

When Practice Does Make Perfect

What everyone can learn from top performers

Peak: Secrets from the New Science of Expertise

by Anders Ericsson and Robert Pool

Eamon Dolan/Houghton Mifflin Harcourt, 2016, \$28; 336 pages.

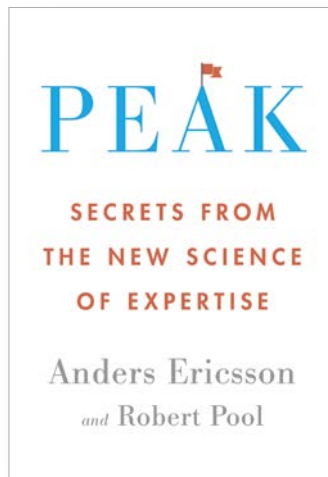
As reviewed by Daniel T. Willingham

Since the early 1990s, Anders Ericsson has done more than any other psychologist in modern times to further our understanding of how people—especially those who become experts—learn and master skills. As the old adage puts it, practice makes perfect. But if practice is all there is to it, why has my typing improved so little in the last 40 years?

Ericsson’s research clarifies the difference between what he calls deliberate practice and other activities that call for repetition. Even though I type every day, my typing is not really practicing, because I’m not purposefully or systematically trying to improve it. Given that I have not formally studied typing, I may even be reinforcing bad technique.

In Ericsson’s formulation, deliberate practice has several components: evaluating what needs improvement, selecting one small aspect of the skill to work on, developing a strategy, and then evaluating the results of the revised performance. And if you plan to become really good, you need to practice: *a lot*. Exactly how long? That depends on the skill—10,000 hours is the popular author Malcolm Gladwell’s magic number, not Ericsson’s—but plan on years.

In the book’s first four chapters, Ericsson and his adept co-author, the science writer Robert Pool, take the



reader through the science of expertise, building toward the idea that “memory representations” lie at the heart of skill. People who are superb at something have an enormous stock of memories related to what happens in their domain of skill, and how to act on it.

If reading a lot of detail about memory sounds formidable, fear not. The authors keep the material lively by using stories to illustrate scientific points. Over the course of the book, you’ll meet the Navy’s Top Gun pilots, a violinist so skilled that when a string breaks during a performance he simply completes the piece on the remaining strings, and the eccentric Hungarian psychologist who was so confident in his theory of genius that he sought a wife who would collaborate with him in raising a child to be a chess prodigy (it worked).

Good science writing requires not just clarity but energy and compelling narrative. *Peak* delivers, and is a pleasure to read. After reviewing the science, the authors explain how we can apply the principles of deliberate practice to our own personal and professional learning. In the profession of medicine, for

example, we could “make” better doctors if we provided them with opportunities to systematically *practice* medicine rather than simply “doing” it.

What lessons, then, does the book hold for educators and policymakers? Surely the world’s expert on expertise has something to say about the process of learning math, for example. In one respect, the book is an excellent companion to Carol Dweck’s *Mindset*. Dweck emphasizes the importance of children believing they can get smarter if they work hard on the right things. Ericsson offers specifics about *how* they need to work if their efforts are to bear fruit.

And if Dweck doesn’t want you to focus on talent, lest you believe that your innate ability matters more than your concerted action, Ericsson takes this principle a step further, and in fact further than most psychologists would go. Ericsson has little use for talent at all. In his estimation, innate abilities matter only *before* people have practiced much. The kid with a high IQ will play better chess than the kid with a low IQ, but only because neither knows much about chess. If they both practice, the influence of IQ will disappear, and whoever practices more will be the better player.

Many people would contend that practice theory cannot fully explain how we reach the peak of performance, especially in certain domains, such as athletics. We tend to see a standout like LeBron James as having been “born great,” no matter how hard he had to work to fulfill his talent. Ericsson concedes that physical characteristics do influence achievement in sports and other physical activities and cannot be modified by practice.

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But in most spheres, Ericsson holds that the role of innate ability, as in the chess example, only provides an advantage at the beginning of the learning curve. It is far from clear that Ericsson is completely right about that, but his underlying message—“Damn the talent, full practice ahead!”—is one that most psychologists (and educators) could support.

What are the practical implications of Ericsson's features of deliberate practice for K–12 education? Ericsson writes that Nobel laureate physicist Carl Wieman uses teaching methods that embody the principles of deliberate practice. Wieman, who is known for his method of teaching large lecture courses via small-group student discussions of carefully selected questions, emphasizes that such discussion requires that students stay mentally active, whereas the more common lecture format encourages mentally passive note-taking. Ericsson agrees, but also highlights Wieman's careful delineation of learning objectives and meticulous sequencing of small mental steps toward those objectives—hallmarks of the deliberate practice method.

Even if a teacher isn't drawn to Wieman's methods, I'd argue that principles of deliberate practice are well worth knowing. The mere distinction between experience and deliberate practice can help guide educators in imparting certain skills. For example, many schools want students to work well with others, so they assign group projects. But working in a group is simply experience. If you want students to become better group members, they need to *practice* being a group member. They must be explicitly taught how to work in groups, and that's something few schools do.

What's more, deliberate practice calls for working on one aspect of the skill at a time. Ericsson would suggest that the complex of skills required for working in a group or writing a research paper should not be tackled at once but should be broken down into smaller tasks, each of which would be practiced on its own. For writing a research paper, one could

imagine subtasks such as using a database to locate research, evaluating the relevance of sources, creating an annotated bibliography, writing a rough outline and then a detailed one, and perhaps as many as four or five substeps in the writing of effective expository prose.

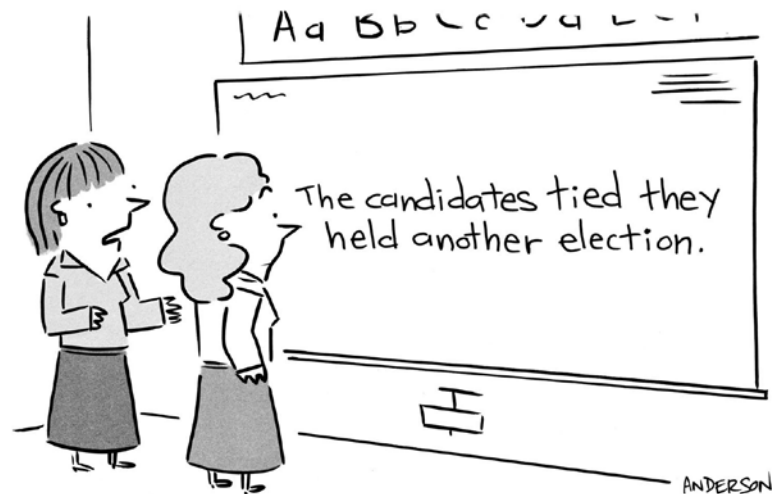
Even more than the teaching of students, *Peak* set me thinking about the training of teachers. Most teachers have no opportunity for deliberate practice of their craft. It's long been noted that, by most measures, the average teacher improves enormously in the first several years on the job, after which student-achievement gains (one gauge of teacher effectiveness) level

off. It's reasonable to speculate that this drastic slowing of improvement is due to a lack of purposeful practice. But if teachers are to deliberately practice, they need to be given time in their schedules to do so.

Another challenge here is rooted in the way some teachers view their profession. Practice is only possible if practitioners agree on who the experts are, so the goals of practice can be articulated. In addition, educators will need to define the sequence of subskills to be acquired on the way to expertise. Practitioners need to know that “once you've mastered X, you move on to Y.” For those who see teaching as more art than craft, such dissection is not feasible.

Enabling practice in the teaching profession will not be simple, but Ericsson and Pool's *Peak* offers a stark wake-up call, pointing up that we can't expect teachers to improve in the absence of real practice. The book also provides an excellent resource for those who want to take action and begin integrating the principles of deliberate practice into K–12 education.

Daniel T. Willingham is professor of psychology at the University of Virginia. His most recent book is Raising Kids Who Read: What Teachers and Parents Can Do.



“She told me it was both a run-on and a runoff sentence. I gave her extra credit.”