

## DIGITAL READING VS PRINT READING: COGNITIVE DIFFERENCES

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**Abstract.** *This article investigates the cognitive differences between digital and print reading modalities. Although digital devices offer significant operational convenience and flexibility, empirical evidence suggests that screen-based reading frequently elevates cognitive load and induces attentional distraction. Conversely, traditional print formats substantially enhance textual comprehension and information retention. The study concludes that for sustained cognitive engagement and deep learning, the physical print medium remains demonstrably more effective than digital screens.*

**Keywords:** *Digital reading; Print medium; Reading comprehension; Cognitive focus; Information retention.*

**Аннотация.** *Данная статья исследует когнитивные различия между цифровой и печатной модальностями чтения. Хотя цифровые устройства обеспечивают значительное операционное удобство и гибкость, эмпирические данные свидетельствуют о том, что чтение с экрана часто повышает когнитивную нагрузку и вызывает отвлечение внимания. Напротив, традиционные печатные форматы существенно повышают понимание текста и удержание информации. Исследование позволяет сделать вывод, что для устойчивого когнитивного вовлечения и глубокого обучения физический печатный носитель остается заметно более эффективным, чем цифровые экраны.*

**Ключевые слова:** *Цифровое чтение; Печатный носитель; Понимание текста; Когнитивная концентрация; Удержание информации.*

**Annotatsiya.** *Ushbu maqola raqamli va bosma mutolaa modalliklari o'rtasidagi kognitiv farqlarni tadqiq etadi. Raqamli qurilmalar sezilarli operatsion qulaylik va moslashuvchanlikni ta'minlasada, empirik dalillar ekrandan o'qish ko'pincha kognitiv yuklamani oshirishi va diqqatning chalg'ishiga olib kelishini ko'rsatadi. Aksincha, an'anaviy bosma formatlar matnni tushunish va axborotni eslab qolish samaradorligini sezilarli darajada oshiradi. Tadqiqot shuni ko'rsatadiki, barqaror kognitiv faollik va chuqur bilim olish uchun jismoniy bosma vosita raqamli ekranlarga qaraganda shubhasiz samaraliroq bo'lib qolmoqda.*

**Kalit so‘zlar:** *Raqamli o‘qish; Bosma vosita; Matnni tushunish; Kognitiv diqqat; Axbo rotni saqlash.*

**Introduction.** The integration of technology has shifted reading habits from traditional print-based comprehension to digital reading. This transition has sparked robust debate among researchers regarding its cognitive implications. While digital platforms offer unparalleled convenience, scholars have raised concerns about their potential impact on reading comprehension, cognitive load, and overall engagement. The primary aim of this study is to examine the cognitive disparities between digital and print modalities, focusing on how each medium affects key cognitive processes such as attention and memory.

**Literature Review.** Recent academic discourse conceptualizes the differences between print and electronic formats through the lens of cognitive load theory. Researchers argue that digital environments often induce "cognitive fragmentation," where hyperlinks, scrolling mechanisms, and screen glare disrupt the brain's subconscious mapping of textual architecture (Carr, 2020). In contrast, physical books provide fixed spatial anchors that assist in constructing a coherent mental model of a narrative. Furthermore, studies suggest that physical books offer tactile feedback and haptic engagement that reinforce chronological and episodic memory, fostering a more profound conceptual synthesis of academic materials (Mangen et al., 2013).

**Methodology.** This study employed a quantitative experimental design to compare reading comprehension across two media formats. The sample consisted of 40 university students (aged 18–22) from the Department of Philology at Diplomat University. Participants were randomly divided into two groups of 20. The 'Digital Group' analyzed academic materials via high-resolution laptops, while the 'Print Group' utilized identical texts in hardcopy format. Both groups were subjected to strict temporal constraints to simulate academic examination pressures. Following the reading phase, all participants completed a standardized 15-question comprehension test designed to measure factual extraction and high-level inference.

**Results.** The findings presented in Table 1 indicate significant differences in how individuals process information across the two media. The experimental parameters were meticulously controlled to isolate the impact of the reading medium on cognitive efficiency. The resulting metrics, which provide a nuanced view of the performance disparities, are synthesized in the table below.



**Table 1: Comparative Analysis of Reading Modalities and Cognitive Metrics**

Evaluation Criteria	Group A: Digital Medium	Group B: Print Medium
<b>Cognitive Load</b>	High (due to screen glare)	Low to Moderate
<b>Comprehension Level</b>	Shallow scanning	Deep analytical processing
<b>Information Retention</b>	68% (average)	84% (average)
<b>Attentional Focus</b>	Elevated distraction	Sustained engagement

**Discussion.** The findings indicate that reading modality significantly influences cognitive performance. Although digital platforms provide speed, they often lack the spatial and tactile cues necessary for deep analytical processing (Sweller, 1988). Conversely, print-based media provide a stable environment that fosters sustained mental engagement and more robust memory formation. The observed "metacognitive miscalibration"—where individuals read faster on screens but with compromised comprehension—further highlights the limitations of digital environments for deep learning (Kahneman, 2011).

**Conclusion.** This study underscores the significant influence of reading modality on cognitive performance. The evidence suggests that the physical print medium may be more effective for certain forms of deep learning and information retention. Ultimately, these findings suggest that the choice of reading medium is a critical factor in optimizing academic learning. Future research could further explore whether hybrid reading approaches might mitigate the limitations of digital environments.

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