
EVIDENCE-BASED EDUCATION?

I was educated as a researcher, in my case in psychology. I was trained to mistrust anything not investigated through controlled experimentation and not verified in multiple replication studies. I learned to be critical about methodological designs and statistical analysis. And I enjoyed that. It cultivated a solid scientific attitude toward my professional activities.

More or less by coincidence, I entered medical education somewhat more than a decade ago with the task to carry out educational research. I noticed that my new colleagues—clinical and biomedical researchers—had the same academic values as I did, which reassured me and made me feel comfortable. However, I quickly noticed something peculiar; the academic attitudes of the researchers appeared to change when educational issues were discussed. Critical appraisal and scientific scrutiny were suddenly replaced by personal experiences and beliefs, and sometimes by traditional values and dogmas. They quite accepted that the quality of research is demonstrated by submitting academic work to the rigorous review of peers. Yet where education is concerned, the autonomy of the teacher is typically to be respected. Challenges to that autonomy are challenges to the professional expertise of teachers.

I am convinced that we could gain a lot if we generalize our attitudes about research to education. I believe that, if we were to apply the usual academic tools (critical reflection, reading, investigating, debating) to education, some startling changes would result. Research on education has demonstrated that many of our intuitive thoughts about teaching and learning are not self-evident. For example, it turns out that teaching is not equivalent to learning, although we often assume so. This being the case, it is interesting to think of education

as the creation of an environment for learning. The task of the teacher is to optimize the conditions for learning. Teaching—giving information, explaining—although important, is only one element in this environment. The study of how students become professionals has delivered good insight about how expertise develops. The way in which knowledge is stored, processed, and accessed; the qualitative differences that emerge with increasing maturation; the conditions that facilitate understanding or transfer of information across learning situations—all of these provide challenging frameworks for thinking about educational implications. Scientific work on the assessment of clinical competence has provided substantial evidence that the quality of our assessments often turns out to be quite poor, despite the confidence that we have in our judgment. Compared with laboratory or clinical tests, most of our examinations are below standard. Education management theories have proposed effective measures to improve educational organizations, including interdisciplinary cooperation, incentive policies for teaching, and systems for quality control. Many educational experiments, including entire medical education programs, have been shown to be feasible and successful.

Physiologists are scientists *pur sang*. They therefore have great potential to become the best teachers. The existence of this educational journal in physiology is not only unique among the medical sciences, but is also proof of the physiologist's intent to achieve that objective.

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