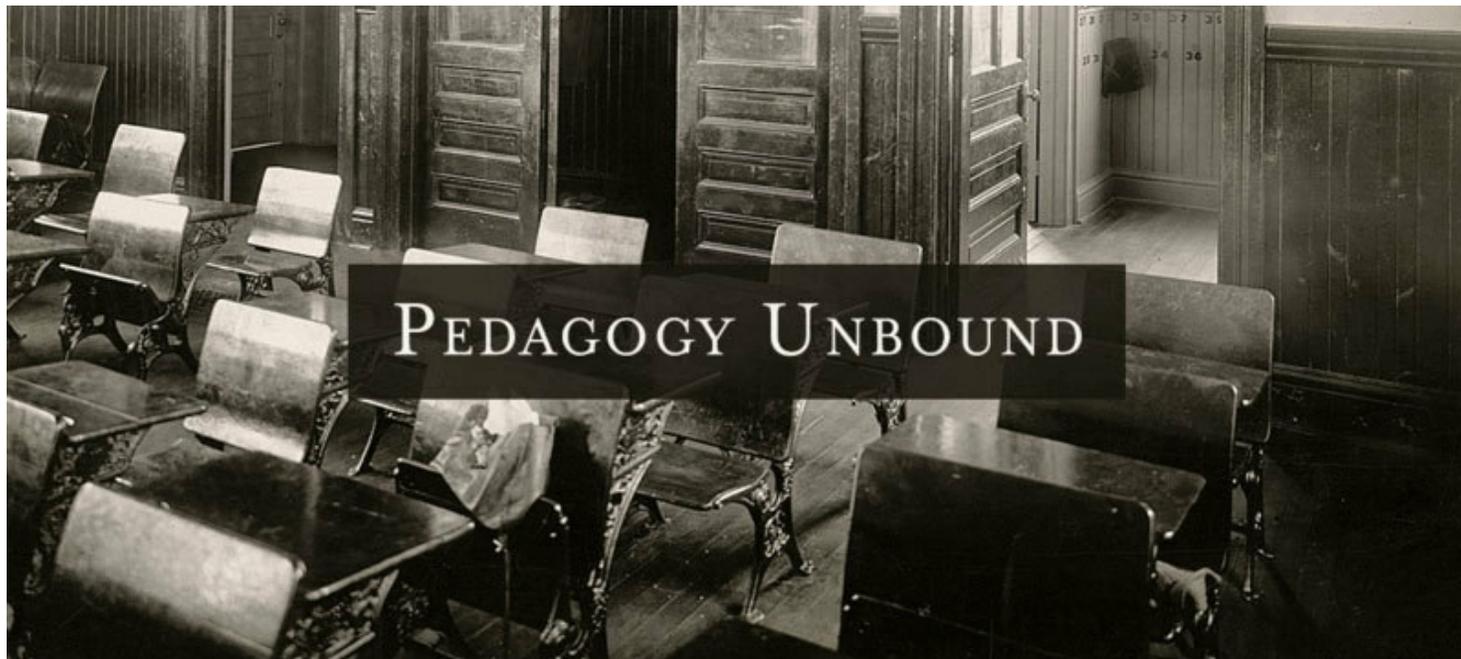


Learning More About Active Learning

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The scholarly literature on “[active learning](#)” is almost shockingly positive. Over and over again, when active-learning strategies have been studied — particularly when they have been compared to lecturing — they have been found to increase student learning.

A 2014 [meta-analysis of 225 studies](#) measured student performance in STEM courses taught by traditional lectures against courses that used active-learning strategies. Using a cautious methodology to avoid biases, the study found a marked difference between the two categories. Average marks in the active-learning courses were a half-grade higher (i.e., a B rather than a B-) compared with those taught by lecture. Moreover, students in lecture courses were one and a half times more likely to fail than their counterparts who engaged in active learning. Considering how many studies were looked at, those were remarkably consistent results.

Search for “active learning” on [Google Scholar](#) or [JSTOR](#) and you’ll find that such results are not at all surprising. [Article after article](#) confirms our new consensus: Get students active in class — whether by using group work or techniques like [think-pair-share](#) or by allowing students to decide important aspects of the course — and they’ll learn more.

All of which is why the title of a 2011 article fairly jumps off the screen: “[Active Learning Not Associated with Student Learning in a Random Sample of College Biology Courses](#).” The study— led by Tessa Andrews, then a graduate student at Montana State University and now an assistant professor at the University of Georgia — runs counter to the bulk of evidence on the subject. But the nature of its findings have potentially great significance for teachers who

want to take advantage of the benefits of active learning.

The 2011 study came about because Andrews and her colleagues noticed an obvious but usually overlooked detail of previous studies on active learning: They were all carried out by educational researchers. In previous studies, most of the courses put under the microscope were taught by educational researchers who, having devoted their careers to studying education, tend to be particularly committed and well-informed teachers. Would active learning fare as well in a study that looked at courses taught by a more representative sample of college instructors? That's just what the Andrews team sought to answer.

They took a random sampling of introductory biology courses taught at major colleges and universities in the United States, and ended up with 29 courses taught at 28 institutions by 33 instructors. The research team gathered data on both the teaching methods used (in particular, the frequency of active-learning strategies) and the student learning (measured through pre- and post-tests) in the courses. I already mentioned the article's title, so you know the results, but it's worth repeating: The study found no significant relationship between the amount of active learning a class engaged in and how much students learned in the course. If students learned more in one class than in another, it wasn't because their class gave them more opportunities for active learning.

So what does that mean?

For Andrews and her co-authors, the findings confirmed the concerns that prompted their study in the first place: "Most of the faculty using active learning in previous studies had backgrounds in science education research. The expertise gained during research likely prepares these instructors to use active learning more effectively."

In short, using active-learning strategies in the classroom may not be enough to improve learning; you have to know how to use them well.

A broader point is an evergreen one: We should always approach scientific research with a skeptical eye and a grain of salt. The important idea confirmed here — that educational research may not be controlling well enough for the expertise of its practitioners — is one that may very well apply to a whole host of studies. The overwhelming support for active learning in the scholarly literature can blind us to the fact that no teaching technique, in and of itself, can suddenly make teaching easy and straightforward. Helping students learn is hard work!

We might also look at the kind of expertise that educational researchers have that "ordinary" instructors might lack. Perhaps the instructors involved in the 2011 study didn't fully understand the theories that underlie active learning. "It is possible," the authors suggest, "that a thorough understanding of, commitment to, and ability to execute a constructivist approach to teaching are required to successfully use active learning." Fully understanding constructivism — the prevailing theory that students learn new things by building on, and revising, previous knowledge — may be necessary to properly put active-learning strategies into practice. Maybe you have to know *why* active learning works to be able to know *how* it works best.

This summer, as you think about ways to improve your teaching in the 2016-17 academic year, don't just look for strategies to use in the classroom. Spend some time reading and thinking about the mechanisms that underlie those strategies. There have been some great books on learning and cognition published in recent years. Read one this summer. I particularly like [How People Learn: Brain, Mind, Experience, and School](#) and [Make it Stick: The Science of Successful Learning](#). Consider your overall teaching goals, and what you want students to get out of class time. Think about the kind of course you want to create, and about which methods will best help you create it.

Active learning, as a subject of scientific inquiry, is still a relatively young phenomenon. Despite the fact that its advantages over traditional lecturing are pretty well settled at this point, there is still so much we don't know. As more research is done, we'll learn more and more about the mechanisms behind active learning, what strategies work better than others, and how best to put them into practice. In the meantime, especially if the summer months afford you a little time for some big-picture thinking, spend some of it trying to better understand how students learn,

and how our efforts might fit into that process.

[David Gooblar](#) is a lecturer in the rhetoric department at the University of Iowa. He writes about teaching for Vitae and runs the teaching website PedagogyUnbound.com.

Find him on Twitter at [@dgooblar](#).

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