

TEACHING

Should You Allow Laptops in Class? Here's What the Latest Study Adds to That Debate

By *Beckie Supiano* | FEBRUARY 06, 2019



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Point: Laptops are a menace, undermining how students take notes in class and distracting not only those using them but also their neighbors.

Counterpoint: Laptops are a lifeline, allowing students with disabilities to participate fully in class.

Plenty of professors have strong opinions about whether laptops belong in the classroom. They also pride themselves on holding opinions based on research. So a new paper investigating the difference between taking notes longhand or on a laptop was bound to attract attention. But that doesn't mean it offers a definitive answer.

The paper, "How Much Mightier Is the Pen Than the Keyboard for Note-Taking? A Replication and Extension of Mueller and Oppenheimer (2014)," was published this week in *Educational Psychology Review*. As the title suggests, the authors tried to replicate a well-known study that found that students who took notes by hand fared better on conceptual test questions than did those who typed notes on a laptop. Students who took notes on a laptop wrote more, and were more likely to write what a lecturer said verbatim, according to the original study. Perhaps, the authors of that study wrote, students taking notes on laptops did so "indiscriminately or by mindlessly transcribing content," did not form a deep understanding of the material, and therefore did worse on the items that demanded such understanding.

The original study was cited among several that led one professor to ban laptops in her classroom in a widely read and much-debated *New York Times* article.

The new paper, in contrast, couldn't completely replicate those findings. Instead, it found that students who took notes by hand fared a bit better on factual test questions, but not on conceptual ones. While both papers find some advantage for students who take notes by hand, the new study at least complicates the 2014 paper's theory about why handwritten notes appeared to improve conceptual understanding in particular.

So where does that leave us in the laptops-in-the-classroom debate? Let's take a look:

Should students take notes by hand?

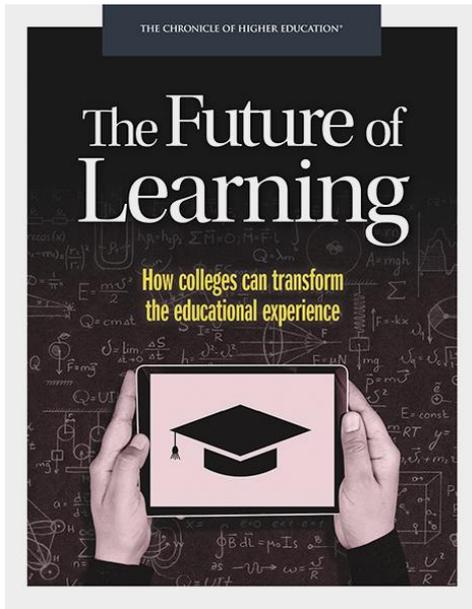
Maybe. When the authors of the new paper conducted a meta-analysis, looking at the results of both papers' experiments, they found a small, statistically insignificant increase in test performance for those who took longhand notes. Still, "we are of the bent that it might be a little too early to make definite prescriptions," said John Dunlosky, a professor of psychology at Kent State University and one of the new paper's authors.

Daniel Oppenheimer, a professor of social and decision sciences at Carnegie Mellon University and an author of the original paper, said he appreciated the opportunity to clarify his advice on best classroom practices. "The right way to look at these findings, both the original findings and these new findings," he wrote in an email, "is not that longhand is better than laptops for note-taking, but rather that longhand note-taking is *different* from laptop note-taking."

Why aren't these studies more conclusive?

One reason: The classroom is different from the lab conditions in the papers' experiments. Both papers deal chiefly with testing students 30 minutes after a lecture ends. In a course, quite a bit more time usually passes between the end of a lecture and the start of an exam. And the new paper suggests that the differences between taking notes by hand or on a laptop diminish over time.

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Previous research suggests that what matters most about note-taking is not the act of note-taking itself, but what you do with the notes later on. In other words, the value isn't in the "encoding" function (how students benefit from the act of note-taking), but the "storage" function (how they benefit from studying those notes afterward). The new paper supports that idea. It found that students who took no notes at all performed similarly to the other groups on the test given soon after the lecture.

If the advantage of handwritten notes comes primarily from encoding, Dunlosky explained, then writing by hand probably won't benefit students taking a final at the end of a semester in the way it benefits those being tested 30 minutes after a lecture.

Are there situations in which how students take notes matters more?

Context, Dunlosky and Oppenheimer agreed, matters. Students might benefit from typing their notes when a professor talks very quickly, Dunlosky said. They might have better results taking notes by hand in a course that uses a lot of figures or illustrations.

Sometimes, Oppenheimer added, having the kind of complete record of a lecture that's easier to achieve on a laptop would be useful. And access to the internet, he wrote, brings both potential benefits and the risk of distraction.

Students themselves seem to understand that intuitively. Dunlosky and his co-authors conducted a survey of students at Kent State, where all of them are based, and found that students vary their note-taking habits, typing or writing by hand depending on the demands of a particular course.

So what should instructors tell students about using laptops in class?

There are several factors to consider, but here's where Dunlosky has landed. He permits students to take notes on a laptop if they wish to, though he discourages them from surfing the internet. Even then, he asks students who use laptops to sit in the back of the room. The reason? Even if the way students take notes doesn't have huge implications for their learning, other research suggests that the devices can pose a distraction.

Beckie Supiano writes about teaching, learning, and the human interactions that shape them. Follow her on Twitter @becksup, or drop her a line at beckie.supiano@chronicle.com.

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