

# Where Have All the Engineers Gone?

Technical thinkers are the leaders of tomorrow and Canada isn't producing enough of them

By Gwyn Morgan

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It's back-to-school weekend. Parents across our very fortunate country are readying their kids for another step in the educational journey that will ultimately determine their future. Collectively, the course choices made by this crop of students will also determine the future of our country.

Unfortunately for both the individual student and the future economic success of our country, too few are choosing a robust suite of math and science courses. For students, this means a myriad of challenging and fulfilling careers are already being closed off by choices made in the very first year of high school. For our country, it means falling behind in the technological edge that is key to maintaining our privileged living standards.

When research and applied science leadership moves from Canada to China or India, the good jobs follow. While all scientific professions are important to Canada's future, the most often quoted measure of technical competitiveness is new engineering graduates. By this measure, Asian countries are beating the West hands down, and quality is generally very high.

Canadian business leaders are understandably calling for more focus on productivity, a term that some wrongly interpret as a call for working harder and longer. I think a better term is working smarter. And it has to start with workers capable of delivering what is needed to succeed, personally and for the Canadian economy.

As someone who chose to study engineering in university and built a career in the technology-intensive energy industry, I know the potential of an engineering degree. Technical projects are interesting and challenging, and technical success often leads to leadership opportunities. A significant portion of chief executive officers are engineers, partly the result of the disciplined, logical thinking necessary to work in the applied sciences.

In my new role as non-executive board chairman of Montreal-based SNC-Lavalin, Canada's largest engineering firm, I see a broad array of fascinating projects being done all around the globe. Canadian engineers are truly world class, but not enough new graduates are entering the profession to make up for those who are retiring.

The sciences offer a plethora of great careers in virtually every field. So, why is it that, at a time when technology pervades every aspect of modern life, so many kids go through the school system and their entire lives as scientific illiterates?

That's not true, you say – "My kid is a technology whiz ... you should see what she can do on the computer or PlayStation."

Well, race car drivers are pretty darned good at using another technically-complex product, but they couldn't design one. It's not about knowing how to use technical products, it's about knowing how to create them. It's also about the satisfaction of going through life with at least a basic understanding of the technologies you use every day. If technical careers are so fulfilling and financially rewarding, then why aren't more high school kids choosing the math and science courses needed for technical professions such as engineering?

Perhaps the biggest reason is poor science teaching. The world around us is fascinating. Science offers the chance to look behind and under the surface at what makes the natural world the wonder that it is, and how applied science combines ancient and modern knowledge to create the man-made wonders we use every day. Science teachers need both knowledge and personal fascination if they hope to turn out students who see the advantage of enrolling in the more challenging math and science courses. Speaking of math and science courses, while there's been a big increase in women entering post-secondary science and engineering faculties, they are still under-represented. It's taken a long time to overcome the totally-erroneous mindset that boys are better at math and science. Basic and applied science offers wonderful career opportunities for women.

A related impediment is poor career counseling. For example, most school career counselors are woefully uninformed on what engineers and scientists actually do and the amazing variety of career opportunities. Students tend to gravitate toward careers that they see and hear a lot about. That's why law and medicine are so popular. Television hits such as *Law & Order* and *ER* actually have a career choice impact. Perhaps what we need is a suspense drama featuring engineers dealing with a collapsing dam, stress cracking in a jumbo jet wing, a medical equipment crisis or a plot to destroy the Internet.

There is no doubt that science has had by far the largest impact on advancing the human condition. Science has developed cures or prevention of many diseases, provided safe drinking water, allowed amazing levels of global transportation, created the electronic communication revolution and facilitated exploration of space. It has also developed consumer products of all kinds, including the equipment needed to keep our beer and ice cream cold on a steamy summer afternoon. Now, that is important!

Science and technology is Canada's future and, hopefully, the future of increasing numbers of young Canadians.

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