

A: For More Effective Studying, Take Notes With Pen and Paper

BY [ALLISON ECK](#) TUESDAY, JUNE 3, 2014 NOVA

[HTTPS://WWW.PBS.ORG/WGBH/NOVA/ARTICLE/TAKING-NOTES-BY-HAND-COULD-IMPROVE-MEMORY-WT/](https://www.pbs.org/wgbh/nova/article/taking-notes-by-hand-could-improve-memory-wt/)

Excerpted

“Handwriting might be a lost art, but educators should make sure it lives on in the classroom.

According to a [new study](#), Pam Mueller and Daniel Oppenheimer of Princeton University and UCLA Los Angeles respectively, students who write out their notes by hand actually learn more than those to type their notes on laptops. Over the course of several experiments, Mueller and Oppenheimer tested students’ memories for factual detail, conceptual comprehension, and synthesizing capabilities after half of them took notes by hands and the other half took notes by way of computer. Students who used laptops cranked out more words than hand-writers did, but the hand-writers ended up with a stronger conceptual understanding across the board.

Should students take notes by hand or on laptops? A recent study suggests taking notes on a laptop hinders learning and retention. Here’s Cindi May [writing](#) for Scientific American:

What drives this paradoxical finding? Mueller and Oppenheimer postulate that taking notes by hand requires different [types of cognitive processing](#) than taking notes on a laptop, and these different processes have consequences for learning. Writing by hand is slower and more cumbersome than typing, and students cannot possibly write down every word in a lecture. Instead, they listen, digest, and summarize so that they can succinctly capture the essence of the information. Thus, taking notes by hand forces the brain to engage in some heavy “mental lifting,” and these efforts foster comprehension and retention. By contrast, when typing students can easily produce a written record of the lecture without processing its meaning, as faster typing speeds allow students to transcribe a lecture word for word without devoting much thought to the content.

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Twenty years ago, cognitive psychologist Robert Bjork called this phenomenon “[desirable difficulty](#),” the idea that making learning harder can help information stick. If teachers required students to take their own notes or (on top of that) requested that they handwrite them, students could perform better on tests—and they might even feel empowered to be more creative throughout the learning process, too. “