

Evidence-based teaching in Economics (or “The case for scholarly teaching”)

Economics is a discipline grounded in empirical evidence: we use theories and models to explain and make predictions about human behavior but only accept those theories and models (and their resulting explanations and predictions) when they are borne out in observable data. As scholars, we would never embark on a new research project without first studying the empirical findings of others in our field. If we are asking a new question, we first investigate what others have found when asking related questions; when using a new dataset, we first read the work of others who have used the same dataset; when using a new econometric estimator, we first investigate what others have found about its robustness and statistical properties, and how it has been used in various applications. And yet, as teachers, we do rarely do any of this background investigation. In this paper, I suggest that we should, and discuss multiple types of evidence that may be relevant for our work as instructors.

The Scholarly Teaching model

In *Scholarship Reconsidered*, Boyer (1990) urged the academy to view scholarly activity in its broader sense:

“Surely, scholarship means engaging in original research. But the work of the scholar also means stepping back from one’s investigation, looking for connections, building bridges between theory and practice, and communicating one’s knowledge effectively to students. (p.16)”

Boyer delineated four separate (but overlapping) areas of scholarship: discovery, integration, application and teaching. Since then, the term “scholarship of teaching” (or, more often, the “scholarship of teaching and learning” or SoTL) has come to refer to the body of peer-reviewed work that is a result of scholarly investigation of teaching in higher education. However, Richlin (2001) has noted that the creation of this body of SoTL work actually involves two distinct activities: scholarly teaching and the resulting communication to a larger audience of peers. That is, scholarly teaching only requires applying the *scholarly process* to one’s teaching practice, presumably for the purpose of affecting the resulting learning; the scholarship of teaching requires the additional work of communicating one’s results and submitting them for review by peers, for the purpose of contributing to the larger knowledge base of teaching and learning. Even if one has no interest in the latter, there are important reasons to engage in the former.

Scholarly process applied to teaching

The scholarly process to which Richlin refers can be summarized as a cycle consisting of 6 steps, which I correlate with 6 questions that must be answered:

1. Identify a problem or question: What do I want to know?
2. Consult the knowledge base: What have others learned already?
3. Determine appropriate methods, data: What should I do to answer my question?
4. Determine appropriate evidence, outcomes that will (or won’t) suggest a believable answer to the question: How will I know my question has been answered?

5. Conduct the study: What is the answer to my question?
6. Analyze results and reflect: What does this mean?

It may be easiest for readers to first think about the scholarly process as applied to empirical economic research. Regardless of one's specific sub-field, any research project begins with identification of a research question and empirical hypothesis (step 1). We review the literature (step 2) to see what others have found about related questions. In part based on that review, we flush out the theory that leads to our hypothesis and select appropriate econometric methods and datasets (step 3). Before we even begin to estimate our models, we generally have an idea of what results would support our hypothesis, or reject it (step 4). Then we estimate our models (step 5) and analyze the results, particularly noting whether they support or reject our original hypothesis (step 6). At this point, we have uncovered an answer to our original question and thus have learned something new. Often, this process uncovers additional questions and we return to step 1 for the next project.

Note that with research, we may go through this entire process before we write a single word about it for others (with the exception of grant proposals!). To turn this scholarly process into *scholarship*, we must take a few additional steps:

7. Synthesize results
8. Contextualize within knowledge base
9. Prepare manuscript
10. Submit for peer review

However, these additional steps are not necessary in order to learn something and advance *our own* knowledge about the research topic.

Let us now consider how this scholarly process applies to teaching. For teachers, the problem or question where we begin might be something specific that we want our students to learn (i.e., rather than 'what do I want to know', step 1 means asking 'what do I want *my students* to know'). It might also be related to behaviors that are indirectly connected to student learning (e.g., how can I get students to do the reading or come to class?) or the application of a new technique or technology (e.g., should I use clickers or have students work in groups?). A scholarly teacher then turns to the existing knowledge base (step 2), asking how other teachers have approached this problem. That review will generally turn up suggestions about the most effective pedagogical methods and best practices (step 3).

When we try new things in the classroom, it is useful to be intentional about *why* we are doing what we are doing (step 1), in part so we can determine whether or not our efforts have paid off (step 4). What does it mean for students to learn what I want them to learn? Or what change in behavior am I looking for and how big must it be to make my effort worthwhile? Thinking about these issues before we even enter the classroom (and execute step 5) can greatly simplify the analysis and reflection we do at the end of the semester (step 6) when we consider whether it is worthwhile to continue or what adjustments, if any, are needed.

Costs and benefits of the scholarly teaching approach

The scholarly teaching cycle goes beyond what most economists currently do. So, since economists recognize that every choice involves trade-offs, we might ask: what are the relevant costs and benefits of engaging in scholarly teaching? First, let us consider the alternative, what we would do in the absence of scholarly teaching (for the sake of exposition, I'll refer to this as "default teaching"). Many academics receive little or no training in pedagogy and effective teaching and so have no exposure to the large body of scholarship in teaching and learning. Thus, although we might ask colleagues informally about how they approach certain issues, default teaching for most economists means completely skipping step 2 in the scholarly teaching process. We are more likely to simply teach as we have been taught and thus using methods and approaches that we have seen used in the classrooms where we were students ourselves (which usually means lectures). For many, even this is not really a conscious choice, which would imply alternatives are considered; we simply do what we've seen done without even knowing there are options for doing things differently.

With default teaching, faculty also rarely engage in conscious consideration of what they really want students to learn and whether students are actually learning it (steps 1 and 4). Many instructors follow their chosen textbook, or perhaps a syllabus received from someone else who taught the class, then lecture on those topics, and give problem sets and exams with questions about those topics. Although the economics discipline has some thoughtful guidelines for both knowledge and skills that we might use as goals for our students (see, for example, Hansen, 1986 and 2001, and Allgood and Bayer, 2016), these are not generally discussed in graduate programs and many economists do not even know of their existence. And to the extent that we think about whether students are actually learning, we rely on their grades on exams but if the grade distribution isn't what we want to see, many faculty are more likely to make adjustments to the exam questions than to their teaching.

It is worth noting that default teaching often *does* include engaging in step 6 of the scholarly teaching cycle, if only informally. It is not uncommon for teachers to recognize when a particular class meeting has not gone well and muse about why not, perhaps making some notes to ourselves about changes to make the next time around. Few conscientious instructors will teach a course multiple times without making *any* changes, even if only small 'tweaks', based on the experience in the previous iteration.

Thus, relative to the default teaching approach, moving to a scholarly teaching approach will generally involve an investment of time and effort to a) seek out and learn from the existing knowledge base in the scholarship of teaching and learning, b) intentionally consider our teaching and learning objectives, and c) intentionally consider whether those objectives are being met.

There are several benefits of making this investment. First, as teachers, our primary goal is presumably to help our students to learn, and the scholarly approach to teaching helps us achieve that goal. Studies of effective teachers – teachers whose students actually learn – find

that such teachers are knowledgeable about both disciplinary content *and* pedagogy; establish clear learning objectives and gather evidence about whether objectives have been met; and are reflective about their teaching, building on evidence to make adjustments (see, for example, Bain, 2011; Buskist and Benassi, 2011; Richmond, Boysen and Gurung, 2016). Thus, scholarly teaching is simply what good teachers *do*.

What's particularly useful about the scholarly approach to teaching is that it helps us improve student learning *efficiently*. By consulting the existing knowledge base, we can learn from the experience of others, rather than learning by trial and error in our own classes. As scholars, we would never embark on a research study without exploring the work of others who have published on similar topics but as teachers, we regularly re-invent the wheel, treating teaching as a solitary act, as if we were not surrounded by others engaged in exactly the same endeavor.

Another benefit of scholarly teaching is that by breaking down the model of 'classroom as island', teaching itself can become a more enjoyable activity. Learning that others are struggling with the same issues and concerns that we are can be reassuring and make us feel better in general (Khazan, 2014). In addition, by learning from the experience of others before we adopt something in our own classroom, we increase the chances that our own implementation will go more smoothly, which makes teaching itself more enjoyable.

The evidence base for teaching economics

As noted above, moving from default teaching to a scholarly teaching approach will generally require a conscious effort on the part on instructors who may have never received any formal training in teaching. To assist with this effort, particularly step 2 of the process (consulting the knowledge base), in this section, I summarize the large and growing literature that we could consult about any number of pedagogical questions. This knowledge base can tell us a great deal about which methods are likely to be most effective and about best practices.

Efficacy studies in the scholarship of teaching and learning

There are three types of evidence that are particularly relevant for economists. First, in almost every discipline, as well as the field of education itself, there are scholars publishing in the scholarship of teaching and learning. The Center for Excellence in Teaching and Learning at Kennesaw State University maintains a comprehensive directory of disciplinary and interdisciplinary journals (<http://cetl.kennesaw.edu/teaching-journals-directory>) that publish peer-reviewed SoTL and currently lists hundreds of such journals, searchable by discipline or topic (they also maintain a directory of teaching conferences: <http://cetl.kennesaw.edu/teaching-conferences-directory>). The list was last updated in December 2013 and so misses some newer journals, and it also ignores the fact that within disciplines, there are many journals that publish SoTL work even if that is not their primary focus (see below for examples in economics). But the sheer number of outlets listed is an indication of the size of the existing knowledge base.

The papers in these journals range from personal narratives and case studies to controlled studies attempting to identify whether, and under what conditions, a particular pedagogical

method is effective (i.e., has a positive impact on some measure of student outcomes). What they generally have in common is that the authors have applied the scholarly process described above to their teaching and they provide useful information to other instructors who may wish to use similar pedagogical practices.

It is worth noting that this scholarship overwhelmingly supports active learning approaches that are not particularly widespread in economics. For example, in a recent meta-analysis of studies of active learning, Freeman, et al (2014) concluded, “If the experiments analyzed here had been conducted as randomized controlled trials of medical interventions, they may have been stopped for benefit—meaning that enrolling patients in the control condition might be discontinued because the treatment being tested was clearly more beneficial.” Moreover, methods such as collaborative learning generally have even greater benefit for women and students of color.

Efficacy studies in the scholarship of teaching and learning in economics

Many of the studies found in SoTL journals involve teaching in subjects other than economics and it is certainly reasonable for economists to ask whether a particular pedagogy is effective *in economics*. For years, the premier outlet for SoTL in economics has been the *Journal of Economic Education* but there are several other journals with a primary focus on economics education; see Table 1, panel A. There are also a number of general interest economics journals that regularly publish work related to teaching in the field (Table 1, panel B). The *Journal of Economic Literature* also periodically has features on economics education, and the *AER’s Papers and Proceedings* issue always includes some sessions related to economics education. Finally, there are now several books that provide overviews and summaries of what we know about effective pedagogy in economics (Table 1, panel C).

Table 1
Outlets for Scholarship in Economics Education

A. Journals with focus on Economics Education

Journal of Economic Education
International Review of Economic Education
Journal of Economics and Economic Education Research
Journal of Economics and Finance Education
Journal of Economics Teaching
Perspectives on Economic Education Research

B. General interest journals that regularly publish teaching-related articles

American Economist
Economic Inquiry
Southern Economic Journal

C. Books

International Handbook on Teaching and Learning Economics (Hoyt and McGoldrick, 2012)
Teaching Economics to Undergraduates: Alternatives to Chalk and Talk (Becker and Watts, 2000)
Teaching Economics: More Alternatives to Chalk and Talk (Becker, et al, 2006)
Teaching Innovations in Economics (Salemi and Walstad, 2010)
Teaching Undergraduate Economics: A handbook for instructors (Walstad and Saunders, 1997)

As with SoTL work in other disciplines, economists have regularly found that active learning approaches are more effective than lecturing, particularly for demographics that are underrepresented in economics (Bayer, 2011).

Lessons from learning science

Many of the studies in the sources mentioned above are empirical explorations of pedagogical methods, asking whether teaching approach X has an observable impact on student outcomes. However, the theory behind *why* a certain approach might work is more likely to come out of scholarship in neuroscience and cognitive psychology that examines how people learn. This literature highlights the key factors that affect memory and skill development for all learners, such as the role of prior knowledge, interleaved retrieval practice or targeted feedback.

Made popular by trade books like *Make It Stick: The Science of Successful Learning* (Brown, et al, 2014) and *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home and School* (Medina, 2014), there are now several sources that discuss the key lessons from the field of 'learning science' and what they mean specifically for college instructors. These include *How Learning Works: Seven Research-Based Principles for Smart Teaching* (Ambrose, et al, 2014), *How People Learn: Brain, Mind, Experience and School* (Bransford et al, 2000, free from National Academies Press), *Applying Science of Learning in Education: Infusing Psychological Science into the Curriculum* (Benassi et al, 2014, free from Society for the Teaching of Psychology), to name a few.

One strand of learning science in particular has received a lot of attention recently and it comes from social psychologists focusing on the role of students' mindset *about learning*; see, for example, *Mindset* by Carol Dweck and *Grit* by Angela Duckworth. In these studies, students with a 'growth' mindset, who believe that effort and perseverance can pay off, consistently do better than students with a 'fixed' mindset who believe that achievement is more a function of natural talent. This literature highlights the importance of helping students develop their metacognitive skills, i.e., learning to monitor and control their own learning.

Generating your own evidence

Consulting the literature discussed in the previous section is a crucial step for any instructor thinking about making changes in the classroom. Building on the evidence collected by others and learning from their experience can potentially save a great deal of time while also ensuring that things go more smoothly with your innovations, thus helping to avoid unnecessary stress.

But another important component of scholarly teaching is collecting and reflecting on the evidence generated in one's own classroom. Although there are general principles of learning and pedagogy that apply broadly to most instructors and classrooms, every instructor and every class is also unique; it is thus important to consider what works for *you* and *your students*.

As noted above, many instructors already regularly engage in informal reflection (particularly when things go wrong!). But the scholarly teaching approach asks us to be a bit more intentional than most faculty are trained to be. This is particularly important when trying new methods or activities. In order to assess whether these innovations are actually worthwhile, a scholarly teacher will consider what, exactly, it means for the innovation to “work”. For example, an increasingly common pedagogical tool is the use of audience response systems (‘clickers’) in order to quiz students in class and collect their responses electronically. But the purpose and goal of clicker usage can differ among instructors – some instructors may choose to adopt clickers in order to provide students with additional practice of material that will then be seen on end-of-term exams, while other instructors may simply want to track attendance. In the first case, the ‘success’ of the intervention might be measured by looking at grades on final exams (ideally seeing improvement in grades after adopting clickers), but in the second case, ‘success’ would be measured by examining attendance rates. In either case, given that using clickers does take some time away from other things one could be doing with class time, how big a change would be needed to make it worthwhile to continue using them?

Conclusion

One might think that as empirical scientists, it would not be unusual for economists to apply the scholarly process to an activity (i.e., teaching) that is such an integral part of our jobs; and yet, we generally receive no formal training in how to do this. In this paper, I have attempted to summarize the scholarly teaching approach and provide economists with some guidance on how to apply it. In so doing, I hope I have made the case that the scholarly, evidence-based approach to teaching has clear benefits for economists interested in maximizing their students' learning while minimizing their own time and effort.

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