

Our Universities Our Future



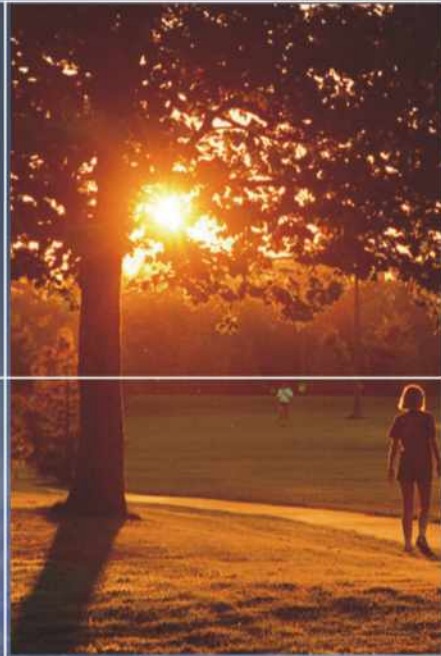
THE University
Presidents' Council
OF BRITISH COLUMBIA

August 2004

Our Universities Our Future



Investing



in our future

In British Columbia, we share a vision of our future – a future of revitalized investment, increased economic growth, and quality of life.

Education is essential to making this future a reality.

Our universities are developing the leaders of tomorrow, creating a highly skilled and forward-thinking workforce that can compete in the global economy. And the knowledge generated by our universities fuels economic growth, promotes social responsibility and enhances quality of life throughout our province.

Recent provincial initiatives are laying the foundation for a prosperous future for BC. Twenty-five thousand more students will have the opportunity to pursue post-secondary education in British Columbia by 2010. With the support from the Government of British Columbia we have strengthened our capacity to educate both medical and technology professionals. Over the next decade, the number of medical students graduating within our province will almost double, improving access to healthcare across British Columbia. A similar commitment to double the number of graduates from high-tech programs like computer science and engineering will also provide more of the highly qualified personnel essential to the success of BC's growing technology industries.

With investments from the Government of Canada in the Canada Foundation for Innovation, and the Government of British Columbia in the BC Knowledge Development Fund (BCKDF), our universities have been able to build the new research infrastructure necessary to drive new discoveries. Our universities are committed to doing their part in helping to build a strong and prosperous future for British Columbia and for Canada. Simon Fraser University, the University of British Columbia, the University of Victoria, Royal Roads University and the University of Northern British Columbia are working together to help make this happen. In addition, Genome BC and the Michael Smith Foundation for Health Research are now recognized nationally and



internationally for excellence in research and discovery. And the provincial government's Leading Edge Endowment Fund is continuing to attract some of the finest minds in the medical, social, environmental and technological fields.

Building On Success: While significant gains have been achieved in recent years it is important to recognize that the work of restoring British Columbia to a national leadership position in several key areas is not yet done.

Achieving success will require action on three key fronts:

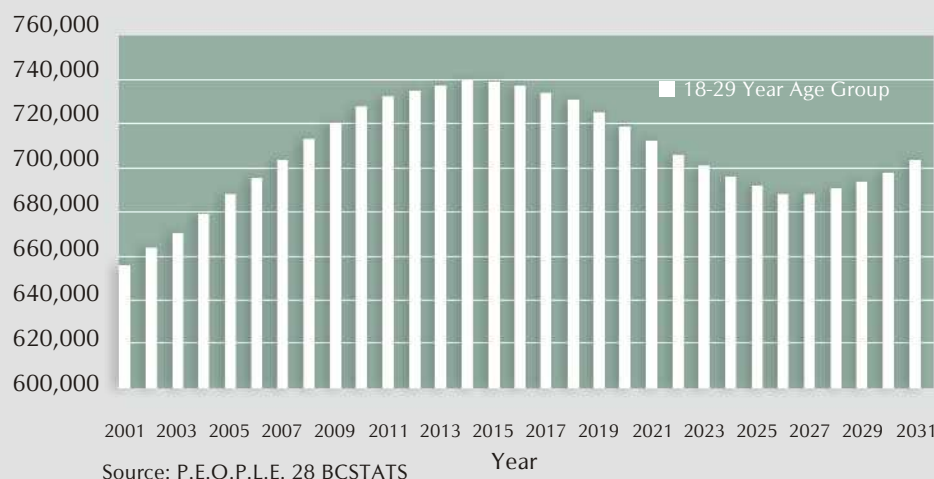
1. The bold plan to add 25,000 new student spaces by 2010 must be supported by both the preservation of strong operating grants and by a commitment to work with universities to put in place the capital infrastructure necessary to meet the needs of current and future students.
2. The strong support from the province in establishing the BC Knowledge Development Fund, and other related initiatives, must be continued with the revitalization of funding for those agencies and for university-based knowledge transfer initiatives.
3. Action will also be necessary to establish a program to attract and sustain highly qualified research intensive graduate students. Outstanding graduate programs are essential to the development of world-class research programs and the economic opportunities generated by research success.

1. Access to education The foundation for a prosperous

Demand for post-secondary education continues to grow as a result of both demographic shifts and society's understanding of the importance of education to future opportunity. The Association of Universities and Colleges of Canada projects that demand for post-secondary education will increase by 30% – or 200,000 full-time students – between 2001 and 2011. As Figure 1 shows, we can expect to see a surge of BC post-secondary students in the 18 to 29 age group over the next ten years.

The demand for access to post-secondary education does not just come from a larger eligible student population. As Canadian society increasingly promotes and values the economic, social and personal benefits of advanced training and education, more and more

Figure 1. British Columbia 18-29 Age Population Estimates



Education: Education of our society



students – including mid-career learners – are choosing to attend university.

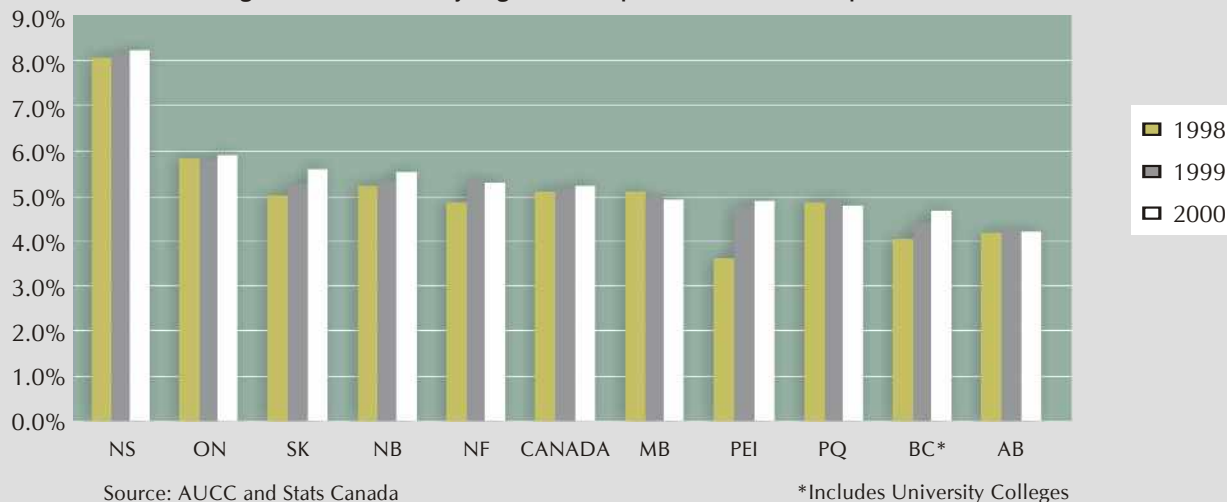
While BC is second only to Ontario in the number of students who will be eligible for post-secondary study in the coming decade, our province also faces unique challenges because of our historically low rates of total university degrees per capita. However, BC is gaining ground in terms of degree production. Although we are in second-last place nationally (see Figure 2), progress has been made and continued improvement will be seen if we continue to invest.

An educated workforce is the foundation of an economically diverse and prosperous society. As

a BC Progress Board Panel report clearly states: “The data tell the story – the province's investments in education, training and upgrading of specialized skills hold the highest pay-off of any investment that government, business and individuals may make in improving the economic environment for business activity and employment growth.”

A 2002 AUCC report makes the link between education and employment, stating that “Between 1990 and 2003, 1.4 million jobs were

Figure 2. Total University Degrees as Proportion of the 22-27 Population



created for university degree holders...and more than 1.2 million jobs were lost for those who had not completed high school.” Figure 3 confirms that individuals who have pursued their education at the post-secondary level have better labour market success and contribute meaningfully to the economy.

There are other social benefits, too. University graduates “contribute almost 35% of all income taxes – or more than twice their 'population share,'" according to a 2002 AUCC report. As Figure 4 shows, university graduates contribute more through personal income taxes – and receive substantially lower government transfers – than those who do not attend post-secondary institutions.

Recognizing the wide-ranging benefits of enhanced access to post-secondary education, the provincial government has undertaken a number of valuable initiatives. The most significant of these is the largest expansion of post-secondary education in the province in 40 years: the addition of 25,000 seats to BC's universities, colleges and institutes by 2010.

This is an important milestone for our province. It will help to alleviate some of the pressure on students to achieve unrealistically high grade point averages in high school in order to gain acceptance to university. One of the stated goals of the initiative is to “ensure that students who achieve an average of 75%, or better, will have the opportunity to attend BC’s universities.”

These new seats are a very positive step in the right direction. Other initiatives – such as the medical school expansion and Doubling the Opportunity – are also extremely important in building capacity within our province and

Figure 3. Employment by Educational Attainment

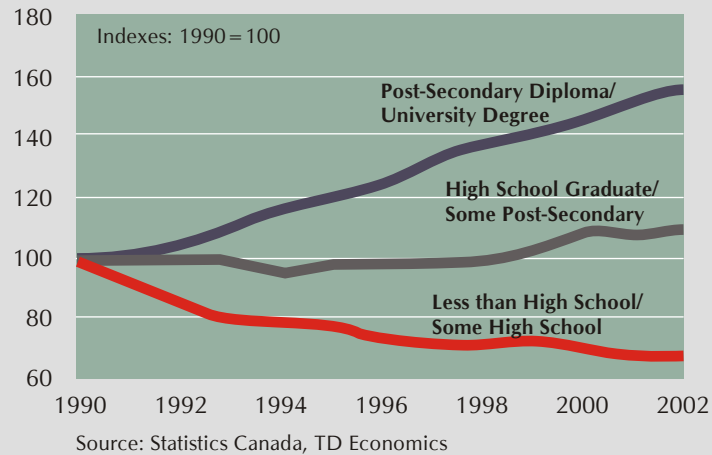
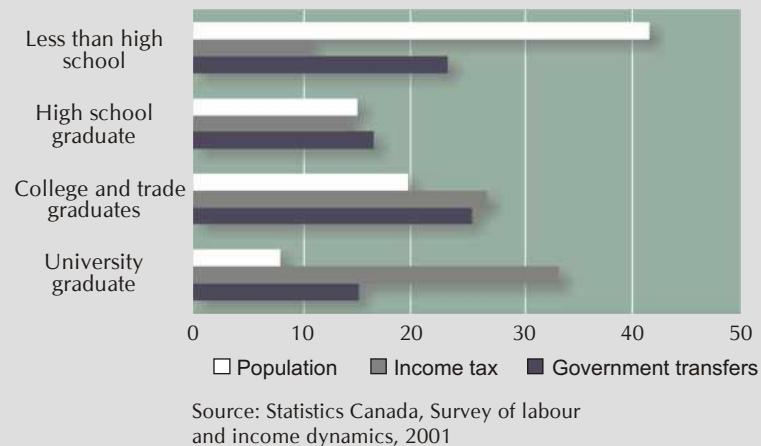


Figure 4. Investing in universities provides returns to graduates and governments





offering our students the options they need to pursue their career goals.

Creating a high quality learning environment

Our universities are respected nationally and internationally for the excellent education they provide our students. In order to maintain this position of respect and educational leadership – while increasing enrolment without significantly increasing tuition fees – universities will require additional financial resources. The provincial government can build on its groundbreaking initiatives to improve access to post-secondary education by taking the following actions:

A) Provide operating funding at levels necessary to maintain a quality learning environment

With the plan to add 25,000 new student positions to British Columbia's post-secondary system over the next six academic years it will be essential for the Government of British Columbia

to maintain or enhance operating grants to universities.

Appropriate funding will assist in helping to sustain high quality learning environments and will also help to relieve tuition pressures faced by our students.

B) Increase capital funding

The expansion of the capacity of our universities to provide further access opportunities for BC students will also require the construction of additional classroom, laboratory and library space. An increase in capital funding will be necessary to accommodate 25,000 new students which, to put in perspective, is equivalent to the creation of two new mid-size universities. Consideration should also be given to the expansion of BCNet to establish a state of the art research and education network that would extend world-class capacity to SFU's Surrey Campus, to the recently announced Okanagan Campus of UBC and to Kamloops. This

2. Research: economic

additional capital funding will also enable our universities to continue providing students with high quality educational opportunities.

C) Provide sufficient student aid for all qualified students

Student financial aid programs play an extremely important role in leveling the playing field and ensuring that students across all income groups are able to participate in post-secondary education. Sufficient student aid must be provided to ensure that all qualified students have access to post-secondary education. The recently eliminated BC Grant program adversely affected a number of students. The universities in British Columbia have increased the level of student aid significantly over the past several years but a sustainable and complementary replacement program for the BC Grant program is still required to help those students most in need.

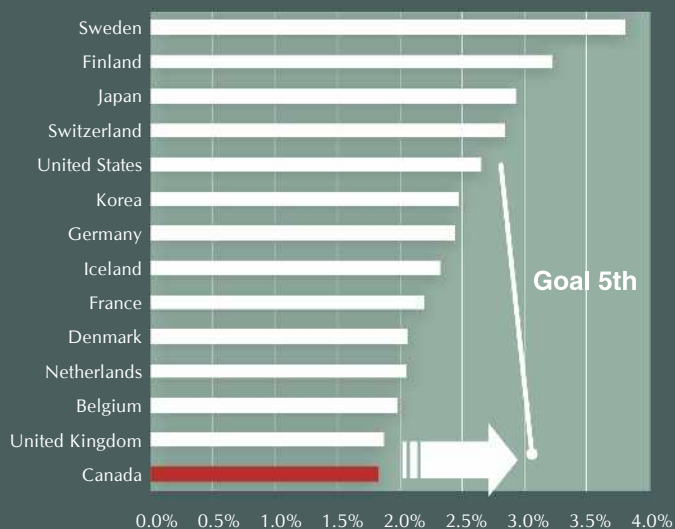
“As Canada anticipates its future prospects, it needs to look upon university research as a powerful stimulant for economic growth and social development. In the final analysis, the issue for society is not whether we can afford to invest in university research, but whether we can hope to prosper without it.”

Martin and Trudeau, *The Economic Impact of University Research* (1998)

Both the federal and provincial governments have recognized the vital role that research plays in driving social and economic development, and have responded with programs to revitalize the research capacity of universities through investments in infrastructure, researchers, granting agencies and graduate students.

The federal government clearly understands the importance of investing in research. Indeed, the explicit objective of the government’s innovation strategy is to have Canada ranked among the top five countries in the world for R&D performance by 2010. Figure 5 shows our current rank of 14th among 30 OECD nations.

Figure 5. Canada Ranked 14th out of 30 OECD Nations in GERD to GDP Ratios



Source: Canada, Statistics Canada, Science and Innovation Surveys Section
All others, OECD Main Science and Technology Indicators 2001, 1999 data

Fuelling growth

Many programs are supporting the federal government's objective, including:

- the Canada Foundation for Innovation (which has awarded more than \$250 million to BC's universities, colleges and the BC Cancer Agency as of January 2004),
- the Canada Research Chairs program (which is recruiting and retaining world-class researchers),
- a commitment to double funding for the three federal granting agencies (NSERC, SSHRC and CIHR) between 2000 and 2010, and
- the Canada Graduate Scholarships Program (which is creating 4,000 new graduate positions at Canadian universities).

Another extremely important initiative is the Indirect Cost of Research program announced in the 2003 federal budget. This program is providing partial support for the indirect costs of federally sponsored research, with \$225 million allocated for each of the first three years of the program.

BC is moving towards a national leadership position in research

BC is building on many of these initiatives and, as a result, has made many major advances in strengthening the province's research capacity. Of particular note are investments in medical and life sciences infrastructure and the BC



Knowledge Development Fund (which ensures that BC receives its full share of research opportunities through investments in infrastructure) – enabling our researchers to compete nationally and internationally.

The results are striking. In addition to training an educated and skilled workforce, investments in research have generated licensed technologies, innovative products and spin-off companies – injecting millions of dollars into BC's economy, creating thousands of new jobs and contributing to many of the province's vibrant and growing industries.

A recent report by Ernst & Young shows that although BC is often considered Canada's third-largest biotech centre (after Quebec and Ontario), it ranks first in market capitalization. In 2003, the amount raised for start-up or early-stage companies in BC was nearly double the amount of the previous year. The reason for BC's success, according to Ernst & Young, is BC's entrepreneurial spirit and the research infrastructure of our universities and hospitals.

Increasing competitive capacity

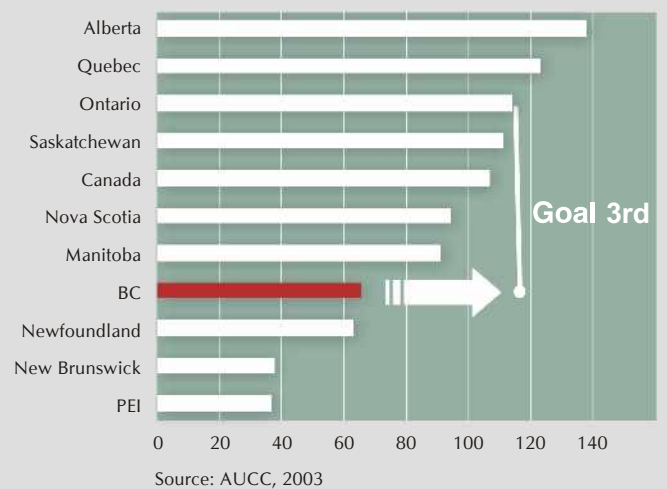
While significant progress has been made, we can do much more. Ongoing investments in our research capacity are needed to ensure that we continue to attract our share of research funding – fuelling economic development province-wide. We need to stay competitive: other provinces and countries around the world are actively investing in education and research so that they can fully realize the economic and social benefits that accrue from gains in innovation and competitiveness.

Although BC is the country's third-largest province, we currently rank seventh in terms of per capita university-based research funding (see Figure 6). If we continue on course by investing in innovation – through infrastructure, scholarships, research chairs and knowledge transfer it is reasonable to expect that we can move to at least 3rd position by 2010.

A provincial research strategy will help us achieve our potential as a province. We believe that consolidating the funding of research projects within a strategic provincial framework will maximize our ability to leverage the value of research investments in BC, use resources more



Figure 6. The National Average in Per Capita University-based Research Funding



effectively and to seize the opportunities available to us. The University Presidents' Council is committed to working closely with government to develop an effective provincial research strategy that will capitalize on our research excellence and emerging strengths that will further establish BC's competitive advantage nationally and internationally.

The provincial government can help to create the right conditions to position BC for a more prosperous future by taking the following actions:

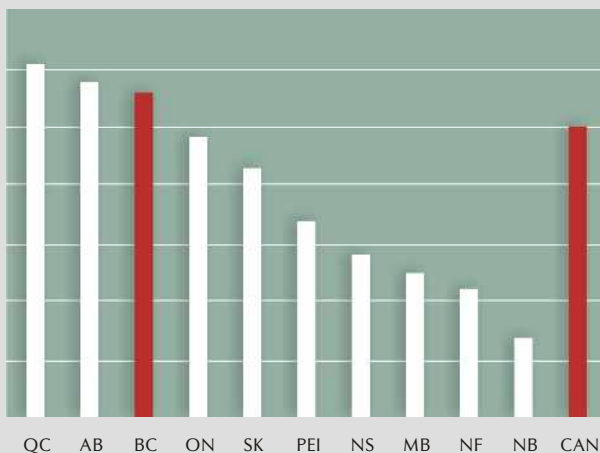
A) Revitalize the BC Knowledge Development Fund (BCKDF)

The BCKDF has been extremely successful in increasing BC's share of per capita national research infrastructure funding to the third highest level in Canada (see Figure 7).

BC universities have been successful in many national competitions for research funding. There are numerous examples, including the Neptune project at the University of Victoria, ICORD at UBC, SFU's Centre for Research in Electrical Materials and UNBC's Development of the Enhanced Forestry Lab.

The joint US-Canada Neptune project will create the world's largest cable-linked seafloor observatory. This project received \$31 million from the Canada Foundation for Innovation (CFI) and \$30.5 million from the BCKDF – an investment that will directly support jobs in information technology, engineering and research as well as countless indirect jobs. ICORD received \$12.9 million from CFI, which was fully matched by the BCKDF, creating a world-class interdisciplinary research centre focused on promoting functional recovery and improved quality of life after spinal cord injury.

Figure 7. CFI Funding Per Capita



Source: Ministry of Advanced Education, 2002

“Further initiatives to upgrade provincial support for post-secondary research, including indirect research costs, will be required if BC is to attract a fair share of the rapidly growing sums of money being dedicated to post-secondary and health care research by the federal government.”

BC Business Council, University Research and the Innovation Economy (December 2001)

In these and all other cases, the availability of BCKDF funding has been critical to our province's ability to attract federal research investment.

As a result of the funding provided by the BCKDF, BC has gained a reputation for research excellence and innovation. However, if we are to maintain – or improve upon – this position, the BCKDF must continue to be fully supported at levels sufficient for the province to capture at least 20% of all opportunities available through the Canada Foundation for Innovation.

The Government of British Columbia can also help to expand our capacity for research excellence by strongly advocating for further improvements in federal support for indirect research costs.

B) Increase support for knowledge transfer and commercialization

BC is a leader in technology transfer with an exceptional track record of turning investments in R&D into innovative products, spin-off companies and new technology. Nearly 70% of BC's biotech companies are spin-offs from research universities and affiliated teaching hospitals.

Over an 11-year period from 1991 to 2002, researchers at BC's universities generated significantly more US patents than those of any other region in Canada and the province has been equally successful at forming start-up companies, often based on technologies and products developed within universities. (See Figures 8 and 9.)

Strong partnerships between universities, government and industry are crucial to expanding the scope of technology transfer and knowledge commercialization in our province. These partnerships are pivotal to ensuring that each group benefits fully from investments in research.

University Industry Liaison Offices (UILOs) have played a critical role in facilitating partnerships between universities, government and industry, and they can take much of the credit for BC's established success in technology transfer and innovation. It is for this reason that the provincial government must improve funding for UILOs so

Figure 8. US Patents Issued per \$1M
11-year Averages

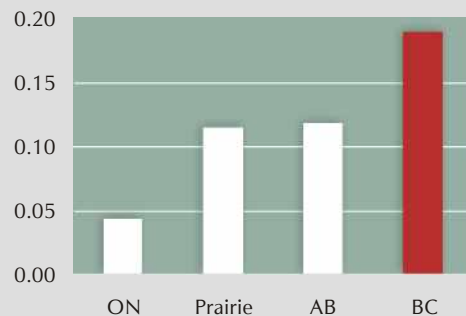
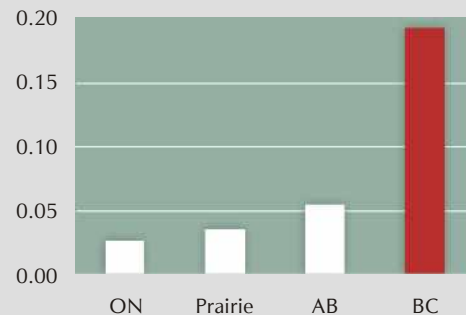


Figure 9. Start-up Companies Formed per \$1M
10-year Averages



Source: An appreciation of accomplishments, issues and opportunities for CFI and for research in Canada. D.W. Strangway
Canada Foundation for Innovation.
March 2004.



they can continue to turn the ideas generated in universities into the products, technologies and companies that are so important to our rapidly changing economy.

Provincial investment is all the more important to ensure that BC secures its full share of the new funding that the federal government has committed to technology transfer and the commercialization of university research.



Photo: TRIUMF

3. A graduate student support

Research and innovation require more than infrastructure. They require great minds. Graduate programs play a vital role in creating vibrant research communities, since graduate students represent the next generation of high-level researchers.

The federal government has acknowledged the critical importance of graduate students to our country's innovation and research efforts by creating the Canada Graduate Scholarship Program, which will support 4,000 new graduate positions in universities across the country. Many provinces, aiming to prevent a shortage of highly qualified personnel have created provincial scholarship programs to match this federal initiative. British Columbia should take similar action.

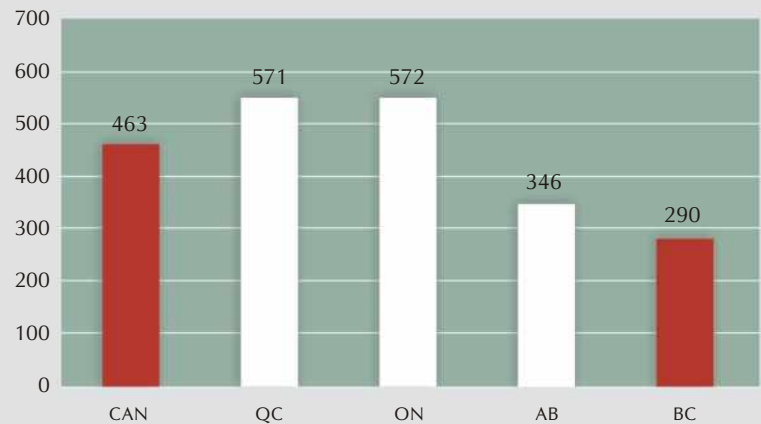
Educating the faculty of the future

In addition to the benefits they bring to research communities, graduate students are also the faculty of the future. With an expected 200,000

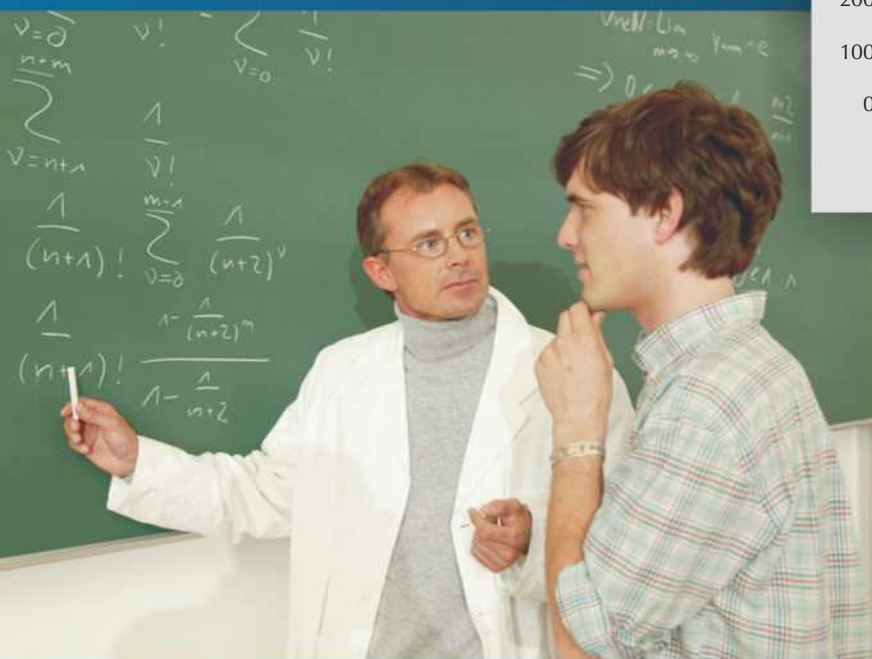
more undergraduate students in the coming decade, Canadian universities must significantly increase the number of graduate students in their programs to meet the growing demand for faculty. AUCC research suggests that Canadian universities will need to hire 40,000 new faculty members by 2011.

BC currently has one of the smallest research communities in the country (see Figure 10) and our historic level of provincial investment in graduate programs has been consistently low. This trend should be reversed.

Figure 10. Research Workforce per 100,000 Population, 1998



Source: Stats Can



program: Supporting the future

The government can play an essential role in attracting BC's fair share of the best and brightest graduate students by creating a provincial graduate student support program.

A) Create a provincial graduate student support program

The Canada Graduate Scholarships Program is supporting and expanding graduate programs by creating 4,000 new graduate positions at Canadian universities. To ensure that BC can compete effectively with other provinces for top students, the province must develop a scholarship program that at least matches the funds provided for recipients of the Canada Graduate Scholarships Program. Both Ontario and Quebec have already created provincial-level scholarships of this nature.

Expanding graduate student programs must parallel the expansion of undergraduate capacity. By 2010, we should aim to have an additional 2,500 graduate students enrolled in our universities. Research-intensive graduate students will be key to ensuring BC's emerging strengths in areas like fuel cell technologies, life sciences and nanotechnology and in many other important areas.

The expansion of graduate internship programs would also help retain highly qualified students while also providing an extremely valuable resource to industry. MITACS (the Mathematics of Information Technology and Complex Systems), for example, has developed a very successful pilot program that is expanding

academic-university collaborations. In internship programs of this nature, industry contributes a share of the funds necessary to have a graduate student work on applied research problems under the direction of his or her academic supervisor. Internship or co-op programs are an excellent way to increase research funding, expand joint research projects between industry and universities to increase the number of highly qualified people with applied skills.



A brighter future

Substantial progress has been made over the last few years to increase access to post-secondary education in BC and to revitalize the research capacity of our universities through investments in infrastructure, researchers and the BCKDF. We applaud the many advances that have been made.

Yet there is more to be done and BC must be proactive. Given the direct connection between investments in research and a stronger and more

vibrant economy, it is critical that BC continue to enhance research funding. This has become even more important in an environment where an increasing number of countries have been aggressively expanding their commitments to research excellence.

The benefits of investments in education and innovation are far-reaching, extending well beyond the walls of our universities. These benefits are felt throughout our province – from



for BC

the student in the north who can pursue a medical degree closer to home, to university applicants who now know that post-secondary education is more accessible, to researchers working on leading edge research.

By continuing on course and by further investing in both education and innovation, we can ensure the economic well being of BC, both now and in the future. British Columbia's universities look forward to the challenge.



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