

THE CHRONICLE

of Higher Education

Faculty

[Home](#) [News](#) [Faculty](#)



August 18, 2011

Want to Be a Good Researcher? Try Teaching

By Dan Berrett

Graduate students in the sciences who both teach and conduct research show greater improvement in their research skills than do those who focus exclusively on laboratory work, says a report to be published in the August 19 issue of *Science*.

The report, "Graduate Students' Teaching Experiences Improve Their Methodological Research Skills," is notable for being among the first to examine gains in the actual research skills of graduate students rather than what they report about themselves.

The findings run counter to the conventional wisdom underlying the training and rewarding of graduate students in the sciences, which tends to view teaching as a distraction from research. And the report arrives amid an intensifying national debate about the proper balance between teaching and research by college faculty.

"Students who both taught and conducted research demonstrate significantly greater improvement in their abilities to generate testable hypotheses and design valid experiments," writes the lead author, David F. Feldon, an assistant professor at the University of Virginia's Curry School of Education. "These results indicate that teaching experience can contribute substantially to the improvement of essential research skills."

To carry out their study, Mr. Feldon and his colleagues gathered two sets of research proposals from 95 beginning graduate students in STEM fields—science, technology, engineering, and math—at three universities in the Northeast from 2007 to 2010. About half of those students taught, on average, one undergraduate course. The other half had no teaching responsibilities.

All of the graduate students submitted research proposals at the beginning of the academic year and provided revised versions at the

end of the year.

Mr. Feldon's team used a rubric to rate several various aspects of the students' research skills, including the context of the proposed study, framing of the hypotheses, attention paid to the validity and reliability of study methods, experimental design, and selection and presentation of data for analysis.

The graduate students who both taught and did research scored higher on those measures, the study found. The results suggest that those students exhibited both superior methodological skills and greater improvement in those skills compared with their peers who focused on research alone.

"The findings resonate with people," Mr. Feldon said in an interview. "Of the people I've spoken to about this study, half said, 'Of course that's what you found.' The other half said, 'There's no way that can be true. Your data must be wrong.' Everyone's got an opinion on this, but there's been little data."

Myths and Assumptions

Much of the existing scholarship on the relationship between teaching and research has focused on how research influences teaching, and not the reverse.

While Mr. Feldon, who studies educational psychology and science, technology, engineering, and mathematics education, points in his paper to evidence that research enhances teaching, this conclusion has not always been settled. In 1996, John Hattie and H.W. Marsh, researchers who at the time were at the University of North Carolina at Greensboro and the University of Western Sydney, in Australia, respectively, surveyed the scholarly literature on teaching and research for the *Review of Educational Research* and found no relationship between the two. "The common belief that research and teaching are inextricably entwined is an enduring myth," they wrote.

That "myth" is one of the reasons graduate students in the sciences are often divided into two camps, observes Mr. Feldon. The more-promising scholars starting graduate school tend to receive generous fellowships and grants, which allow them to focus on research without the distraction of teaching undergraduates. The other group is assigned the job of teaching, and their research has

long been thought to suffer as a result.

The assumption that teaching diminishes research quality is reflected widely in graduate programs in the sciences, says Mark R. Connolly, a researcher at the Wisconsin Center for Education Research, at the University of Wisconsin at Madison, who heard a preliminary presentation of Mr. Feldon's findings. Science-faculty members are rewarded largely on the basis of their research, notes Mr. Connolly. That reality naturally leads faculty members to place more value on time spent advising their graduate students on research than on teaching.

Mr. Connolly's own research draws on his interviews with graduate students in STEM fields as they start their academic careers. Those students said they feared that they would not get good jobs if they didn't focus enough on research. "Interest in teaching is considered a signal of failure as a researcher," he says they told him.

The most significant aspect of Mr. Feldon's findings, says Mr. Connolly, is that they are based on data that track the development of actual research skills instead of those that are self-reported. "They're looking at demonstrated competency," he says. "It gets away from these assumptions that teaching is inimical to research. In fact, they're complementary."

Mr. Feldon cites two reasons that teaching seems to improve research skills. The first is that a graduate student who teaches, for example, 20 undergraduates how to develop a laboratory study ends up practicing those same skills him or herself. "It's a straight practice effect," he says. "You're getting more opportunities in more situations."

The second reason is that people who have to explain to someone else how to carry out a task are quicker to develop their own abilities to do that same task.

Teaching's benefit to research depends on a certain kind of educational experience, Mr. Feldon continues. The educational experience for both instructor and student must involve what he calls "active inquiry," the investigation of open-ended questions, in which students must figure out which areas deserve exploration and what data to collect.

Teaching and research in the social-science disciplines would probably have a similar dynamic, he says. That assertion finds some support in a paper by William E. Becker, now a professor emeritus of economics at Indiana University at Bloomington, and Peter E. Kennedy, now a professor emeritus of economics at Simon Fraser University in British Columbia, which was presented at the American Economic Association's annual meeting in 2005.

Their paper described the results of a qualitative study of the relationship between teaching and research among economists who were known as accomplished researchers. About 50 percent of the respondents could provide specific examples in which their teaching of undergraduates had led directly to the publication of research. Thirty-five percent could not cite a specific example but said teaching had played a positive role. The remaining 15 percent didn't volunteer a case in which teaching had helped their research.

A Wider Debate

Mr. Feldon's report comes at a time when some policy makers and politicians are questioning the proper relationship of teaching to research, and whether the greater emphasis on research has harmed the teaching of undergraduates.

This debate has been most visible in Texas., where the Texas Public Policy Foundation, a think tank aligned with Gov. Rick Perry, a Republican, [has advanced](#) what it calls the Seven Breakthrough Solutions. One of those recommendations is to divide colleges' budgets for research and teaching, with the goal of "increasing transparency and accountability by emphasizing teaching and research as separate efforts in higher education, and making it easier to recognize excellence in each area."

To many in academe, that recommendation advocates the severing of the research and teaching functions of faculty members. This was [sufficiently alarming](#) to the Association of American Universities that its president at the time, Robert M. Berdahl, sent a letter last year to Texas A&M University officials warning that adopting the proposed solutions would threaten the American research university. "Separating research from teaching and oversimplifying the evaluation of faculty does violence to the values that have produced the American universities that are envied and emulated across the globe," Mr. Berdahl wrote.

Many of those who support the proposed solutions have backed away from the document or have said it is not intended to be followed in its entirety. The proposal's architect, Jeff Sandefer, a board member of the policy foundation and co-founder of the Acton School of Business, says he never meant to suggest that teaching and research should be separated entirely—just that they should be measured and rewarded individually.

Mr. Sandefer finds the results of Mr. Feldon's research unsurprising. "The great researchers aren't, to me, super narrowly focused on the answers," he said in an interview. "They're excited by great questions. Teaching is really about getting students to struggle with and explore those questions."


ComDISQUS
Powered by DISQUS

Add a comment

Log in to post

with your Chronicle account:


Don't have an account? [Create one now.](#)
Or log in using one of these alternatives:

 Chronicle

Showing 16 comments

Sort by Oldest first Follow comments: [by e-mail](#) [by RSS](#)

Real-time updating is **enabled**. ([Pause](#))




edonchin 20 hours ago

As is true of all correlational studies, at best one can conclude from the Feldon study (as described in the CHE article) is that grad students who were selected, by some unspecified process, to serve as TAs turned out to be better researchers. There is no basis for concluding from the reported results any causal relationship between teaching and subsequent research skills. Perhaps the paper in Science will provide the necessary details....

In general, I endorse the implications of the study. In my previous department we required all graduate students to serve at least one semester as TAs even though the vast majority could be supported on RAships, Fellowships and such like. We did so because we assumed that teaching is an important component of the role of a faculty member in a research university (and this is what we assumed we are training). It was important, therefore, to include intensively supervised teaching in the training of our graduate students.

1 person liked this. [Like](#)



wrappedupinbooks 19 hours ago

I found the same to be true of my experiences in the humanities. I'm a much more productive and enthusiastic scholar when I'm teaching, just as I'm a more engaged and enthusiastic teacher when I'm actively researching a project.

7 people liked this. [Like](#)

**beckerw** 19 hours ago

Dan Berrett would have us believe that this study by lead author, David F. Feldon is unique in its finding that teaching enhances research, which is supposedly contrary to the conventional wisdom. Overlooked was my work with Peter Kennedy in which we articulate how teaching enhances research as documented by our survey of leading economists.

William E. Becker Professor Emeritus of Economics, Indiana University Adjunct Professor of Commerce, University of South Australia Research Fellow, Institute for the Study of Labor (IZA, Bonn Germany) Fellow, Center for Economic Studies and Institute for Economic Research (CESifo, Munich Germany) William E. Becker and Peter Kennedy, "The Influence of Teaching on Research in Economics," Southern Economic Journal, January 2006: 747-759.

William E. Becker and Peter Kennedy, "Does Teaching Enhance Research in Economics?" American Economic Review, Vol. 95 (2), May 2005: 172-176.

2 people liked this. **bigtwin** 18 hours ago

I think that all research carried out by TT professors should always have linkages with teaching, but this is usually not the case. I think there is too much disconnect right now between what is researched and what is taught. Nearly all research -- in my discipline at least -- has next to no applicability in the classroom. It is too often myopic in focus, written in indecipherable jargon, or formulated merely as a rebuttal to another work. Worse, yet, most research is just plain boring to non-specialists - too many pet projects carried out in the name of personal interest or advocacy.

I believe that if your research isn't suitable for the undergraduate classroom, it should not be undertaken on the university dime. Instead, do it on your own time as a hobby, since that is what it is. There are far too many abysmal teachers in higher ed already, the same people who are considered top researchers. Students deserve better.

9 people liked this. **5768** 18 hours ago

There was a time when promotion and tenure had stated standards of excellence in each of three areas: teaching, research, and service. And people actually excelled in each of the three at the time. What has changed? I suggest it is greater workloads, viz, "expectations" on faculties which may be wholly incommensurate with those decades ago (which I also suggest were more reasonable then by comparison with today's expectations), workloads which have transmogrified teaching and research into much more separate entities because one simply doesn't have the time to do justice to both simultaneously and meet expectations for each under today's standards. Each has become a black hole in terms of the time required to do either well, with one having become a distraction from the other. I know many excellent researchers who are superlative teachers; they may in fact had been better teachers had they not to distract themselves with research. Either way it is was a zero sum game in terms of overall faculty quality distributed over the three areas until institutions realized that in separating responsibilities they realized greater usufruct from individual faculty efforts by making responsibilities both separate and thereby intensifying their individual demands made on faculties (this hypothesis of mine requires substantiation). Such strategies have a price to pay, however, and I believe we are seeing that in more ways than one.

As far as the article goes, it has long been noted that practicing the left hand piano part also facilitates performance of the right hand, and vice versa. What we have today are faculties playing with one hand only and doing well as long as they neglect the other hand--whereas formerly they were equally adept with all three.

6 people liked this. **nyhist** 17 hours ago

In my own teaching I have found that having to explain my ideas to others sharpens them and gives me new research insights. One of my better undergrads went to a grad school who rewarded her with a no-teaching fellowship. She quit ABD. I have always thought that one reason was that she never experienced the joys of the classroom.

6 people liked this. [Like](#)



Robert Oscar Lopez 11 hours ago

I have a 4/4 load. If I don't find ways to rehearse my research in my pedagogy and vice versa, I would never be able to publish anything. I'd die.

4 people liked this. [Like](#)



mulerooster 11 hours ago

Finally!!! It's about time people start to realize that it's not always bad to do both teaching and research. I wish they would show this to the research-centric people at my grad school. All they ever talk about is how our program is special and unique because we are one of the only programs that doesn't have teaching opportunities for grad students. I've received a lot of "why are you wasting your time" statements when I have told the faculty members that I was pursuing outside teaching jobs while continuing my graduate school research.

Anyways, my past month in the lab has been super productive. It's because I started preparing for my teaching job in the past month. Actually getting away from my grad school for a bit has made me more productive during the times when I'm at my grad school.

4 people liked this. [Like](#)



sir_mixxalot 6 hours ago

the study is not very well described: how was the quality of research measured?

[Like](#)



electronicmuse 4 hours ago

The secret here is that those who actually teach people, of necessity have to learn the "subject" at greater depth. Students have a way of asking innocent questions that lodge right between the armor plating of one's "expertise." I suspect that these results have less to do with "research" skills than they do with "researchers" having a better grip on their field.

I always try to get my students to form "study groups" and try to teach each other. Those who have tried it are surprised by: (1) how difficult teaching is; (2) how trying to teach something inevitably reveals issues and nuances that previously have been glossed over or misunderstood.

4 people liked this. [Like](#)



rab60 4 hours ago

Want to be a good teacher? Try research.

1 person liked this. [Like](#)



theseus 43 minutes ago in reply to rab60

That either/or dichotomy is what's destroying the credibility of higher ed., as the article well shows.

Like



kettles04 4 hours ago

From Alan Jenkins , Professor Emeritus Oxford Brookes University UK

From Alan Jenkins , Emeritus Professor Oxford Brookes University

The discussion so far tries to clarify a range of somewhat different issues-not helped by an article that fails to signal these different issues Does teaching at post grad level help develop oneself as a researcher? Should postgraduate training include both research and teaching roles ?and then the article and much of the discussion gets into the thorny and to me key issue of the what are the actual and desired relationships between teaching and research for individual faculty... and institutions ? and in particular for students With respect much of the discussion relies on anecdotal evidence while the article draws too much on a limited and dated evidence base Take care this post now pushes some of the work by myself and Mick Healey Here are some readily available reviews of the research evidence and suggested policy implications for departments and institutions Jenkins A (2004) A Guide to the Research Evidence on Teaching Research Relations, York, Higher Education Academy

<http://www.heacademy.ac.uk/ass...>

Healey M and Jenkins A (2009) Developing Undergraduate research and inquiry <http://www.heacademy.ac.uk/ass...> (152 pages)

Jenkins A , Healey M and Zetter R (2007) Linking Teaching and Research in Disciplines and Departments

<http://www.heacademy.ac.uk/ass...>

Jenkins A and Healey M (2005) Institutional Strategies to Link Teaching and Research . York .Higher Education Academy

<http://www.heacademy.ac.uk/ass...>

Like



ezekielolupot 3 hours ago

Yes ! i fully agree with this new findings; to share my own experience i begun direct university teaching at the level of T.A, with Kampala International University in August 2004, having finished my under-graduate course, for this time long, my research skills have often grown. As a qualified teacher, one of the methods of learning is latent learning, thus, by vague of one being involved in teaching, learning takes place. Thus, im

totally in aggenmce with the out comes of this study, congratulations for the good work done Mr. Feldon and the team- Bravo !
Ezekiel Olupot Eliko

Like



jefftylerpmp 1 hour ago

Known fact in education: The teacher is the best student in the class.

1 person liked this.

Like



dejenieal 15 minutes ago

It is a very basic principle of teaching which requires finding the frontiers of things and thereby doing research and investigations. In fact it is when we teach we look outwards and sometimes stumble on something which is new, a precursor for research and expanding existing knowledge.

Like

Copyright 2011. All rights reserved.

The Chronicle of Higher Education 1255 Twenty-Third St, N.W. Washington, D.C. 20037