



Atlantic Provinces Community
College Consortium

Consortium des collèges
communautaires des
provinces de l'Atlantique

Atlantic Provinces Community College Consortium (APCCC)

Roundtable on Improving Competitiveness and Productivity In Atlantic Canada

Appendix IV – Literature Review

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Introduction

This document contains information that informed the first in a series of background resources that were circulated to participants in the Atlantic Provinces Community College Consortium (APCCC) Roundtable on Competitiveness and Productivity in Atlantic Canada, held in October, 2005 in Memramcook, New Brunswick. The participants at the two-day Roundtable session included a solid cross-section of Atlantic Canada Community College staff and members of provincial and federal governments, departments and agencies, including policy and program experts who helped define a practical role for APCCC and its members within the topics explored. (See Appendix I for a complete list of participants).

The original background resource, circulated in advance of the Roundtable, was specifically designed by the consulting team to trigger ideas in participants and other key observers from both within and outside of the Atlantic community college system so as to better prepare participants for the Roundtable discussions. This document enhances the original background resource simply by adding contextual information in the Introduction Section so as to better supplement the main Roundtable report, which will support a broader audience.

The Issue: Competitiveness and Productivity in Atlantic Canada

Atlantic Canada's public community colleges are instrumental to the social, cultural and economic development of the Atlantic region. These institutions have a key role to play in improving the region's competitiveness and productivity.

The Atlantic Provinces Community College Consortium (APCCC) is a network of colleges including College of the North Atlantic, Holland College, New Brunswick Community College/Collège communautaire du Nouveau-Brunswick, Nova Scotia Community College and the following four provincial government departments responsible for community colleges in the Atlantic region: the Department of Training and Development of the Province of New Brunswick and the Departments of Education of each of the Provinces of Newfoundland and Labrador, Prince Edward Island and Nova Scotia. As such, the APCCC provides a framework for enhanced interprovincial collaboration and cooperation among community colleges in the Atlantic region.

The APCCC recognized that there were a number of issues that impacted competitiveness and productivity in the Atlantic region. In concert with Atlantic Canada Opportunities Agency (ACOA), the APCCC proposed to identify practical approaches to improving Atlantic Canada's economy.

Key Action Areas

It is the view of the APCCC that the competitiveness and productivity of business and industry is impacted by a number of issues including, but not limited to:

- **Literacy / Under-Education**
- **Aboriginal Needs**
- **Seasonal Workers / Demographic Changes**
- **Immigration Needs and Constraints**
- **Applied Research / Innovation; Technology Adaptation / Adoption; and Commercialization**

APCCC recognized that the extent to which these issues impact the economic landscape of Atlantic Canada was not readily available to decision makers and post-secondary institutions. It is the belief of the APCCC; however, that inherent in each of these issues are opportunities to improve the lives of Atlantic Canadians within the context of a vibrant economy.

Development of the Literature Review

Approximately fifty studies, strategies and reports were reviewed to establish a base of issues affecting competitiveness and productivity within the five areas of interest outlined above. Internet searches and references from key stakeholders helped inform the literature review list which included provincial, regional and national studies and discussion papers on immigration, literacy, innovation, aboriginal issues and demographics. Relevant background documents from various conferences and reports on education trends and education/training challenges affecting these areas of interest were also reviewed.

The review focused on the definition of key issues. The issues were inventoried by the consulting team who then assembled a list of apparent opportunities for the community college system. Building on these identified opportunities, an initial list of potential project ideas was developed through further discussions with the Steering Committee for the project, which included the Executive Director of the APCCC and senior staff members from the four Atlantic community colleges, along with other key stakeholders.

For purposes of stimulating discussion prior to and at the Roundtable session, each of the five action areas were examined under the following headings:

- Issues
- Best practices
- Apparent opportunities

To further supplement the identification of specific, targeted initiatives addressing the five action areas, additional support information was compiled under the following headings:

- General issues
- General best practices
- Pilot program ideas

The Literature Review

The following sections, including the appendices, comprise the information circulated to participants and other stakeholders as a resource designed to support informed discussion at the Roundtable session. Key points stemming from the literature review relating to each of the five action areas are identified below.

Literacy / Under-Education

The research on literacy confirmed that this issue is of prime concern to the community college system. The impact of students with low literacy skills on the classroom environment has been documented. Additionally, young adults with lower literacy skills will be less likely to enter the community college system and therefore less able to positively impact the economy.

Issues

- Adults with lower literacy skills read less and participate less in the economy.
- Illiterate students put added pressure on the community college system.
- Unemployment, under-employment and literacy issues are related.
- Employers are not yet encouraging employees to enhance their literacy and other basic workplace skills. Many employers lack awareness of existing programs and suppliers of training.
- Teachers may have very little understanding of the challenges families face regarding literacy issues.
- Demand for skilled workers cannot be filled unless we improve the literacy of older workers.

- It is difficult to track training investments since knowledge gained is an intangible asset until converted into products and services.
- Less than 10 per cent of Canadians who could benefit from literacy upgrading programs actually enrol.¹
- The AIMS 3rd Annual Report Card on Atlantic Canadian High Schools found that half of the 265 high schools assessed scored a C or C+ and less than 5% ranked an A or A+ grade.²
- The 1994-98 IALS shows that adults between the ages of 46-65 have lower levels of literacy compared to adults between the ages of 16-45. Adults 55-64 years-old also have lower levels of education than 25-34 year-old adults.³

Best Practices

Enhancing Family Literacy in Rural Atlantic Canada, Dr. Vianne Timmons, UPEI

- This project focuses on the development of a family literacy program specifically developed for rural communities. The program will also be duplicated in three Aboriginal communities in Prince Edward Island and Nova Scotia.⁴
- Parents, children, and teachers were interviewed using questions which revolved around reading, community support, family support, and health.
- In post reading assessment tests, eighty percent of the children showed an overall improvement over the 10 week period in various reading aspects.

Apparent Opportunities

- Improved curricula, instructional and assessment methods for adult literacy.³
- Investigate the HR development needs, including literacy requirements, of specific industrial sectors.³
- When training, use learning contexts, tasks, materials, and procedures taken from the future situation (employment) in which the learner will be functioning.
- Explore alternative delivery modes for literacy development using advanced learning technologies.
- Program evaluation: Numerous literacy initiatives have been introduced, but they do not appear to have been evaluated on a pan-Atlantic basis.
- Assess prior learning and experience, particularly those of immigrants, in order to establish equivalent credentials.
- Awareness initiatives around literacy may have implied costs for managers and employees. Introduce a wide range of effective workplace literacy strategies. Improve literacy access by partnering with unions.
- Family literacy programs that improve the literacy levels of multiple generations. Encouraging parents to read to their children and provide access to quality reading material can make a tremendous difference. Investigate opportunities to build on the PEI Pilot program.
- The closer the match between motivation of students for taking vocationally oriented course, and getting a job, the more likely students are to complete the course.
- Courses that are brief as well as strongly focused might help increase completion rates.
- Specialized preparation in reading instruction for primary teachers.

Aboriginal Education

Aboriginal education issues touch many areas of concern including under-education and seasonal workers. The literature indicates that there are many provincial and federal initiatives which are attempting to address these issues, some of which may provide specific opportunities for community colleges to partner with or support lead agencies and departments.

Issues

- The health and vitality of First Nation communities is directly linked to the overall educational successes of its members, including culture and language competencies.
- Only 32 % of reserve kindergarten children are graduating from Grades 12-13. 68% of the school-aged population has less than a high school education.
- 43% of students identified feelings of isolation or cultural marginalization as important factors influencing them to consider withdrawing from studies.⁶
- Reserve unemployment rate exceeds 50%; in some it exceeds 75%. Social assistance benefits and seasonal jobs are often the main sources of income on some reserves.
- Aboriginal students make up a disproportionately small portion of the science student bodies.
- Some adults need transition programs to help them to move towards their career goals.
- Barriers include:
 - Lack of preparation for university or college;
 - Feelings of social discrimination, isolation, and loneliness at postsecondary institutions;
 - Difficulty meeting financial obligations of postsecondary education;
 - Lack of respect for Aboriginal culture and cultural differences at the postsecondary level;
 - Family demands imposing financial and time restraints on postsecondary education; and
 - Lack of understanding of Aboriginal issues by managers/employers.
- Aboriginal graduates of health programs at the University of Manitoba expressed significant levels of personal stress while enrolled in postsecondary studies - feelings of isolation, inadequacy, and discrimination.
- Advanced education is usually located in urban areas, which requires leaving the aboriginal community.
- No widespread research has isolated the issues that are unique to Aboriginal men or women, including Aboriginal women with children, within the postsecondary area.
- Little research has been devoted to the problems of day-care, housing, and relocation costs for Aboriginal postsecondary students.
- Challenges often stem from the need for personal and academic support networks.
- The development of resource centers for the active sharing of materials is required.

Best Practices

- Among programs or initiatives that were singled out for praise by stakeholders, common characteristics included:⁶
 - Community delivery, such as offered through the Teacher Education Programs;
 - Transitional support and support through alternative admissions criteria;
 - Academic and personal support, such as that offered through the University of British Columbia's First Nations House of Learning; and
 - Support for Aboriginal control of education, either at the program, curricular, or institutional level.

- **First Nations University of Canada** offers its university programs and services on three campuses - Regina Campus, Saskatoon Campus and Northern Campus - as well as in First Nations communities across Saskatchewan and Canada. Each campus offers cultural and traditional advising services through the Elders.
- Universities, particularly **St. Thomas University, the University of New Brunswick** in Fredericton, as well as the **Cape Breton University** in Sydney and **Dalhousie University** in Halifax, offer courses on Mi'kmaq and Maliseet language and culture, and frequently host conferences on Aboriginal issues.⁸
 - **Wagmatcook**, Nova Scotia, and **Eel Ground**, New Brunswick, the bands are developing forestry programs for members of their communities.⁸
 - **Membertou**, Nova Scotia, has developed mentorship training programs with several high profile companies such as Clearwater Fine Foods, Sodexho.⁸
 - **Tobique** First Nation graduated 21 Aboriginals from six communities in New Brunswick who successfully completed a 60-week intensive Microsoft Certified Systems Engineers training program. Eighteen of the graduates have full-time jobs.⁸
 - **Membertou** offered a similar computer course in October 2002. Of the 50 community members enrolled, the great majority are youth.
- Courses and programs offered by these First Nations institutes of higher learning are highly relevant and valued by First Nations communities; these institutions provide a supportive learning environment and students are encouraged to persist and complete their courses/programs.⁷
- In New Zealand, Te Wānanga-o-Raukawa (TWOR), or **University of Raukawa**, was the country's first private university-level institution. It is a unique centre of higher learning devoted to Māori knowledge. The method of teaching at Te Wānanga-o-Raukawa is based upon knowledge and wisdom passed on by Māori ancestors and is a holistic approach to learning and teaching. Courses are based on group learning, or "hui," rather than individual learning. The three core subjects are Māori language, Iwi and Hapū studies, and information technology and telecommunication.⁶
- Australia's **Batchelor College**⁶ - The College has developed several strategies and pedagogies to assist in Aboriginal success at the postsecondary level. These include:
 - Mixed-Mode Delivery: Batchelor College's "mixed-mode" delivery allows response to the requirements of mature age students, including their family and ceremonial obligations.
 - The mixed mode of course delivery supports the college's "both ways" philosophy of education, designed to provide programs that support the respective Indigenous and Torres Strait Islander cultures. A pedagogy that seeks to reconcile and use both mainstream and Indigenous Australian cultures in its teaching methods and course materials.
 - Community Study Centers: The College established a network of Community Study Centers in over 35 remote Northern Territory communities. It has agreements with councils, schools, and clinics, which establish the basis under which the college utilizes locally owned premises for course delivery/student support. The Remote Area Teacher Education (RATE) program facilitates discussion on culturally appropriate teaching styles and curriculum for students.⁶
- Access programs developed in **Manitoba**
 - Sponsors university education to persons who have traditionally not had the opportunity for university education owing to social, economic, or cultural reasons or to a lack of formal basic education.⁶
 - The various supports offered through the Access programs include:⁶
 - An extensive pre-university orientation held for students prior to fall classes

- Individual academic advising
 - Introduction to university courses for degree credit
 - Tutorials
 - Regular consultation with academic advisors
 - Personal support/counseling
 - Housing assistance
 - Childcare assistance
 - University/urban adjustment assistance
 - Communication and personal development workshops
 - Career counseling
- **University of Victoria.** In the First Nations Partnership Program, coordinated through the University of Victoria, student retention and successful program completion across the seven partnership programs is twice the national average for Aboriginal postsecondary training.
 - The **Saskatchewan Indian Institute of Technologies** has run successful addictions workshops during lunch hours. They also try to include spouses in student support activities.⁶

Apparent Opportunities

- Develop/enhance programs designed to prepare students for the transition from community living to that of a postsecondary student.
- Increase the presence of Aboriginal staff and faculty.
- Leverage partnerships between Aboriginal organizations, academia and government that could identify the skills gaps between industry demand and Aboriginal supply. On-the-job training could be used to help fill those gaps.
- Courses and programs developed in partnerships offered in some First Nations institutes of higher learning are highly relevant and valued by First Nations communities.
- First Nations institutions often provide shorter term, employment oriented training which assists individuals greatly in finding employment.⁷
- Curriculum developed through a joint effort by the aboriginal communities and the academic institution. For example, in the development of successful Métis studies programs at **Saskatchewan**, a committee was formed with Elders, university personnel, and leaders and experts in the Métis community.
- Partnerships between Aboriginal organizations, academia and government should focus on identifying the skills gaps between industry demand and Aboriginal supply and On-the-job training should be used to help fill those gaps.

Seasonal Workers / Demographic Changes

Seasonal employment was found to be a common Atlantic Canadian issue, especially among young adults. There is considerable literature related to demographic challenges which are a concern to all four provincial governments and the federal government. It is clear that Atlantic Canada has particular challenges in this area.

Issues

- Atlantic Canada's economy is much more seasonal than the rest of Canada – a 12% seasonal variation in employment compared with a 5% variation nationally.
- A low birth rate means the number of young people in the Atlantic region will continue to *decline*, shrinking supply for seasonal industries, especially in rural areas.
- Seasonal employment in Atlantic Canada is mostly rural.

- High seasonality in Atlantic Canada may be policy induced. Policies to increase tourism, protect the fishing industry, etcetera, may have the effect of increasing seasonality in Atlantic Canada.
- Many seasonal workers regard the EI program as a requisite form of income support.
- Some seasonal workers find it difficult to adjust to an insurance-based EI program. Some require retraining but first need basic education and literacy training.
- Seasonal workers are much more likely to have lower levels of education. A lack of education can also preclude these workers from gaining alternative employment in other industries.
- The fish and fish processing sector accounts for the largest proportion of the estimated 122,000 seasonal employees in the Atlantic region, with an estimated 26,500 seasonal workers. Tourism related industries – accommodation and food services and culture and recreation – form the second largest sector with an estimated 26,000 workers.
- Construction is the third largest sector with an estimated 23,000 seasonal workers. Agriculture and forestry are highly seasonal, they are very small sectors overall, each accounting for less than 5,000 seasonal workers.¹⁰ These industries are already examining alternatives such as temporary foreign workers.¹⁰
- Seasonal workers tend to be older than full-year workers. In Atlantic Canada, about 42% of seasonal workers are 45 years or older compared with 36% among full-year workers.
- The need to improve the skills and training of workers, both seasonal and full-year workers, will continue as firms seek to compete in a knowledge-based economy.¹⁰

Best Practices

- APEC's analysis, along with other research, has clearly identified the role of education levels in explaining seasonal employment and EI use. Stronger measures to encourage training by young people should be introduced. For example, Denmark introduced a youth package in 1996. Young people under 25, who do not have formal education or training, are required to enter education or training after six months of benefit but continue to receive benefits at half the normal rate.

Apparent Opportunities

- Recommend changes to federal policies that would enable access to funding for those not attached to the Employment Insurance Program to support their enrolment in approved training and education programs.
- The literature review uncovered a variety of references to apparent opportunities perceived to be part of the mandate of the community college system. Career counseling, literacy training were two areas noted.
- For younger workers, identify and implement specific measures to ensure a successful transition from high school completion to full-year employment.¹⁰

Immigration Needs and Constraints

Immigration is viewed by some governments as one way to address the forecasted worker shortages of the future. Available literature indicates that most industries, *even traditionally seasonal industries*, are forecasting shortages. The challenge will be to define an appropriate role for community colleges, likely linked to the general opportunities defined as gap training.

Issues

- Nationally, immigration will play an ever-increasing role in Canadian labour force growth. By 2011, immigration is expected to account for virtually all of the net growth in the Canadian labor force¹¹
- Between 1995 and 2003 the numbers of arrivals to Atlantic Canada dropped, impacting federal funding for settlement agencies.
- Research shows that immigrants prefer to settle in urban centres.

- In 2001, only 1.2% of Canadian immigrants came to Atlantic Canada, down from over 3% in the early 1970s (with more than half of these heading for Nova Scotia). Even in this region, immigrants choose to settle in the cities. Halifax accounted for 81% of the immigrants to Nova Scotia in 2001 and St. John's accounted for 72% of the immigrants to Newfoundland and Labrador.³
- Immigrants face barriers regarding recognition of their qualifications and international work experience.
- Demographic projections forecast falling worker counts for Atlantic Canada. Most industries, including the fishery, are forecasting significant challenges finding workers in the near future.
- Some provinces like Manitoba, Saskatchewan, and New Brunswick operate extensive immigration websites as attraction and integration tools and employ staff to perform marketing, communication, consultation, applicant selection, and strategic functions.¹³
- Globalization trends are increasing the number of new immigrants who are still mastering English. The challenge facing these individuals is not simply to master technical skills; they often lack the basic literacy skills needed to do college-level studies. Many of these students will learn English best within the context of technical education.¹⁴
- Immigrants have the opportunity to take initial language assessments and classes through English as a Second Language programs (ESL). However, the minimum requirement for success in a community college program would be at least a Level 8 ESL.
- Immigrants often lack the basic literacy skills needed for college-level studies. Many of these students will learn English best within the context of technical education.
- Gaps in service exist with regard to occupation-specific, sector-specific, and employment-specific language training; these gaps are limiting employment prospects.
- Research suggests that if newcomers take "survival" jobs, it becomes even more difficult to re-enter their original occupations.¹¹

Best Practices

- MISA and the NS Department of Education are currently conducting a feasibility study, funded through HRSDC, focusing on the possibility of establishing an international credentials assessment service in Atlantic Canada. At present, there is no such agency in the Atlantic Region. There are provincially mandated services in Quebec, Ontario, Manitoba, Alberta and British Columbia.¹¹
- The employer community needs a focus point to articulate their needs and expectations. A model for this can be found in the **Manitoba Business Council** and in the current efforts of the **Nova Knowledge Immigration Committee**.¹³

Apparent Opportunities

- Target international students for immigration because they know the community, better understand the job market, have graduated with recognized credentials, and have acquired good language skills¹⁵
- Colleges can:
 - Collaborate with education and research institutions such as the Atlantic Metropolis Centre/Centre Metropolis Atlantique, the Atlantic Institute for Market Studies, and the Atlantic Provinces Economic Council to undertake required research that is responsive and suits the needs of government and partners
 - With the assistance of research institutions, develop research capacity to learn more about why immigrants stay or move on.
- Immigration-related research is needed to keep current on immigration trends and opportunities.¹⁵

- Enhance programs to assist newcomers to learn how to job search and how to be effective in a job interview in Canada. Newcomers also need support services to help them understand the many cultural differences between workplaces in their birth countries and Canada.¹¹

Applied Research /Innovation; Technology Adaptation /Adoption; and Commercialization

The community college system is already involved in applied research. The literature indicates that there are further opportunities in this area that are well aligned with community college capabilities. A major challenge is that the current research funding mechanisms appear to favour universities. The literature also indicates that opportunities exist for a pan-Atlantic approach to research in the community college system.

Issues

- The needs of the Atlantic region are two-fold: to build industry capability to undertake applied R&D, and to increase industry's receptor capacity for the innovations developed by universities and other institutes undertaking applied R&D in the region.¹⁶
- Gaps in innovation capabilities presently outweigh strengths and assets. In terms of the most important asset - people - there are many challenges. There is a need to foster a culture of innovation and entrepreneurship in the population at large.
- Atlantic Canada does not have critical mass in many of its research and innovation systems, infrastructure and industrial capacity are also limited. Therefore it is unable to access many national programs. Its leverage of other investments from existing federal programs is lacking. Industry funding is matched only 6% as opposed to 26% in the rest of the country.¹⁶
- Atlantic Canada companies invest less in research and development than the national average. There is a need to build greater industry capacity to undertake applied research and development and to increase industry's receptor capacity for the innovations resulting from applied research and development in the region.
- In 1998, Atlantic industry performed \$95 million in R&D, and directly funded \$89 million, but was only leveraged about 6% of its applied R&D from other sources. By comparison, nationally, industry invested \$6.8 billion in R&D and conducted \$9.1 billion, a leverage of 26%.¹⁶
- Agencies and researchers have scarce resources and compete with each other for limited financial resources. There is a lack of access to long-term research funding.
- Entrenched bias exists – socially and politically – towards a resource-based economy.
- Atlantic Canada requires both an innovation strategy and sustained investment in order to accelerate innovation in the region's economy. This presents a significant opportunity. Thus, the greatest threat is to fail to articulate a solid and successful strategy that converts this recognition into success. There are programs and funds to assist with research chairs, innovation infrastructure (**Canadian Foundation for Innovation**) and strategic research (**Natural Science and Engineering Research Council and National Research Council**), as well as increased university research, increased regional innovation (Atlantic Innovation Fund), and investments in community development.¹⁶
- Several general categories within the innovation and commercialization process require a critical mass of investments. These include:
 - Understanding, awareness, networking and attitude change;¹⁶
 - People expertise and creativity;
 - Knowledge transfer and dissemination;
 - Receptor capacity and capability; and
 - Venture investments and a positive re-investment climate.

- Potential exists to produce benefits to Canada from innovations in life sciences, biotechnology and health care. Barriers to success include a lack of access to long-term research funding, lack of internationally competitive intellectual property protection, prolonged regulatory approvals, inadequate supply of biotechnology scientists and health researchers.¹⁷
- Universities and colleges need to encourage cross-training and a multidisciplinary approach to increase the commercialization of environmental and clean energy technologies.¹⁷
- Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis adapted from *Innovation and Commercialization in Atlantic Canada* by Dr. Alan Cornford from Gardner Pinfold Consultants Ltd. Published in March 2002:

STRENGTHS

- Some good research laboratories with physical infrastructure for R&D.
- A few centres of excellence upon which to leverage development.
- Very good agencies facilitating university/industry collaboration in innovation and design (AVC, GINI, Genesis and CCMC).
- A few applied R&D industry agencies facilitating innovation and commercialization services – e.g. TARA.
- Untapped leverage opportunities for matching funding from other national programs.

BARRIERS, WEAKNESSES & THREATS

- Lack of industry *pull* for R&D & industry receptor capacity.
- Lack of entrepreneurial activity & innovation in the culture.
- Brain drain and few innovators in the brain gain.
- Not enough industry/university agency activity throughout region facilitating innovation and commercialization services.
- Gaps in the innovation process – stages lacking sufficient activity.
- No regional science council to catalyze increased industry investment
- Limited means for aggressively accelerating industry/university relationships.
- Limited number of graduate level and Postdoctoral Fellow programs to retain/attract good graduates.
- Agencies & researchers have scarce resources & compete with each other for limited financial resources.
- Distance from major Canadian & US industrial/commercial centres.
- Weak economy, especially in the knowledge-based industry sector.
- Entrenched bias – socially & politically - towards resource based economy & limited experience with KBE.

OPPORTUNITIES

- Some programs assist with research chairs, innovation infrastructure (CFI), increased university research (CURE), increased regional innovation (AIF), strategic research (NRC) and investment in community development.
- There may be additional federal support for commercialization of university research, & adjustments to equalization payments to the region.
- Up to 5% of federal granting agency R&D funding may be available to assist dissemination of university research in to Canadian innovation.
- A few good leaders with vision.
- Opportunities to build partnerships, focus on strengths and build innovation & commercialization in a few target sectors.

Best Practices

- **British Columbia** has invested in acquiring and retaining the best research people who can create and support pinnacles of strength. Via its **Advanced Systems Institute**, the provincial government provides additional support for university research fellowships as well as funding for university/industry research that is usually matched by incremental leveraged investments from federal government research programs.¹⁶
- **Association of University Technology Managers (AUTM)** from the United States tracks commercialization of university research; **Statistics Canada** tracks economic and R&D-related data.
- **Organization for Economic Cooperation and Development (OECD)** tracks innovation capacity indicators. Among these, there is some consensus regarding best practices, and these provide a few 'rules of thumb' within the process.¹⁶
- In Atlantic Canada, industry applied research has been confined to a few companies along with a small number of agencies and university related institutes. **TARA, AVC, GINI** and a few others have produced successful economic outcomes. They incorporate:¹⁶
 - Strong applied research relationships and networks
 - University professor and student fellowships
 - Applied research
 - Local industry commercialization and investment
- Numerous Atlantic entities are involved in university/industry liaison and dissemination. In Nova Scotia (at or near Dalhousie University) agencies include **NU-TECH, GINI, Dalhousie BioMed, Life Sciences Development Association (LSDA), TARA, InNOVAcorp, and Genome Atlantic**. In Newfoundland, associated with Memorial University, are **Genesis, the Canadian Centre for Marine Communications (CCMC), the Canadian Centre for Fisheries Innovation (CCFI) and the Canadian Centre for Core Ocean Research (CCORE)**. In PEI there is the **PEI Food Technology Centre, AVC Inc. and Biovectra**, and in New Brunswick there are several service centres for research and development liaison, including the **Research and Productivity Council, Genieo, and BioAtlantech**. There are also numerous Federal research laboratories. These represent areas of particular R&D strength in key sectors, and they may be appropriate centres of excellence around which to develop clusters and partnerships with industry in order to increase levels of applied R&D and to expand dissemination capabilities.¹⁶
- The **Georgia Research Alliance**, which is a strategic partnership of the state's business community, government and research universities employs a variety of methodologies to attract investment and job creation to the region.¹⁶ The GRA model has facilitated an 800% increase in research relationships between universities and industry, venture capital investment with 10 times the investment levels that existed in 1995.¹⁶
- The Atlantic Provinces have invested in a few incubators to facilitate small business development and university/industry relationships. All have strong **NRC/IRAP** and *Industrial Technology Advisor* (ITA) linkages, as well as reasonably strong small business development, loan and investment programs, and some tax-based programs.
- The **University of Washington (UW), Simon Fraser University (SFU) and The University of Toronto Innovations Foundation** all host business plan competitions. SFU's initiative is a province-wide business plan competition sponsored by New Ventures BC, and involving SFU business school professors and local business executives.¹⁶
- **Agriculture and Agri-Food Canada (AAFC)** has recognized that much of this intellectual property has commercial value to entrepreneurs and the agricultural sector. It was determined by the representatives of NRC-IRAP, ACOA and AAFC that there could be a more effective way to deliver a program that would develop the commercialization potential of agriculture research in Atlantic Canada.¹⁸ The result was a plan for a pilot project to pro-actively identify commercial opportunities with AAFC technologies and intellectual property and forge linkages between scientists and local firms. Through this initiative it was planned to generate a database of technologies and expertise

at AAFC centres, use this to systematically link firms who have the receptor capacity and ultimately commercialize these opportunities.¹⁸

- The **Institute for Nutrisciences and Health (INH)** was established in July, 2003 to become the cornerstone of an Atlantic Canada knowledge-based bioresource cluster in Charlottetown. The focus of the INH will be the discovery, development and commercialization of high-value bioactive compounds for human and animal health and nutrition, derived from a diversity of renewable bioresources.¹⁹
- The four key policy themes contained in the **Advisory Council on Science and Technology's** recommendations are:¹⁹
 - Seed-Stage Commercialization
 - Human-Capital Development
 - Communication and Shared Decision Making
 - Strategic Investments in Research
- **Springboard** (formerly the Atlantic Research Commercialization Network) is another example of the trend in research towards collaboration. Springboard's aim is to encourage economic growth through the commercialization of university-based research and development. The network hopes to have 18 technology transfer specialists who will be geographically dispersed, based at the various member institutions throughout Atlantic Canada but will be accessible to all 13 of the universities in the network. The "experts" will have a specialty area and will be able to assess whether a technology has commercial potential. Specialists for the region will also be the "generalist" at their host institution²¹ "The network is particularly beneficial to the smaller institutions which will have access to specialized staff services, training and funding programs similar to those available at larger Canadian universities.
- The Indirect Costs Program¹⁹ - Budget 2003 announced a new permanent program to support the indirect costs associated with research in institutions that receive funds from any of the three federal granting agencies. The **Canada Research Chairs Secretariat** administers the **Indirect Costs Program**. The program also helps smaller institutions, which cannot benefit from the economies of scale realized by large institutions, to increase their research capacity.

Apparent Opportunities

- Investigate opportunities for research, development and innovation within emerging sectors in Atlantic Canada, including: aquaculture, biotechnology/pharmaceutical and medical technologies and products, environmental industries, ocean technology, oil and gas and, information and communications technologies.¹⁶
- Capitalize on a variety of basic and applied research opportunities in Atlantic Canada in areas like software, neuroscience and genomics, functional foods, networked supercomputers, wireless systems labs, occupational health and safety, research into climate change and soil remediation and biofilms,²⁰ for example.
- Capitalize on existing physical and intellectual assets. Can federal laboratories assist with commercialization on behalf of industry? Pilots could involve labs at RCMP, Department of Fisheries and Oceans, National Research Council Military, Health Canada, Agriculture, others. Can colleges facilitate these broader partnerships?
- Develop university/community college system research partnerships and joint ventures.
- Work with university based commercialization initiatives like Springboard.
- Undertake pilots that more fully engage community college staff with business in specific applied research projects.

- Broaden the pan-Atlantic agenda with industry partners with reference to research and development. Work to shift attitudes to a more positive alignment among the four provinces and individual research institutes to make way for partnerships and alliances that, together, create a critical mass of innovation and commercialization investment and activity.
- Develop a common vision for a culture of innovation in the community college system.

General Community College Issues

- Many community colleges now have multiple missions directed at addressing the needs and interests of a wide variety of constituencies. The list of missions includes transfer to a baccalaureate program, terminal occupational education, developmental education, adult basic education, English as a second language, education and training for welfare recipients customized training for specific companies, preparation for industry certification exams, non-credit instruction in a plethora of areas (including purely vocational courses), small business development, and even economic forecasting.²²
- In addition to impacting competitiveness and productivity, the majority of the five key areas of interest outlined in this document are also in the social spectrum. What is the community college role in determining social policy? Where is the line between social policy and revenue generation? Is this an area where community colleges should play a role?
- Most community colleges fail to realize their bridging potential. Many find it difficult to make the connections between remedial and college-credit programs, between academic and occupational degree programs and between degree programs and jobs – that are necessary for creating pathways of advancement for disadvantaged students. It is obviously expensive to serve disadvantaged students and yet community colleges tend to be poorly funded.²³
- Enrollment pressures - the provincial systems have experienced dramatic increases in enrolment in recent years. This creates competitive pressure for the colleges and for disadvantaged students.
- How should community colleges address transfer of credits for vocational programs?²⁴
- About 40 to 50 percent of all students who enter community college must take at least one developmental education course. In urban community colleges that serve low-income, low-skilled adults, as many as 70 to 80 percent of students take developmental courses.¹⁴
- Traditional degree programs are not designed to reflect the realities of life for low-skilled working adults, many of them with families.
- In content and approach, community college remedial education resembles what many students were subjected to – and turned off by – in high school.²³
- Community Colleges are not able to directly change student academic preparation, immigrant numbers, EI policies that promote seasonal work, etc. Is it realistic to think that Community Colleges can impact federal/ provincial political decisions?
- What is a realistic goal for this project (the roundtable initiative)?

General Best Practices

- The fact that community colleges have economic development missions often results in partnerships that go beyond advisory committees or equipment donations. For example, new business incubators can provide internships for students and experience for faculty, technical assistance programs can give faculty first-hand knowledge of new technologies and changing skill requirements.²⁴
- Reverse transfer—people who already have completed a four-year university program but who may want to acquire particular skills or change careers.
- A 1986 survey of presidents of 103 community colleges in Appalachia found that 84 percent already solved technical problems for local businesses, 65 percent had partnerships to diffuse technology, 62 percent believed that a clearly defined role in technology diffusion is essential, 55 percent believed that a dedicated office or center is essential.¹²

- **Austin Community College** (Texas) has taken up a state-wide challenge to close the gap between the current rate of college enrolment and the projected future need for more highly educated workers by providing high school students with a “College Connection.”²⁶
- Successful approaches use four strategies to open up pathways from multiple entry points:
- Integrated Institutional Structures and Services.¹⁴
 - Accelerated Learning.
 - Labor Market Payoffs.
 - Comprehensive Supports.
- Almost half of the students who leave adult education do so because of non-instructional factors, such as the loss of child care, a job change, personal or family illness, a change in housing, or transportation challenges.¹⁴ Programs that incorporate academic and personal support services as an essential component are needed.
- Web based system of access to the college through which students will be able to post their personal academic plans and goals, see their progress, and decide what to do next.
- A study by Kevin J. Dougherty and Marianne F. Bakia in the Community College Research Center Brief of January 2000 called *The New Economic Development Role of the Community College* found that new economic development programs can be grouped under three main headings:⁴⁰
 - Contract training: improving the job and academic skills of current or prospective employees by providing training under contract to employers or government agencies.
 - Small business development: assisting new and existing small businesses to modernize their production technologies, improve their management and marketing, compete for government grants and contracts, and secure facilities and administrative assistance at low cost.
 - Local economic-development planning: working with local economic development agencies to retain existing industries and attract new ones.⁴⁰
- Should community colleges simply react to labor market and student demands or should they be proactive and try to influence firms’ behaviors and students’ choices?²⁴ The “reactive” colleges survey labor market trends and employer needs and then orient programs towards those trends and needs. The “proactive” colleges anticipate needs based on patterns of technological changes and knowledge of current best practices and then acts as systems integrator and modernizer by providing a work force prepared for the future. Colleges historically have been reactive, but the new economy is increasingly looking to colleges to be catalysts for improvement within firms.²⁴

General Community College Opportunities

- Is there a new seniors market?
 - College-educated people who have been in careers and are ready for a change, but not for retirement.
 - Lower wage workers with little or no college education who also need a change.
 - People, who at the end of successful careers, have sufficient retirement income and little interest in pursuing new careers, but have a strong interest in education as recreation.²⁷

Pilot Program Ideas

This idea list is designed to stimulate discussion. Some may already be in place. We look to observers to add others.

Demonstration projects

Literacy Coordinator / Educator

This can be done as a specialization in year 2 for any Human Services Program or as a certificate “add on” to any Early Childhood Educator / Teaching Assistant/Child and Youth Care / Addictions / etc programs.

Vocationally Focused ESL

These programs should be for immigrants with training in their own field but no English/French language. This Vocationally Focused ESL could also be a lead in to further diploma level training in the same area.

Gap Training

Training for immigrants to bring skilled workers up to Canadian standards or to give them work experience in Canada. This could be focused on industries with the largest actual or projected labour shortages. This would have to be coordinated with credentialing authorities so that if someone passes this course they automatically are accepted to work in their field in Canada, or their wait time is much reduced.

Job Search Training

This can be a certificate program to teach immigrants how to complete effective job searches, networking, resumes, interviews etc in Canada. There could be components where they learn about professional associations, regulatory bodies for specific industries to further their employment possibilities. Internships could be considered.

Homeland Security

Although this is an American term, additional training modules could be added onto the Policing and Security programs currently available. These could focus on customs, airport security, even bioterrorism cleanup.

Seasonal Worker Upgrading

This would be a combination of the upgrading for low skill / low literacy, job search, gap training programs. This could be focused on industries with the largest actual or projected labour shortages. Each province will have different areas of concern and focus. The important part of this would be how to recruit young seasonal workers into the programs before they get too dependent on the EI / Season cycle. This could also be for older workers who are losing their seasonal employment due to industry restructuring / lack of demand. Again, recruitment will be the critical issue.

Adult Education Upgrading

These programs are needed for low literacy / low skilled English / French speakers. They could be condensed, vocationally focused and cover real life job skills, literacy, business math, writing, etcetera. The goal would be to bring low skills up to the level where people could enter college to continue training or find better employment.

Lab Assistant, Research Assistant Program

SpringBoard offers assistance for “smaller institutions” without access to major R&D funding etc. The trick is to find a niche and partners. Potential specialty could be in biology, marine, chemistry, biotech, and etcetera.

Aboriginal Training

Courses that are needed within an Aboriginal community include Early Childhood Education, Teacher’s Assistant, Business, Entrepreneurship, policing, healthcare (homecare, addictions, counseling) service industries (automotive repair, hairdressing etc. The classes would be taught in the community (internet based?), not at the urban campuses.

Aboriginal Curriculum

Partnerships would have to be made with the local councils to develop and teach these courses.

Research

A review of current pilots

Rather than trying to generate new ideas for research, conduct a review of all the current pilot projects for each of the 5 areas of interest in Atlantic Canada and determine if any current pilot project would benefit from a “Phase 2/3/4” approach.

Survey seasonal workers and develop strategy

Survey a sample of young seasonal workers regarding why they entered seasonal employment, what would make them leave it, which industries in each province were most attractive to young seasonal workers, and develop a strategy to attract these young people out of the seasonal life. Use this strategy to run pilot employment / skills upgrading training programs in each province. Assess success.

Build partnerships with universities

Survey universities on where they are lacking specific lab space, resources, specific research skill sets, etcetera, and look to build partnerships with universities to meet these needs from within the community college system. For example, maybe students in the Child and Youth Care or Early Childhood Education programs can assist Child Psychology researchers as part of the On the Job Training portion of their program.

Aboriginal research and pilot

Conduct a review of Aboriginal Post Secondary Education (PSE) withdrawals to determine why they left the system and what supports and incentives would bring them back in and what would have kept them in. Develop a pilot “support” program based on research findings and implement that with the next intake of aboriginal students. Assess the impact of pilot program on withdrawal rates to determine if the “support” system actually made a difference over 5 and 10 years. Manitoba’s Access Program could be considered as a template.

Immigrant services

Conduct a survey of immigrant PSE students regarding how they chose Atlantic Canadian universities and colleges, how difficult the visa process was, whether they would be interested in staying after completion of their education, and what supports or incentives would they need to stay.

Predetermine literacy program

Conduct a literacy assessment of students in elementary / junior high to determine how far behind the potential grads of 2010/2015 are in literacy skills already. Determine what supports can be put in place without changing the funding for elementary and junior high education. Determine what additional specialized education teachers should have to deal effectively with those students that are behind. A longitudinal study following the same cohort could be a useful methodology.

Employer Literacy partnership

Survey employers on what resources (time, space or money) they would be willing to donate to upgrade the literacy or basic skills of their employees. Track this by industry, business size /success, owners / manager’s own educational levels. Do employers with university degrees see upgrading as more important than managers / owners with less education? Try a pilot program with employers to improve literacy levels for employees already on the job.

Enabling immigrant market entry

Survey employers on their views regarding immigrants as employees. Develop educational materials to illustrate benefits of hiring immigrants and then follow-up to see if educational materials were received well and any changes that resulted.

Are there other ideas on the following subject?

- Curriculum development?
- Research projects?
- Partnerships?

Next steps

1. Feedback via interviews and submissions
2. Development of a second discussion document which integrates new input
3. Collaboration at the roundtable

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