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## Print Reading and Digital Reading: A Comparative Study on Practices, Preferences, and Cognitive Impact

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**Abstract:**
This study examines the comparative dimensions of print and digital reading among students, particularly focusing on the ways in which these mediums shape reading practices, individual preferences, and cognitive outcomes. Drawing on survey data collected from 150 students across three engineering colleges, the research investigates how the chosen medium influences comprehension, engagement, and retention of information. The findings indicate that print reading continues to play a crucial role in fostering deep comprehension and sustained focus, as students often report better understanding and memory retention when reading printed materials. By contrast, digital reading is frequently valued for its convenience, accessibility, and the efficiency it offers in multitasking and accessing diverse sources of information quickly. However, the study also highlights that students are not strictly bound to one format; instead, they employ hybrid strategies, selecting print for tasks requiring concentration and academic rigor while relying on digital resources for leisure reading and immediate access to materials. Such flexible approaches underscore the evolving nature of reading in the digital age, where students seek to balance depth and speed in their literacy practices (Baron, 2021; Liu, 2005).

## Introduction

Reading habits have witnessed a profound transformation in the digital age, largely due to the rapid expansion of technology and its integration into educational and personal spheres. The availability of e-books, online databases, and AI-driven platforms such as personalized recommendation systems has reshaped the ways in which students interact with texts. Traditionally, print reading has been linked with higher levels of concentration, comprehension, and critical thinking, as the physical medium reduces distractions and promotes deeper engagement with content. In contrast, digital reading is characterized by its

speed, portability, and interactive features, making it particularly appealing for multitasking and quick information retrieval. Engineering students, who represent one of the most technology-savvy groups in higher education, are especially significant for analyzing this transition, since their academic success depends not only on technical knowledge but also on effective reading and comprehension skills. By comparing print and digital reading habits, this study seeks to illuminate the distinct advantages and challenges associated with each medium, while also exploring their broader cognitive and behavioral effects on students (Mangen et al., 2013; Baron, 2021).

**Literature Review**

Research over the past few decades has extensively examined the cognitive processes involved in reading across different formats, highlighting notable distinctions between print and digital mediums. Print reading has consistently been associated with deep reading, higher comprehension, and stronger memory retention because the physical structure of printed texts encourages linear engagement and minimizes distractions (Wolf, 2018). The tactile experience of holding a book and navigating through its pages often strengthens recall and supports the ability to track arguments in complex texts (Mangen, Walgermo, & Brønnick, 2013). Moreover, studies suggest that the slower and more deliberate pace of print reading fosters reflective thinking and critical analysis, making it particularly valuable in academic contexts (Singer & Alexander, 2017).

By contrast, digital reading—while offering advantages such as portability, search functions, and rapid access to a wide range of resources—is frequently linked to more fragmented attention spans. Many students report that reading on screens encourages skimming, multitasking, and surface-level processing rather than deep engagement with the material (Liu, 2005; Delgado et al., 2018). In addition, issues such as screen fatigue, notifications, and hyperlinked content often disrupt the sustained concentration needed for complex comprehension (Clinton, 2019). Despite these challenges, digital formats play an essential role in academic life by enabling instant access to scholarly databases, multimedia resources, and collaborative platforms that support active learning.

Recent scholarship emphasizes the increasing significance of hybrid reading strategies, in which learners combine the strengths of both mediums to achieve optimal outcomes (Baron, 2021). For instance, digital texts are often used for quick reference, searching keywords, or accessing supplementary materials, while print is preferred for tasks requiring close reading, in-depth analysis, and long-term retention (Kerr & Symons, 2006). This dual approach reflects a growing recognition that no single medium can fully meet the diverse needs of students in today's educational environment.

Furthermore, the rise of artificial intelligence (AI) has reshaped reading practices through personalized learning platforms, AI-driven recommendation systems, and e-libraries, which help students tailor their reading habits to individual learning goals (Holmes et al., 2019). While these technologies increase efficiency and expand access to content, they also raise concerns regarding over-reliance on digital tools, potential erosion of sustained

attention, and the danger of prioritizing speed and convenience over deep comprehension (Carr, 2010). Consequently, educators and policymakers face the challenge of promoting balanced reading practices that integrate the best aspects of print and digital mediums while mitigating the cognitive and behavioural risks associated with excessive screen use.

**Objectives of the Study**

To compare comprehension, focus, and ret4ention between print and digital reading.
To analyze student preferences in academic and leisure contexts.
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To provide recommendations for balanced reading practices.

**Methodology**

This study adopted a quantitative research design using a survey method. A structured questionnaire was distributed to 150 engineering students across three colleges. The questionnaire collected data on reading frequency, preferred medium (print or digital), comprehension levels, and challenges faced in each format. The responses were coded and analyzed using descriptive statistics to identify patterns and preferences.

**Survey Results**

| Reading Medium | Preferred for Academic (%) | Preferred for Leisure (%) | High Comprehension (%) | Reported Change |
|---|---|---|---|---|
| Print | 65 | 30 | 70 | Cost, Portability |
| Digital | 35 | 70 | 45 | Distraction, Eye Strain |

**Analysis and Discussion**

The survey results indicate that students overwhelmingly prefer print reading for academic purposes (65%), citing deeper comprehension and better focus. Conversely, digital reading dominates leisure contexts (70%), driven by portability and access to diverse content. Print reading scored higher in comprehension levels (70%), while digital reading showed a lower comprehension rate (45%), largely due to distractions and multitasking. Students reported eye strain and reduced concentration as major drawbacks of digital reading, whereas print reading was criticized for being less portable and more expensive.

**Findings**

1. Print reading is associated with higher comprehension and academic effectiveness.
2. Digital reading is more popular for leisure due to accessibility and convenience.
3. Students increasingly adopt hybrid reading strategies based on context.
4. Each format presents distinct challenges: print lacks portability, while digital promotes distraction.

**Challenges**

Print reading, despite its long-standing association with concentration and comprehension, continues to face certain limitations that make it less attractive for everyday or casual use. The cost of purchasing physical books and academic materials is relatively high compared to accessing digital resources, and the lack of portability often discourages

students from carrying multiple volumes. This creates practical challenges, especially for engineering students who frequently need to consult a wide range of technical texts and reference materials. In contrast, digital reading offers the undeniable advantages of convenience, instant accessibility, and the ability to store thousands of resources on a single device. Yet, these benefits come with their own set of challenges. Prolonged screen exposure can cause eye strain and fatigue, which negatively affect reading comfort and long-term engagement. Moreover, the fast-paced and hyperlinked structure of digital texts encourages multitasking and quick skimming, leading to shorter attention spans and reduced comprehension or retention of complex material. For engineering students—who are not only digital natives but also heavily immersed in technology—these risks are even more pronounced. The constant availability of AI-driven platforms, digital libraries, and social media feeds may result in over-reliance on screens, ultimately undermining their ability to engage deeply with texts, analyze arguments critically, and retain information in meaningful ways.

**Recommendations**

Based on the findings of this study, several recommendations can be made to help students, particularly those in engineering disciplines, develop more effective and sustainable reading practices.

1. Encourage balanced reading habits through scheduled deep reading sessions. Students should be encouraged to dedicate specific periods of time exclusively to print reading, free from digital distractions. Such "deep reading sessions" can improve comprehension, strengthen focus, and enhance long-term retention of complex academic material. Institutions can play an active role by integrating reading hours into study schedules or by organizing group reading activities that emphasize reflection and discussion.
2. Integrate digital literacy programs to train students in critical digital reading. Since digital texts are now an inseparable part of academic life, students must be equipped with the skills necessary to engage with them critically. Digital literacy programs can help learners distinguish between reliable and unreliable sources, manage information overload, and resist the tendency to skim superficially. By teaching students how to slow down and read reflectively even in digital environments, such programs can reduce the cognitive disadvantages often associated with screen-based reading.
3. Promote hybrid libraries combining print and digital resources. Universities and colleges should invest in hybrid libraries that combine the richness of traditional print collections with the accessibility of digital databases. This dual-resource model allows students to choose formats according to their specific needs—print for deep comprehension and digital for quick access or supplementary materials. Such libraries ensure inclusivity, accommodating diverse learning styles and reading preferences.
4. Raise awareness about managing screen time to reduce eye strain and distraction. Finally, awareness campaigns should be conducted to educate students about the physical and cognitive challenges of prolonged screen exposure. Practical strategies such as the "20-20-20 rule" (looking away from the screen every 20 minutes at something 20 feet away for 20 seconds), using blue-light filters, and practicing mindful screen use can reduce eye strain

and distraction. By promoting healthy digital habits, institutions can help students make the most of digital resources without compromising their well-being.

**Conclusion**

The study concludes that both print and digital reading possess distinct strengths as well as inherent limitations, making it essential to view them not as opposing practices but as complementary modes of learning. Print reading continues to support deep comprehension, critical analysis, and academic rigor, qualities that are indispensable for complex problem-solving and sustained engagement with technical texts. It fosters a form of focused attention that is often difficult to replicate in digital environments filled with hyperlinks and notifications. In contrast, digital formats provide unmatched convenience and accessibility, enabling students to carry vast amounts of material, search content instantly, and interact with dynamic resources. For engineering students, who must constantly balance heavy academic requirements with exposure to rapidly evolving technologies, adopting hybrid reading practices emerges as the most effective strategy. By combining the depth of print with the efficiency of digital tools, students can maximize both comprehension and productivity. However, this balance does not occur automatically; institutions and educators play a critical role in shaping reading practices. Structured guidance through digital literacy programs, the promotion of hybrid libraries, and initiatives to encourage sustained deep reading can help students cultivate informed and balanced approaches. Ultimately, in an age increasingly dominated by digital media and AI-driven platforms, nurturing conscious reading choices is vital for optimizing learning outcomes and preparing students for both academic success and lifelong intellectual growth.

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