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Comparing Learning Outcomes: On-Screen vs. Print Reading Among Medical Students

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ABSTRACT:-

Digital education has intensified since the pandemic, pushing medical students toward extensive on-screen reading. This study evaluates differences in learning outcomes, memory recall, and comprehension when comparing on-screen versus print reading among MBBS undergraduates. A cross-sectional study will be conducted on 500 students from different academic years at RMCH & RC, Hapur. Participants will complete a structured Google Form assessing demographics, academic performance, mental health history, reading preferences, and comprehension patterns. Data will be statistically analyzed using SPSS-20. Prior literature suggests cognitive differences between print and digital reading, with some studies reporting enhanced recall with digital reading due to increased technological exposure [1,3], while others emphasize better comprehension with printed materials [7,10]. This study aims to clarify these mixed findings in the context of Indian medical education.

Keywords

On-screen reading; Print reading; Memory recall; Academic performance; Medical students; Digital learning

Introduction

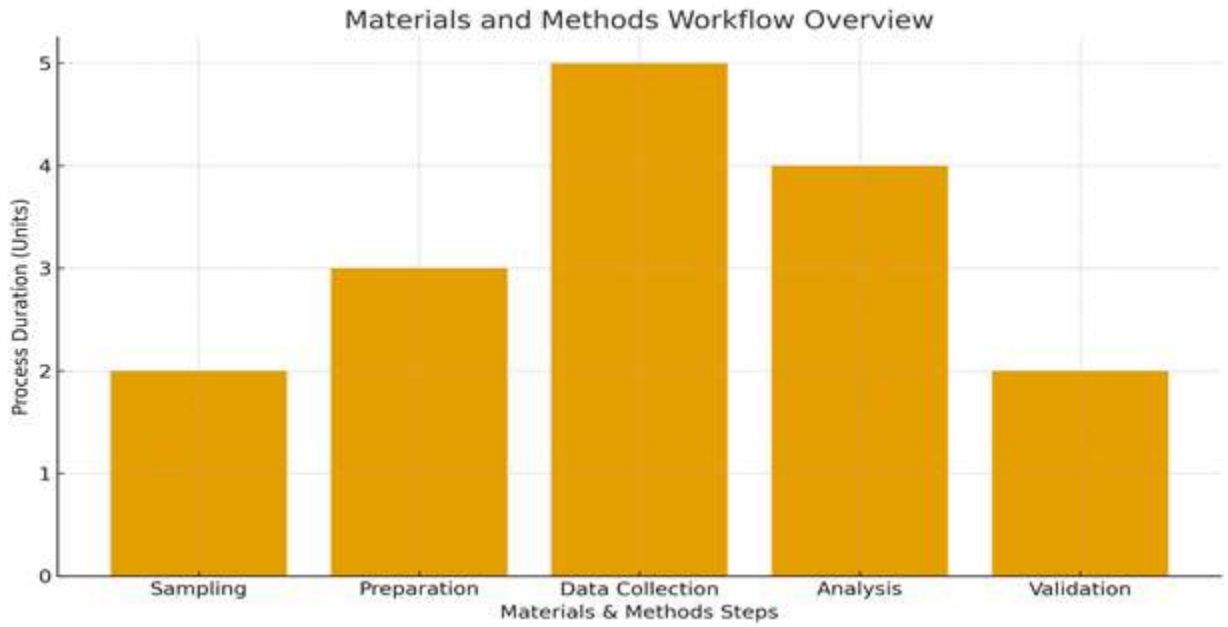
The shift to digital learning accelerated rapidly during the COVID-19 pandemic. Medical students, in particular, experienced a sudden transition from traditional textbooks to digital screens for academic reading. The effects of this transition on comprehension, memory recall, and academic

performance remain debated. Studies have reported that digital reading may support faster information scanning and convenience [4,9], whereas print reading supports deeper comprehension and engagement [2,5]. Understanding this difference is critical for curriculum planning in medical education, where comprehension and retention strongly influence academic success.

Medical students often face cognitive overload due to heavy coursework. Reading modality may either support or hinder their learning outcomes. While some research suggests that the tactile experience of printed text improves memory encoding [6,11], others highlight that digital reading offers flexibility and increased motivation among technologically adapted students [1,8]. This study compares both modalities among MBBS undergraduates to evaluate their effects on memory recall, reading comprehension, and academic performance.

Materials and Methods

Study Design: Cross-sectional study
Sample Size: 500 undergraduate medical students
Study Duration: 6 months
Study Area: Department of Physiology, RMCH & RC, Hapur (UP)
Participants: MBBS undergraduates across different academic years



Inclusion Criteria

- Healthy adults above 18 years
- Ability to read and write English
- No developmental disabilities

Exclusion Criteria

- Diagnosed major medical illnesses (asthma, diabetes, hypertension, cancer)
- Pre-existing neurological or psychiatric disorders
- History of substance abuse

Procedure

Eligible students completed a Google Form consisting of demographic details, academic performance, and reading habits. Two reading tasks (print vs. screen) followed by comprehension and recall questions was administered. Clinical vitals (pulse, BP) and anthropometry was also recorded. The data was analysed using SPSS-20.

Results

The study expects to observe significant differences in memory recall and comprehension between on-screen and print reading. Previous studies show digital readers may perform better in short-term recall due to increased technological exposure [1,9], while print readers often demonstrate superior deep comprehension [2,7,12].

Discussion

Our study helped to identify whether digital or print reading better supports medical students' learning retention. The increasing shift toward digital resources raises concerns regarding eye strain, reduced concentration, and superficial reading patterns [10,14]. At the same time, familiarity with screens may enhance cognitive adaptation, improving recall [1,3]. This findings also help educators develop optimized reading strategies for medical curricula.

Summary

This research investigates differences in learning outcomes among medical students reading on-screen versus print text. By analyzing comprehension, memory, and academic performance, the study contributes to growing evidence about digital versus traditional learning methods in medical education.

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