

The image shows a modern, multi-level building interior. The top half features a balcony with a glass railing and a large window looking out onto a landscape. A series of rectangular light fixtures hang from the ceiling. The bottom half shows a person walking on a lower balcony, with a large window behind them showing a green landscape. The word "LIFE" is overlaid in large white letters on a grey background in the center.

LIFE

Evolving with the times: A LEED-designated building, the new flagship NSCC Waterfront and campus was designed using green principles.

Nova Scotia Community College is confronting the skills shortage head-on, meeting the needs of evolving industries and graduating students who are in high demand

Lessons

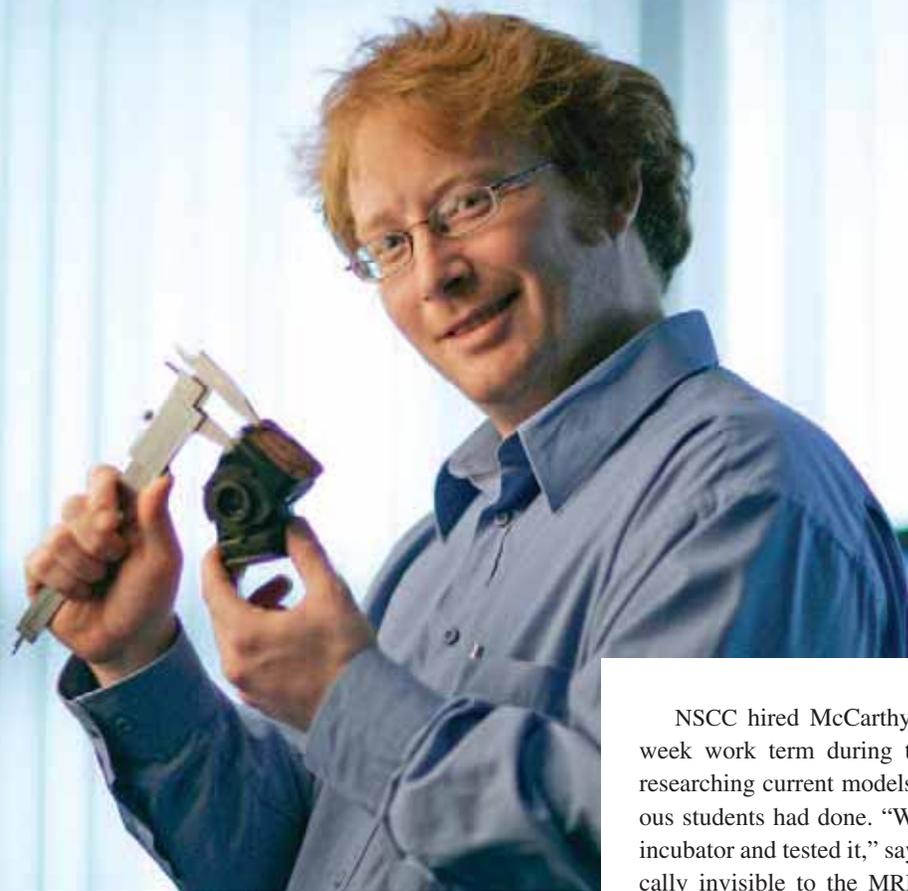
by Joe Fitzgerald
photography Sandor Fizli

Launching yourself out of a perfectly good airplane and trusting your fate to the wind and the tenuous fabric of a parachute may seem crazy to some, but for Halifax resident George McCarthy, the exhilaration of freefall is second only to his passion for creative and innovative problem solving. The desire to meld his prior education with his natural talents in a meaningful career landed the avid skydiver, and now student, gracefully onto the Institute of Technology campus of the Nova Scotia Community College (www.nsc.ca).

For McCarthy, 35, being married with two children presented unique challenges to continuing his education. Originally intending to finish a physics degree, an education degree, and then teach, his plans changed when his wife, a social worker, came home after attending an apprenticeship workshop hosted by Skills Nova Scotia directing students toward trades and technology. “Her comment when she came home was, ‘Plumbers make a lot of money!’ ” says McCarthy with a laugh.

The couple began looking at fast-tracking McCarthy’s career plan from becoming a teacher to learning a trade. McCarthy did NSCC’s test-drive program, where prospective students can spend a day in their program of choice to get a feel for it. “I did the mechanical engineering technology program,” says McCarthy. “I chatted with the students and got an idea of what they did—physics and math, problem solving. I love puzzles so it was great, but it was the applied research that they were working on at the time that drew me to the program. I said, ‘Wow, I can really do something here.’ ” The projects included a brain injector for Halifax’s QEII Health Sciences Centre and a special incubator for neonatal babies at the IWK Health Centre. McCarthy applied, was accepted, and is now in his final year of the two-year program.

“What makes community college unique is that students play a huge role in shaping their



“NSCC realizes that a lot of people have taken their time to finish their programs with a reduced workload”

— George McCarthy, NSCC student

own educational journeys,” says NSCC president Joan McArthur-Blair. “Students can choose which community organizations or businesses to take on as clients and apply their learning through volunteer or project work. In the end, they will have a portfolio of work that reflects not only their skills but also who they are as individuals.”

ON THE CUTTING EDGE

A few years ago, the IWK Health Centre approached NSCC with a project to develop an incubator that was magnetic resonance imaging (MRI) compatible for neonatal babies. There are models currently on the market, but they range from \$200,000 to \$450,000, which is not cost effective for a hospital that doesn't do many scans. “If they don't have that incubator, what they do is wrap the baby in a warm blanket, a little plastic, and another blanket, then do the scan as quickly as possible without affecting the baby,” says McCarthy. “In such sensitive environments, changing the temperature by half a degree or a degree can really affect their physiology.”

NSCC hired McCarthy and one other student for an eight-week work term during the summer to work on the project, researching current models on the market as well as what previous students had done. “We designed a new heat source for the incubator and tested it,” says McCarthy. “The heat source is basically invisible to the MRI. It doesn't affect the quality of the image, or what is called artifacting. The shroud material we've chosen has no artifacting or image-quality problems. So it's leading toward the end of this year to a working prototype. It's also very cost effective.”

McCarthy's enthusiasm for creative design and innovation led him to another project: designing a prosthetic ankle for a scuba diver. “The gentleman is a below-the-knee amputee who has a prosthetic ankle designed for swimming,” says McCarthy. “His problem is that when he has a dry suit on, he's unable to activate the ankle from a walking position to a swimming position. The current ankle has a screw that must be unscrewed and screwed back in to change positions. What I've designed is a new ankle that is button activated. The gentleman will be able to go from a walking to a swimming position just by pressing the button and repositioning the foot.”

NSCC teachers recognize that the student of a generation ago is not the same as today. Those such as George McCarthy come to the college with custom-designed goals and timelines for their achievement.

“The projects George has worked on demonstrate the knowledge and sophistication our students bring to real-world challenges,” says Colin MacLean, the vice-president of people and planning. “Not every project will be as big as a neuron-injector or a mechanical ankle, but regardless of the program—be it practical nursing or welding—students are applying their learning and creating practical solutions that make a difference.”

“The teachers know that someone could be fresh out of high school or they could be working and don't want to go to school full-time,” McCarthy says. “NSCC realizes that a lot of people have taken their time to finish their program with a reduced workload, so they could do something else, whether it's paying work or spending time with their family.”



ADAPTING TO THE CHANGING TIMES

“Right across the country, there is tremendous pressure on community colleges to meet the skill-shortage needs, because the biggest shortages are in the areas we work in,” says McArthur-Blair. “Trades and health in particular, but right across the board.” Some of the ways NSCC is planning to meet those needs is through flexibility. For example, if employers don’t have a person qualified to fill a particular position, they may hire someone who doesn’t possess the skill and require them to attend NSCC. “As a college, we provide flexibility around those tremendous stresses that will be created by not having enough people with the right skill sets to fit the job,” says McArthur-Blair.

In the last 20 years, there has been a remarkable revolution, particularly in the technologies and the way NSCC intersects with workplaces. “We sit on the precipice of things like video-interface robotic machines that go around small hospitals and interact with patients because the doctor is in a centralized place,” says McArthur-Blair. “In a community college we ask, who works those machines on the ground? Who repairs those machines, what kinds of talents are required?”

Specifically, there are the advancements in composite fabrics for aerospace and airplanes, and the technological edges are where NSCC resides. “It’s a fascinating shift, and the shift is exponential,” says McArthur-Blair. “The need for college graduates is outstripping our capacity to graduate people in everything from business management to trades, technology, and health to

music, radio, television, and graphic arts.”

McArthur-Blair emphasizes that all work, even traditional trades, are changing dramatically with today’s social issues and economic needs—that community colleges are now central to the economic engine of this country. And it’s because of the kinds of work that are currently required to drive our economy forward. For example, carpentry is a traditional occupation, so the aim is to intersect carpentry with climate change, and suddenly a whole new skill is required of a modern carpenter, says McArthur-Blair. “Not just to build a house, but to understand the capacity to build something that fits within a sustainable future environment. All those things in society are intersecting, the high technological environment, the issues of climate change, the needs of business and industry for tremendous leadership and innovation at all levels.”

Practicing what they preach, the new NSCC Waterfront campus was built with sustainability and innovation at the forefront. The campus reflects the changing face of the economy and society. The building is composed almost entirely of windows on the harbour side, bathing students in natural light. It is an environmentally sound structure, with rooms that sense the number of people inside and that adjust heat, lights, and ventilation accordingly. A new trades-and-technology facility located on the campus will be built this year and be as close to possible to a zero carbon footprint building. It will also house environmental as well as construction research facilities and act as a curriculum itself in the ways people build today.

“We hope that by taking our commitment to environmental sustainability to new heights, we will not only inspire a culture of best practices in our students but also help set a new standard within the building industry,” says Cathy MacLean, the principal of the Waterfront campus.

Funding the future

Since 1999 NSCC has received nearly \$20 million in funding for applied research, more than any other college in Canada. Initial research projects focused on geomatics but have since expanded to include health and life sciences, the environment, aerospace, information technology, renewable energy, agriculture, and teaching and learning. — NSCC

MEETING THE NEED

Carol MacCulloch, the president of the Dartmouth, N.S.-based Construction Association of Nova Scotia (CANS), says that NSCC must remain open to industry needs. “The major issue facing the construction industry is succession planning, ensuring we maintain

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Education without boundaries

NSCC's Centre for International Activities provides international learning and work experience for staff, faculty, students, and recent NSCC graduates. NSCC works with partners in countries such as Mexico, Cuba, Bolivia, The Gambia, Romania, Malaysia, and China to develop programs in the fields of faculty and student exchanges, educational leadership, international internship placements, curriculum development, and technical-program development. For more information, visit www.international.nsc.ca. — NSCC

our skill level and capacity as people begin to retire. This is a huge challenge that will combine a number of strategies, from recruiting and training new people to upgrading the skills of people already working in the industry, especially moving people into supervisory and managerial roles, and to attract people back to Nova Scotia who are working elsewhere, either temporarily or permanently.”

CANS is committed to raising \$2.5 million over the next five years for scholarships for construction-related programs and is exploring ways to work with NSCC in applied research. “We see great practical opportunities for the industry in this regard,” says MacCulloch. “NSCC is definitely on the right track. We have a tremendously positive relationship with NSCC and envision it growing and becoming more dynamic.”

As well as the applied technology, the

college also encourages students to get involved in their communities. As a way to thank the community for its support and the \$123 million contributed by the province, on Oct. 17 NSCC held an event called Reach Out to Nova Scotia. More than 10,000 students across the province were involved in projects benefiting their local communities. “This was new,” says McCarthy, who participated in the event. “I’m involved in other community organizations on a smaller scale, and I thought what a fantastic idea—not only were many projects happening at once but each project was also identified locally and served the immediate community.”

As the world races forward with ever-increasing speed, NSCC plans to keep pushing the envelope in providing industry with leading-edge workers—and students with fulfilling and meaningful careers. ■



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