Knowledge, Innovation, and Skills for a Global Economy

Rapporteur's Report

Janice MacKinnon

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The Canada-UK Colloquia

The Canada-UK Colloquia are annual events that aim to increase knowledge and to educate the public about the advantages of a close and dynamic relationship between Canada and the United Kingdom. These conferences bring together British and Canadian parliamentarians, public officials, academics, private sector representatives, graduate students, and others. The organizers focus on issues of immediate relevance to both countries. One of the main endeavours of the colloquia is to address these issues of mutual concern through engaging British and Canadian experts in dialogue.

The colloquia are supported by the Department of Foreign Affairs and International Trade in Canada and by the Foreign and Commonwealth Office in the United Kingdom. The conferences are organized by the School of Policy Studies at Queen's University, this year in collaboration with the Institute for Research on Public Policy on the Canadian side, as well as by the Canada-UK Colloquia Committee on the British side, from which an executive board, the Council of Management, is elected annually.

The first colloquium was held at Cumberland Lodge in Windsor Great Park in 1971 to examine the bilateral relationship. A British steering committee, later to become the Canada-UK Colloquia Committee, was launched in 1986. The Queen's School of Policy Studies assumed responsibility for the Canadian side in 1996, succeeding the Institute for Research on Public Policy. Previous reports can be found at www.canada-uk.net.

About the Author

Janice MacKinnon is a professor of public policy at the University of Saskatchewan, a fellow of the Royal Society of Canada and a former Saskatchewan finance minister. She also sits on various private and public-private boards, holds a Social Sciences and Humanities Research Council fellowship and is a frequent contributor to public policy debates at the national level.

She has authored three books: one on political culture, published by Harvard University Press, and a second on women refugees. Her latest book, *Minding the Public Purse: The Fiscal Crisis, Political Trade-offs and Canada's Future,* is about the fiscal crisis and includes a discussion of health care and other critical issues facing Canada. Her article "The Arithmetic of Health Care," published by the Institute for Research on Public Policy in 2004, discusses the trade-offs involved in the current level of funding for health care and proposes changes to the financing of the system.

From 1991 to 2001, Ms MacKinnon was a cabinet minister in the Saskatchewan government. She served as finance minister during the debt crisis in the 1990s, when Saskatchewan became the first government to balance its budget. The other portfolios that she held include minister of social services; minister of economic and co-operative development; minister responsible for trade, research and investment; and government House leader.

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Preface

This Rapporteur's Report summarizes the discussions at the recent Canada-United Kingdom Colloquium on "Knowledge, Innovation, and Skills for a Global Economy." The importance of this topic is highlighted by the growing need in the industrialized world for a knowledge-based economy and by the emergence of the developing world as an economic force to be reckoned with. In addition, the productivity of all members of British and Canadian society is essential to a sense of unity and social cohesion that was the theme of the 2007 colloquium.

Canada and the United Kingdom face similar challenges in giving our citizens the knowledge and skills needed to thrive in an ever-changing global economy. The central lesson to be learned from this year's colloquium is that students, parents, educators, institutions, governments, and employers need to work together to provide citizens with the optimum mix of academic, practical, and ethical knowledge and skills—from primary school to adult education and on-the-job training. Progress to this end begins with dialogue between all of the stakeholders in education and training about what kind of society we want. Judging from the discussions during the colloquium, it is clear that stakeholders in the United Kingdom and Canada want much the same kind of society: an ethical, inclusive, diverse society where citizens are able to lead productive and meaningful lives.

We would like to express our gratitude to Professor Janice MacKinnon for her invaluable service to the colloquium in serving as Rapporteur and in producing this illuminating report. Professor

MacKinnon has managed to weave the multitudinous strands of debate into a cogent and thought-provoking report. We draw particular attention to the final sections, where she outlines the roles for educational institutions, government, and business in developing knowledge, innovation, and skills through partnerships and a holistic and cooperative approach. This year, the report also includes conclusions reached by the participant working groups in response to particular policy questions.

We are also grateful to Mel Cappe as Chair for directing the proceedings with his ideal blend of humour and firmness. We were treated this year to a tour of some of the most innovative and visionary enterprises in Montreal. We wish to thank Canadian National Railway, Ubisoft, Cirque du Soleil, and GlaxoSmithKline for hosting us, and Peter Edwards for sharing CN's vision with us over breakfast at the Loews Vogue Hotel. In addition, we wish to thank Anne Jarrett, the UK Consul-General for Montreal, for hosting us at the University Club.

Support for this year's colloquium was provided by the Department of Foreign Affairs and International Trade, Human Resources and Skills Development Canada, Canadian National Railway, and Queen's University. The Foreign and Commonwealth Office made it possible for the British team to attend. We also acknowledge the constant support we have received from the British High Commission in Ottawa and the Canadian High Commission in London, the latter of which gave us additional financial assistance in producing this report.

Lastly, thanks are due to those who have devoted time and energy to organizing this year's event. Special mention is due to Erica Maidment and Suzanne Lambert on the Canadian side and to George Edmonds-Brown on the British side for ensuring the smooth execution of the event. We would also like to thank Geraldine Kenney-Wallace for her advice and support to the British Committee.

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Knowledge, Innovation, and Skills for a Global Economy

Janice MacKinnon

INTRODUCTION

Knowledge, innovation, and skills are the foundations for economic, social, and individual success in our twenty-first century global economy. Countries that prosper in a knowledge-based economy are those which have an educated, skilled workforce with the capacity to adapt and innovate in an ever-changing global village. The most important determinant of the standard of living of a country is productivity, which in turn is directly related to the skills and education of its people and to the level of research and development. Similarly, social cohesion depends on ensuring that all members of society have the opportunity to make the most of their talents and abilities so that no one is left behind. And to succeed in this century, individuals need both specific skills and a more general capacity to be innovative, strategic, and adaptable. It is therefore most fitting that the Canada-UK Colloquium for 2008 focused on knowledge, innovation, and skills for a global economy.

The topic is not an easy one to tackle. First, it involves discussing education at the secondary and post-secondary level. At both levels a variety of institutions must be considered; for instance,

the Canadian post-secondary education sector includes universities, an array of community colleges, and technical institutes. Another issue is the extent to which there are similarities and differences between the Canadian and UK education systems. While our educational institutions are based upon similar principles, there are major differences in the ways in which educational policies are developed and implemented in the two countries.

While the educational system in the UK is centralized, the Canadian one is decentralized. The provinces are responsible for designing and administering educational programs, with the role of the federal government being restricted to providing financial assistance to post-secondary students, funding research, and providing transfer payments to the provinces to fund post-secondary education. Moreover, there are significant differences among Canada's ten provinces and three territories with respect to education. For instance, the Canada-UK Colloquium was held in the province of Quebec where the majority of the population is French-speaking. For Quebeckers education is one of the cornerstones of their culture, and they are diligent in guarding against federal intrusion into this area of provincial jurisdiction. Also, some provinces like Alberta, which has a right-of-centre political culture, have accepted private charter schools as part of the educational mix on the grounds that they provide competition and choice. Other jurisdictions, like Saskatchewan, which elected North America's first social democratic government in 1944, are firmly wedded to the ideal of a publicly funded educational system. Because of this diversity, it is difficult to compare specific educational programs in the two countries. As a result of this reality, participants at the colloquium wisely decided to pay more attention to general trends and overarching themes than to specific programs.

Despite the differences between the two countries, important concerns were shared by Canadian and UK commentators. One key question involved the extent to which Canada and the UK are doing a good job of preparing for success in the knowledge-based economy and innovative world of the twenty-first century. Important gaps were identified. There was a consensus that more needs to be done to attract students to specialize in science, technology,

engineering, and mathematics (STEM subjects). It was also widely agreed that ethics and ethical questions do not receive sufficient attention in the curricula of educational institutions or in employers' assessments of the qualities that they seek in their employees. A host of concerns were raised in the context of the need to consider knowledge, skills, and innovation in a global context. And there was a great deal of discussion throughout the colloquium about the number of people falling through the cracks of our educational systems and the implications of this serious problem.

As well as identifying problems, participants discussed some of the general solutions that might be adopted. A recurring theme, in this respect, was the importance of recognizing the role that diversity plays in education and skills training. Because of the growing diversity of students, institutions, and learning vehicles, it was generally agreed that educational institutions required more flexibility and local autonomy. Yet, there was also the view that flexibility and local autonomy had to be balanced with the need for global standards and the capacity to measure and compare outcomes.

Another theme involved the role that governments, educators, and businesses should play in improving our track records in promoting knowledge, skills, and innovation. There was significant discussion about the respective roles of these three stakeholders in designing curricula and forecasting the skills required for the future economy. Solutions were found in the fostering of partnerships and the adoption of a holistic approach to the development of knowledge, skills, and innovation.

BACKGROUND

A good starting point for understanding the role that knowledge, skills, and innovation will play in the twenty-first century is demographics and how it relates to the needs of a global market-based economy. Currently, we are experiencing a global economic recession that in the short-term will lead to job losses. Some sectors,

such as manufacturing, will continue to be threatened in Canada and the UK. Nonetheless, several speakers pointed out that the immediate economic problems do not change the long-term structural reality. Our populations in Canada and the UK are aging at a time when the knowledge-intensive global economy will require more educated, skilled people. Hence, there will be competition for such people. The availability of a highly skilled, educated workforce and the quality of life available in a jurisdiction will be important factors in determining where companies locate. Hence, there is and will continue to be global competition among countries and provinces for highly educated, skilled people.

As well as an aging population, Canada and the UK are experiencing a decline in the under-16 age group, which has important implications. Competition for students among educational institutions is a reality that has made and will continue to make these institutions more responsive to changing student interests and demands. Moreover, with fewer national students to rely on, there will continue to be more emphasis on attracting international students.

The combination of an aging population and a shrinking cohort of young people means that in both Canada and the UK population growth comes from net immigration. In Canada almost 20 percent of the population was born outside the country, and the UK has important experience with a significant number of second- and third-generation immigrants.

ARE WE PREPARED FOR THE KNOWLEDGE AND INNOVATION CHALLENGES OF THE FUTURE?

An important question that was addressed at the colloquium is this: How well are Canada and the UK doing in preparing for the knowledge and innovation challenges of the future? In some respects, both are doing well. In terms of post-secondary education attainment, the UK scores well and Canada is in first place among Organisation for Economic Co-operation and Development (OECD) countries. However, in Canada there is a significant

difference between older workers, who score poorly, and younger Canadians who do very well in this category. The UK does well in terms of the number of graduates from its secondary educational systems, and Canada has an impressive community college system, which helps to explain its high ranking with respect to post-secondary educational attainment. Relative to the UK, Canada experiences more "churning": 22 percent of students switch programs, with some moving within the same system and others moving from universities to community colleges. Relative to Canada, post-secondary education levels in the UK are more directly related to the income levels of parents. In terms of secondary education, both jurisdictions are in the middle of the pack, or in some cases above the middle, relative to comparable countries.

Participants agreed that despite the fact that Canada and the UK scored reasonably well in overall educational results, there are underlying problems that need to be addressed. Productivity in Canada and the UK lags behind the levels of other countries, notably the United States, a problem that was raised in the context of various discussions during the colloquium. Also, participants identified serious gaps in our educational institutions and other systems that require attention, and these formed the basis for many of the fundamental changes recommended at the colloquium.

The STEM Problem

One of many factors affecting productivity in Canada and the UK is the fact that not enough young people are choosing to study science, technology, engineering, and mathematics (STEM) at the undergraduate and graduate levels. In order for industries to move up the value chain and enhance productivity, they require a significant number of new STEM graduates. In the UK today, 24 percent of employees in knowledge-intensive businesses have science and engineering degrees. In the knowledge-based economy of the future, it is anticipated that the demand for STEM graduates will increase faster than the overall increase in demand for graduates.

Yet neither Canada nor the UK are producing sufficient numbers of STEM graduates to meet our future needs, although the problem in Canada is masked by reliance on immigrants to provide these skills.

The roots of the problem are many. Not enough students take mathematics, science, physics, and chemistry. In Canada, this problem can be related to the fact that marks in STEM subjects are often lower than in other areas. In the UK, early streaming of students means that many do not have significant exposure to STEM subjects. In both jurisdictions, teachers who are not STEM specialists sometimes teach these subjects. Another problem is that STEM subjects are often considered dry and boring. What is more, students lack a clear sense of the real-world applications of these subjects, which is surprising in light of contemporary concerns about such issues as climate change.

Ethics

Another gap that was identified was the lack of adequate emphasis being placed on ethics. Participants pointed out that ethical lapses are easy to identify in recent global controversies. The accounting scandals of companies like Enron could only have occurred because senior executives were willing to misrepresent their companies' financial statements. A similar misrepresentation of the value of assets was at the heart of the recent sub-prime mortgage crisis. And recent wars, such as the one in Iraq, provide many examples in which military personnel and politicians were less than honest with the public. Yet, when companies list the qualities that they seek in employees, it was observed that traits like a strong sense of ethics rarely topped their lists. Similarly, educational institutions do not emphasize ethics in their curricula, nor are there rewards within the system for moral behaviour.

Part of the problem is that it is often assumed that morality is being taught elsewhere, by churches or families. However, attendance at church has been declining. At the same time, skepticism about the rationality of morality has been growing. And the

emphasis placed on respecting the views and beliefs of others has fostered a reluctance to assert the primacy of morality and ethics.

There was a strong consensus among participants that morality and ethical issues had to be emphasized more and should be an integral part of the curricula of educational institutions. Individuals would benefit from being more solidly grounded in a firm sense of ethics. Moral values, such as integrity and respect for others, are an important component of good judgment and sound decision-making. And companies that are successful are often ones that have a strong set of values that are articulated and practised throughout the company—values such as openness, transparency, and a sense of corporate responsibility.

Thinking Globally

One irony noted at the colloquium was the fact that we all acknowledge that we live in a global economy and world, and yet there are important ways in which we do not think globally. Consider the case of standards. How often are we content to use local, provincial, or national standards to assess the performance of our institutions rather than rely on global ones? Yet, the competition for students is international and the economy in which students will have to work is a global one. Hence, it is important use internationally recognized standards to assess how well we are doing in promoting knowledge, skills, and innovation.

Both Canada and the UK recognize that operating in a global world means attracting more international students. Currently, the UK has an excellent track record in attracting international students, which will be important in offsetting the shrinking number of young people. In fact, the UK is second only to the United States in this respect. Canadian universities, facing the prospect of a smaller pool of national students, have made significant efforts to recruit more international students. But they are still behind in this area and perhaps could learn from UK institutions about how to improve their records in the international sphere.

Another global issue raised at the colloquium was the role of immigrants in Canada and the UK. Immigrants who come to Canada with the hope of bettering their standard of living too often find their ambitions frustrated by such factors as their inability to have their professional credentials recognized. Universities have not developed programs to bridge immigrant skills and education to Canadian standards. Evidence suggests that many first-generation immigrants are preoccupied with providing educational opportunities for their children. The UK has experience with educating the children of second- and third-generation immigrants and has found that particular groups, such as Caribbean males, have problems doing well in the educational system. Since recent immigrants are a significant percentage of the population in Canada and in the UK, it was agreed that more needs to be done to ensure that we are making the most of the talents and abilities of immigrants.

A point that was made repeatedly throughout the colloquium was the importance of multilingualism in a global economy. It would seem self-evident that in order to communicate and connect with people around the world, educational institutions, governments, and businesses should be promoting the study and use of other languages. But in the UK and Canada, evidence shows that this is not the case. Hence, it was recommended that educational institutions and governments find ways to encourage multilingualism.

Those Being Left Behind

A significant concern, and one mentioned frequently during the colloquium, was that many people in Canada and the UK are "falling through the cracks"—they are not participating in the educational system or in the workforce and lack the basic skills required to succeed in the modern world. A recent report by the Conference Board of Canada found that in 2008 more than 7 million adult Canadians—or four in ten—do not have the literacy skills to cope with the demands of everyday life in the modern world (*How*

Canada Performs: Report Card on Canada 2008). An earlier study in the UK found that one in five adults were functionally illiterate.

An equally serious concern is about NEET young people—those who are not engaged in education, employment, and training. In the UK it has been estimated that as many as a quarter of a million 16 and 17 year olds fall into this category. Some regions experience this lack of participation in education and the workforce more acutely than others. For instance, about 20 percent of young people in Cape Breton, Canada, and in Northern Ireland are not engaged in either education or work.

Also, some groups are more likely than others to fall into one of the above categories. In 2005, the National Institute of Adult Continuing Education in the UK identified the target groups as follows: black and minority ethnic groups; offenders; older learners; people with language, literacy and numeracy needs; people with low skill levels; those unemployed for a long time; single parents; and learners with disabilities. Unique to Canada are Aboriginal peoples, many of whom are being left behind with respect to educational attainment and employment opportunities. For instance, 40 percent of Aboriginal people between the ages of 20 and 24 have not completed high school.

There was also discussion about inequity with respect to access to post-secondary education. The most important factors in determining whether or not an individual will attend a post-secondary institution are the income and particularly the education level of parents. One UK study found that, by 22 months of age, social class is a strong predictor of later educational outcomes. In Canada, only 8 percent of Aboriginal people currently obtain a university degree.

Allowing so many citizens to be left behind is problematic from a social, economic, and individual perspective. The simple truth is that many people in Canada and the UK are not making the most of their talents and abilities. In a knowledge-based economy in which there will be shortages of skilled, educated young people, we need everyone participating in the economy to the best of their ability. Also, social cohesion suffers when some members of the

community are not benefiting from either educational or employment opportunities. In communities that have broadened the educational and workforce participation of target groups, there has been evidence of a decline in racism, an increase in civic participation, and fewer social and health problems. Investing in programs that target groups being left behind makes good sense from the perspective of social and economic policy.

BUILDING ON STRENGTHS AND EXPLORING SOLUTIONS

Diversity

As well as focusing on problems, the colloquium considered solutions. Acknowledging the importance of diversity was a common starting point for these discussions. Today's students are very diverse: a significant number come from a variety of immigrant backgrounds—in Canada some are Aboriginal—and there are many cultural and religious differences within any student body. Some students are full-time, others are part-time; some are young, others are mature adults returning to education. Some are being educated in traditional classrooms, while others are using the Internet or other technologies that facilitate distance education. There is also a great deal of diversity within the educational sector. As mentioned previously, Canada has an array of community colleges that are not easily categorized. In the UK there is the Russell Group of Universities, which awards the majority of doctorates and attracts about two-thirds of the research funding, as well as many other post-secondary education institutions. At the secondary level there has been an increase in specialized schools.

In light of this diversity, participants agreed that flexibility, choice, innovation, and some measure of local autonomy were important in the educational system. One of the main conclusions of UK participants was that their education system is too centralized. There is too much focus on a national curriculum and standardized testing and not enough flexibility to accommodate today's

diversity and allow for innovation. It was also argued that early streaming can limit students' options. Students need to have more choices. And there needs to be more latitude for educators to develop programs that are tailored to the specific educational needs of their student bodies. In short, the days of "one size fits all" education should be over.

There was also a widely accepted view that in addressing the challenges of those not adequately represented in the educational system and the workforce, a variety of strategies had to be considered. The problems of those living with disabilities differ from the challenges of single parents or the barriers to achievement faced by the poor. And in Canada, Aboriginal people have unique histories and cultures that have to be taken into account in developing policies with the goal of increasing their participation in education and the workforce.

Balancing Flexibility and Accountability

At the same time, participants expressed the view that flexibility, innovation, choice, and local autonomy had to be balanced with the equally important goals of ensuring accountability, mobility for students and workers, and an ability to measure and compare outcomes on a global basis. Standards among educational institutions should be uniform enough to allow students to move from one school or educational institution to another. Although educational institutions that focus on the specific needs of students at risk can play an important role in increasing participation rates, such institutions should not become "dead ends." Participants also considered it important to ensure that allowing more diversity in secondary schools did not lead to more hierarchy. For example, parents may want to pay the higher costs of sending their children to private schools because of benefits such as smaller classes; however, what are the implications for the quality and diversity of the publicly funded school systems? Moreover, in a global economy it was deemed to be important to have the capacity to compare the outcomes of educational institutions on a global basis.

Thus, meeting the educational requirements of a diverse population requires enough flexibility in the educational system to meet the needs of specific groups while at the same time offering students a variety of choices so that they can realize their dreams and expand their horizons. Some of the experiences with Aboriginal education in Saskatchewan suggest how such a balance might be achieved.

Aboriginal people comprise about 13 percent of the population of the province, and historically they have been a disadvantaged group whose members experienced high levels of poverty and low levels of educational attainment and participation in the workforce. Aboriginal children who do not live on reserves have attended the public school system, in many cases in schools with services specifically designed to address the challenges of lower-income families. However, their educational success has lagged behind.

The province also has significant experience with an educational model in which Aboriginal young people are taught in institutions separate from the mainstream. These include federally funded schools on reserves and the First Nations University of Canada, a federally funded, autonomous First Nations educational institution associated with the University of Regina. Studies have shown that the educational outcomes of the reserve schools are very low and much worse than the off-reserve schools attended by Aboriginal children. The First Nations University of Canada has been mired in controversy over governance issues. But a more important consideration is that the institution does not provide its students with a wide range of options. It focuses on subjects like native studies or Aboriginal languages but does not give students the opportunity to become engineers, scientists, doctors, or lawyers. Perhaps because of this limitation on their horizons, many more Aboriginal students attend the University of Saskatchewan, the provincial medical-doctoral university, than go to the First Nations University.

The educational model at the University of Saskatchewan, which is also reproduced at the primary and secondary levels in the

province, blends curricula and standards that are common to all parts of the university with programs and events that recognize the unique culture, traditions, and challenges of Aboriginal people. Aboriginal students take the same classes and write the same exams as other students, but there are special classes to help them with language and other difficulties. Aboriginal ideas are woven into the curriculum; for instance, the university researches not only modern medicine but also traditional Aboriginal remedies for illness and disease. Aboriginal students also have their own student organizations, cultural celebrations, and conferences. The university brochure for Aboriginal students states that the campus is one where "Aboriginal achievement is celebrated, Aboriginal scholarship is first-rate, Aboriginal awareness is our priority and Aboriginal success is paramount." In terms of outcomes, the results speak for themselves. The university has more Aboriginal students than any other university in Canada. More than 10 percent of the University of Saskatchewan's 16,000 students are of Aboriginal ancestry and there are Aboriginal graduates in education, medicine, law, engineering, and other subjects.

Increasing the Participation Rates of Those Left Behind

Another problem in Canada and the UK is the need to increase the participation rates of those not adequately represented in the post-secondary education systems. For instance, in Canada, since the 1960s there have been federal and provincial student assistance programs in which financial aid is targeted at low-income students. While there has been an increase in the participation of people from low-income families in post-secondary education, there is still a gap between them and students whose families have higher incomes and educational levels.

From a public policy perspective, it is often argued that more of the support that governments provide to post-secondary students should be targeted to lower-income students. However, there is another view in Canada, which is that middle-class families view post-secondary education as one of the benefits they receive for

the higher levels of taxation that they pay. The idea that there is a limit to the tolerance of middle-class taxpayers for targeting benefits to low-income citizens is substantiated by the fact that many provincial governments have recently developed programs, such as tuition freezes, which provide benefits to students irrespective of income. Also, the federal government provides support for post-secondary education students through programs such as tax credits and educational savings plans, which effectively provide relatively more benefits to students from middle- and upper-income families.

Since much of the financial assistance available to post-secondary students is in the form of loans that have to be repaid, student debt levels have increased dramatically. It was recommended that governments find ways to ease the debt burden by adopting such policies as making the repayment of student loans more flexible.

In the UK, governments and universities have made efforts to attract more students from low-income families into post-secondary education, but relative to Canada governments in the UK devote more resources to the secondary school systems and to developing the skills of those being left behind. Various programs have been instituted that target the specific problems experienced by those who are falling through the educational cracks. For example, Teach First is a program that involves graduates in STEM subjects working as teachers in disadvantaged communities. The aim is to increase the number of students taking STEM subjects. Another more general goal in the UK is to enhance the esteem with which students and parents regard technical or vocational education compared with university education.

An informative session was devoted to the secondary school system in both countries. The UK and Canada score reasonably well in terms of the subject matter being taught at this level. However, they score very poorly with respect to the levels of engagement among the students. It was argued that as well as teaching basic skills such as literacy and numeracy, the goals of the secondary education system should be to foster the development of happy, well-adjusted people who want to pursue further education.

Secondary education should encourage characteristics such as an frame of mind, an ability to think in interdisciplinary or cross-disciplinary terms, and a sense of social engagement. It was also pointed out that guidance for students about their futures should be provided at a younger age. One participant posed a thought-provoking question: Where in the educational system do students learn innovation?

The discussion about how to enhance the participation rates of those not engaged in secondary education was part and parcel of a broader discussion of the respective roles of business, government, and educators in the educational system and the importance of partnerships and holistic approaches to problems.

THE ROLE OF EDUCATIONAL INSTITUTIONS, GOVERNMENT, AND BUSINESS IN PROMOTING KNOWLEDGE, SKILLS, AND INNOVATION

The discussion about the respective roles of educational institutions, governments, and businesses in promoting knowledge, skills, and innovation focused on three main questions. Do our citizens have the appropriate knowledge and skills to participate in a global economy? Do our businesses have access to adequate knowledge and skills to compete in a global economy? What steps should be taken and by whom to ensure a high quality and plentiful supply of appropriately skilled workers? The questions generated extensive discussion, much of it focused on the extent to which educational institutions are doing a good job of providing students with the right skills.

Evidence suggests that in the UK, businesses in particular are not satisfied that educational institutions are turning out graduates with the skills that employers require. Some graduates were considered to be deficient in basic literacy, numeracy, and employability skills. At the same time, some employers were vague when it came to describing the skills they require; for instance, in one survey many UK employers stated that beyond technical skills what they valued most were leadership and management skills.

Educators, on the other hand, have been skeptical about business playing a significant role in designing curricula. They argue that education is about more than merely turning out graduates with the skills needed by business. Education should encourage individuals to develop general character traits such as tolerance, intellectual curiosity, and a sense of ethics. Thus, education is also associated with the creation of better societies.

Participants generally agreed that educational institutions should design curricula that teach students general competencies while businesses should be assigned the task of providing more specific training. In theory, this division of function works well; however, in practice there are problems. Big businesses have the resources to invest in training, but small- and medium-sized businesses do not; this is an especially significant problem in Canada since the majority of businesses are small and medium sized. Also, the track record of businesses in training employees has not been a stellar one, particularly in Canada.

With respect to the issue of forecasting skills that will be required and ensuring that educational institutions are offering students the opportunity to acquire these skills, participants argued that, in theory, market mechanisms should address the problem. That is, one of the reasons that students seek advanced education is to secure a meaningful, well-paying job. Hence, if there are shortages of educated, skilled people in a particular area, then this reality should translate into more opportunities and higher salaries, which in turn should increase student demand for those courses. Similarly, since post-secondary education institutions compete with each other for students, they should have to respond to student demands and should therefore be offering courses that are responsive to the changing demands of the economy.

As is often the case, what works in theory does not necessarily work in practice. It was pointed out that forecasting the demand for skill is complex. Employers have difficulty in precisely defining their future needs, and labour markets are slow to adjust. There is also often a misalignment between labour market needs and post-secondary education systems. For example, in Canada the

shortage of workers in the skilled trades has been forecasted for some time but technical institutions and employers have been unable to respond in a way that addresses the problem. More generally, the case was made that since it is not clear that there is conclusive evidence as to what the optimal mix of skills is for the future, there is need for a system that responds rapidly to demand shifts or anticipates them so that young adults have the skills needed for the jobs that will be created.

Partnerships and a Holistic Approach to Skills, Knowledge, and Innovation

The issue of skills training was only one of many that showed the need for partnerships among governments, educational institutions, and businesses and the importance of taking a holistic approach to promoting skills, knowledge, and innovation. In reality, businesses and educational institutions want similar educational outcomes. That is, in a rapidly changing world, the technical skills needed today are often quickly outdated, which means that more emphasis should be placed on teaching broadly based, generic skills. Businesses and governments want students who are able to think strategically and analytically, who are adaptable and ethical in their behaviour, who know how to work in teams both as members and as leaders, and who are culturally sensitive and innovative. Hence, there should be no dichotomy between the needs of businesses and the goals of educators. One question raised was, Should we be focusing on training our young people for the labour market or on giving them a general education? The overwhelming response was both.

Partnerships involving business, government, and educational institutions were also seen as a way of addressing the complex and difficult problem of forecasting skills that will be required in the future and developing strategies to meet the demand. Formal partnerships among government, business, and educational institutions have been adopted through the creation of Sector Skills Councils in the UK and comparable Councils in Canada. The

Sector Skills Agreements developed in the UK illustrate how the partnership works in practice. The agreements involve five stages:

- assessment of current and future skills needs in the sector,
- assessment of current provision in the sector,
- analysis of gaps and weaknesses in demand and supply,
- identification of the scope for collaborative action with employers, and
- production of a costed action plan with supply-side partners.

The overall objectives of the agreements are to determine what drives productivity and competitiveness in a sector, to establish global best practices, and to identify the skills required to meet these goals.

More generally it was agreed that the barriers between the educational and working worlds need to be broken down. To cite one example, many of the solutions to the problem of a shortage of STEM graduates lie with holistic approaches involving schools, colleges, universities, employers, and professional bodies. Students at a young age have to be exposed to role models from the business sector and students in higher education to discuss the importance of studying STEM subjects. Topical subjects like climate change have to be presented to students in a way that is exciting and directly linked to problems in their communities. Introducing STEM graduates who are doing exciting work in the business world into the classroom and allowing students to see first-hand what opportunities exist for them was seen to be an effective way to generate more interest among students in STEM subjects.

Another example of an area in which a more holistic approach is required is the debate about the role of research and teaching in universities. It is sometimes argued that universities place too much emphasis on research at the expense of teaching. It is true that the publication record of faculty is a major factor in decisions about hiring, tenure, and promotion. But it is also true that virtually all universities require student evaluations of teaching, which are taken into account in hiring and promotion decisions,

and many universities have awards that recognize distinguished teachers. Compare this situation with that of a generation ago when evaluations and recognition of teaching were the exception rather than the rule. Yet students also benefit from having instructors who are actively engaged in research. Hence, rather than seeing research and teaching as being at odds with each other, it is more appropriate to see them as complementing each other.

Participants cited many other benefits that would result from breaking down the barriers between educational institutions and the workplace. Many students can benefit from participating in programs in which a semester or term is spent working with a business, a branch of government, or other organization. Students gain practical experience to enhance their learning and employers can use the programs to screen and groom potential recruits for the future.

The importance of a holistic approach and the development of partnerships were seen as particularly valuable in enhancing the educational and workforce participation of underachieving students. The partnerships should include educators, business people, government officials, and parents. It was pointed out that parents often play a key role in the educational choices that students make. To cite one example, the fact that many students in Canada shift their areas of study may be a reflection of the role that parents play in influencing their children's choices of subjects and careers. Also, often the challenges that students are having at school are rooted in family problems. Hence, solving students' educational problems sometimes necessitates addressing the difficulties they are experiencing at home. Involving parents in their children's education is almost always beneficial.

Participants agreed that underachieving students benefit from practical experiences either in the classroom or in the workplace. It was suggested that educators place more emphasis on a case study approach to learning by using practical examples of real life situations. In a similar vein, there was support for bringing people who can speak about their experiences in a particular area into the classroom. There was a strong consensus that practical

experiences in the working world are especially valuable for underachieving students. As one participant put it, there is a role for action-based learning in which students live the experience of working in the "real" world.

It was also argued that enhancing the educational attainment levels of underachievers involves being innovative and flexible. For example, it is important to identify barriers that are preventing students from realizing their educational potential and take action to remove those barriers. If students, for example, have young children, then providing daycare might be an essential step in enhancing their educational performance. As well as providing facilities to meet the needs of specific students, educators have to be flexible in the models of program delivery that they make available. Some students may do better studying part-time rather than full-time. Some students may find it more convenient to study online rather than in a classroom setting. In short, as much as realistically possible, educational programs and the way they are delivered should be adapted to the needs of students so that all have an opportunity to make the most of their talents and abilities.

CONCLUSION

The importance of partnerships and taking a holistic approach to promoting knowledge, innovation, and skills in a global economy were overarching themes of the 2008 Canada-UK Colloquium. It was recommended that business, government, and educational institutions work together to increase the educational and workplace participation levels of those currently falling through the cracks. It was agreed that similar partnerships were also needed to encourage more students to enroll in STEM subjects and to address the complex issue of identifying and supplying the skills needed for the economy of the future. There was a consensus that a holistic approach to education meant placing more emphasis on ethical issues, encouraging multilingualism, and accepting more fully the contributions of immigrants in our societies. There was an understanding that diversity has to be accommodated within

our educational institutions while at the same time ensuring that students have a full range of educational options and that the outcomes of educational programs are comparable on a global basis.

Advancing knowledge, skills, and innovation in the twenty-first century requires flexibility rather than rigidity, choice rather than prescription, and an acceptance of diversity rather than an assumption of uniformity. We are invited to adapt, to be innovative, and to be strategic in response to an ever-changing world.

APPENDIX

BREAKOUT GROUP DISCUSSION NOTES

QUESTION 1: *Should we be focusing on training our young people for the labour market or should we be focusing on giving them a general education?*

Observations

1. The dichotomy is a false one as it implies doing one or the other. In a world where globalization is increasing the level of competition and where one response is to increase the knowledge intensity of work, change—the occupational distribution of employment—is inevitable. The education system needs to do both things simultaneously.
2. It is not clear whether we have the evidence needed to decide what the optimal mix of skills is for the future. This uncertainty translates into a need for a system that can respond rapidly to demand shifts, or better, anticipate them, so that young adults have the skills needed for the jobs that will be created. The key underlying issue is providing transferable skills that impart the ability to adapt.
3. The need for transferable skills led to a discussion about whether the current modes of instruction were suited to the needs of all learners and, given the loose connection between fields of study and occupation, whether we should be much more focused on transferable competencies.
4. There was some discussion about the need to adopt policies that ensure that early student choices do not unduly constrain their later choices.
5. Finally, there was an acknowledged need to be mindful of the forces that foster skill demand. By extension this implies doing more than managing supply. Much policy assumes high levels of demand, an assumption belied by low rates of return observed for some supposedly high-demand occupations, including computer scientists and engineers. On the other hand, there is a need to predict key skill shortages.

Notes compiled by Scott Murray
President, DataAngel Policy Research Inc.
Kanata, Canada

QUESTION 2: *How can more young people who have multiple aptitudes and preferences be encouraged to focus on science, technology, engineering, and mathematics (STEM) subjects and seek STEM careers?*

Overall Messages

STEM graduates and skills are important for our economic productivity and global competitiveness. We need to retain highly skilled people with STEM education. We need to restructure many industries to move up the value chain, and to do this we will need the talent of people with a background in STEM subjects. We also need to understand the broad application of STEM skills and knowledge in financial services, information technology, the creative sector, and professional services. To build the knowledge economy of the future, we have to invest in higher level skills, particularly in science and mathematics. People with STEM skills are needed to replace an aging workforce (replacement demand) and to cope with future economic growth (expansion demand).

So… yes, we need more young people to take STEM subjects and to choose STEM-related careers.

STEM shortages are more acute in the UK than in Canada; Canada uses the immigration system more freely to resolve any mismatches in the demand and supply of STEM skills. The UK uses immigration talent as a short-term solution but recognizes the need to invest in British young people to increasingly take STEM subjects in secondary school, college, and university.

Problems

- Too many non-specialist STEM teachers in secondary schools. This is also an issue in primary schools: data from England show that primary school mathematics teachers have on average a C grade in that subject.
- Lack of role models (young scientists) to raise awareness and share experiences of STEM subjects with students, and to demonstrate the relevance to career choices.
- Teaching methods connected with whether students are streamed or grouped in mixed-ability classes are another issue. UK evidence shows that there are significant benefits from peer learning, group work, and feedback in mixed-ability classes.
- Science and math perceived as "too difficult," irrelevant, and not "sexy."
- At university, experiences in Canada show that marks for STEM subjects are generally lower, so students choose non-STEM subjects.

- In the UK, not enough young people take A-levels (only 36 percent of young people in England) and even fewer take math, science, physics, and chemistry A-levels (11 percent). Only 4 percent of all students, mainly in higher education, obtain two science A-levels (67 percent of the 4 percent).
- Perceived lack of connection between STEM subjects and "real world" jobs. We need businesses to work more effectively with schools to demonstrate the relevance of math/science to careers and everyday jobs. We need more student placements in business offering a quality learning experience to young people. We need clear market signals about career opportunities through national labour market data and stronger connections between schools and local businesses.
- Need to make science exciting again in the classroom – there is a perception of too many health and safety regulations as barriers which prevent students from really experiencing the excitement of science.
- Need to exploit the passion of young people for climate change, renewable energy, poverty reduction, disease . . . and to engage them in developing solutions to these challenges through STEM knowledge and skills.

Solutions

- Recruit appropriately qualified teachers with a core competence in STEM knowledge.
- Provide access to continuing professional development (CPD) training for STEM teachers, with classroom coverage by the school system.
- Invite more young role models from the business sector and students in higher education to share their learning and experiences of the relevance of studying STEM subjects.
- Arrange more quality student placements in businesses and other organizations that rely on STEM knowledge and skills.

United Kingdom

- *Teach First.* This successful pilot program places graduate teachers of STEM subjects in schools in disadvantaged communities. About 200 new teachers are placed per year, with roughly a 50 percent retention rate.
- *Transitions into Teaching.* This program involves experienced people from business (on secondment or as a result of redundancy) transferring into teaching or visiting as guest speakers.

- *New School Diplomas.* Diploma courses offer an alternative qualification to A-levels as entry requirements into higher education. Diploma courses include both practical and academic learning in secondary schools with a special focus on math, science, and information technology. These courses are linked directly to work placements.
- *Role Models.* A range of schemes are run by large companies and professional bodies.
- *National STEM Framework.* The government funds (£350 million) a number of national schemes involving schools, universities, employers, and professional bodies in chemistry, physics, engineering, and other fields.
- Consider reinstating biology, chemistry, and physics as single subjects in the UK rather than teaching them as a combined science, to give each subject due priority and time in the curriculum to bring student skills and knowledge to adequate levels.
- Schools could share teachers and develop local partnerships between schools to offer joint curriculum using combined resources rather than each school doing it on their own.
- Summer school (as in Canada) could be offered to STEM teachers as a CPD activity and a means of improving their knowledge and teaching skills.

Canada

- The education system allows people a "second chance"—the system encourages individuals to access higher education at any point in time.
- Universities and community colleges use eligibility criteria beyond qualifications and grades to provide access to higher-level learning.
- University education offers a "general" experience before specialization in later years of study. This means that more students can get some exposure to math and science.
- Immigration solves many STEM skills shortages, so there is no real urgency to address STEM education student "supply" issues.
- The Canadian approach to STEM is based on the understanding that STEM subjects are important, across the education continuum, to economic productivity and wealth creation. Hence the lack of STEM PhD students is of concern.
- Class size certainly seems to be one variable that has an impact on student performance. There is some indication that smaller class sizes are more beneficial for teaching complex STEM subjects.

Other Issues

- We need to address the high cost of STEM teaching by allocating more funding for STEM subjects.
- We need more holistic approaches that involve schools, colleges, universities, employers, and professional bodies.
- We need long-term solutions and the commitment of businesses to consolidate and more effectively integrate their STEM initiatives in partnership with schools.
- We need to better understand the "demand" for STEM skills.
- We may need to offer incentives for students to study STEM subjects in secondary school, college, and university.
- We need to reconcile the supply of students with the capacity of the education system, for example, by monitoring the closure of university departments in STEM subjects.
- We need to create economies of scale in the research and teaching of STEM subjects and to monitor the overconsolidation and hence lack of geographic presence of STEM departments in the university sector.

Notes compiled by Keith Herrmann
Deputy CEO, Council for Industry and Higher Education (CIHE)
London, UK

QUESTION 3: *What role should government have in education in terms of funding access to education and setting curricula?*

Access

Increasing participation and success for male students is a challenge. The government has a role in ensuring that all schools, even those in poor areas, have adequate resources. The government also has a role in funding a range of support for low-income families at the three levels of education in order to broaden access and ensure quality of education.

How should this be done? Through student assistance. Especially in Canada, there is a feeling that the system has swung too far toward tax credits. In Britain, the special interest rates for student financing need to be adjusted more rapidly to reflect market changes.

There should be an increase in continuing education initiatives.

It is important to recognize the impacts of immigration on educational attainment and wages, and that immigration stabilizes native-born Canadians' wages and the economy in general.

The idea of creating institutions *for* underrepresented people like Aboriginal peoples is controversial. Some of those groups claim it is the only way that they will participate significantly in higher education. However, perhaps *all* universities ought to be reaching out to these students.

Setting Curricula

The discussion focused on K-12 education (i.e., primary and secondary).

To familiarize us with the respective systems, the UK has centralized its pedagogy over the last 30 years, particularly within England (there has been decentralization among the UK's four constituents). There is a sense that the pendulum has swung much too far in that direction in England. In Canada, the education system varies depending on the province or territory. Each province has a different system; most provinces are very centralized within their own borders, and standardized testing comes and goes as a trend.

There was a consensus that at the post-secondary level, the government should have a limited role. There was also a feeling that the government should have a much smaller role at the primary and secondary levels as well, particularly in the UK. In Britain, education has become far too mechanistic and "box-filling," which is reducing respect for teachers. This creates a vicious cycle: teachers are undermined and so the government becomes even more prescriptive.

The UK and Canada face a common challenge: the need to find a balance between giving educators the flexibility to add value that may not adhere to requirements and ensuring accountability and mobility of students. Schools must be sufficiently similar to ensure that students can move between them. Schools should not become a "dead end" because of a lack of consistency between different institutions.

Notes compiled by Denise Helly
Professeure titulaire, l'Institut national de recherche scientifique,
Université du Québec
Montréal, Canada

QUESTION 4: *How should the education system stream students by abilities and interests and encourage both diversity and cohesion in schools and higher education institutions?*

Streaming

The working group was asked to consider the pros and cons of streaming both by abilities and by interests. It was once thought in both the UK and

Canada that streaming was a method of organizing pupils so as to maximize the development of their full potential. Streaming was used to differentiate and separate pupils by abilities, but the practice has proven different from the theory.

In theory, streaming was to facilitate the optimum allocation of teaching resources and to group together pupils at similar levels of attainment or interests.

In practice, however, individuals are much more complex and harder to categorize. Moreover, academic achievement was often due to factors other than intellectual ability, which in any case was not a simple given but could improve with encouragement and sensitive teaching. While initially less successful pupils might be almost permanently written off as "low-achievers" in a streamed system, a different approach with the same pupils could engender improved self-confidence or motivation, resulting in effective "late-developers." Sometimes late development occurred regardless of educational inputs, and damage might be done by a rigid system of streaming.

The preferred alternative was "setting," where a class of mixed-ability pupils could be subdivided into smaller and more focused groups, but in a more flexible way that could be regularly reviewed and adjusted.

The working group also felt that mixed-ability classes, while in some ways more challenging, produced better intellectual results and better social attitudes. Pupils might excel in one area but be weak in others, since "all-rounders" were not necessarily the norm. The aim should be to foster mutual respect between pupils of varying abilities and differing strengths, not only in academic subjects but also in sports, music, drama, art, and extracurricular activities.

Social Cohesion

In general, the working group felt that social cohesion could best be enhanced by mixing young people from differing ethnic and religious backgrounds. Both the UK and Canada are very diverse societies, and the education system should encourage integration rather than separation. Multiculturalism should be a process of sharing experience across cultures rather than risking "ghettoization." Single faith schools often produce better-than-average academic results when their ethos is more values-based and disciplined, but conscious efforts must be made in such schools to spread knowledge and mutual respect for other faiths and traditions, including the secular culture.

There is no clear parallel in the UK education system of the past unfortunate treatment of some Aboriginal pupils in Canada, but the lessons learned in terms of respecting cultural differences and traditions while working to

achieve an overall framework of integration and cohesion are relevant to both countries. Canada's bilingualism has important lessons for the UK in demonstrating effective methodology for teaching proficiency in a second language.

While fluency in oral and written English in the UK, and English and French in Canada, is a prerequisite for achieving social cohesion, greater efforts should be made to promote the learning of foreign languages, especially those most relevant to meet the challenges of trade, investment, and scientific exchange in the global economy. In this context, the shift of economic strength and growth in the world toward East and South Asia and the Middle East underlines the priority for schools as well as institutions of higher education to teach languages such as Chinese, Japanese, Korean, Hindi, and Arabic, as well as Western languages such as German, Spanish, Portuguese, and Russian.

It would further social cohesion if minority communities in the UK and Canada were more widely recognized for the value they can bring to the process of bridge-building with the wider world. For instance, British Indians or Chinese Canadians, who are proficient in their mother tongue as well as in the official languages and who retain cross-cultural sensitivities, could act as a hugely valuable human resource to promote international economic, scientific, and technological exchanges. Each country's education system should build on the benefits of diversity in the national population, rather than promote too narrow a form of social cohesion.

A final point highlighted by the working group was the need to review the curriculum regularly in order to make adjustments rapidly, should major shifts occur in the population through changing patterns of migration. The education system must be in a position to meet the varying and sometimes unpredictable results of globalization.

Notes compiled by Nicolas Maclean, CMG
Chief Executive, Materials World Modules (Education and Training)
London, UK

QUESTION 5: *How do we improve the quality of the interaction between higher education institutions and students' future employers in terms of career services, curriculum design, teaching, and funding?*

The multidisciplinary group addressing this question included a politician interested in getting people into the workforce, an academic researcher, a sector skills person, the chair of a research-oriented university, a business CEO, a government funding person, and a think-tank man.

Definitional Issues

Higher education is a level of qualification in the UK but a type of institution in Canada. We must exercise caution with comparisons. Therefore, the group focused on "post-compulsory" education as a definition of higher education. The group also focused on graduates (not on knowledge transfer).

Initial Propositions

Institutions should articulate better what students are working toward in terms of employment. The role of universities should be to develop school-leaving capacity and adaptability. The colleges are better suited to more immediate skills needed for employment.

The Shortage of Engineering Graduates

- The problem may not be easily solvable as students, not employers, decide what they will study.
- Universities are very responsive to student choices, especially with enrolment slowing.
- Engineering study imparts many valuable skills for employment other than as an engineer.
- However, the professional bodies tend to cram the curriculum. As a result, subjects like engineering are seen as "hard," and students are discouraged from pursuing them.
- Labour market intelligence does not encourage young people to want to be engineers.
- The government believes the country needs more engineers doing engineering, but they can also use those skills for other jobs.

Further Thoughts

- Students have to decide what subjects to study far too early, as young as age 12.
- Schools have a key role in stimulating interest and excitement in STEM subjects.
- At the high school and college levels in Canada, there are "affinity groups" between teachers and employers to negotiate curriculum. This option might be examined by the UK.

Recommendations

Some of the recommendations address the issue of access to post-secondary education or relate specifically to employers. Many of these proposals are being done already to differing degrees in Canada and the UK. A study should perhaps be conducted to compare practices in the two countries.

1. Guidance should be offered earlier in school (to widen choices not narrow them).
2. Guidance should be tailored and progressive.
3. Job shadowing, work experience, co-op placements, and sandwich programs should be implemented where possible (beginning at the high school level).
4. Summer schools should be put in place.
5. Practicing employability skills should be encouraged where possible.
6. Apprenticeships should be encouraged.
7. The influence of parents should be used to advantage. This process works both ways: it requires providing information to parents as well as "first-generation strategy" targeting for access.
8. A systems approach to access should be followed, with an emphasis on distinction, excellence, and equality.
9. The "Ubisoft campus" idea should be explored: collaboration with the private sector leading to a university degree.
10. Business–institution consortia should be built and strengthened.
11. Web-based learning should be explored to increase access. The practice is already quite strong in the UK, and is starting in Canada.
12. Skills academies, a collaboration between institutions and the industry sector, may be another option for business–institution partnership.
13. Visiting professors should wherever possible come from industry.
14. Business members of the governing boards ought to be thinking about learning outcomes. In other words, they should engage in rigorous governance beyond wages and benefits, which would reduce unnecessary friction between institutions and industry.

Notes compiled by Roger McClure
Chief Executive, Learning and Skills Improvement Service
London and Coventry, UK

QUESTION 6: *How do we bring our citizens' skills and capacity for enterprise and innovation as well as our formal education system up-to-date to reflect the realities of the new global economy, particularly the rise of communications technology and the rise of the developing world?*

First, we determined what this question is asking by examining the context and the components of the question.

The global reality is that there is a demographic divide between the West and the East, and between the North and the South. There are differences in the uptake of science and technology. However, the boundaries between countries are blurring. The world is becoming a "global village."

Why are we not attracting students to science and technology? How do we increase numbers, and how do other countries do this? Can we provide more incentives and address barriers (including early childhood to secondary and post-secondary education)?

How do we engage our adult population in continuing education for their first degrees or graduate degrees? Is part-time learning the answer? Do we need more than one model of delivery? Some examples are the open university, distance learning, the blended learning model, and workforce programming.

There is a need to embrace Prior Learning Assessment and Recognition.

There is also a need to address access for adults in general and for underrepresented groups such as immigrants and Aboriginal peoples. Access may not relate so much to the content of what is taught but to the teaching and learning process. We need to move beyond the traditional classroom approach. There needs to be more opportunities for learners to be exposed to a greater breadth of experiences. These experiences need to include more simulations and "real-life" exposure.

With the increasing reliance on immigrants and foreign producers in both Canada and the UK, do we do enough to promote cultural understanding?

Once we determined what this question is asking, several potential directions and solutions to the issues arose.

Open Universities and Distance Learning

- There is a need to keep in mind the benefits provided by the open (distance) universities of both Canada and the UK. Open universities promote open access to university-level study to a broad range of traditional and non-traditional students. There is a need for access to higher education for those who live in rural and remote areas, who cannot find a place in traditional institutions, who have non-traditional academic backgrounds, or who have ongoing family responsibilities.

- The majority of students at open/distance universities are already in the workforce and are able to complete courses or a degree while working. Access to education by working adults is critical, especially given our demographics and worker shortages. Such access is facilitated via use of technology-based alternatives to traditional instructional channels and contexts (distance education).
- The open universities in Canada and the UK, as with most open universities in the world, tend to have strong partnerships with employers of all kinds.
- The increased use of distance education to give workers the skills and training they need is strongly recommended.

The Global Economy and Work Experience

- The focus should be on action-based learning, and on showing and telling learners about the world and new global realities.
- There needs to be opportunities for learners to be exposed to the developing world, and more global experience generally.
- Since study abroad is often expensive, a cost-effective supplement would be to have visits to the classroom or workplace from individuals from developing countries or who have worked in developing countries. Companies with operations abroad could contribute to this initiative.
- Short- and longer-term international assignments are also crucial.
- Training should be offered to teachers and faculty members so that they can impart knowledge about the global economy and developing countries.
- "Sandwich degrees" or "co-op terms" are good ways to give learners work experience.

Incentives for Science and Technology Entry

- There should be some financial and/or job incentives to pursue science and technology in higher education. Since the pursuit of these subjects is an individual choice, incentives must influence this choice. One option would be to use the "military model" of guaranteeing job offers upon completion of the program. The private sector might be able to contribute financially or through job offers.
- There should also be social incentives, such as child care, for people pursuing science and technology studies.

- The barriers to access should be identified, whether they are in the delivery system or in the funding system, but this research should pass quickly to action.
- Role models and mentors in science and technology would have a positive impact on learners seeking to acquire science and technology training.

Learning Languages and Enhancing Cultural Understanding

- There is a general sense that we should consider or reconsider compulsory language courses at primary or secondary levels. As an alternative, an incentive-based approach could be adopted, with an emphasis on promoting the benefits of learning languages to participation in the global economy. Models discovered through international collaborative research into schools that provide language training could be used.
- Learning languages contributes to cultural understanding. Cultural understanding is important in alleviating the perpetual friction that arises from differences in the understanding of, for example, intellectual property and safety.
- As well as language, environmental sustainability and social awareness should be promoted.
- We need to better exploit the safe environment that Western countries provide for living and doing business.
- How do we accelerate the learning process to meet the needs of a complex world? There needs to be a balance between relevant content and experiential teaching.

Notes compiled by Pamela Walsh
Director of Operations, Athabasca University
Athabasca, Canada

CONCLUSIONS AND ISSUES FOR FURTHER JOINT DISCUSSION

The United Kingdom and Canada share many of the same challenges in providing their citizens with the knowledge and skills they need to become innovators and productive workers in the global economy. Faced with the pressures of globalization and the rise of the developing world, the need for British and Canadian citizens to be competitive in terms of both knowledge and skills is more urgent than ever. It is important for our two countries

to learn by international example. The United Kingdom and Canada are so alike in culture and so different in experience in the domain of education, skills, and training that it is natural to learn from one another.

Many important concerns in education and training are shared by the United Kingdom and Canada. Notably, these concerns include:

- the disenfranchisement of certain minority groups and a section of male students from the education system
- difficulties in accessing higher education by some groups, including people from rural areas, adult students, and students of lower income levels
- the need to make better use of immigrants' skills and knowledge
- the need for a more multicultural, multilingual, and global education that informs students about global issues
- the lack of students pursuing science, technology, engineering, and mathematics
- the apparent tension between the need for a free-ranging educational experience and the need for training for the realities of the job market, and between educational institutions and employers
- the balance between government control and centralization of curricula and freedom for educators and institutions to shape particular programs

The preceding recommendations point to some areas where Canada and the United Kingdom can learn from one another, such as the Teach First and Transitions into Teaching programs in the UK and language immersion schooling in Canada. However, there are also areas where further cooperative study and effort is needed between Canada and the UK. These areas include:

- the promotion of global standards and qualifications in order to reap more benefits of immigration and to assist in international comparisons
- the development of role models and mentors both for disenfranchised groups and for science, technology, engineering, and mathematics careers
- the design of curricula to maintain a balance between consistency and flexibility
- the development of tools to forecast future skills and competencies shortages
- the improvement of communication between businesses and higher education providers and between these institutions and secondary schools

- the sharing of experiences between British and Canadian open universities, community colleges/colleges of further education, and Skills Councils to improve access to higher education and the higher education–workforce transition
- the importance of promoting ethics and social responsibility in educational institutions, businesses, and government

The 2008 Canada-UK Colloquium was meant as a starting point to bring experts on knowledge, innovation, and skills together to identify common concerns and to begin to find solutions to these concerns through dialogue and bilateral comparison. It is hoped that this work will continue, and that the participants of the colloquium and the readers of this report will be inspired to pursue this dialogue in the spirit of fellowship that has always existed between our two countries.

PROGRAM

THE 2008 CANADA-UK COLLOQUIUM

Knowledge, Skills, and Innovation for a Global Economy

Chair: **Mel Cappe,** President and CEO, Institute for Research on Public Policy (IRPP)

Wednesday November 19

6:00 p.m. United Kingdom participants arrival

Florence Room

7:15 p.m. Reception and informal dinner

Thursday November 20: Montreal Innovation Day

Loews Hotel Vogue, Lyon Room

7:30 a.m. Breakfast and presentation
Peter Edwards, Vice-president, Human Resources, CN (Canadian National Railways)

8:45 a.m. Departure from the hotel

9:15 a.m. Tour and presentation
Ubisoft Canada Inc.
5505 St-Laurent Blvd., Suite 5000, Montreal

11:30 a.m. Lunch
CN
935 de La Gauchetière Street West, Montreal

1:00 p.m. Tour
Cirque du Soleil
8400 2nd Avenue, Montreal

3:30 p.m. Tour
GlaxoSmithKline R&D Centre
525 Cartier West, Laval

6:00 p.m. Return to hotel

7:00 p.m. Reception and dinner
Loews Hotel Vogue, Florence Room

Friday November 21: Topics in Knowledge, Innovation, and Skills for a Global Economy

Florence Room

8:00 a.m. Breakfast buffet

Paris I, II Room

8:45 a.m. Opening remarks
Philip Peacock, Chair of the British Committee, Canada-UK Colloquium
Arthur Sweetman, Professor, School of Policy Studies, Queen's University

Chair's introduction
Mel Cappe, President, Institute for Research on Public Policy

9:00 a.m. **Session 1: Our Knowledge, Skills, and Innovation Needs**

Canada: **Arthur Sweetman**, School of Policy Studies, Queen's University
UK: **Michael Osbaldeston**, School of Management, Cranfield University

10:30 a.m. Break

11:00 a.m. **Session 2: Private and Public Sector Roles in Lifelong Learning**

Canada: **David Stewart-Patterson**, Canadian Council of Chief Executives
UK: **David Fisher,** King's College

Foyer Paris I, II

12:30 p.m. Lunch buffet

Lyon Room

1:00 p.m. Breakout group discussion

With a view to providing input for the rapporteur's report, the goal of this session is to discuss specific actions the two

countries can take to improve each nation's knowledge, innovative capacity and skills. Special emphasis should be placed on lessons learned from each other in the course of discussion, and how best practices from one country may be adapted to the specific context of the other. Breakout discussion will be conducted around the lunch tables at the facilitators' discretion. Results are to be submitted to the rapporteur.

Paris I, II Room

1:45 p.m. **Session 3: The Quality and Value of Education and Training Outcomes**

Canada: **Ken Norrie**, Higher Education Quality Council of Ontario
UK: **John Randall**, Skills for Justice

3:15 p.m. Break

3:45 p.m. **Session 4: Priorities of Secondary Education**

Canada: **Penny Milton**, Canadian Education Association
UK: **Baroness Walmsley**, Liberal Democrat Party spokesperson on skills

5:15 p.m. Adjournment

5:45 p.m. Gather in the main lobby of the Loews Hotel Vogue for transportation to the University Club of Montreal

6:00 p.m. Reception
University Club of Montreal
2047 Mansfield Street, Montreal
Host: Anne Jarrett, UK Consul-General

7:00 p.m. Dinner

Saturday November 22: Actions to Be Taken

Florence Room

8:00 a.m. Breakfast buffet

Paris I, II Room

9:00 a.m. **Session 5: Access, Completion, and Innovation in Post-Secondary Institutions**

Canada: **Andrew Parkin**, Canada Millennium Scholarship Foundation
UK: **Wendy Piatt,** DG Russell Group

10:30 a.m. Break

Lyon Room

11:00 a.m. Breakout group discussion

Similar to the breakout discussion on Friday, with the same groups, but more results-based. The aim at the end of the session is to have coherent, synthetized responses from the discussion to present to the rapporteur.

11:45 a.m. Discussion group presentations

Florence Room

12:30 p.m. Lunch

The rapporteur will take time to organize the responses and her notes from the speaker sessions into a presentation, with the help of the discussion group chairs.

Paris I, II Room

1:00 p.m. **Session 6: Rapporteur's report**

Rapporteur: **Janice MacKinnon**, University of Saskatchewan and Chair, IRPP

The rapporteur will give a brief summary of the topics discussed and the conclusions reached by the participants. She will then draw broader conclusions about the state of knowledge, skills, and innovation in the global economy and the directions the UK and Canada should take faced with the human capital challenge of globalization. The participants will have an opportunity to comment.

2:00 p.m. Meeting of the 2009 colloquium organizers

4:00 p.m. Departure of UK participants for Pierre Elliot Trudeau Airport

LIST OF PARTICIPANTS

CHAIR

Mel Cappe
Institute for Research on Public Policy(IRPP)

RAPPORTEUR

Janice MacKinnon
University of Saskatchewan

CANADIAN ORGANIZERS OF THE 2008 COLLOQUIUM

Arthur Sweetman
School of Policy Studies, Queen's University

Mel Cappe
Institute for Research on Public Policy (IRPP)

Erica Maidment
Queen's University

ADVISER TO THE UK COMMITEE (not present at the meeting)

Geraldine Kenney-Wallace
City and Guilds

CANADIAN SPEAKERS (in order of presentation)

Arthur Sweetman
School of Policy Studies, Queen's University

David Stewart-Patterson
Canadian Council of Chief Executives

Ken Norrie
Higher Education Quality Council of Ontario

Penny Milton
Canadian Education Association

Andrew Parkin
Millennium Scholarship Foundation

BRITISH SPEAKERS (in order of presentation)

Michael Osbaldeston
Cranfield School of Management

David Fisher
King's College London

John Randall
Skills for Justice

Wendy Piatt
Russell Group

Baroness Joan Walmsley
House of Lords

OTHER CANADIAN PARTICIPANTS

Jenny Baechler
Dalhousie University

Robert Best
Association of Universities and Colleges of Canada

Claude Boucher
Canadian High Commission, London

Malcolm Brown
Human Resources and Social Development Canada

Andrew Cardozo
Alliance of Sector Councils

Elizabeth Church
The Globe and Mail

James Clarkson
Human Resources and Social Development Canada

Peter Edwards
Canadian National Railway

Pierre-Gerlier Forest
Fondation Pierre Elliott Trudeau

Sarah Fortin
Institute for Research on Public Policy (IRPP)

David Gill
Department of Foreign Affairs and International Trade Canada

Denise Helly
Institut national de recherche scientifique Montréal

James Knight
Association of Canadian Community Colleges

Shannon Marchand
Alberta Employment and Immigration

Scott Murray
DataAngel Policy Research Incorporated

Peter Nasr
Human Resources and Social Development Canada

Cheryl Paradowski
Canadian Food Industry Council

Philip Pinnington
Department of Foreign Affairs and International Trade Canada

Pamela Walsh
Athabasca University

OTHER BRITISH PARTICIPANTS

Eleanor Barham
London School of Economics

Bernie Borland
St Francis Xavier College

Mary Bousted
Association of Teachers and Lecturers

Sir Andrew Burns
Canada-UK Committee

Anthony Cary
UK High Commission in Ottawa

Iain Crowe
University of Manchester

George Edmonds-Brown
Canada-UK Committee

Tim Faithfull
AMEC, Shell Pensions Trust, CP Rail, TransAlta

Baroness Janet Fookes
Canada-UK Committee

Alexandra Frean
The Times

Lesley Giles
UK Commission of Employment and Skills

Natalie Gowers
Foreign and Commonwealth Office

Keith Herrmann
Council for Industry and Higher Education

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Oxfordshire Economic Partnership

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