What We Still Don't Know About Digital Reading

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Stephen Sawchuk   7/31/2017

Every day, students consume hundreds of words on their iPads, mobile phones, Chromebooks, and Kindles. Increasingly, educational publishers are delivering curriculum on these devices, including several start-ups focused on getting informational texts and news stories into students' hands. But fundamentally, is reading online different from using the old class copies of *Ethan Frome* or *The Federalist Papers?*

As it turns out, what we don't know outweighs what we do know about how people comprehend texts on a digital screen rather than on the printed page, a new research review concludes.

There's some good evidence that readers seem to process longer texts for understanding better in print than digitally, but beyond that there are a lot of question marks, concludes the review, which was published online in July in the Review of Educational Research.

For example, does this pattern show up across genres? How does the age range of the reader affect the equation? And how aware are students of the fact that they may not grasp as much when reading online versus in print? And what about differences across the various types of digital devices? What about pared-down online texts, versus those with bells and whistles?

It's not so much a question of a "horse race" between reading in print or reading digitally that needs exploration, said Patricia A. Alexander, a University of Maryland professor in the department of human development and quantitative methodology and one of the review's authors. Rather, knowing "when it matters, for whom, and under what conditions is the question that constantly needs to be examined, again and again," she said.

A Small Pool

The research review, by Alexander and her graduate student, Lauren M. Singer, takes an exhaustive look at what scholars have written on the topic for the past 25 years. The two researchers combed databases and journals for research using the terms "reading," reading in print," "digital reading," and "online reading."

From an initial pool of nearly 800 studies, the researchers set four criteria to whittle down the list: The studies had to investigate both print and digital reading. They had to be empirical, objective studies—so that meant theoretical or philosophical publications and anecdotal research were out. The studies had to use data beyond just self-reported survey results, and they had to employ a gauge of reading comprehension.

These criteria narrowed the number of studies in the pool down to just 36, something Alexander called "a shock."

"There's been an assumption that digital reading is just going to be digital, and there's no reason to compare it to print. A lot of the studies on digital literacy just looked at the digital environment, not the consequences of that" on how students process text, she said.

And there were plenty of methodology issues, too. Only nine of the 36 studies laid out a definition for reading, and only five crafted one for the term digital reading, for example. Some of the measures of reading comprehension they used were flawed: More than 60 percent of the studies used reading measures that were developed by the researchers, who didn't sufficiently specify their tests' technical validity and reliability.

The studies often weren't very detailed on the type of text students were asked to read or its length. And finally, many of the studies only looked at fairly simple gauges of reading comprehension—for example, factual recall as measured on multiple-choice tests, rather than more cognitively demanding tasks.

In all, the research seems to suggest that, when reading only for superficial purposes, and at very early ages, format doesn't seem to matter much.

"If all you care about is the gist, generally speaking, [format] doesn't matter; you can read it fast and get it. But it seems that when you go into more detailed types of comprehension questions that demand careful attention to things—like issues of accuracy and justification—you see the effect coming in," Alexander said.

She said researchers need to spend more time teasing out all of the interrelated factors that might play into comprehension differences by format. This would include textual aspects, like text length and type; individual student differences, such as vocabulary level or topic knowledge; type of digital device used; and also, how students interact with and process texts as they read. (There's evidence that people have more difficulty understanding texts that require them to scroll extensively on a screen, for example.)

And those will mean scholars will have to craft more sophisticated study designs and pay more attention to how they're collecting data, she said.

There's a lot here that reflects what my colleagues found in [an extensive report on digital reading](#) put out last year.

One problem, they reported, was that the term "digital literacy" itself tends to confuse more than enlighten. People use it to mean everything from merely sticking print text online without a lot of modification, to online text that requires students to sort through all manners of hyperlinks, multimedia, and other sensory enrichment (or distraction, depending on your point of view).

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