

Smartphones and flashcards: The connection between digital media and learning

Langa Masilela, Kathryn Craig, & Dr. Kara Sage



Introduction

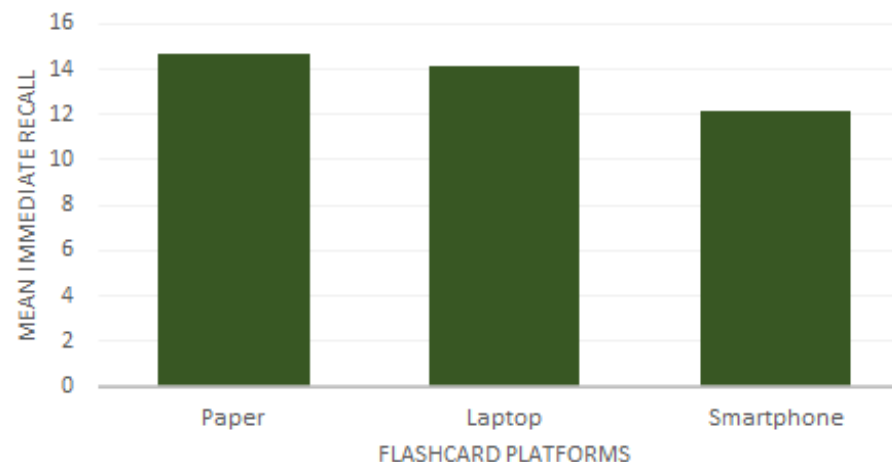
- Smartphones are rapidly being integrated into learning and education; an increasing number of smartphone users consume educational information on their devices (Smith, 2015).
- This integration leads researchers to wonder if digital learning should be accommodated, and even encouraged, on smartphones. Walker (2007) describes how learning using mobile devices is unique because it better accommodates the context of the learner.
- Tossel et al.'s (2015) study demonstrated that smartphone use can support learning. Via tracking students' device usage, they found that iPhones can be helpful for informal learning and accessing school resources.
- The present study compares the effectiveness of paper, laptop, and smartphone flashcards to gain quantitative insight into the effect that directed smartphone use has on learning.

Methods

- 150 college students participated.
- Participants were randomly assigned to study flashcards on either paper, laptop, or smartphone.
- After studying the flashcards, participants were given a memory quiz, exploring free recall and recognition of the words.
- Finally, participants completed a survey on their learning experience and satisfaction with the learning medium. The survey also inquired into their general learning perceptions surrounding digital devices.
- A MANOVA approach was utilized for data analysis, to compare how six dependent variables differed across the three platforms.

Figure 1.

Memory Performance



Discussion

- Our results indicate consistency in learning outcomes across platforms.
- The longer reading times on paper platforms may indicate a difference in the physical affordances between digital and paper platforms, like flipping between flashcards as opposed to tapping on a screen.
- Future research could investigate the amount of time spent studying on electronic devices and its impact on memory retention.
- Based off these findings, both educators and students would benefit from a greater effort towards digital learning, as results illustrate the effectiveness of both traditional paper learning and digital learning.

Results

- Students' memory for the words did not vary by platform for the immediate recall quiz or recognition quiz (see Figure 1).
- There was a difference in time spent on the platforms, with students taking longer to review the paper cards relative to the digital cards.
- The univariate tests showed that self-reported satisfaction and cognitive load did not show any significant difference across platforms.



References

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