

REPORT ON COLLEGES

New skills for new times**Laid-off workers go back to school, creating challenges for colleges**

ROSANNA TAMBURRI
SPECIAL TO THE GLOBE AND MAIL
FEBRUARY 4, 2009

Christina Kleinschmidt, 39, represents the new face of college students. Applications to community colleges across the country are surging as displaced workers and other mature students, facing grim economic prospects, are opting for a college education.

Ms. Kleinschmidt lost her job a little more than a year ago assembling trucks at Daimler AG's Sterling Truck plant in St. Thomas, Ont., just south of London. After months of fruitlessly looking for work, Ms. Kleinschmidt enrolled in the electronic engineering technician program at the St. Thomas campus of London's Fanshawe College.

"You feel like you're banging your head against the wall," sending out countless applications without getting any response, she says. Even her previous degree, a bachelor of arts in psychology from the University of Western Ontario, didn't seem to help.

Enrolling in the program made her feel like she was taking charge of her career and has given her hope of finding long-term, stable employment. The diploma she will receive after completing the 52-week program will qualify her to work as an electronic engineering technician or to apprentice as an industrial electrician.

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"A college diploma or applied degree is a ticket to a job," says James Knight, president of the Association of Canadian Community Colleges, which represents 150 colleges and institutes across the country. "This is very attractive for people who have become unemployed."

In Ontario, applications to the province's 24 community colleges for programs starting in January jumped 10 per cent to 43,850 from 39,866 in the same month a year earlier, according to Colleges Ontario, a provincial association.

The increase was "considerably higher than normal for winter applications," says Linda Franklin, Colleges Ontario president. In 2008, applications for the winter term increased 5 per cent from a year earlier.

The number of applications from mature or returning students rose 11.6 per cent in 2009, outpacing the increase in the number of high-school applicants, which rose 9.7 per cent. Demand was strongest for those programs that appear to offer job security even in tough economic times, such as police training, health care and early childhood education, among others. Ms. Franklin predicts that applications for September enrolment will also rise.

Fuelling the increase in part is a growing participation in the Ontario government's Second Career program, which offers financial support, including paid tuition, for laid-off workers.

"We are going to have to figure out how to accommodate these people, particularly people who would love to train in high-demand programs that are already full," Ms. Franklin says.

Fanshawe College admitted some 1,300 new students in January, up about 20 per cent from the same month a year earlier. Many of the applicants were like Ms. Kleinschmidt, mature students between 30 and 50 years old.

They also included participants in the Second Career program, says Howard Rundle, Fanshawe's president.

Mr. Rundle says the trend that is occurring now is reminiscent of what happened during the prolonged recession in 1982. Then, too, college enrolment swelled along with the ranks of the unemployed. But, even in these tough economic times, he adds, there continues to be job opportunities for skilled workers in certain areas.

These include health care, some areas in manufacturing and information technology.

It's the same story at Bow Valley College in Calgary. Bow Valley, which admits students year-round, has seen applications for programs starting in May reach 500 this year, up from 300 last year.

"I think the economy is a huge factor," says Sharon Carry, president. She predicts that demand for college spots will continue to increase across Alberta as oil companies scale back new development projects or cancel them altogether.

But the influx of new students is starting to put a strain on colleges, many of which were already operating at capacity, says ACCC's Mr. Knight.

"Even before this recession, many applicants to colleges were turned away," he says. Ottawa's Algonquin College turned away 6,000 qualified applicants last year, he notes, and the wait time for some trades in Manitoba was four years. "Now we have this [economic] downturn and the situation has gone from critical to impossible," he adds.

To help colleges cope with the enrolment increase, Mr. Knight says governments should look for ways to increase capacity by whatever means possible in the short-term, including providing funds to keep colleges open evenings and on weekends and to rent facilities that can be quickly converted into classrooms.

But in the long-term, permanent capacity is needed, he says. The federal government pledged in the budget last week to spend a proposed \$2-billion to expand and repair aging facilities at colleges and universities. The budget, which hasn't been approved yet by Parliament, sets aside 30 per cent of the funds for colleges and the remainder for universities.

The budget also provides added funds to retrain laid-off workers, many of whom are likely to enroll in community colleges.

Colleges also need more operating funds from the province to accommodate the influx of students, adds Ms. Franklin. Operating grants aren't keeping up with the cost of running colleges, she says. "I expect you'll see more of this as time goes on and I expect you'll see all kinds of measures, from program cutbacks to layoffs, if this isn't addressed," she says.

Colleges face other challenges too. Some employers, squeezed for cash, are taking fewer college apprentices. It's also getting harder for colleges to fill some co-op placements, Ms. Franklin adds.

While the economic situation may seem bleak, the outlook for those with advanced skills remains optimistic, says Howard Rundle, Fanshawe president. "The recession will end and the boomers will start to retire and there will all kinds of opportunities," he predicts. In the meantime, there's probably no better time to be in college preparing for that, he says.

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REPORT ON COLLEGES: RX FOR RNS

Resuscitated nursing programs

Colleges get creative to move nurses into the work force faster

NICOLE DUNSDON
SPECIAL TO THE GLOBE AND MAIL
FEBRUARY 4, 2009

They breathe. Their skin feels real. They have seizures and go into cardiac arrest. And, if you're a nursing student and you're doing something wrong, they let you know.

The use of High-Fidelity Human Simulators in state-of-the-art simulation labs is one of a few innovative solutions designed to provide more nurses with the experience they need to get educated and, more importantly, get to work.

Why the rush?

Canada's nursing shortage has reached what many are calling critical proportions, with all levels of government, educational institutes and professional associations throwing money and time into creative solutions.

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According to Rachel Bard, CEO of the Canadian Nurses Association (CNA), colleges and institutes have responded to the issue. "They've increased the output of nursing programs from 4,833 graduates in 1999 to 9,447 in 2007. That's an increase of 95.5 per cent."

Despite these efforts, Ms. Bard says the predictions of a 2002 CNA study - anticipating that Canada will be short 78,000 registered nurses by 2011 and 113,000 by 2016 - still hold true.

Research suggests that 12,000 graduates per year are needed to address the projected nursing shortage. To reach that number, the amount of entry-to-practice graduates would need to increase by an additional 27 per cent beyond the 2007 results.

In an effort to reverse this trend, colleges across the country are getting creative.

Nursing student Angela Closter is taking advantage of the Vancouver-based British Columbia Institute of Technology's (BCIT) fast-tracked, three-year Bachelor of Science in Nursing (BSN).

"I'm 27, so when I finally figured out what I did want to do, I'm glad to be able to get done earlier and get going with my career," says Ms. Closter, who understands the effects of the nursing shortage first-hand after working at a medical office for nine years.

Currently in her first year of the three-year BSN, Ms. Closter says she would have gone into nursing regardless of the high demand, but it is nice to know she's going to be needed when she graduates with the first three-year nursing degree graduates in 2011.

Pamela Adams, associate dean of Baccalaureate Nursing at BCIT, says the institute will be graduating 96 students twice a year from the newly revamped program. This will amount to a 50-per-cent increase in capacity.

"We used different time frames, such as having the students go through the summer, distance learning, online aspects of courses and the introduction of a simulation lab in order to increase our intake," says Dr. Adams.

Dr. Adams says the provincial government supported the three-year degree following its Conversation on Health public consultation, which led to the dedication of \$2.85-million over six years in operating funding. In addition, BCIT received \$1-million from the Ministry of Health Services and \$395,000 from the Ministry of Advanced Education and Labour Market Development.

Yvonne Moritz, associate dean of Specialty Nursing at BCIT, says many specialty areas of nursing, such as critical care, are experiencing a great shortage.

"Nurses are able to return to BCIT to complete a certificate in their chosen specialty area," she says.

Durham College, in Oshawa, Ont., was chosen through a competitive process by the Ontario Ministry of Health and Long-Term Care to address the province's critical-care nursing shortage.

Durham's new Critical Care Nursing E-Learning graduate certificate program received a boost of \$1-million in provincial support. It graduates its first class in October, 2008, and currently has almost 400 students working through the program, more than tripling its size since it began.

"With the nursing shortage that we are facing right now, especially in intensive care units, there is more of a need for programs like this than ever," says Sandra Goldsworthy, co-ordinator of the innovative critical care e-learning program.

Students participate in six interactive e-learning courses, a critical-care simulation course and 120 hours of supervised clinical experience.

Ms. Goldsworthy says providing nurses with access to specialty nursing is an important consideration for hospitals seeking to attract and retain nursing staff.

Edmonton-based NorQuest College, Canada's largest educator of practical nurses, opened its state-of-the-art Health Education Centre in September 2008. This will allow the college to expand its practical-nurse diploma program to graduate 800 nurses a year.

"The new centre has also enabled us to open a patient simulation centre," says Wayne Shillington, president and CEO of NorQuest. "The sim patients are critical, allowing students to make errors and learn from them."

Dr. Shillington says other innovations at NorQuest, such as varied delivery models through satellite campuses, community-based partners and distance learning, have also allowed the college to increase its number of graduates.

"With the critical shortage of nurses, many hospitals are bringing in internationally trained nurses. We provide the practical nurse re-entry program for international students to transition them into the Canadian work environment," says Dr. Shillington.

Another innovation is NorQuest's work with the Saskatchewan Indian Institute of Technologies. "We've also created an aboriginal enhanced stream to attract aboriginal students who want to work in their community," he says.

Ms. Bard says that the education component is only part of addressing the nursing shortage.

"We need an integrated approach involving government, employers, educators and professional organizations to provide incentives for innovative education programs, create new models of care and stabilize the work force."

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REPORT ON COLLEGES: APPLIED RESEARCH: CASE STUDY

Smart research, smarter buildings

Centennial College's number crunching helped a small business hit the market with its energy-saving devices

MARLENE HABIB
FEBRUARY 4, 2009

For the inquisitive minds at REGEN Energy Inc., the question was how turn "dumb" buildings into "smart" ones.

For Toronto's Centennial College, being wooed to evaluate REGEN Energy's wireless energy-saving load-management devices for buildings was an opportunity to further the school's applied-research mandate.

When the college's Energy Institute and REGEN Energy, a Toronto-based small business with a staff of about 10, were first matched up in 2006, there was no guarantee their investigative fling would go beyond a few months.

But the partnership serves as a glowing example of how industries and colleges can parlay a seemingly fleeting relationship into a long-term bond.

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Centennial is among just over half of the approximately 150 colleges across Canada involved in applied research, undertaking \$100-million to \$110-million in research activity annually, according to Lorna Malcolmson of the Association of Canadian Community Colleges.

In many cases, hooking up a business with a college for a particular project requires advance work, says Trish Dryden, Centennial's director of applied research and innovation and one of the founders of the Colleges Ontario Network for Industry Innovation - a consortium of 10 colleges that works to help business and industry become more competitive.

"What we do at Centennial's applied research centre is be a matchmaker with funding and try to figure out how to go after local, provincial and national grants to put everything together," says Ms. Dryden.

And time and resources are scarce, especially for small and medium-sized enterprises (SMEs) that make up the bulk of industry members seeking out colleges' applied-research help.

"Most SMEs don't have research and development offices," says Ms. Dryden. "Usually it comes down to a bunch of [company personnel] saying, 'We're really into something, so how do we get the research we need without having the human or fiscal resources to take on this innovation?' Often an inventor who has something they want to get to the marketplace are trying to beat the clock, to move things forward quickly. One of the things colleges can do is we can move quite quickly on things, because of the way we're structured - we are pragmatic and can put together the right teams quickly."

In the case of REGEN Energy, headed by CEO Mark Kerbel, chief technology officer Roman Kulyk and executive vice-president Chris Beaver, the Ontario Centres of Excellence (OCE) linked the company with Centennial to evaluate the company's innovative wireless device: EnviroGrid.

EnviroGrids automatically control electric loads like air conditioners, water heaters, lighting systems and battery chargers using what is called swarm-intelligence logic, says Mr. Beaver. Each controller is about the size of a cigarette package - a sort of wireless radio that sets up its own network to communicate with other controllers about when is a good time for an electrical load to run or take a break. Plugged into "loads," such as appliances, and wall plugs, controllers "take a dumb building and make it smart without a massive investment," he says.

Today, the technology is being used in many small to mid-sized industrial and commercial locations, including schools, hospitals and government buildings in Ontario.

But before EnviroGrid was patented and trademarked and hit the wider market, REGEN Energy sought third-party, independent validation.

Enter Herb Sinnock, manager of Centennial's Energy Institute at the School of Engineering Technology and Applied Science. OCE "brokered" a meeting between the college and REGEN Energy in the late spring of 2006.

Mr. Sinnock enlisted the help of Dave Clark, who graduated from Centennial's environmental protection technology program in 2005.

With help from a \$95,000 OCE grant sponsored by the Ontario Power Authority, REGEN Energy asked the Energy Institute to assess the numerous EnviroGrid installations at a four-storey, 40,000-square-foot electrically heated office building in Toronto that serves as the headquarters of the Canadian Federation of Independent Business.

The controllers had already been in operation for more than two years at the building, and not only were providing customers with savings by reducing their energy consumption during peak demand times, but also helped them save on their overall consumption - a side benefit that was only discovered after Centennial did its validation research, says Mr. Beaver.

The three-month, work-intensive summer for Mr. Sinnock and Mr. Clark began with a work plan.

"We knew we had an existing building with an existing load [electric baseboard heaters that use a lot of energy]," says Mr. Sinnock. "The first thing we had to do was understand how the building and those [space] heaters could operate with no controllers at all. That involved quite a bit of work - figuring out how the building was affected by outside temperature, how the wind was blowing on the building and to some extent what direction the wind was coming from."

After much analysis, Mr. Clark and Mr. Sinnock constructed a mathematical model to determine how the building would react in various situations, such as with no controllers, and then with the controllers, over a period of time.

The fruits of the team's labour was a 70-page report that concluded the EnviroGrids were "very clearly doing what [REGEN] intended them to do, i.e., providing peak demand savings, but we also discovered the controllers could save on kilowatt hours, the consumption of energy, as well as the peak demand - extra savings for the building," says Mr. Sinnock.

"REGEN was thrilled."

So thrilled, says Mr. Beaver, that REGEN Energy is committed to using Centennial's applied research talents over the next two to three years as the company targets other provinces for its EnviroGrids.

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REPORT ON COLLEGES: APPLIED RESEARCH: POLYTECHNICS

Innovation in the 'dead zone'

Polytechnics fill the gap between pure research and bringing products to market

TERRENCE BELFORD
SPECIAL TO THE GLOBE AND MAIL
FEBRUARY 4, 2009

At Toronto's George Brown College, researchers have partnered with Pure Fun Confections to develop new chewy organic candies and jelly beans. Fuelling that research are government grants totalling \$31,500.

At the Southern Alberta Institute of Technology in Calgary, professors and students in the School of Hospitality and Tourism are working on ways to convert cooking oil to biodiesel fuel. The end result will be sold at Calgary's first biodiesel retail gas station Green Way Fuels.

Those two small projects are just the tip of what may prove to be an R&D iceberg if Canada's seven polytechnic institutes have their way. From coast to coast, the polytechnics have begun to raise funding and focus on applied research in a major way.

Some, like the British Columbia Institute of Technology and SAIT, have been in the R&D business for a decade. Others, like Toronto's Humber Institute of Advanced Learning and Technology, have only recently formalized their efforts.

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The goal is not to compete with universities but to partner with them, says Dr. Alex Zahavich, SAIT's director of research and innovation services.

"Our focus is on what I call the dead zone," he says. "Universities focus on the pure research while corporations play their role in bringing the results of that research to market.

"Where we fit in is in the creation of prototypes and testing based on that research. Right now, that work is the missing link in innovation in Canada."

Getting polytechnics involved in the research assembly line is absolutely vital to Canada's economic future, points out Sharon Maloney, executive director of Polytechnics Canada, the national organization representing the seven elite colleges that offer the most degree programs and focus on applied research.

"Advanced skills and value-added products with a global market are the future for Canada," she says. "Polytechnics are in the best position to help create both of those.

"They see it as an integrated part of the education process. We want to be a resource for the commercialization of products. The biggest gap in the chain today is in testing and the creation of prototypes."

But what may seem a no-brainer to laymen has met with resistance from the universities themselves, says Dr. James Watzke, head of applied research at Humber College.

"Universities don't welcome the competition for what they see as scarce R&D funding," he says. "But what I have told a House of Commons committee is that all we want is to be a part of the assembly line.

"We may not win a Nobel Prize but we may build the process control system on a device that does indeed win the Nobel Prize."

The federal Government seems to agree. In 2007 it earmarked \$48-million for university and college research grants. George Brown College promptly applied and received the maximum: \$2.3-million over a five-year term.

George Brown regularly spends between \$500,000 and \$1-million a year on applied research, says Dr. Robert Luke, its director of applied research and innovation.

Right now the college has 40 projects under way, with another dozen about to start. Almost all are small, depending on grants in the \$10,000 to \$20,000 range, but all have practical commercial results.

"We worked with Bloorview MacMillan Children's Hospital, for example, to create a device that measures a child's grip strength," he says. "In another case we worked with Motorola Canada on a prototype PDA for use in hospitals and warehousing.

"Where university research falls apart is in the creation of prototypes that allow commercialization. That is where we come in."

SAIT in Calgary sees itself as a veteran in Canadian applied research. It has had programs in place since 1999, says Dr. Zahavich.

The annual budget usually runs in the \$3-million to \$3.5-million range - enough to take on eight to 10 projects a year, which can last anywhere from five to 18 months.

"There are various clusters we focus on, things like clean building technology, software development, data security, radio frequency identification, sports engineering and even the culinary side."

Perhaps surprisingly, funding from industry, especially small- to medium-sized companies, is on the rise.

"Well managed companies understand the value of using down times to focus on innovation that will position them well in the market when boom times return," he says. "What I have also found is that we can leverage every dollar from industry two-to-one with various government grants."

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