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Innovation and Differentiation in Canada's Post-secondary Institutions

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Executive Summary

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Background and Purpose

In the global economy, it is increasingly recognized that knowledge is the key to competitive success for Canada as a nation, as well as to the success of individuals in the labour market. Universities and colleges, in particular, have a central role in generating knowledge and fostering innovation, through both their teaching and research activities.

The purpose of this study was to examine the state of innovation on Canadian university and college campuses in two specific areas: teaching and learning, and research dissemination. The kinds of innovations of interest were those which involve changes in *general* practice at an institution or across institutions and, in particular, innovations designed to place an institution at the forefront of a field or to differentiate the institution in some way from other similar institutions.

The work was carried out in two stages. The first stage consisted of a series of interviews with provincial officials and a brief survey of post-secondary institutions. These were intended to examine the climate for innovation and to help identify examples of innovations. In the second stage, six examples of innovative practices were examined in more detail.

Interviews and Survey

The interviews revealed that most provincial governments now have in place specific agencies and funding mechanisms to promote innovation. Most of these are concerned with knowledge transfer and especially the promotion of commercial opportunities from research. Governments are also concerned with increasing access to post-secondary education and prompting articulation among institutions and programs. Beyond this, governments seem to be taking a less activist approach towards post-secondary education than in the past.

Competition among institutions for students, and competition for the "innovation dollars" available from the various new agencies were cited as driving forces for innovation. Some skepticism was expressed by provincial officials over the ability of institutions to respond to changes in the external climate and over the ability to sustain innovation once the current funding stimuli are no longer available.

Most survey respondents expressed the view that the innovation climate in their institutions is positive and that the main driving forces for innovation are internal. Administrative and institutional vision, pedagogical and personal development support, and dedicated financial and human resources were the most commonly cited examples of internal drivers of innovation. The main barriers to innovation cited were limited resources, limited incentives and opportunities, limited rewards and recognition, and resistance to change. Colleges also mentioned the limited opportunities for research in the

college environment. Most of the respondents indicated that innovation is a means of distinguishing themselves from other institutions in their provinces and regions. Other than broad strategic plans, the main mechanisms used to promote innovation seem to be institutes, centres and posts, unique approaches to curriculum, learning and credentials, partnerships and collaborations, and funds to stimulate innovation. Colleges, in particular, placed substantial emphasis on innovations in teaching and learning. Collaborative arrangements between colleges and universities are also reasonably common.

The Case Studies

The six cases were selected to include a range of examples including innovative uses of technology in teaching and learning, a pervasive climate for research dissemination, and large scale institutional transformation. Most of the cases represented innovations related to the reputation of an institution or the manner in which it attempts to differentiate itself from others. In two instances, e-learning and the evolution of community colleges, the cases represent a pervasive trend that cuts across institutions. Because of our definitions, the case studies focused on broad institutional change and on teaching and learning innovations rather than on research. A much more comprehensive study would be required to gain useful insight into research innovation.

Acadia University – In the early 1990s, Acadia University initiated what has become known as "the Acadia Advantage" as a response to concerns about the university's ability to maintain its enrolment in the face of emerging demographic trends and increasing competition among the many universities in Nova Scotia. The key element of the Acadia Advantage is the deliberate integration of computer and information technology into the teaching and learning process. This is accomplished by providing every student and faculty member with a laptop computer, and establishing a comprehensive support system, both for the technology and for its use in teaching and learning. The Acadia Advantage is a clear example of the creation of a unique institutional culture through the exercise of visionary leadership in response to perceived adverse conditions.

Distance Education and e-learning – This represents a more pervasive trend in the use of technology in teaching and learning, and an area in which Canada has some claim to world leadership. This innovation seems to be driven by demand for access to post-secondary education on the part of those not able to take advantage of traditional campus programs, emerging emphasis on life-long learning and a desire on the part of government and industry to promote the use of information and communications technology as a driving force of the new economy. E-learning takes various forms, distinguished by the types of technologies used and the intensity of use of these technologies. The emergence of the Internet has brought about a profound change in the ability to deliver programs directly to individuals without intermediary facilities. Several institutions in Canada have used distance education in general, and e-learning in particular, as a means of differentiating themselves from other institutions and as a way of attracting a new student clientele. Nevertheless, despite this growth, e-learning remains controversial in terms of whether it should be viewed as supplementing or

replacing traditional modes of teaching and learning, and whether it is pedagogically effective or cost effective.

The University of Waterloo: Co-operative Education and Technology Transfer – The University of Waterloo has clearly built its reputation on these two areas. Co-operative education, while not unique to or originating with Waterloo, may be seen as the catalyst for its gaining independence from the University of Western Ontario in the 1950s, and for the continuing attraction of its Faculty of Engineering in particular. A strong argument can also be made that the attraction of co-operative education is a major factor in Waterloo's success in attracting research funding, and in its ability to generate commercial applications for its research. This is because the co-operative program brings the university much closer to industries in a position to take advantage of research, and because it encourages an entrepreneurial culture among students, faculty and graduates. Added to this is the early adoption by Waterloo of a policy allowing intellectual property to remain in the hands of researchers. The synergy between co-operative education and technology transfer, aided by the intellectual property policy, clearly differentiates Waterloo from other Canadian universities of its size.

McMaster University: Problem-Based Learning – Problem-based learning is an innovation of the McMaster University Medical, School which dates from its formation in 1965. PBL is based on tutorials in which small groups of students engage in intensive studies of cases designed to illustrate clinical principles. The role of the instructor is to facilitate and ensure participation rather than to transmit knowledge. Because of this significant shift in instructor role, much effort must be devoted to instructional development. The McMaster model has been fairly widely adopted and subjected to some research on its effectiveness. However, controversy remains over both the effectiveness issue and over the fidelity of its implementation in other settings. Recent changes in the program at McMaster have been designed to address perceptions that the program yields inadequate preparation in basic science, low emphasis on some professional competencies and the need for increased skill in dealing with the vast growth in medical knowledge.

The Nova Scotia Community College – This is a case study of institutional transformation and of the exercise of leadership in the face of external forces forcing an institution to change, but not determining the specific direction of that change. The main external forces were provincial government concern with the shortcomings of the many separate vocational schools in the province and a reduction in federal "seat buying" in the 1990s. Following critical reports on the college system dating from the late 1980s, the separate institutions were merged under an independent board of governors in 1996. The first few years of the new institution saw considerable consolidation of programs and closure of some campuses. It was not until the appointment of a new president in 1998 that the situation began to turn around and the new college was set on a road to recovery. The key element designed to distinguish NSCC from other community colleges was the adoption of "portfolio learning" in which all students are expected to build a portfolio of examples of their work as their program progresses, and to use this portfolio as a primary tool in seeking employment and in continuing to learn beyond the program itself. This

approach is credited not only with significantly improving employment rates for graduates, but also with bringing the college to the forefront as a major player in development of the Nova Scotia economy. The recent consequence of this attention is a decision of the Nova Scotia to reverse a decade of resource constraint and allow the institution to embark on a major expansion program.

Community College Developments – Like e-learning, this case represents a pervasive set of innovations that transcends a single institution, and that is driven largely by demand for increased access to post-secondary institutions and a perceived need for "hybrid" programs which blend academic and occupational studies. Several recent developments have challenged the traditional roles of community colleges and blurred the distinction between colleges and universities. These changes are most evident in Ontario, British Columbia, and Alberta and have taken on somewhat different forms in each province. In Ontario the long-standing separation of the college and university sectors, with essentially no transfer arrangement, has been broken with approval for the colleges to offer applied degrees. In British Columbia and Alberta, colleges have long offered university transfer programs along with the more traditional occupational programs. The main change in British Columbia was the transformation of some colleges into "university colleges" with their own degree granting power. Alberta followed a similar pattern, moving from allowing some colleges to offer applied degrees, to allowing all to offer a wide range of bachelor's degrees. In all of these provinces, residual concerns about the quality of the new degrees have prompted provincial governments to establish external quality assessment bodies, to which proposals for new degrees must be submitted. All of these innovations are too new for any assessment of their impact to be made.

Conclusions

The interviews and survey support the idea that most innovation is internal. However, the cases suggest a more complex picture. For example, visionary leadership seems to have been exercised in response to significant external pressures and even crises. It is also clear from the cases that sustained effort over a long time is required to ensure that an innovation makes a mark. The e-learning and community college cases represent examples of many institutions rising to the challenges of the new economy and the demands for increased access to post-secondary education by using new technologies and new program structures.

Because some of the innovations studies were designed as a means of differentiating an institution from its possible competitors, many of the innovations studied are not readily "exportable". Indeed, uniform adoption of such innovations would defeat their main purpose. At the same time, many features of such innovations, especially technology use, likely find their way into other institutions without necessarily becoming defining features of these institutions.

The current external policy climate around innovation in teaching and learning is best described as passive. Government concern with improving access to post-secondary

education, and with life-long learning, seems not to have been translated into policy initiatives that would encourage innovative ways to achieve these goals. While there is some evidence from the e-learning case study of institutional response to external policy thrusts, this seems to be the exception rather than the rule. Given the well established link between higher education and economic outcomes, governments and institutions should have strong reason to support research on how to properly define and measure the specific kinds of knowledge and skills that contribute most to these outcomes. More specifically, it is recommended that e-learning and other innovative approaches to achieving these goals be given greater impetus through support for both the development of practices and the conduct of research around these practices.