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Digital Technology, Social Networks And Their Impact On Memory And Attention: A Qualitative Exploration

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ABSTRACT
This study explores how digital technology affects attention and memory, intending to examine how cognitive processes are affected by digital distractions and offloading memory. A qualitative research design was used to conduct semi-structured interviews with 30 interviewees in Islamabad, chosen through a purposive sampling technique in order to have a diverse sample of the population in terms of age, occupation, and technology usage. Applying the method of thematic analysis developed by Braun and Clarke (2006), it was possible to identify such thematic categories: digital distractions that result in fragmented attention and memory offloading as a result of dependence on digital tools and strategies that help to cope with these cognitive difficulties. The participants stated that they paid less attention and remembered less because of frequent digital disturbances, but also, they experienced cognitive advantages of using digital resources to learn and organize. The results indicate that there is a need to establish a moderate use of technology, with time management applications, mindfulness, and digital detoxes being some of the suggested methods to enhance mental performance. These outcomes may be applied to the interpretation of the role of digital technology in the cognitive processes and to the recommendations on the way to reduce the adverse impact of these technologies.

Keywords: Digital Technology, Social Media Use, Attention Fragmentation, Memory Offloading, Cognitive Overload, Digital Distractions, Digital Amnesia, Mindfulness Strategies.

Introduction
The introduction of digital technologies as a component of daily life in the 21st century has transformed the manner in which people interact, communicate, and process information. The emergence of smartphones, social networks, online learning platforms, and internet connectivity has transformed the way human beings act and think on a fundamental level. Although digital technologies have, without any doubt, led to a plethora of advantages that include but are not limited to increased access to information, increased communication, and exploration of new avenues of social interaction, the

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technologies have also brought up concerns about their effects on the most basic cognitive functions, such as attention and memory (Pooja, 2025). Social media in particular is a crucial source for introducing new characteristics to indigenous culture, which may be classified as both positive and negative in terms of their distortion and compatibility for indigenous cultural aspects (Imran and Khan, 2021). Learning, decision-making, and general cognitive health cannot do without attention and memory, and problems with these functions may have a far-reaching impact on both personal and professional life (Ibanga, 2024).

Attention capture and attention fragmentation are two of the most remarkable implications of digital technology. Being constantly pestered by notifications, updates, and multimedia messages, people must split their attention between many different activities at once, which is also known as Multitasking. Although it is believed that multitasking is effective in increasing efficiency, studies have revealed that frequent distraction by using digital devices may reduce the capacity of an individual to concentrate on a specific task over a long duration of time, which results to low productivity, mistakes, and cognitive exhaustion. The prevalence of smartphones and social media platforms, especially, has been associated with decreased attention spans and the inability to focus on long-term objectives or tasks that demand long-term attention to the mind (Reed, 2018).

Another critical cognitive process that is greatly affected by digital technology is memory. Before this, people had to use the old methods of memorizing and recalling information through the use of books, notes, and mental memory. The emergence of the internet and the digital devices, however have altered the methodology of how knowledge is stored and accessed. The so-called Google effect or digital amnesia is an idea that postulates that a growing number of individuals are starting to use external digital aids to get information instead of storing information in the brain. This change in cognitive behavior has also made some researchers doubt that the usage of digital technologies to retrieve memories may reduce the memory capacity of individuals in the long-term memory. Although it is claimed that external memory can support cognitive functioning because it decreases cognitive load, others fear that such technologies can lead to the underdevelopment of natural memory of the brain (Firth et al., 2019).

Technological influences on attention and memory are especially timely due to the overload of information in our times. Digital technologies are giving a person unlimited access to tremendous amounts of information, including news articles and social media feeds, emails, and advertisements. This avalanche of information may result in cognitive overload, which is a condition of the brain being overwhelmed by excessive information, causing the inability to process, remember, and retain valuable information (Shanmugasundaram and Tamilarasu, 2023). Cognitive overload studies have proposed that when specific people are bombarded with too much information simultaneously, they run out of working memory space and cannot concentrate on particular details and recall them. These cognitive challenges may be made worse by the sheer volume of digital content, the need to keep up and stay connected, which may cause people to experience the latter (Cavanaugh et al., 2016).

The role of digital technologies in attention and memory is becoming more relevant as they keep on advancing and changing. Although most studies have been conducted to highlight the adverse impacts of digital distracters, there are other studies that have indicated that digital devices can be exploited in a manner that supports mental operations. As an example, one can bring digital platforms, which can aid the learning process, improve the retention of information, and exercise some cognitive training. The

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problem is that it is necessary to find a compromise between the advantages of technology and the suppression of the possible disadvantages (Özbay, 2026).

Problem of Statement

The prevalence of digital technologies, including smartphones and social media, has cast doubts on their effect on the cognitive functions of attention and memory. Although the advantages of digital tools are generally agreed upon, little study has been done on the perception of individuals on the effects of these on their lives. This research examines the impacts of digital technology on attention and memory, as well as what individuals are doing to deal with distractions in the digital world. In analyzing these factors, the research aims to get an understanding of the cognitive issues
that come with living in the digital era, as well as give a better perspective of how technology affects cognitive processes.

Research Objectives

To explore individuals' perceptions of the impact of digital technology on attention.
To examine how digital technology influences memory retention.
To identify the strategies individuals, use to manage digital distractions.
To assess whether digital technology is viewed as enhancing or hindering cognitive functions

Literature Review

The digital technologies have evolved quite fast, introducing a lot of changes in the way people are exposed to information, communicate, and conduct their everyday activities. Although these innovations have many positive impacts, they have also cast doubts on the impacts that they could have on the cognitive processes, especially attention and memory. The existing body of literature on this subject matter is varied, with some research indicating the detrimental effects of digital technology on others, stating that cognitive skills can be improved through the purposeful use of digital instruments. The literature review will offer an in-depth examination of the existing studies of the effect of digital technology on attention and memory, emphasizing four main directions, including digital technology and attention, the influence of technology on memory, cognitive overload, and coping mechanisms against digital distractions.

Attention and Digital Technology

One of the cognitive processes that allows people to concentrate on a particular task or stimulus is attention, which has been severely influenced by the emergence of digital technologies. Multitasking behavior has been on the rise because people engage in smartphone use, social media, and other digital gadgets. Multitasking can be described as the process of being engaged in a variety of activities simultaneously, and can be characterized by the constant switching between activities. Although multitasking can be viewed by some people as a way of achieving efficiency, studies have revealed that in most cases it results in poor performance and cognitive exhaustion (Çiftçi, 2026).

A groundbreaking study was done to distinguish the adverse qualities of multitasking on attention and student performance. The students who had a habit of alternating between activities, e.g., texting or looking at social media during the study, had more time to spend on assignments and committed more mistakes. In the same way, it was proven that people who practice frequent media multitasking are inferior in performing tasks that demand concentration, as they have a poor capacity to filter away irrelevant information.

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This is also known as cognitive filtering, which is impaired when people are subjected to a constant number of digital distractions and cannot focus on doing what matters (Jamaludin, 2026).

The idea of continuous partial attention (CPA) also elaborates on the effect of digital distractions on attention. CPA refers to the condition whereby people always become conscious of various stimuli but fail to pay attention to one of them in totality. The condition has gained prominence in the digital age, where people are now being flooded with notifications, updates, and information from different sources. Consequently, the sustained attention cannot be attained, which has caused the disjointed cognitive resources and reduced productivity (Llana et al.,2026).

Furthermore, there is the problem of attention residue when people change tasks, and the cognitive attention on the former task persists and does not allow people to be fully involved in the new activity. The continuous alternation of attention among the various digital platforms, which include checking emails, social media, and news updates, may lead to cognitive fragmentation, which leads to decreased efficiency of attention and concentration (Tang et al., 2025).

Technology and Retaining Memories

Another vital cognitive activity, which is influenced by the use of digital technologies, is memory. Encoding, storage, and retrieval of information are the functions of memory, which are critical in the learning process and decision-making. Conventionally, people used their memory or other external sources, including notebooks, books, or other physical materials, to memorize information. The introduction of the internet and computerized devices has, however, changed the manner in which information is accessed and stored. The encyclopedias, search engines, and cloud storage have led to a shift in the dependence of internal memory on external digital systems (Deckker and Sumanasekara, 2025).

Among the theories that are associated with this change is what is known as the Google effect or the digital amnesia. According to this theory, people are becoming more dependent upon search engines like Google to find out information rather than memorizing it. The more people transfer the information retrieval to external digitalized means, the less the brain can store and retrieve information. As much as this change can be seen to be beneficial in terms of alleviating cognitive load as well as mental resources, it also brings into question the long-term consequences of the change on the ability to retain memory. Not every research is, however, pointing towards negative results. Other researchers believe that digital tools can improve memory by supporting the cognitive processes (Aghaziarati & Rahimi, 2025). As an example, the digital note-taking apps can enable people to better organize and store data to be able to remember it more effectively (Călinescu, 2024). Besides, digital learning tools that incorporate multimedia content, including videos, images, and other types of interactive material, have been found to facilitate better memory through a more captivating and interactive learning process (Somani et al., 2025). However, the excessive use of digital aids to recall memories can cause so-called cognitive offloading. Cognitive offloading takes place when the individual overextends his or her use of external assistance, including digital devices, to carry out tasks traditionally accomplished within his or her memory (Alimour and Alrabeei, 2025).

Although cognitive offloading can be an effective way to enhance efficiency, it can impair the advancement of more profound thinking and the formation of long-term memory (Aghaziarati & Rahimi, 2025).

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Cognitive Overload and Digital Technology

Another major issue that can be raised in terms of the influence of digital technology on attention and memory is cognitive overload. Cognitive overload is the state where one is given more information to process at a time than he/she can, and this causes mental exhaustion and poor mental performance. The digital world is plagued by all kinds of information that people are constantly bombarded with via social media, news stories, email, and advertisements. Such a continuous stream of information may saturate the brain with the number of details, which should be processed, stored, and remembered (Spytska, 2025).

The Cognitive Load Theory is a theory that argues that the working memory has a limited capacity to process information. In the event of surpassing this capacity, there is a reduction in cognitive

performance (Evgenia et al., 2026). Digital technology is frequently over this capacity due to the continuous flow of information that it enables, which causes cognitive overload. Indicatively, the endless monitoring of emails, social media, and news feeds can overload a person with information, and cannot be able to concentrate on other more significant activities. In addition, digital technologies tend to promote the phenomenon of information grazing, during which people read through information within seconds without integrating it (Aldalalah et al., 2026).

Shallow processing of information may result in shallow learning and an inability to remember information. The so-called shallow processing has been discussed in the context of digital technologies, and studies indicate that individuals are more inclined to passively receive information when they are exposed to digital content instead of processing it actively, which improves long-term memory (Shafaqat and Sharif, 2023).

Techniques of Digital Distraction Management.

Since digital distractions may negatively affect attention and memory, people have devised different mechanisms to lessen their effects and enhance cognitive processes. Practice of mindfulness, which consists of sticking to the moment and deterring distractions, is one of the common strategies. Mindfulness has also been demonstrated to increase attention and working memory through improvements in cognitive control. Specifically, mindfulness meditation is reported to have a negative impact on digital distractions by teaching people to be more focused and enhance their filtering of irrelevant stimuli (Călinescu, 2024).

The second method of dealing with digital distractions is through a digital detox mechanism, whereby they take a break from digital devices to lessen the overloading of cognitive load and reorient attention. Digital detoxes can be beneficial in terms of both attention and mental clarity, and have been demonstrated to be effective, whether as a scheduled screen-free time or as a more comprehensive digital detox vacation. Additionally, people will have the opportunity to work in concentration, including the Pomodoro Technique, which promotes short, focused working periods with fewer breaks in between (Spytska, 2025).

This strategy assists users in staying focused and not experience burnouts as a result of being exposed to digital distractions over a long period. Finally, people are able to minimize cognitive overload by controlling their digital landscape. It involves the use of the ability to shut downnotifications, reduce the duration of time on the screen, and apply apps that can block distracting materials. Attention and memory can be greatly

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enhanced by minimizing distractions by digital devices at a minimum (Aghaziarati & Rahimi, 2025).

Methodology

The proposed study was based on the exploration of the perceptions that people in Islamabad have of the effects of digital technology on memory and attention. Even though earlier literatures have examined the same subject, this study was centered on the gathering of insights from a varied sample of Islamabad people in their attempt to understand the influence of digital technology on the formation of cognitive functions in the urban context. A qualitative research design was adopted, and the primary mode of data collection was semi-structured interviews. This method enabled exploring the experiences and perceptions of the participants in a flexible manner in order to examine the effects of digital technology on attention and memory.

Purposive sampling was used to sample thirty participants to make sure there was a variety in terms of age, occupation, and use of technology. The participants were divided into four age groups, including teenagers (13-18), young adults (19-30), middle-aged adults (31-50), and older adults (51+). The sampling approach contributed to a wide coverage of views of various age groups and occupational classes, such as students, teachers, office workers, and retirees, as they have diverse experiences with digital technology.

These interviews were free-flowing and took between 30 and 45 minutes. The interviews were recorded on mobile with the consent of the participants, and the questions were aimed at the impact of digital technology on attention and memory. Semi-structured interview design gave the opportunity to use follow-up inquiries to gain a deeper insight into the answers by the participants. The thematic analysis was used to perform data analysis as outlined by Braun and Clarke (2006). The researcher transcribed the interviews and became conversant with the text and coded it to find the important patterns. These patterns were grouped into themes, including digital distractions, offloading memory to digital devices, and coping strategies for dealing with distractions. Thematic analysis helped in the comparison of responses of the different groups and pointed to similarities and differences.

The ethical considerations were followed strictly during the study. The participants gave informed consent, were informed about the purpose of the research, and about their right to terminate the participation without any consequences. Confidentiality and anonymity were ensured, and no details that would identify the individuals were provided in the ultimate analysis. The entire audio recordings were safely kept.

Results and Discussion

This section discusses the findings based on four key themes: digital distractions and attention fragmentation, memory offloading and reduced retention, strategies for managing digital distractions, and the perceived cognitive benefits of digital technology. These themes provide a comprehensive understanding of how digital technology impacts cognitive functions.

Digital Distractions and Attention Fragmentation

This is a theme that covers the problem of digital distraction and its role in divided attention. The contemporary world and its technologies of smartphones, social media, and constant alerts have rendered people unable to stay concentrated on doing one thing at a time. The digital distractions are disruptive to the capability to focus, and the

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difficulty is in maintaining intensity when maneuvering through these frequent interruptions.

Narration 1:

"I have something to do, and within a few minutes, I get a communication, whether it is an email communication or a WhatsApp message. I take it and read it, and (after a minute) I forget what I was doing. I take a few minutes trying to resume my task. It is quite irritating since I always keep my foot in two worlds. I am never fully here or there. I am in the habit of constantly going back and forth between my phone and my work, and as such, I am never fully dedicated to anything. At the end of the day, I have been at it all the time, and not a single thing that counted has been accomplished."

Even a short break leads to a huge loss of concentration and productivity. The individual ends up changing tasks a lot. The constant back and forth of looking at the notifications and going back to the task causes reduced effectiveness as the brain cannot find the right balance each time it is distracted.

Narration 2:

"When I open my phone to look at some easy things, such as the news feed or the weather, I get distracted by the ads or other irrelevant articles appearing on my phone. I start reading one thing, and then I see something that is completely different. In the next minute, I realize that 30 minutes have elapsed, and I do not even recall what I had even opened my phone to see. I was expected to use the phone to accomplish a simple task, but this time it got me onto a totally different path. I lose my thought process, and I find it difficult to resume my previous activity."

An example of digital fragmentation is the change of focus. The person is distracted by the new information, which comes in constantly and is not related at all to the task that is going on, and the individual loses the ability to sustain the flow of thought. Although the phone is only used to fulfill tasks, it frequently results in a long duration of not working on the task at hand.

Memory Offloading and Reduced Retention

The theme is centered on the effects of such reliance on digital technology to retrieve information, which results in memory offloading. Instead of memorizing facts, people tend to use external devices, such as smartphones and search engines, to access facts and forget about storing information in the long-term.

Narration 1:

"When I do not know something, I simply search it on Google. It is no longer about me trying to get everything to memorize as I know that I can always look back later on my need. I would memorize phone numbers, addresses, and every little thing. Now I do not bother. Why do I have to pound my brain when I have the answer in my own pocket? However, in the recent past, I have begun to realize that I have a problem in remembering things when I attempt. It is as though the highway in my brain, where I store information, has become weaker due to not being used anymore. I can know all that, but I do not know anything."

The tendency to use external tools to retrieve information is getting more popular. It also gets rid of the strain to memorize the smaller aspects of life, as people are sure that they can always remember them at a later time. This dependence, however, minimizes

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the requirement of the brain to store and re-access information actively and hence less memory is retained, particularly in activities that involve deep learning or re-membrane.

Narration 2:

"Now all I need to do is enter something into my laptop or my phone, and I will remember anything that I will be required to know. It is so easy and convenient. However, I have begun to experience that my brain is sluggish in some manner. I cannot remember things as I did several years ago. Such basic items as the birthday of a friend or the instructions on how to get somewhere I have been to before. I do not go without my gadgets. And though it makes me manage to live through the day, I am concerned that my memory is not as good as it used to be. It is as though my brain is in the backseat and the technology is doing all the driving."

The fact that people can have information at their fingertips due to digital devices has created cognitive laziness. The individual will use their phone or laptop in place of using their memory to remember facts. Although convenient, this breaching out of the memory process implies that the person's brain is not conducting the extrinsic mental reaction required to retain the memory in the long run, thus impairing memory growth.

Strategies for Managing Digital Distractions

This theme dwells upon the methods that people use in order to mitigate the cognitive effects of digital distractors. The more people are informed about the negative impact of digital technology on their attention, the more they devise strategies of reducing the effects of such interruptions and reclaim their cognitive focus.

Narration 1:

"Now I have blocked my phone at some hours. I have established certain times in which there would be no notifications, so I would not have to look at messages or social network notifications all the time. I have also added the social media blocker software that does not allow me to visit such sites when I have a project to complete. I was initially feeling awkward, and I had the habit of using the phone. And as time has gone by, it has helped a lot. I can concentrate more without
being distracted. My level of work has also become better, and I am not so disoriented at the end of the day. It puts me more long-term oriented."

This plan will entail managing the outside distractions by turning off notifications and restricting access to social media. These measures will guarantee the individual a more concentrated work environment, hence increased concentration and productivity. Focus-enhancing apps and settings would be utilized to minimize the urge to be distracted by digital devices, enabling the individual to remain focused on the task and work longer.

Narration 2:

"One of the habits that I uphold in the evening is to spend at least an hour phone-free after dinner. I simply locked it in another room, and I do not check it. I suppose it helps me to de-stress and concentrate on other activities like reading a book, or having time out with my family members without any distractions. Initially, I was apprehensive, and I kept on thinking that there was something important that I was missing. But now I am anticipating that hour. It aids me to unwind and get rid of my mind prior to sleep. I feel better when I am sleeping, and I wake up fresher and prepared for the next day."

Setting limits with technology, like taking a break during the evening with the phone, enables relaxing the mind and a more peaceful passage into the next day. The individual

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discovers that less time spent on the screens relaxes him and makes them more focused on other significant activities the next day. This will develop a healthy relationship with technology and increase mental clarity.

Perceived Cognitive Benefits of Digital Technology

Although a lot of studies focus on the adverse effects of online technology, this theme discusses how there are some people who view the mental advantages of using online technology. Digital technologies should be considered a helpful resource when brought into the learning process and applied in a wise manner to increase cognitive efficiency and improve learning.

Narration 1:

"I love a multitude of apps that I use to learn new things, in particular, language learning apps. I
consider them to help me memorize new words and concepts better than traditional ways of learning. I am involved in the interactive exercises and quizzes. It does not resemble studying. It feels like playing a game. I can remember more because I am on the go and not reading off a book. In six months, I have acquired more vocabulary using these applications than I did in two years of scheduled courses. Learning can, in fact, be enhanced by the use of technology when applied in the right manner."

Educational apps have turned out to be an effective tool in the learning process of a person. The apps make the learning process more interactive through the use of exercises, quizzes, and a gamified learning experience; they said the retention process. The introduction of technology into the learning process, when applied intelligently, may give a more productive and enjoyable learning process.

Narration 2:

"I rely on web-based applications to organize my work and personal life schedules and notes. This would help me to remember all the deadlines and important things that I should remember and not only use my memory. I do not need to go to several places. My work, my schedule, my significant papers. I do not need to worry about forgetting anything since the system reminds me. It makes me less stressed and keeps me focused. My mind feels less cluttered. I can concentrate on the job at hand rather than keep remembering what I need to do next. These applications enable me to be more efficient, and they also allow me to be more organized in a manner that my memory could never do."

The individual makes use of cloud-based applications to monitor tasks and other important data to enhance organization and memory. The cognitive load is simplified with the assistance of the digital tools instead of using their memory exclusively and nothing is forgotten and all the deadlines are achieved. These applications make people more efficient in their cognition by cluttering the mind.

Discussion

The results of this study indicate the ubiquitous role of digital distractions on the capacity of people to sustain their concentration, especially within work and educational institutions in Islamabad. Respondents indicated that digital distractions like continuous notifications provided by social media, emails, and messaging applications were a major problem in their focus in their work. The

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excessive number of these distractions caused frequent interruptions, which caused reduced productivity and mental exhaustion (Shafaqat and Sharif, 2023).

Another idea that was identified in the research was the notion of memory offloading in which a significant number of participants acknowledged that they used digital tools extensively to recall information. This reliance of technology in retrieving information has brought about the problem of long-term memory storage especially in tasks that involve deep memorization. The access of information has been facilitated by the search engines and cloud systems but has also led to the fact that people are becoming less able to memorize information without the help of technology (Jamaludin, 2026).

To alleviate the impact of digital distractions, participants used different strategies in reaction to these challenges. These entailed the utilization of do not disturb features on mobile phones, the worsening of time limits in which social media could be utilized, and frequent disconnection from electronic gadgets. It was determined that these strategies could be useful in improving the level of attention and productivity, as well as enabling one to regain control over cognitive load (Călinescu, 2024).

In addition, the research showed that despite the downsides of digital technology, it can be of significant cognitive advantage. Those subjects who had applied digital means to the educational process, including the language learning applications and cloud-based tools for managing tasks, noted a rise in knowledge retention and cognitive organization. These gadgets gave people interactive and interesting learning experiences that enabled them to remember new information better (Spytska, 2025).

The results of the study confirm the currently existing research on the adverse impacts of digital distraction, but also point to the cognitive benefits of the digital tools when applied reasonably. The issue is to find the balance between the productivity and learning use of the digital technology against the disruptive impact on attention and memory.

Conclusion

This research demonstrates that there is a complicated effect of digital technology on mental processes, especially attention and memory. The results indicate that social media and frequent notifications can be regarded as the primary sources of digital distractions that are highly disruptive in relation to attention and productivity. The frequent rotation in activities and disturbances causes fragmented attention, whereby people cannot be able to concentrate on one activity for a long time. The use of digital devices to acquire information has also resulted in what has been termed as memory offloading, whereby people who have access to such tools rely on them instead of retaining information deep into their memory, which might impair long-term memory retention. Irrespective of these issues, the research also shows that digital technology, when undertaken in a strategic manner, can have cognitive value. Task management, memory improvement, and learning tools, including educational applications, cloud-based tools, etc., have been demonstrated to improve cognitive performance, memory retention, and organizational capabilities. Altogether, the findings of this research indicate that digital technology poses a serious threat to attention and memory, but it also has a beneficial effect on the improvement of cognitive functioning. The choice of interaction between these positive and negative effects is highly dependent on how people go about using digital tools in their lives.

Recommendations

Promote using the apps and tools that can assist one in spending time wiser and reducing the number of digital distractions, including task management applications and digital detoxes.

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Inform people about the impact of digital distractions on the human brain and offer effective methods of dealing with the distractions.

Introduce mindfulness exercises into everyday life as a way of enhancing attention and minimizing the effects of digital distractions.

Teach people to restrict the time they spend using social media, particularly when they are at work or studying, to reduce distractions and enhance productivity.

Encourage the use of educational applications and interactive sources to augment the knowledge level and cognitive involvement.

Another study is required to examine the effect of digital technology on attention, memory, and cognitive development in the long-term, in dimensions of other cultures.

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