

Evidence-Based Teaching in the 21st Century: The Missing Link

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Throughout my career, I have struggled with the fact that teacher preparation programs do not include a course in educational research. When I mention this to colleagues (or students), a highly predictable response is “Why should teacher candidates learn about research?” After years of trying to give a calm and rational response to that question, I have recently begun to answer with some questions of my own:

- Why should medical students learn about medical research?
- Why should nursing students learn about health science research?
- Why should law students learn about legal research?
- Why should engineering students learn about engineering research?

I think Homer Simpson may have given us the best possible answer to all of these questions (including the teacher education question): “Doh!” Still, I think we should take seriously the question regarding research-based or evidence-based practice in teaching.

I am not alone in this observation. After examining teacher education documents in several countries, Munthe and Rogne (2015) observed: “The terms ‘research’

and ‘inquiry’ are either not used when describing teacher education programs or appear to be used interchangeably in the brief presentation of program goal” (p. 18). Indeed, Hargreaves (1997) laid out a variety of similarities and differences between the place of research in medical practice and in teaching.

So, let me try the rational approach again. I would like to start by talking a bit about medical education. As noted, others have made comparisons between medical education and teacher education (e.g., Hargreaves, 1997). Davies (1999), identifying what counts as evidence and how to apply it, explained: “Education seems to be in a position remarkably similar to that of medicine and health care five or ten years ago” (p. 117). Taking that as a point of departure, I argue that a useful comparison of the use of research-based evidence in teaching and in medicine is closer to a century old.

In 1910, Abraham Flexner, who had founded a private secondary school in Kentucky and written a critical report on higher education, was commissioned by the Carnegie Foundation for the Advancement of Teaching to conduct a study of medical education in the United States and Canada. Flexner (1910) found, in part, that there was an oversupply of medical doctors, a plethora of low-quality commercial medical schools, and a disturbing lack of standards in medical education. At the same time, he argued, medical practice was changing: “Progress in chemical, biologic, and physical sciences was increasing the physician’s resources, both diagnostic and remedial” (p. 8). He recommended that medical schools be housed in universities, affiliated with teaching hospitals, and have demanding admission standards. He also noted that a small number of aspiring doctors went to Edinburgh, London, and Paris for their schooling. There, they were exposed to the “statistical and analytical study of disease, which is the discriminating mark of modern scientific medicine” (p. 9). After reviewing the emergence of new tools and new knowledge, Flexner noted that the field of medicine lent itself to “quick, intelligent, and effective action” (p. 20). However, he immediately qualified that observation: “Provided, of course, the physician is himself competent to use the instrumentalities that have been developed! There is just now the rub” (p. 20).

The Flexner report was massively influential, leading to dramatic changes in medical education (Cooke, Irby, Sullivan, & Ludmerer, 2006). One of the most enduring impacts was the way in which medical schools and medical students took up the challenge to develop research-based practices. And that is why medical students need to learn about medical research. The fact that this challenge was taken up by the physician community

almost certainly accounts for the incredible progress that medicine has made in the last century.

Should teacher educators and teacher candidates find a moral in this story? I think they should. Just as research in the basic sciences and the development of tools like thermometers, stethoscopes, and sphygmomanometers created opportunities for the growth of research-based medicine, the growing research in the social sciences and the emergence of neuroscience based on fMRI technology—in conjunction with the overwhelming growth of information and communication technologies—now creates an environment in which there is an increasing demand for evidence-based teaching. Indeed, Davies (1999) described two levels of evidence-based teaching and pointed out that at the second level (involving the production of new knowledge) the “objective of evidence-based education at this level is to ensure that future research on education meets the criteria of scientific validity, high-quality, and practical relevance” (pp. 109–110), and attributes this development to the influence of an Oxford University master’s program in evidence-based health care.

Of course, we have long emphasized the importance of research in the preparation of the graduate students who will become leaders in the profession, but I am saying that *all* teachers should have the knowledge and skills needed to critically read the education and social science literature on teaching and learning. Further, they should also have Davies’s (1999) level 2 skills in that they should be able to conduct action research in their own schools and classrooms so that their practice is informed by relevant local data.

In Flexner’s time, some better models for medical education existed—he specifically identified Edinburgh and Paris where he saw both more demanding admission standards and a stronger alliance on practice informed by scientific research. So I think it reasonable to ask if there are currently any examples of Canadian teacher education programs that include some preparation in applying educational or social science research to teaching practice. The answer is yes, they do. For example, the University of Ontario Institute of Technology, which opened in 2003, included a course in applied educational research as part of the B.Ed. Despite the best efforts of the faculty to make the content both interesting and practical, student dissatisfaction with the course persisted and eventually the course was dropped, but it has recently been at least partially replaced with a focus on action research in field placements.

More recently, O'Connor, Nickel, and Sternberg (2015) reported that the four-year teacher education program at Mount Royal University includes action research in a practicum setting:

In addition, the final semester practicum involves an action research inquiry project where mentor teachers and teacher candidates work together to puzzle over some teaching issue in the classroom. This capstone research project aims to equip teacher candidates as future teacher researchers and build the research capacity of practicing teachers as well. (p. 29)

Action research may well be the leading edge of a move toward introducing research to teacher education programs in Canada, as several other faculties (e.g., the University of Toronto, Queen's University) have made some form of action research option available in recent years, often in the context of reflection on practice.

It is worth noting that the connections between research and teaching practice are less compelling than the connections between science and the practice of medicine. Moreover, the processes of moving from research to practice are less obvious and more complex. Coessens and Van Bendegem (2006) provided a thorough analysis of these complexities yet, despite an emphasis on the limitations and problems, they concluded: "The complex relations between science and society are at the core of the subject of education, which completes the circle and educates society about science" (p. 124). That is to say, there exists now a mutual interdependence between science and education. I believe that that interdependence requires that teachers take science sufficiently seriously that they should consider how its methods might inform their practice.

Along that line, Mandinach, Friedman, and Gummer (2015) surveyed teacher education programs in the US about their treatment of "data literacy" and also reviewed course syllabi from many of these courses to determine exactly how that treatment appeared in practice. Though they found that many teacher education programs reported that they teach students about "data literacy," the term seemed often to refer only to skills related to assessment, not to the applications of data to decision making about policy and practice. Nonetheless, Mandinach et al. went on to identify the specific barriers to a more research-oriented focus and provided specific suggestions for how teacher education programs might address those barriers. They concluded on a hopeful note about the current time being a teachable moment with respect to data literacy for teachers.

As we look forward to the 21st century, I think teacher educators should be building the basis for a new teaching profession in which classroom teachers, using the online resources available to them, begin to plan their lessons based on the existing research in education, the humanities, and the social sciences. We should also expect that they will not only reflect on their practice, they will do so in the tradition of disciplined inquiry with data they have gathered on their students' needs, expectations, and prior learning. Like medical faculty a century ago, we have a growing body of knowledge and a burgeoning set of new tools to support our professional work. What is the missing link? I think it is teachers who are "competent to use the instrumentalities that have been developed" and ready to take up the challenge (Flexner 1910, p. 20).

Aye, there's the rub!

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