



Challenges for education

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The topic of education has been incorporated into most mission statements at academic institutions, organizations and professional societies, in fact it would be difficult to identify one in which it was absent. Yet, what does it mean, how do we achieve it and is it really viewed as an equal partner in the tripartite mission of clinical care, research, and teaching? Are the successful methods employed in education within neurology that much different from any other medical speciality or for that matter, should its' pedagogy differ from say, history, art or romance languages? How do resources, training programs, healthcare institutions, infrastructure, and society influence the form of any educational program that is in place as well as influence its revision? This represents only a partial list of questions, most unanswered, but all relevant and highlighting why education is a fitting and equal partner within this Frontiers series whose ultimate goal is to support, influence, communicate, and facilitate advances in the field of neurology. Education is clearly an equal partner.

ORGANIZING OUR OBSERVATIONS

Models (best practices, hypothesis, etc.) are necessary components of educational research, but there needs to be a way we can organize our questions or categorize our observations. One approach may be the critical theory or deliberative practice model where an educational program or development of a curriculum is viewed as involving groups of participants that not only interact with one another, but influence directions chosen and the eventual outcome of neurology education. These groups include the student (as medicine is life-long it is not only the undergraduate medical student, but also the successful graduate, resident as well as the practitioner), teacher, curriculum and finally the milieu. The milieu can be local, regional, or national and encompasses the culture of the institute or the country. There is much that can be included in this last organizational

box, but it is the one that is most frequently neglected and the source of failure for many educational initiatives.

Interpretations require data that is not only accessible, but organized in such a way that it allows its retrieval. The usefulness of data repositories in regards to medical outcomes are hastening their development and implementation within healthcare and providing metrics of performance, utilization as well as serving as a planning tool. However, while similar repositories exist with a focus on social sciences and education they have yet been uniformly implemented for medical education research. A global system that allows access to educational data sets would hasten research and support the collaboration of diverse user groups and locations. Such an accomplishment is not impossible and in fact such a movement and recommendations as to how it can be achieved are underway (Schwartz et al., 2010).

RESEARCH IN EDUCATION

While there is a growing body of evidence-based practice guidelines for medical education, unfortunately, similar to our healthcare and best practice guidelines, they are only slowly being implemented. There are also many useful educational models that allow us to construct a question, predict an outcome, or help us to interpret our observations. If the model we choose is a good one, it helps us to develop a best response for a particular circumstance, if not then our results may suggest how our model needs to be modified going forward.

Up until now educational research has been based on the same implicit paradigm as conventional scientific research, but recently the appropriateness of those models and those paradigms have been questioned. The issues concerning education are in some sense "more complicated" than those within typical scientific research and perhaps not "solvable" by using the methods applied to research within those "hard sciences". This interesting view of what should educational

research strive to do has been surfacing and highlighted recently by questioning whether our trying to adapt the dictum of conventional research to education helps or restricts its advance (Eva, 2010). The question then becomes whether we need to reconsider the science constructs of the "imperative of proof and the imperative of simplicity" remain useful:

"Education research is not rocket science, which is built on a structured, linear system with a straightforward set of factors which we can stick into a well-articulated formula to predict a clearly defined outcome. Rather, if we must make analogies to the physical sciences, we might do better to look to quantum mechanics and chaos theory. Such analogies will lead us away from the search for proofs of simple generalisable solutions to our collective problems, and towards the generation of rich understandings of the complex environments in which our collective problems are uniquely embedded." (Regehr, 2010)

Perhaps not a totally new paradigm, but certainly a change in perspective that suggests asking the question of "Why did it work? or, Why didn't it work?" may be more enlightening than just describing an outcome or attempting to develop a generalizable solution (Regehr, 2010). This does not negate the need for a clear understanding of the research paradigm, rigor, collaboration, and the necessity of validity and reliability, but it does suggest that looking for "the" answer may not be as rewarding as identifying and understanding the results within a particular circumstance.

RATIONAL FOR EDUCATIONAL RESEARCH AND THE IMPLEMENTATION OF EDUCATION

The purpose of neurology education is to generate a "consumable" and educational research to ensure that it is desirable. The hope of this section is its' fostering the development of a community of individuals who are interested in the practical and

theoretical aspects of neurology education, but its ultimate goal is to ensure that its practitioners can provide care for those with neurological disease.

CHALLENGES FOR NEUROLOGY EDUCATION AND THE SUGGESTED FOCUS FOR THIS SECTION

1. *Defining clear educational outcomes and developing an educational model that is not only effective, but ensures that graduates remain reflective, life-long learners who are capable of maintaining and demonstrating continued competence.* Our current models of “education” for undergraduate, graduate, and maintenance of competence are all undergoing review, but it is clear that reform is needed. We would not conceive that any industry would survive for very long if it implemented how we currently approach medical (and perhaps most professional) education and the costs for support. Here the physician workforce alone accumulates an educational debt of \$2.6 billion (Medical School Tuition and Young Physician Indebtedness, 2004) on which society contributes an additional \$8.4 billion for post-graduate training. (This individual medical school educational debt will require, after residency training is completed, 9–12% of after tax income to repay within 10 years.) Yet, the paradigms, pedagogy, and effectiveness of our current system of education were not rigorously reviewed or questioned for decades. Later those same individuals will spend additional monies on educational events to support their recertification, but with methodologies that in many cases are of unproven benefit and not linked to outcomes. Then perhaps the conundrum of this
2. *Neurology educational research needs to be supported if for no other reason than to investigate and manage cost, while improving outcomes.* Currently this does not require new funds, but will require the reallocation of scarce funds currently used to support “traditional research”. Clearly this is a controversial comment made at a time when all valid research needs to be supported, but we can no longer neglect an area where society has clear expectations for its healthcare practitioners and the costs associated with their “work” continues to grow. The savings incurred would make the eventual return on this investment cost effective.
3. *The World Federation of Neurology (WFN) mission is to reduce the global burden of neurological disorders through education, promoting high standards in neurological practice, and facilitating research (World Federation of Neurology, 2010). Additional groups exist within Europe such as the European Federation of Neurological Societies (EFNS), not to mention medical school accrediting bodies and the Bologna Process. This section should serve as a vehicle to highlight their work and a way to recruit others in addressing the needed educational reform so that our practitioners can implement their skills in improving the health of our global community and we can identify ways to support them.*

I wish to end this document with the following quote taken from the jacket of Marcelo Gleisers’ book, *A tear at the edge of creation* (Gleiser, 2010):

“...award-winning physicist Marcelo Gleiser argues that this quest for a *Theory of Everything* is fundamentally misguided, and he explains the volcanic implications this ideological shift has for humankind. All the evidence points to a scenario in which everything emerges from fundamental imperfections, primordial asymmetries in matter and time, cataclysmic accidents in Earth’s early life, and duplication errors in the genetic code. Imbalance spurs creation. Without asymmetries and imperfections, the universe would be filled with nothing but smooth radiation.”

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