

Searching for gold

Jennifer Flanagan knows that some of the most innovative Canadians are the ones who are hardest to reach. But for her, and tech giants like Google, it's well-worth the hunt.

BY ALLY FOSTER



P&I photograph by Jake Wright

Seventeen years ago Jennifer Flanagan found herself in Baker Lake, Nunavut, in awe of the school children's ravenous appetite to learn.

Now, Flanagan is co-founder, president and CEO of Actua, a national charity that engages youth by providing critical skills-building STEM programming to more than 225,000 youth every year, and is pushing the government to include diversity in its new innovation policy.

Sitting in Actua's brightly-lit office space in Ottawa's Byward Market, Flanagan tells *P&I* more about that first trip.

It was 1999, and she entered the community the same week that Nunavut became a territory. Education infrastructure was severely lacking in the north and she had been asked to come for a brief visit to provide the students with science tutorials and to conduct some experiments with them.

She brought a bag filled with materials for her demonstrations. She was probably better prepared for that than the -50°C temperature in the inland Inuit community located exactly at Canada's geographic centre.

She stayed in a small house in town, and recalled the children banging on her door before dawn to rouse her on her second day, anxious for her to teach them more. Together, they worked on localized science activities, like dissecting a caribou while she conducted a physiology lesson, and as a group they analyzed local animal migration patterns.

"I had never experienced that level of interest among kids, or the recognition that their opportunities were so limited, in both STEM [science, technology, engineering, and math] and education," Flanagan says. "It was an incredible example of what is possible in these kinds of communities."

Flanagan left Baker Lake with many of her scientific materials still packed, untouched in her suitcase, and a seed of an idea firmly planted about how to bring high-quality, exciting education to Canada's hardest to reach youth.

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TEAMING UP WITH GIANTS

From its humble beginnings, Actua has grown from a staff of two to a predominately female team of 16 in Ottawa, as well as more than 1,000 volunteers who work with 33 college and university partner groups to conduct research and deliver programming on the ground.

The organization has formed strategic partnerships with science and technology giants like Google, Suncor, General Electric, and Lockheed Martin to create

programming that is used by a wide group of organizations to deliver STEM training to youth across Canada.

Flanagan started doing this type of engagement work with youth when she was studying science at the University of New Brunswick. In 2007 Flanagan was named one of Canada's Top 100 Most Powerful Women, and was on Ottawa's Top 40 Under 40 in 2011.

"You get hooked," she tells *P&I*, explaining the feeling of "doing something that's exciting and purposeful, and where you can see the impact of your work very quickly."

Actua now works with more than 225,000 youth annually, providing more than a million face-to-face hours of learning. These programs include after-school, weekend and summer camps, workshops and clubs—all centred around learning hands-on tools in the sectors of science, technology, engineering, and math. Digital literacy and computer programming is also a new priority area of focus, Flanagan says.

After Actua was established, Flanagan realized that there are many Canadian youth who miss out on opportunities to confidently express their interest in STEM areas, but that there are some specific groups who are *really* missing out.

"A focus and a niche had to be established for underrepresented groups of youth," she says. Actua focuses on girls, indigenous communities, new Canadians, those living in remote rural areas, youth with social and economic disadvantages, as well as populations living in the north.

A SOCIAL CAUSE WITH AN ECONOMIC BENEFIT

Flanagan says a social justice element is what underpins Actua, but it has naturally evolved to serve multiple purposes.

"At its core, it's about using science and technology to help kids achieve their potential. But we're a lot more conscious now of the role we're playing in economic and social prosperity," she says.

"There's a significant economic imperative to our work, which is that the STEM workforce is facing giant shortages... There's 2,000 open jobs in Waterloo right now in digital space and no one to fill them. It just doesn't make sense not to engage more than half the population in filling all of those gaps."

One major goal is to boost the number of young women and girls in the STEM field. Like other sectors, there is still a large discrepancy in gender, despite the fact that there are more women than men pursuing a post-secondary degree now in Canada.

"We see interest in girls in STEM start to drop off in junior high," she says. When asked why, she responded that there's a lack of role models, and a lack of encouragement.

"Girls are encouraged to play things differently than boys by parents who aren't aware, or who have stereotypes about what girls do and what boys do," she said. "Girls are still encouraged to play with princesses and boys are encouraged to build things. That's a generalization, but it's a pretty accurate one."

According to a 2013 Statistics Canada study, women accounted for 39 per cent of graduates from STEM-related university programs, and by comparison, represent 66 per cent of graduates in non-STEM sector degrees.

"We always make the case that it's not just the workforce issue, and it's not just an equality or gender parity issue," she says, asserting "these fields will benefit tremendously from these diverse perspectives. We need to have women at the table on all things science in order for that science to be furthered."

A PLAN TO SPUR GOVERNMENT INVESTMENT IN STEM

In order to help bolster these marginalized groups into high-paying, highly-skilled jobs in STEM and computer programming industries, Flanagan said Actua has begun focusing on shaping government policy.



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P&I photographs courtesy of Actua

"Actua's work has evolved from being very focused on program delivery, which is still our bread and butter... but we take all of that and the impact, the trends, and what we're hearing on the ground and formulate that into information that we can then use to influence policy, both provincially and federally."

Flanagan says they are currently working to provide recommendations to the federal government as it forms its new innovation agenda.

The Liberals' 2016 federal budget promised financial assistance to help offset post-secondary tuition costs, investments into science research, \$2-billion into university labs and research facilities, and \$800-million

over four years for certain regions, such as Waterloo, Ont., that have demonstrated to be pockets of innovation and new business. Another \$200-million per year over the next three years was committed to developing this overarching new innovation agenda.

"Our strong recommendation, which has been extremely well-received, and this government has demonstrated in many ways that they get it, is that we put the youth voice and a diverse voice at the centre of that policy" she says, adding that in the past it has seemed like an afterthought to engage youth and diverse groups.

A YOUTH-FOCUSED INNOVATION AGENDA

For example, when including indigenous youth, "those voices need to be in the centre of the creation of that agenda, and instead of coming out and saying we need to engage [indigenous youth] because they're underrepresented, recognizing that indigenous communities and indigenous leaders are some of the best innovators that the country has ever seen. We need to hear that voice and see that perspective within the agenda, instead of it being a tactic that comes out of the agenda," says Flanagan.

She also emphasizes that there needs to be a digital skills strategy either within the new innovation agenda, or created on its own—and it has to be focused on youth.

"An innovation agenda is not going to happen if we don't have an engaged and digitally literate population coming up quickly behind," she argues.

She says the federal government needs to provide clear support both inside and outside of schools by funding and promoting programs that connect youth to new digital technology, encouraging mentors and community leaders, and facilitating the link between these programs and industry leaders.

Earlier this month, Actua partnered with federal Minister of Science Kirsty Duncan, the University of Ottawa Faculty of Engineering, Ladies Learning Code and Google to host an event called Code on the Hill in the East Block of Parliament Hill. A group of local grade four students participated and learned about the newest gadgets and digital services, including 3D printing, interactive art, and virtual reality technology.

But to be truly successful, she says, it requires a different frame of mind.

"We need to stop looking at youth as the leaders of the future," she says, "and see them as the leaders of *now*." **P&I**