# From monkeys to medicine: Science education is on trial

In 1925 John T. Scopes, a Tennessee high school teacher, was convicted of teaching evolution to his students. The so-called Scopes Monkey Trial generated intense interest and stimulated debate about the role of science and religion in education. The longstanding principle of separation of church and state has many justifications. One of these is the realization that there is often a substantial difference between the beliefs and traditions that give us a sense of comfort and belonging, and the ways in which the laws of nature actually operate. Nevertheless, there is also recognition that our lives are enriched by a cultural and religious mosaic, and we impoverish ourselves if we deny the importance of those elements. For example, many hospitals provide chaplains who can address the sorts of needs that lie beyond what the medical system can provide. A key part of the balance, of course, is that we do not place those individuals in charge of treatment decisions. We take justifiable pride in having a society where our public institutions and education system reflect the principle that what we do and teach should be guided by the best evidence in front of us. We understand that we will disadvantage ourselves—and our children's education—if we allow this principle to be violated. Since the time of Flexner, 100 years ago, medical education has been based on this principle.

Efforts in the United States to teach religion within the science curriculum have been ruled unconstitutional. In particular, the theory of "intelligent design" has been disallowed by the courts because of its "demonstrably religious, cultural, and legal, missions."[1]

The Canadian multicultural mosaic presents challenges for educators who wish, admirably, to show respect for different beliefs while teaching information that lies in the factual realm. In British Columbia, Ministry of Education guidance documents for grade school science curriculum carefully point out the following (wording here is noteworthy):

> While respecting the personal beliefs of students, teachers should be careful to distinguish between knowledge based on the application of scientific methods, and religious teachings and associated beliefs such as creationism, theory of divine creation, or intelligent design theory.[2]

This effort is not always successful, and the social and academic trends noted above can lead to systemic failures. For example, in the popular Science Probe series of textbooks in use in BC, pages 1 and 2 of every edition from grades 4 to 7 contain the following statement about "expanding the world of science" and the role of traditional cultural views of the workings of nature: "There is another kind of science … known as Indigenous Knowledge (IK) or Traditional Ecological Knowledge (TEK)…" Although taken from a single series of textbooks, the statement mirrors the language of ministry documents directing science teachers to treat the traditional beliefs of different cultures as though they were on a par with scientific knowledge:

> Traditional Ecological Knowledge and Wisdom (TEKW) is defined as the study of systems of knowledge developed by a given culture… It is a subset of traditional science, and is considered a branch of biological and ecological science.[3]

Even the above breathtaking claims of the ascension of traditional belief systems into the realm of systematic, testable, and self-correcting scientific fields could, perhaps, be discounted as the wishful thinking of those bent on a social or cultural agenda. But there are very real prospects for the miseducation of school children about what science actually is. Indeed, grade 6 students using the Science Probe science textbooks are given a full page devoted to the assertion that traditional herbal remedies are effective.[4]

Efforts to honor the cultural milieu of students are to be lauded. We all understand the importance to both individuals and to society. Such efforts can go off the track, however, and may actually disadvantage individuals and *disempower* populations if we go too far and make unsupportable claims that blur the distinction between scientific fields of knowledge and belief systems that enrich our lives in other ways.

The cultural and social mission embodied by the foregoing is emblematic of the very same concerns articulated by the US courts in ruling the inclusion of religion in science classrooms as unconstitutional.

We owe it to our kids to prepare them for the world ahead in a way that allows them both to participate in a social mosaic and to engage future challenges with the best and most objective information available. Science education is crucial in the education and enlightenment of our citizens. But using science classrooms to deliver on another agenda—particularly if the vehicle is pseudoscience—will not move our society ahead.

**—Lloyd Oppel, MD**
**Chair, Allied Medicine Committee**

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viders using mobile technology is not intended to replace health services; instead it should enhance health service delivery. Technology that is fun, fast, easy to use, and makes people feel engaged has the best chance to make measurable improvements in population health. Scientific evaluation, including cost-effectiveness analysis, is essential to ensure the best and most appropriate interventions are brought forward.[6] BC, with its clinical and public health institutions, academic leaders, solid technology private sector, and vision of equitable health services delivery, is well situated to move the province's health systems forward to lead the way in m-health.

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I am writing this column 6 weeks before our annual general meeting. I sincerely hope that this year's AGM takes some further steps forward in healing old conflicts, allowing our association to move forward with greater strength and unity.

This is the time that feels like passing on the baton in a running relay. You do your best on your lap, and try not to drop the baton as you pass it on to your teammate. Dr Nasir Jetha is looking forward to his term as president and the responsibilities that come with it. Along with the rest of the Executive Committee, I wish Dr Jetha all the best during his year and look forward to celebrating his installation on 11 June 2011 as our next president.

**—Ian Gillespie, MD**
**BCMA President**

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