

DIGITAL COGNITIVE OVERLOAD EXPERIENCES AMONG ISLAMIC RELIGIOUS EDUCATION STUDENTS IN PLATFORM-BASED DIGITAL LEARNING: A PHENOMENOLOGICAL STUDY

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Abstract. Digital transformation in higher education has expanded students' access to learning resources, but it has also created new challenges, including information overload, notification-based distraction, multitasking, and cognitive fatigue. This study aims to explore the experience of digital cognitive overload among students of Islamic Religious Education (PAI) in platform-based digital learning. The study employed a qualitative approach using Interpretative Phenomenological Analysis (IPA). The participants were six PAI students at UIN Walisongo Semarang, selected through purposive sampling based on their experiences with multiple digital platforms and encountering overwhelm, distraction, or difficulty maintaining focus during learning. Data were collected through in-depth semi-structured interviews and analyzed both ideographically and across cases. The findings revealed six main themes: cognitive fatigue and information overload; digital distraction and fragmented academic presence; notifications as triggers for attentional shifting; ambivalence toward digital platforms and AI; failure and effort in developing digital self-regulation; and recovery strategies from digital pressure. The findings indicate that digital cognitive overload is not merely a technical issue of media use. However, a complex lived experience involves the body, emotions, attention, self-regulation, and the meaning of learning. This study emphasizes the need for PAI learning that is simpler, more purposeful, cognitively friendly, reflective, and digitally ethical. It also highlights the importance of metacognitive awareness as a form of self-regulation in improving students' patterns of digital media use.

Keywords: Digital Media; Digital Cognitive Overload; Islamic Religious Education (PAI); Interpretative Phenomenological Analysis (IPA).

INTRODUCTION

Digital transformation has fundamentally and far-reaching changed learning in higher education. Students now learn through Learning Management Systems (LMS), WhatsApp groups, Google Classroom, Zoom, Google Meet, YouTube, e-books, online journals, Canva, and artificial intelligence applications such as ChatGPT (Sormunen et al., 2020). This shift has broadened access to knowledge and accelerated academic communication. At the same time, it has introduced new problems, including an excess of instructions, links, notifications, messages, assignments, and information sources that students must process almost simultaneously. More specifically, higher education institutions provide computerized digital facilities that support the virtual management and monitoring of teaching and learning processes (Alenezi et al., 2023). Therefore, the central

issue in digital learning lies not only in the availability of technology but also in students' capacity to manage attention and construct meaning amid digital density.

The increasing accessibility of learning has raised particular problems for Cognitive Load Theory. Students may face a crucial problem: when the load is too high, information is lost; conversely, when the load is too low, students do not learn sufficiently (Kalyuga & Singh, 2016). From the perspective of Cognitive Load Theory, learning is strongly influenced by the limitations of working memory. Sweller (1988) explains that learning is disrupted when the information to be processed is excessive, too complex, or presented in an unstructured manner. In digital learning, cognitive load arises not only from course materials but also from technical demands. Moving across platforms, opening links, downloading files, reading group messages, watching videos, completing attendance forms, uploading assignments, and responding to notifications are now common elements of students' academic activity. Skulmowski and Xu (2022) emphasize that digital design, navigation, interactivity, and information redundancy can increase extraneous cognitive load when they are not properly controlled.

In this study, the phenomenon is referred to as digital cognitive overload, namely a condition in which digital stimuli and information exceed students' capacity to concentrate, select important information, process meaning, and use knowledge reflectively. Information overload refers to a situation in which the volume, complexity, or speed of information exceeds an individual's capacity to process it effectively (Eppler & Mengis, 2004). In students' everyday lives, this overload is intensified by digital multitasking. Feroz et al. (2022) and Fan (2025) indicate that multitasking with digital devices can disrupt concentration, retention, learning efficiency, and academic performance. In other words, the simultaneous use of multiple platforms can reduce concentration, depth of learning, and critical thinking.

This issue becomes particularly significant in the context of students of Islamic Religious Education (PAI). PAI learning is not intended merely to transfer religious knowledge but also to cultivate understanding, the internalization of values, reflective attitudes, good manners, moral awareness, and intention oriented toward divine approval (Munjiat, 2020). Religious learning, therefore, requires calm attention, conscious engagement, and space to contemplate values and meaning (Abdullah, 2022). When students learn directly through numerous digital platforms, the critical question is not only how they access materials but also whether they can still understand, internalize, and reflect deeply on PAI materials amid notifications, social media, AI, and the widespread culture of doomscrolling. This reality deserves further investigation.

Interview data in this study indicate that all participants were active users of digital media and reported feeling easily distracted. The platforms most frequently mentioned were WhatsApp, Instagram, TikTok, Shopee, ChatGPT, Canva, and YouTube. Although students acknowledged that digital platforms support learning, they also reported dizziness, fatigue, feeling overwhelmed, procrastination on tasks, sleep disruption, and difficulty maintaining focus. Thus, digital cognitive overload is not simply a technical issue related to media use or information access. More than that, it is a subjective experience that affects the body, emotions, attention, self-regulation, and the meaning of learning.

Research Gap and Novelty

Research on digital and online learning, cognitive load, and the use of educational technology has expanded extensively. Nevertheless, several important gaps remain. First, many studies treat digital platforms as learning media, while students' subjective experiences of digital cognitive load have not been explored in sufficient depth. The relationship between the brain and digital fatigue

is therefore an important area of inquiry. Second, research on cognitive load generally focuses on instructional design or media effectiveness but has paid less attention to students' lived experiences as they navigate multiple platforms simultaneously. Third, studies on digital overload often discuss technostress, engagement, and digital well-being in general, while the specific context of PAI students remains limited. This is important because PAI is closely connected to values, good manners, religious reflection, and Islamic ethical meanings. Fourth, many studies rely on quantitative surveys, whereas the experience of digital overload requires an interpretative phenomenological approach to examine the meaning of students' experiences more deeply.

The novelty of this study lies in its effort to interpret the experience of digital cognitive overload among PAI students in platform-based digital learning through Interpretative Phenomenological Analysis (IPA). This study does not merely discuss the use of technology. Rather, it examines how students experience, feel, interpret, and respond to information accumulation, notification distraction, multitasking, AI use, cognitive fatigue, and the decline of reflective depth in PAI learning. Conceptually, this study brings together digital cognitive overload, platform-based digital learning, and PAI. Practically, it provides a basis for PAI lecturers to design digital learning that is not only technically effective but also cognitively friendly, reflective, and ethical. It also serves as a reminder for students to be more careful and intentional in using digital media.

Research Questions and Research Objectives

This study is directed by four main questions: (1) How do PAI students experience digital cognitive overload in platform-based digital learning? (2) What factors contribute to the overload? (3) How does it affect focus, understanding, engagement, and depth of reflection, and (4) How do students interpret and respond to the experience? In line with these questions, the objectives of this study are to describe PAI students' experiences of digital overload, identify its contributing factors, analyze its impact on the PAI learning process, and reveal students' meanings and response strategies in dealing with digital pressure.

Literature Review

Cognitive Load Theory places the limitations of working memory at the center of understanding the learning process. Sweller (1988) argues that excessive and unstructured information can hinder the formation of knowledge schemas. As a result, the brain receives too much stimulus to encode, and the information is not organized effectively. In digital learning, cognitive load becomes increasingly complex because students process not only course content, but also platform design, media navigation, digital interaction, and stimuli outside the learning activity. This is consistent with the meta-analysis conducted by Rumani (2026), which reported negative effects on attention, motivation, and academic performance when learning fatigue occurs due to excessive digital media load. Skulmowski and Xu (2022) describe this as part of extraneous cognitive load, which can increase when digital design is not clearly aligned with learning objectives.

Information overload occurs when the information received exceeds an individual's processing capacity (Eppler & Mengis, 2004). In the digital ecosystem, overload manifests as digital overload because pressure arises not only from information but also from notifications, connectivity, social interaction, and the demand for rapid responses. Tafesse et al. (2024) also explain that digital overload is related to technostress, exhaustion, coping mechanisms, and student engagement. Digital multitasking intensifies this problem because students move from one

application to another: from course materials to conversations, from ChatGPT to Canva, from WhatsApp to TikTok, and from academic tasks to digital entertainment. Ultimately, irrelevant multitasking disrupts focused attention and may weaken academic performance (Fan, 2025).

PAI learning based on digital platforms offers both opportunities and risks. Its opportunities lie in easier access to religious materials, instructional videos, online references, and creative media. This is supported by the findings of Idris et al. (2023), who observed that post-pandemic Islamic education employed WhatsApp groups, Google Classroom, Zoom Meetings, YouTube, Google Meet, and e-learning platforms. However, the risk arises when students spend more energy managing platforms than understanding the material. In other words, digital distraction affects cognitive performance, sustained attention, procrastination, recall, and ultimately academic performance (Martin et al., 2025). In PAI, this problem is crucial because religious learning requires not only mastery of information but also the internalization of values, a sense of purpose, and good manners.

Interpretative Phenomenological Analysis (IPA) is used because this study seeks to understand students' personal experiences. Smith (1996) introduced IPA as an approach for investigating significant experiences and the ways individuals make sense of them. IPA is grounded in phenomenology, hermeneutics, and idiography (Smith et al., 2009). Phenomenology helps researchers understand participants' lived experiences; hermeneutics assists in interpreting the meaning of those experiences; and idiography emphasizes in-depth analysis of each individual before identifying patterns across participants.

METHODS

This study employed a qualitative approach using the interpretative phenomenological design (IPA) developed by Smith et al. (2009). This approach was selected because digital cognitive overload is not merely a technical symptom of platform use, but a personal experience involving thought, emotion, attention, the body, digital habits, and students' meaning-making in relation to PAI learning. Through IPA, the study not only describes that students feel dizzy, distracted, or inclined to postpone tasks; it also interprets how these experiences become meaningful in their academic and religious lives. Students' lived experience, therefore, becomes the distinctive phenomenon at the center of this study.

The participants were six students from the Islamic Religious Education Study Program at UIN Walisongo Semarang. This number is consistent with the character of IPA, which prioritizes data depth over participant count (Smith et al., 2009). Participants were selected using purposive sampling with the following criteria: they were active PAI students, had participated in platform-based digital learning, used more than one digital platform in academic activities, and had experienced overwhelm, distraction, difficulty focusing, mental fatigue, or a sense of being burdened by digital media use in learning.

Data were collected through in-depth semi-structured interviews. This technique allowed participants to narrate their experiences openly and express their feelings freely, while remaining focused on their use of digital platforms, situations that triggered overload, forms of distraction, the impact on PAI learning, and the ways students interpreted and responded to those experiences. Data were analyzed following IPA procedures: rereading transcripts, developing descriptive, linguistic, and conceptual notes, generating emergent themes, connecting themes, analyzing each participant idiographically, and then conducting cross-case analysis. Data trustworthiness was maintained through repeated reading, the use of direct quotations, researcher reflexivity, and limited member checking.

RESULTS AND DISCUSSION

The IPA analysis identified six superordinate themes: (1) cognitive fatigue and information overload, (2) digital distraction and fragmented academic presence, (3) notifications as an entry point for attentional shifting, (4) ambivalence toward digital platforms and AI in learning, (5) failure and effort in developing digital self-regulation, and (6) recovery strategies from digital pressure. These six themes show that digital cognitive overload among PAI students is not a single isolated symptom, but a complex experience that connects the body, attention, emotion, digital habits, and the meaning of learning.

Theme 1: Cognitive Fatigue and Information Overload

“I become tired, dizzy, and confused when I use digital media for too long.” (P1)

This quotation shows that digital overload affects not only the mind but also bodily responses. The words “tired,” “dizzy,” and “confused” indicate that prolonged digital exposure produces real mental pressure. They also suggest that the pressure is deep and repeated. Students are not tired simply because they look at screens, but because they must continuously process messages, course materials, links, notifications, social media, assignments, and other overlapping platforms.

“I had already been reading for 20 minutes, but I still did not understand; I did not get what I was reading.” (P3)

This statement reveals a gap between learning and understanding. The student appears to be reading, yet their cognitive capacity is not sufficiently available to process meaning. The participant felt confused and experienced information overload, which made understanding difficult. In the deeper interview exploration, the participant admitted that this could happen because of the amount of information seen at the same time. In PAI learning, this situation is risky because religious material cannot simply be read quickly; it requires understanding, internalization, and reflection. Digital overload may turn PAI learning into a surface-level activity: reading occurs, but meaning is not fully present.

Theme 2: Digital Distraction and Fragmented Academic Presence

“Yes, sometimes I use my phone in class.” (P4)

On the surface, this statement may be read as a matter of indiscipline. Phenomenologically, however, it indicates fragmented academic presence. The student is physically present in class, but their cognitive attention has shifted into the digital space. This reflects a common phenomenon in contemporary education: students are physically present, but not fully mentally present. In PAI learning, this touches on the issue of good manners in learning. The body is in the classroom, but attention is not fully present to receive knowledge.

“I am easily distracted. When something comes in, I immediately take my phone. Once I open it, I end up not studying.” (P2)

This quotation illustrates a concrete mechanism of distraction. When a digital stimulus appears, the body responds automatically: taking the phone, opening the message, and then interrupting the learning process. Distraction is not merely a wandering thought; it has become an embodied habit. Students do not fully control their attention. Instead, their attention is easily pulled by digital signals such as notifications.

Theme 3: Notifications as an Entry Point for Attentional Shifting

“Often, because there is a notification, I become distracted and end up reading the message.” (P2)

“At first, I only looked at the notification on my phone, and then it spreads to opening Instagram or TikTok during class.” (P3)

Notifications become a small entry point into a much larger shift of attention. Distraction does not always begin with the intention to leave the learning activity; often, it begins with a sound or a small visual cue that demands attention. The word “spreads” is particularly important because it shows that distraction unfolds gradually: from checking a notification to opening a message to entering social media spaces such as Instagram or TikTok. Thus, a notification is not merely information. It is a mechanism that shifts students' learning orientation from conscious attention to reactive attention.

The data also show that interruptions come from various sources, including WhatsApp, Instagram, and shopping applications. The same device is used for lectures, entertainment, social communication, shopping, and AI. As a result, the boundary between academic and non-academic spaces becomes blurred, yet its effects are real. Students do not learn only through their phones; they are also continuously disturbed by the entire digital ecosystem within those phones.

Theme 4: Ambivalence toward Digital Platforms and AI in Learning

“I often open ChatGPT when there are questions I do not know.” (P1)

“I like using ChatGPT when the lecturer asks a question.” (P5)

The use of ChatGPT shows the double face of technology. On the one hand, ChatGPT is a helpful tool when students do not know the answer. It can provide initial explanations and direction for thinking. On the other hand, it can shorten the learning process when students directly search for answers without reading, discussing, verifying sources, or reflecting on context. As a result, students' reasoning and critical capacities may weaken. In PAI learning, not knowing should become the beginning of tafaquh, deeper reading, and dialogue with sources of knowledge. However, the culture of quick answers risks transforming religious learning into an instant process. This becomes problematic when conclusions are drawn without sufficient understanding or verification.

“I feel overwhelmed, but if I do not open and watch those platforms, it feels lonely and boring, even though there is so much information and news there.” (P4)

This quotation reveals the strongest form of ambivalence. Digital media are exhausting, yet they are also needed to fill loneliness and boredom. This means that digital cognitive overload is not only a problem of information but also of emotion and everyday existence. Repeated digital habits become embodied and direct the mind toward opening digital media. Students feel overwhelmed yet still return to platforms because they offer a sense of connection, entertainment, and an escape from boredom. Therefore, the solution cannot simply be a prohibition against using phones. What is needed is the development of alternative meanings, healthier learning rhythms, and more constructive non-digital habits.

Theme 5: Failure and Effort in Developing Digital Self-Regulation

“Very often, at first I only intend to use it for a short while, but suddenly it has been hours, and in the end I do not do the assignment.” (P4)

“Very often I postpone assignments. I already intend to do them, but it ends up becoming nothing.” (P5)

These two quotations show the gap between intention and actual behavior. Students do intend to study, but that intention falters when digital media pulls them away. The expression “ends up becoming nothing” marks an experience of losing outcomes: time passes, but the assignment is not completed, and understanding does not increase. In PAI learning, procrastination is not only a matter of time management. It is also related to amanah toward knowledge and academic responsibility.

“Sometimes I use my phone until morning, until it disrupts my sleep.” (P6)

This quotation shows that digital overload extends beyond the classroom and permeates students' daily lives. When phone use continues into the morning, rest time is disrupted, readiness to learn decreases, and focus the following day weakens. Students also admitted that they often lose focus and feel sleepy during class.

However, the data also show the potential for self-regulation. One participant stated, “I make a promise to myself that I must study for 20 minutes, and I always keep it” (P1). Small strategies such as studying for 20 minutes, using the do-not-disturb (DND) feature, or keeping away from the phone indicate that students are not entirely passive. They are beginning to seek ways to struggle for control over their attention and time.

Theme 6: Recovery Strategies from Digital Pressure

“When I already feel dizzy, I usually go running and try not to open my phone again.” (P2)

“When I am tired from studying, I rest, for example, by playing with my cat.” (P3)

These two quotations show that students try to recover by returning to bodily experience and non-digital relationships. Running and playing with a cat become ways of taking distance from the screen. This is important because recovery does not always appear in the form of formal academic strategies. It may emerge through simple activities that help the body and emotions regain stability.

“When I am tired, sometimes I just stare blankly and do not know what to do.” (P5)

“When I am already tired from facing the screen, I scroll for a while.” (P6)

Nevertheless, recovery strategies are not always effective. “Staring blankly” indicates a lack of direction after learning fatigue, while “scrolling for a while” reveals the paradox of digital recovery: students are tired because of screens, yet return to them to rest. This creates a closed cycle in which screens are both exhausting and used as an escape from exhaustion. This is where digital self-regulation becomes important. It should not only regulate the duration of use, but also develop awareness of the function, intention, and impact of digital use.

Synthesis of the Discussion

Overall, the findings of this study show that digital cognitive overload among PAI students involves fragmented attention and diminished depth of learning, driven by continuous digital pressure. Students experience information overload, cognitive fatigue, notification disturbance, phone use in class, ambivalence toward AI use, task procrastination, sleep disruption, and a need to build self-consistency. Digital platforms help them learn, but they also divert attention. ChatGPT helps answer questions, but it can shorten the thinking process. Notifications provide information, but they also interrupt concentration. The phone becomes a learning tool, but at the same time, it becomes an entry point into distraction.

From the perspective of Cognitive Load Theory, experiences of dizziness, confusion, eye fatigue, and difficulty understanding reading materials indicate increased cognitive load. Cognitive load occurs when too much information enters the mind, making the brain work harder to encode it in working memory (Sweller, 1988). This is especially the case when students not only process

PAI materials, but also additional stimuli from multiple applications. When attentional capacity is overloaded, understanding becomes shallow. This is consistent with the findings of Fan (2025), Feroz (2022), and Martin et al. (2025), which show that engaging in digital multitasking simultaneously can reduce the quality of attention, understanding, cognition, and academic performance. Ultimately, this affects the quality of students' learning itself.

In the context of PAI, this issue is important because religious learning requires depth, good manners, and reflection. Religious learning is not sufficient if it is merely “delivered” through a platform. It must help students become consciously present, understand sources, and connect knowledge with the values of life. Wong et al. (2024) suggest that meaningful learning is necessary for achieving academic success, so students need to be involved behaviorally, cognitively, and affectively. Similarly, Ratnayake et al. (2024) suggest that supporting metacognitive awareness involves evaluating the learning process and reflecting on the steps taken so that subsequent learning sessions can be improved and learning quality maintained.

The findings also show that intervention for digital overload is insufficient if it relies solely on prohibiting device use. Prohibition without a strategy merely shifts the problem rather than addressing its root. Students need support in developing digital self-regulation: managing notifications, setting study time, using AI critically, limiting multitasking, maintaining sleep, and creating space for non-digital recovery. Self-regulated learning through metacognitive awareness can serve as an alternative for helping students regulate the intensity of gadget use (Ratnayake et al., 2024). In the context of PAI, digital self-regulation can be connected to the values of intention, amanah, muhasabah, good manners toward knowledge, and responsibility for time. Thus, the solution to digital cognitive overload is not only technical, but also pedagogical and ethical. This becomes an important gap for future research to investigate further.

CONCLUSION

This study concludes that digital cognitive overload among PAI students is not merely the result of using many digital platforms. It is a learning experience that involves cognitive fatigue, attentional distraction, weak self-regulation, emotional ambivalence, and a decline in depth of understanding. Students experience tiredness, dizziness, confusion, eye fatigue, difficulty understanding reading materials, distraction from notifications, phone use during class, procrastination on tasks, use of ChatGPT for both assistance and shortcuts, and sleep disruption from excessive digital media use.

Through an IPA, digital platforms appear to have a dual face. On one hand, technology helps students access information, create learning media, answer questions, and expand religious knowledge. On the other hand, technology also creates a learning space that is noisy, fragmented, full of interruptions, and difficult to control. As a result, students may be present in learning, but not fully present cognitively and reflectively.

The main conclusion of this study is that digital cognitive overload is a problem of attention, meaning, and digital good manners. Therefore, platform-based PAI learning needs to be designed in a simpler, more purposeful, and cognitively friendly way. Lecturers need to consider the number of platforms used, the clarity of instructions, the rhythm of assignments, and the use of AI. Students also need to be strengthened in digital self-regulation so they can manage time, notifications, social media, sleep patterns, and academic responsibilities more consciously. In the context of PAI, digital regulation is not only a learning skill but also part of good manners regarding knowledge.

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