

If good teachers are common why is good teaching rare?

Some Connected Successes

Twenty years ago this fall I student taught with a very good mentor teacher. I had a few very good teachers as a student in my K-16 experience prior to that. In the twenty years since entering Janice's classroom as a student teacher, I've worked with hundreds of teachers and visited scores of classrooms. The lion's share of those classrooms and teachers has science in common. The majority of teachers I have met and worked with throughout that time have been smart, reflective, analytical, hardworking and kind.

Like virtually every teacher educator I know (and I know plenty), I believe the graduates I have worked with are better than average beginning teachers on track to becoming good to excellent teachers. Like the experienced teachers I have worked with (many of them as mentors for these beginning teachers), these beginners are typically smart, reflective, analytical, hardworking and kind. By and large, I believe the beginning teachers I have worked with are better prepared than I was and this is fundamental to why I chose to become a professor of education. (In each of my eight years as a secondary school science teacher, I saw at least one first year teacher in tears. In my first year, that teacher was in the mirror).

There are two main reasons that I became a teacher educator. First, I wanted teachers to be better prepared than I was. Second, I wanted to change (especially science) teaching and thought I'd make more of a difference working with future teachers than I did as a classroom teacher.

I am now part of a community of educators who share a largely common vision for what good science teaching looks like. It is a mark of success that we have a reasonably articulated, research-based vision of good teaching and jointly understand important aspects of how people learn. This goes directly to my second reason for becoming an academic. (The documents that I look to first in regards to the above are *The National Science Education Standards* and various publications from the National Research Council's Committee on How People Learn.)

The simultaneous presence of a smart hardworking and kind teaching force and an articulated vision of what good teaching looks like (supported by a body of research on how people learn) seems worthy of rejoicing. And to make the celebration merrier still I believe I'm helping to prepare teachers who are not only better prepared than I was but also better prepared than most of my colleagues when I was teaching high school. Further reason for celebration is, according to a recent AP-AOL poll, most Americans (63%) can identify a teacher who "...made a difference in the way their life turned out." All great stuff. Let's bust out the champagne!

A Vexation

The trouble is that these successes are disconnected from one another. Good teachers are everywhere. I think I'm one, for heaven's sake. Most of the teachers I know are at least pretty good. Most Americans say teachers have changed their lives. And yet I imagine homeschooling my (currently preschool-aged) kids. Like many educational researchers, I regard good teaching as uncommon. In that AP-AOL poll question, 37% said that a teacher had *not* changed their lives. Given that most Americans have a few dozen teachers before graduating from high school and teaching is meant to transform, shouldn't we expect *everyone* to be able to identify at least a few? Granted, that's a big burden to put on schools and teachers, but isn't that what they're for?

Why don't the vision of quality teaching and the quality teaching force coalesce? If we know what it's supposed to look like and we've got good people working at it, why isn't high-quality teaching commonplace? The answer is at once easy and immensely complicated: It's the system, man. The educational system is a complex adaptive system, like an ecosystem. If we measure the health of the system in terms of resilience and the ability to reproduce itself, then the educational system is healthy. The system's ability to absorb change and continually perform the basic functions it's performed for over one hundred years is truly remarkable. (I argue that its *basic* functions are not its *explicit* functions, and I don't believe these functions have been designed but rather that they are emergent). Those basic functions include educating a few reasonably well, but the functions have at least as much to do with sorting or maintaining the social order as with teaching people how the world works and about their place in it.

Seeing educational systems (edusystems) as ecosystems provides a raft of new insights about how the systems operate and how we might influence their evolution. Two inter-related aspects are the importance of initial

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conditions and first cover. “Initial conditions” refers to the status of the individual agents and the environment at the beginning of some process. “First cover” refers to the practices, species or agents that take root first after disturbance. Disturbance (by fire, for example) can reset initial conditions. After an area is denuded the first species to take root will often dominate the landscape (for a time) regardless of measures of efficiency of the species in the niche. Sometimes, in other words, it is not survival of the fittest, but rather survival of something that more or less fits but was there first. This is not meant to imply that competition is unimportant, but rather that species that move into a system first have strong competitive advantages over whatever may come along later.

In ecosystems and edusystems, competition plays out on multiple scales in both time and space. When change in a system is inhibited, this does not imply the absence of competition, rather it is an aspect of competition: “... no species necessarily has a competitive superiority over another. Whichever colonizes the site first holds it against all comers” (Connell and Slatyer 1977, p. 1138). A competitive advantage that comes from taking control first is hardly unique to eco- or edusystems. Gaining initial control is an advantage in ecosystems, edusystems, battlefields and basketball. But it doesn’t mean the game is over in any of those situations.

The lecture and lecture hall are examples of first cover for the educational system. Lecture’s use is pervasive, embedded in the bricks and mortar of institutions and regarded by most who give it serious attention as deeply flawed. If you don’t lecture, what would you do with the thousands of lecture halls in this country? Other examples of first cover include: the fifty or so minute class that meets three times a week at the college level or five times a week at the high school level; the agrarian calendar; the age-graded school; the placing of seats in rows, and: the expected passive behavior of students. These practices are not grounded in educational research. There was no *Origin of Courses* written by some educational equivalent of Charles Darwin. We do these things because they were done in the first modern classrooms. While they weren’t created by the Industrial Revolution, that disturbance allowed them to proliferate.

An important example of first cover is the fundamental structure of the school day, semester and year. Why is it that students in secondary schools are taking about five classes at a time? Why do college students take four or five? Why do we begin and end the study of these subjects simultaneously? I suspect it is because they *seemingly* always have. School schedules are educational invasive species that changed the landscape of the edusphere over a century ago. Is it rational to think that the temporal structure of either high schools (dating back at least to the introduction of Carnegie Units almost 100 years ago) or of colleges (dating back further still) is anything much like the best approach? Can we come up with even a moderately convincing argument for these practices based on what research says about how people learn? Are schedules invasive keystone species in edusystems that suppress the growth of good educational practice?

Like excellent teaching, purple loosestrife has been in this country for over one hundred years in scattered pockets. Somehow, some combination of factors came together and turned loosestrife from exotic to invasive. We know from schools like Central Park East, that excellent exotic species of teaching can flourish, at least for a time. What can we do to help them invade? Can we identify and propagate species (of schedules, for example) symbiotic to the species of teaching we wish to cultivate? I am hopeful that my Crossroads colleagues can help me consider possibilities I’ve not yet imagined. My ideas include creating incentives to encourage my graduates to stay in the poor rural districts near my university while working closely with teachers and administrators in these districts who have visions of different kinds of schooling.

- Schools are simultaneously invasive species and susceptible to invasive species. Can we (like Deb Meier) identify edusystems that have been disturbed (in the ecological sense, making them more prone to invasion) and sow the seeds that might yield a different kind of school? There are attributes that make a system more invadeable and what characteristics make a species more likely to invade?
- What would a school look like if its design was well informed by research on learning and uninformed by the designers’ school experiences? Can we learn from ecosystem management and change? Can we supplant existing invasives with others more to our liking?