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'Techno' program gives birth to startups
By CYNTHIA GOH

University of Toronto works with its students to bring their technology-intensive companies to market

Universities traditionally contribute to the growth of industry through their trained graduates, whose knowledge and experience enhance numerous company operations.

The other critical output of academic institutions is the creation of cutting-edge research.

New ideas in science lead to new technologies, new products, and new solutions, providing competitive advantages that are vital to businesses. But the path from laboratory to market is painfully gradual and meandering. A method of detecting disease, an approach to safely kill pathogens, self-cleaning windows – our quality of life can be so much better if we accelerate this process. The answer from the University of Toronto is the science students themselves, and a training program called Techno [http://techno.optics.utoronto.ca/2012] (short for Technopreneurship).

I'm interested in the fundamentals of how the world works. Many people think that scientists like myself are not interested in applications of their knowledge – this is completely false. Like many of my colleagues, I wanted to see how my expertise could benefit society. I just didn't know how to do it, until recently.

My students and I have co-founded several companies. Axela Inc. [http://www.axelabiosensors.com], a new approach for disease detection by diffractive optics, was our first attempt, and my education in the process of knowledge translation. Vive Crop Protection [http://www.vivecrop.com], engaged in the eco-friendly delivery of pesticides, was a successful test of our approach, and my PhD student at the time, Darren Anderson, led the development of the technology and the formation of the company.

In 2004, I started a lecture series to train scientist-entrepreneurs that later evolved into Entrepreneurship101 [http://www.marsdd.com/event_series/entrepreneurship-101] at Toronto's MaRS Discovery District – possibly the largest training program in Canada with about 1,500 registered participants each year. I don't know how many companies come out of the program now, but it has expanded beyond a focus on science students, so I have refocused our efforts with Techno.

A science PhD student is smart, creative, perhaps obsessive, and highly motivated. To become a scientist, you examine a challenging problem, delve into the unknown, and put a great deal of effort into discovering something new. You don't read about how to become a scientist, you simply do it, with access to a research supervisor who is an
expert. Learning by doing, with access to experts – it's how scientists are trained, it's how we believe "technopreneurs" should be trained.

In 2010, we put this idea to the test with a four-week intensive program. During Techno, we work with students to build technology-intensive companies, giving rise to 10 new startups every year, with products ranging from non-toxic wood protection based on nanomaterials, to structural elements that mitigate vibration in high-rise buildings.

When "tech" is mentioned, it usually evokes IT, mobile apps, computing. But there is more to technology than that – think of the physical world. We have comforts that our parents' generation did not enjoy – noise-cancelling headphones, MRI, soft contact lenses, memory foam, odourless paint, laser eye surgery, remote control, non-stick pans, air bags. Some of them are revolutionary, others seem mundane, but all of them create a more comfortable life.

All our startups aim to create tangible products, which may take longer to get to market. They also need capital for manufacturing, which is hard to find these days, particularly for students. With our help, more than half of the companies are managing to bootstrap their way forward, and many are beginning to get sales, which creates value, creates jobs. And perhaps more importantly, we are keeping talent here in Canada.


Major universities in Canada are known worldwide for research excellence. The foundation is there, all we need is to harness the brain power and the expertise of our science students to provide us with a competitive edge in the knowledge economy.

This is what we do at Techno.

The future looks bright.

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