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PROOF POINTS: Debunking the myth that teachers stop improving after five years

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The idea that teachers stop getting better after their first few years on the job has become widely accepted by both policymakers and the public. Philanthropist and former Microsoft CEO Bill Gates popularized the notion in a 2009 TED Talk when he said “[once somebody has taught for three years, their teaching quality does not change thereafter.](#)” He argued that teacher effectiveness should be measured and good teachers rewarded.

That teachers stop improving after three years was, perhaps, an overly simplistic exaggeration but it was based on sound research at the time. In a 2004 paper, economist Jonah Rockoff, now at Columbia Business School, tracked how [teachers improved over their careers](#) and noticed that teachers were getting better at their jobs by leaps and bounds at first, as measured by their ability to raise their students' achievement test scores. But then, their effectiveness or productivity plateaued after three to 10 years on the job. For example, student achievement in their classrooms might increase by the same 50 points every year. The annual jump in their students' test scores didn't grow larger. Other researchers, including [Stanford University's Eric Hanushek](#), found the same.

But now, a new nonprofit organization that seeks to improve teaching, the Research Partnership for Professional Learning, says the conventional wisdom that veteran teachers stop getting better is one of several [myths about teaching](#). The organization says that several groups of researchers have since found that teachers continue to improve, albeit at a slower rate, well into their mid careers.

“It's not true that teachers stop improving,” said John Papay, an associate professor of education and economics at Brown University. “The science has evolved.”

Papay cited his own [2015 study with Matt Kraft](#), along with a 2017 study of [middle school teachers in North Carolina](#) and a [2011 study of elementary and middle school teachers](#). These analyses all found that teachers continue to improve beyond their first five years. Papay and Kraft calculated that teachers increased student performance by about half as much between their 5th and 15th year on the job as they did during the first five years of their career. The data are unclear after year 15.

Using test scores to measure teacher quality can be controversial. Papay also looked at other measures of how well teachers teach, such as ratings of their ability to ask probing questions, generate vibrant classroom discussions and handle students' mistakes and confusion. Again, Papay found that [more seasoned teachers were continuing to improve](#) at their profession beyond the first five years of their career. Old dogs do appear to learn new tricks.

The debate over whether teachers get better with experience has had big implications. It has prompted the public to question union pay schedules. Why pay teachers more who've been on the job longer if they're no better than a third-year teacher? It has encouraged school systems to fire "bad" teachers because ineffective teachers were thought to be unlikely to improve. It has also been a way of justifying high turnover in the field. If there's no added value to veteran teachers, why bother to hang on to them, or invest more in them? Maybe it's okay if thousands of teachers leave the profession every year if we can replace them with loads of new ones who learn the job fast.

So, how is it that highly regarded quantitative researchers could be coming to such different conclusions when they add up the numbers?

It turns out that it's really complicated to calculate how much teachers improve every year. It's simple enough to look up their students' test scores and see how much they've gone up. But it's unclear how much of the test score gain we can attribute to a teacher. Imagine a teacher who had a classroom of struggling students one year followed by a classroom of high achievers the next year. The bright, motivated students might learn more no matter who their teacher was; it would be misleading to say this teacher had improved.

Many other things can affect student test scores from year to year, such as unexpected snow days or natural disasters. We wouldn't want to say that most teachers in America became worse at their jobs in 2020 and 2021 because test scores declined during the pandemic. Other changes, such as switching to a new curriculum, can affect test scores too. Broader population changes at the school also complicate the math. If a city is gentrifying, the test scores in a teacher's classroom might rise a lot because test scores are generally higher in richer neighborhoods. Higher test scores, in this case, would probably not be a sign that the teacher is getting a lot better at teaching.

Economists need to make assumptions when they try to disentangle how much of the classroom's test score gain should be attributed to the teacher and how much should be attributed to all the other stuff that's going on. In Rockoff's influential 2004 paper, he assumed that there were diminishing returns to job experience. It's a reasonable assumption, given that we all have a steep learning curve when we first learn something new and then annual improvements are smaller as we refine our practice. In Rockoff's data, annual improvements were so tiny by a teacher's 10th year that he effectively assumed that teachers stopped improving any more and plateaued. Arguably, Rockoff assumed what he was trying to study.

When Papay and other economists relaxed the assumptions about how much teachers typically improve each year, they found that teachers tended to get better and better well into their mid careers. But they had to make other assumptions. For example, Papay assumed that new teachers start at the same starting line every year. That is, the cohort of rookie teachers in 2001 were just as effective as the cohort of rookie teachers in 2009. That might not be true if teacher preparation programs have improved.

I emailed Jonah Rockoff to see if he agrees that the science has evolved and that teachers improve throughout their careers. He told me that he still stands by his 2004 analysis and he generally sees a consensus among researchers, not a debate. According to his reading of the research, everyone is finding the same patterns: student achievement increases the most during the early part of a teacher's career and tends to plateau after 10 years of experience. Whether teachers plateau or continue to improve at a very sluggish pace isn't a meaningful difference to him.

Papay agrees that the story is “nuanced” and that mid-career teachers aren’t showing “tremendous improvement.”

“It’s not like teachers continue to improve at the same rate that they do early in their career,” Papay said. “It’s more modest.”

Regardless of whether teachers plateau or slowly improve, the more interesting policy question is whether there are better ways to help teachers improve throughout their careers. Papay and other scholars are trying to pinpoint the kinds of working conditions and on-the-job training that help teachers flourish. For example, Papay is finding promise in [pairing teachers together](#) to learn from each other and Kraft has studied whether [every teacher should have a coach](#).

Just because inexperienced teachers are improving the fastest also doesn’t mean that professional development should be targeted at them. Rockoff thinks it might be “too early in their careers” for them to get much out of some types of training.

And most importantly, teachers late in their careers might be improving student outcomes in ways that test scores – or even classroom observations – cannot capture. They might inspire students to go to college or to become scientists or artists some day. That’s an impact that’s priceless but harder to measure.

This story about [teacher improvement](#) was written by Jill Barshay and produced by The Hechinger Report, a nonprofit, independent news organization focused on inequality and innovation in education. Sign up for the [Hechinger newsletter](#).

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