicated in the findings, activities such as checking notifications, browsing social media, and engaging with entertainment content are among the most common sources of off-task behavior in learning environments. Research shows that these behaviors are strongly associated with decreased focus, increased procrastination, and lower academic achievement (Pérez-Juárez et al., 2023; Suico & Malabago, 2026; Fisayo et al., 2022; Vaishnavi et al., 2025). The addictive nature of social media, driven by instant gratification and dopamine-based reward mechanisms, further exacerbates this problem by reinforcing habitual checking behaviors and reducing students' ability to resist distractions.

The impact of digital distraction is particularly pronounced in online learning environments, where the boundaries between academic and non-academic activities are less clearly defined. As highlighted in Table 1, online learning introduces additional challenges, including the ease of switching between tabs, the absence of direct supervision, and the constant availability of alternative digital content. These factors contribute to increased levels of multitasking, mind-wandering, and device use during learning activities. Studies indicate that in virtual learning contexts, students are more likely to engage in off-task behavior and experience divided attention, resulting in reduced learning effectiveness and lower academic performance (Wang, 2022; Cvetković & Opsenica-Kostić, 2024). Furthermore, the presence of continuous notifications and unexpected interruptions disrupts the flow of attention and increases cognitive load, making it more difficult for students to engage in deep learning processes.

Another critical dimension of the attention crisis is the role of internal cognitive factors, particularly mind-wandering and boredom. While external distractions are often emphasized, internal distractions can be equally disruptive to learning. Students frequently experience lapses in attention due to fatigue, lack of interest, or insufficient engagement with the learning material. These internal states often trigger habitual behaviors such as checking digital devices, creating a feedback loop that reinforces distraction. Research suggests that boredom plays a mediating role in the relationship between perceived academic control and susceptibility to digital distraction, with students who experience higher levels of boredom being more likely to disengage from learning tasks (Cvetković & Opsenica-Kostić, 2024). This finding highlights the importance of considering both psychological and instructional factors in understanding the attention crisis.

The consequences of digital distraction extend beyond individual cognitive performance to affect the broader educational environment. As identified in the findings, frequent off-task behavior disrupts teacher–student interactions and undermines the overall classroom climate. Teachers report difficulties in maintaining student engagement, reduced attentional synchronization, and decreased instructional effectiveness when students are distracted by digital devices (Kostić & Randelović, 2022; Pérez-Juárez et al., 2023; Martin et al., 2025). This disruption not only affects learning outcomes but also impacts teachers' job satisfaction and classroom management. In technology-rich classrooms, where digital devices are widely used, studies indicate that sustained attention and attentional control are often only moderate, while selective attention tends to be relatively low (Suico & Malabago, 2026). This suggests that the integration of technology into education must be carefully managed to avoid unintended negative consequences.

Despite the clear negative effects of digital distraction, the development of effective intervention strategies remains a complex challenge. One commonly proposed approach is the restriction or prohibition of digital device use in classrooms. However, research indicates that such measures are not always effective and may even produce unintended consequences. For example, strict bans on smartphone use can lead to anxiety, disengagement, or the substitution of digital distractions with non-digital ones (Kostić & Randelović, 2022). Additionally, students may resist restrictive policies, particularly in contexts where digital devices are integral to their daily lives. This highlights the limitations of purely regulatory approaches and underscores the need for more nuanced and flexible strategies.

Another approach involves the use of technological tools designed to enhance self-control, such as applications that limit screen time or block distracting websites. While these tools offer potential

benefits, their effectiveness has been mixed. Studies suggest that self-control applications alone are insufficient to address the underlying behavioral and cognitive factors that contribute to digital distraction (Kostić & Randelović, 2022; Martin et al., 2025). This is because digital distraction is not solely a technological issue but also a psychological and social phenomenon, influenced by habits, motivations, and environmental factors. Therefore, interventions must address these broader dimensions to be effective.

In response to these challenges, emerging research emphasizes the importance of developing attentional literacy and self-regulation skills among students. Attentional literacy refers to the ability to understand and manage one's own attention in digital environments, including recognizing sources of distraction and implementing strategies to maintain focus. Studies suggest that fostering attentional awareness and self-regulation can significantly improve students' ability to resist distractions and engage in sustained learning (Pegrum & Palalas, 2021; Krebs et al., 2023; Sitte et al., 2025). This approach aligns with contemporary educational theories that emphasize metacognition and learner autonomy as key components of effective learning.

In addition to individual-level interventions, the design of the learning environment plays a crucial role in mitigating digital distraction. Instructional strategies that minimize idle time, increase interactivity, and provide clear guidelines for technology use can help reduce opportunities for multitasking and off-task behavior. For example, the implementation of structured "technology breaks," limitations on non-academic device use, and the integration of engaging learning activities have been shown to improve attention and reduce distraction (Kostić & Randelović, 2022; Pérez-Juárez et al., 2023; Martin et al., 2025; Thapa et al., 2025). These findings highlight the importance of aligning pedagogical practices with the realities of digital learning environments.

Furthermore, interventions that target cognitive and emotional aspects of attention, such as mindfulness training and academic delay of gratification (ADOG), show promising results. Mindfulness practices can enhance students' ability to maintain focus and regulate their attention, while ADOG interventions encourage students to prioritize long-term academic goals over immediate digital gratification. Research indicates that such approaches can improve concentration, reduce smartphone dependency, and enhance overall learning outcomes (Flanigan & Daleiden, 2025; Sitte et al., 2025). These strategies represent a shift toward more holistic approaches that address both the cognitive and behavioral dimensions of the attention crisis.

In relation to the research objective, this discussion demonstrates that the attention crisis in education is a multifaceted phenomenon driven by the interaction of technological, psychological, and instructional factors. Digital distraction significantly impairs students' ability to sustain attention, process information, and achieve academic success. However, the effectiveness of interventions depends on their ability to address the complexity of the problem, rather than focusing on isolated aspects. By integrating insights from multiple domains, this study provides a comprehensive understanding of the attention crisis and highlights the need for coordinated efforts to enhance student focus in the digital era.

In conclusion, the findings underscore the urgency of addressing digital distraction as a central challenge in contemporary education. As digital technologies continue to evolve, the ability to manage attention will become increasingly critical for academic success and lifelong learning. Therefore, educators, policymakers, and researchers must work collaboratively to develop and implement strategies that support sustained attention and meaningful learning in an increasingly digital world.

Conclusion

This study concludes that the attention crisis in the era of digital distraction is a complex and multidimensional phenomenon that significantly affects students' ability to maintain focus and achieve optimal learning outcomes. The findings demonstrate that digital distraction—manifested through multitasking, device-based interruptions, and internal cognitive factors such as mind-wandering—reduces sustained attention, increases cognitive load, and leads to superficial learning and lower academic performance. Moreover, the impact extends beyond individual cognition to influence classroom dynamics, teacher–student interactions, and overall learning effectiveness. While digital technologies offer substantial benefits for access and flexibility, their uncontrolled use creates persistent disruptions that undermine deep learning processes. Therefore, addressing the attention crisis requires an integrated approach that combines self-regulation development, attentional literacy, effective

instructional design, and balanced technology policies. In this context, improving students' ability to manage attention becomes a critical prerequisite for meaningful learning in the digital era.

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