



How Innovation Occurs In High Schools Within the Network of Innovative Schools

The Four Pillars of Innovation Research Project

An Analysis of the Underlying Fundamentals and
Characteristics that Foster Innovation in Schools and How
They Compare With Innovation in Organizations

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Executive Summary

Innovation is broadly defined as a process through which value is extracted from skills and knowledge by generating, developing and implementing ideas to produce new or improved products, processes and services. This definition is equally applicable to the world of work as it is to the education system. Innovative schools—and the teachers, principals, vice-principals, and other team leaders and learners within these environments—are dedicated to achieving excellence in student learning and are committed to the discovery and implementation of new or improved teaching techniques and learning practices. This report examines the nature of innovation in schools by identifying the key characteristics and attributes that innovative schools within the Network of Innovative Schools (NIS) possess.

Innovation is a complex, and at times disruptive process, driven (or inhibited) by a variety of factors—including people, leadership, cultures and climates, and structures and processes. With the right mix of factors in place innovation has the potential to flourish. Place obstacles in the way of innovation—e.g., school leaders who do not support new ways of doing things, or people who are not committed to excellence—and the capacity for a school to be innovative may be greatly impaired.

Innovative Schools

Schools are innovative because of their people—people who are creative risk takers, and who are constantly seeking to improve themselves and the environments in which they work. Schools are innovative because of their leaders—leaders including principals and vice-principals who have a clear vision, who trust and support their staff, and who are passionate about their schools and their students' learning. Schools are innovative because of their cultures and climates—cultures and climates that have an entrepreneurial and risk taking spirit, that are open, that encourage collaborative approaches to learning and teaching, and in which the necessary resources and environments needed to think and act in new ways are promoted. Schools are innovative because of their structures and processes—structures and processes that enable and encourage innovative thinkers, that foster the sharing of knowledge and information, and that are flexible enough to allow for "outside of the box" initiatives to happen.

Keys to School Innovation

No two schools or learning environments are alike. As such, there is no single panacea for innovation success in schools. However there are several important components or elements that innovative schools collectively support and acknowledge as being critical:

- Financial and other resources are committed to create, develop, and implement new ideas;
- Teamwork and collaboration between teachers, and between teachers and school administrators is encouraged;
- All activities and initiatives focus on student learning and student development;
- Teachers and school administrators have a passion to seek out new and better ways of doing things;
- Access to new technologies and programs to learn and use
- Time and resources are made available to teachers and school administrators to think and learn, create and implement.

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1. Overview of the Research Project

The Conference Board of Canada has undertaken this research project, *The Four Pillars of Innovation: How Innovation Occurs in High Schools Within the Network of Innovative Schools*, to examine the nature of innovation in schools and to better understand the key characteristics and attributes that innovative schools possess.

The Four Pillars of Innovation research project intends to determine first and foremost what makes innovative schools innovative; and whether or not the four pillars of organizational innovation,¹ as identified by the Conference Board of Canada—namely leadership, structures and processes, cultures and climates, and people—are applicable to schools. More precisely, the report is intended to provide school principals and vice-principals, teachers, team leaders, superintendents, and school boards with a comprehensive understanding of the key factors that lend to schools being effectively innovative. Specifically, this report addresses two primary research questions:

- What distinguishes highly innovative schools from the rest?
- What levers do school principals and vice-principals, superintendents, teachers, and school boards use to build innovation capacity in their schools?

It is the hypothesis of this research report that the capacity for innovation in schools flourishes when teachers, principals, vice principals, team leaders and students are open to new ideas, and to new ways of thinking, acting and doing. The learning environments and teaching cultures that support and applaud innovative thinkers, risk takers and doers with the necessary structures and processes, leadership and vision are the ones that are most innovative. Ultimately, the key to innovation—whether it is found in organizations or in schools—lies in three words: purpose, passion and people.² Schools and businesses alike must both galvanize individual creativity and commitment and create a context and climate in which that energy can be successfully focused. Innovation is above all a human process. How this plays out in schools and classrooms, and how innovative schools accomplish this, is the primary focus of this report.

This research project brings together the Conference Board's expertise in organizational innovation, human resource management and development, organizational excellence, leadership development, knowledge management, and education and learning.

Objectives of the Four Pillars of Innovation Research Project

1. Understand the nature and essence of innovation in schools by examining how schools come to be innovative.
2. Identify the decisive characteristics and qualities of successfully innovative schools.
3. Determine the extent to which the criteria for organizational innovation apply to schools.

¹ The four pillars—as presented by the Conference Board—provide a framework from which innovation can be discussed without fear of missing any critical components. They are not intended to be the "end-all-and-be-all" of innovation thinking.

² Judith Gibson and Musawir Karim, *Laying the Foundation for Successful Innovation: Managing the Unmanageable* (Ottawa: The Conference Board of Canada, 1999). p. 2.

Key Benefits of the Research Project

- Provide teachers, principals, vice-principals, team leaders, school boards, and government policy-makers with a greater understanding and appreciation of how innovative teaching and learning practices are realized and implemented within a school environment.
- Provide school boards and schools with a template to better understand their skills needs and human resource requirements for innovation, and for evaluating the performance of current and prospective staff in contributing to school innovation.
- Provide teachers and school administrators (i.e., principal and vice-principal) with insights into the skills, attitudes, behaviours, cultures, climates, and effective processes and structures required for successful innovation to occur—which can then be used to inform curriculum and program development, processes and structures, cultures and climates.

Four Pillars of Innovation Project Methodology

The Four Pillars of Innovation research project employs as its principal methodology a set of in-depth interviews—both face-to-face and telephone interviews—with teachers and school administrators from five high schools.³ In total, 30 interviews—10 principals and vice-principals, and 20 teachers—were conducted for this research project. As well, a study instrument was distributed to all 30 of the interview participants. The purpose of the study questionnaire was threefold. First to provide the interview participants with background information on innovation and the four pillars of innovation framework. Second, to familiarize them with the complex subject matter of innovation and how it manifests itself in different working and learning environments. Third, to collect additional written responses—where applicable—on how innovation is incorporated into the overall strategy of schools and on what it means to be innovative in schools.⁴

The Conference Board's extensive expertise in the areas of organizational innovation, leadership, human resource management and development, and education and learning further supplement and reinforce the qualitative interview methodologies used in this research project. It is through the extensive innovation research conducted by the Conference Board and other research

Exhibit 1—Innovation

Innovation does not just happen. It takes a lot of work and concerted effort. Innovation takes vision, dedication and conviction in order for it to occur.

Nor does innovation happen in isolation. It involves all areas and all aspects of an organization or institution in order to be realized. Innovation happens under the right sets of circumstances, cultures and environments, under the right guidance and direction, and under the right systems and structures.

Most importantly, innovation occurs, and sustains itself, if an organization or institution is filled with the right people—people with the right sets of skills, attitudes and behaviours.

³ The five schools selected for this research project come from Industry Canada's SchoolNet Network of Innovative Schools (NIS). The schools selected were Bishop's College (Newfoundland); École secondaire de Casselman (Ontario); Ursula Franklin Academy (Ontario); Garden Valley Collegiate (Manitoba); and Canmore Collegiate High School (Alberta).

⁴ Not all of the responses to the study instrument were recorded in this research project. Rather the instrument was used as a means of getting interview participants thinking about "innovation" and how it manifests itself in the business community.

organizations and departments that a comparison of school and organizational innovation is made possible.

2. Introduction to the School Interviews

The core research process of the *Four Pillars of Innovation* project is the interview. Face-to-face and telephone interviews are a qualitative methodology that allows participants to describe in their own words the school context for innovation and for building innovative capacity. The interview also offers participants the opportunity to provide both verbal and written comments on understanding innovation in schools, as all interview participants received a background "Innovative Capabilities" study questionnaire, which they were asked to review and complete.

The Process of Undertaking the School Interviews

The interview process is broken down into three basic phases:

A—Identifying the Schools and Interview Participants

1. Five schools from Industry Canada's SchoolNet Network of Innovative Schools (NIS) were selected to participate in the research project.⁵ Schools were selected, in part, based on their innovative initiatives and sustained records of innovative successes, their geographic location, and their urban/rural makeup. A complete list of the schools is found in Appendix 1.
2. At each school 6 interview participants—including the school principal, vice-principal and 4 teachers—were selected. The school principal was asked to select the interview participants based on their subject matter expertise, their contribution to the school, and their involvement in innovative projects and activities.

B—Preparing the Study and Interview Questions

The basis of the interview questions and study questionnaire document used in this research project draw extensively from the Conference Board's ten years of research experience in organizational innovation.

The study questionnaire itself is closely based on the Board's annual "Innovative Capabilities" study questionnaire that regularly polls close to 400 organizations from across Canada. Slightly

Exhibit 2—SchoolNet's Network of Innovative Schools (NIS)

The NIS is a Program from Industry Canada's SchoolNet that helps to ensure that students, educators and community members are prepared for the challenges and opportunities of using Information and Communications Technology (ICT) in meaningful and imaginative ways. Member NIS schools are strengthening the capacity for innovation in schools through research—like this project—and through sharing knowledge and by helping Canadian students gain the skills required to succeed in today's knowledge economy. This is key to the Government of Canada's priority of stimulating a culture of innovation and branding Canada as a leading innovator globally. Over 80 schools in the Canadian K-12 system are members of the NIS.

For more information about NIS and SchoolNet go to: www.schoolnet.ca/nis-rei/e/

⁵ The school selection committee for the research project included: the Western and Northern Canada NIS Coordinator; the Eastern Canada NIS Coordinator; and the Communications Officer, NIS National Office.

modified to reflect the differences between the education and business sectors—including variances in language and terminology—the study document provided all interview participants with a good understanding of how innovation is measured and realized in organizations. A copy of the study questionnaire is attached as Appendix 2.

C—Conducting the School Interviews

During the May 20th to June 12th, 2002 timeframe 30 teacher, principal and vice-principal interviews were conducted—20 school teacher interviews and 10 school principal and vice-principal interviews. Each interview lasted between 45 minutes to one hour. The interviews were informal in nature and consisted primarily of a structured conversation centred on the concept of innovation and the four pillars of innovation framework. Twelve of the 30 interviews were conducted in person (at 2 schools), and 18 interviews were conducted over the telephone (at 3 schools). In total 18 of 30 written study questionnaires were returned.

Step 1—Interview participants were asked to define innovation in their own words, and to describe how their school, as part of the NIS, is considered to be innovative. They were also asked to comment on the research project's "de facto" definition of innovation and whether it accurately reflects the sort of innovation that occurs in their schools. By describing their innovative activities, both inside and outside the classroom, and how their school implements innovative initiatives (i.e., what are the underlying contexts, climates and environments necessary for these innovative processes and activities to take place) interview participants reflect on the root causes and enabling factors of innovation.

Step 2—Interview participants were introduced to the research project's 4 pillars of organizational innovation framework and were asked if this framework applies to their school's innovation activities (i.e., did the innovation pillars of leadership, cultures and climates, structures and processes, and people resonate with them).

Step 3—Interview participants were asked to "drill-down" and focus their attention on how innovation is manifested in their schools—not on what the innovations are but how they came to be realized.

Step 4—Interview participants were asked to describe the skills, attitudes and behaviours that they, their co-workers, and leaders needed to possess in order for innovation to be realized within their schools. As well, interview participants were introduced to the Innovation Skills Profile (ISP)—a list of the skills, attitudes and behaviours that organizations and schools need to be innovative and successful in every aspect of performance, and that individuals need to fully contribute to their organization's innovation performance.⁶ A draft of the ISP is found in Appendix 3.

⁶ The Innovation Skills Profile (ISP) project is an analogous piece of *innovation research* that The Conference Board is conducting. The ISP isolates the unique contribution that skills make to an organization's innovation performance by focusing on the role of individuals' and teams' skills, attitudes and behaviours in achieving successful innovation. The ISP will be released in December 2002.

D—Writing the Report

This report is based solely on the findings and insights gathered from the interviews and study questionnaires. Additional innovation research and literature materials are referenced throughout the paper to bring context and positioning to key points and arguments.

3. The Conceptual Framework of Innovation

Innovation is the product of several factors, including organizational capacity, individuals' skills that generate personal capacity, and the linkages in place between internal and external working and learning environments. By extending the focus from how a particular innovative outcome occurs to include what fundamentals are needed to enhance the ability to innovate—for example, the skills, attitudes and behaviours of individuals and teams, the leadership qualities of an organization or institution, and the physical and social working environment in which people function—it is clear that innovation is a process that can be managed to enhance the probability of successful development and implementation.

The Government of Canada, in its recently released innovation strategy report: *Achieving Excellence—Investing in People, Knowledge and Opportunity*, defines innovation as *a process through which new economic or social benefits are extracted from knowledge*.⁷ It is through innovation, the report states, that knowledge is applied to the development of new products and services or to new ways of designing, producing or marketing an existing product or service for public and private markets. Here, innovation refers to both the creative process of applying knowledge and the outcome of that process. Innovations, therefore, can be world first, new to a country, like Canada, or simply new to the organization or institution that applies them.

The Conference Board of Canada defines innovation in much the same way. Innovation within organizations is broadly defined as *a process through which value is extracted from skills and knowledge by generating, developing and implementing ideas to produce new or improved products, processes and services*.⁸ Although this definition may appear to be predominately "business-centric" in nature—by focusing on the economic value of innovation coming from private sector initiatives (e.g. improved returns on investments, higher profit margins, or reductions in time to market) it is also applicable to Canada's education system and the role that educators and schools play in nurturing and developing highly innovative individuals. In schools innovation capacity is built through processes and structures comparable to the business experience. In innovative schools, teachers are given more opportunity and support to seek out and harness new learning and teaching experiences. In doing so, they not only acquire capacity themselves, they are also able to help their students become innovative by gaining new skills and knowledge. How innovation capacity is realized in students is determined to a large extent by the value of their educational experience.

Measuring the Value of Innovation

In most businesses, employees work to produce tangible end products, like cars or laptops. The risks and rewards of innovative thinking or innovative initiatives in these organizations can be

⁷ Industry Canada. *Achieving Excellence: Investing in People, Knowledge and Opportunity*. (Ottawa, Industry Canada, 2002) p. 4.

⁸ It is this definition that the school educators and administrators were asked to reflect on during their interviews.

measured fairly directly as profits and losses to the company. In schools staff tend to work toward more intangible outcomes or end products—e.g., skilled, educated, and knowledgeable students—and the benefits or detriments of their innovative initiatives are much more difficult to measure. How a student attains and retains skills and knowledge is a function of the teaching and learning environments in which they are situated. Ultimately, it is through inspired and innovative teaching and learning practices and processes, and by exposing students to learning environments and learning cultures that support and encourage innovative ways of thinking, acting and doing that students themselves learn best. It stands to reason, therefore, that teachers and school administrators can extract value (the enhanced learning experience of their students) from their teaching skills and subject area knowledge by generating, developing and implementing ideas to produce new or improved products (e.g., new or improved lesson plans, class projects, assignments, and field trips), processes (e.g., collaborative teaching opportunities, recognition of achievements) and services (e.g., teacher mentoring activities, professional development initiatives).

Creating the Context for Innovation

Three main elements determine a company's or a school's ability to innovate successfully overtime:⁹

- *The Organizational or Institutional Context*—The organizational or institutional context for innovation determines the extent to which how effectively the innovation process can occur within a company or school.
- *The Collaboration Context*—The availability of opportunities for partnerships, alliances and collaborative efforts creates the collaboration context that enhances a company's or a school's internal abilities to innovate.
- *The Public Policy Context*—This determines the general environment in which companies and schools operate, and can have a strong influence on such key innovation-related issues in as skills availability, protection of intellectual property, curriculum, pedagogy, and amount of available professional development.

Together, these three contexts determine the extent to whether or not a company or school can make innovation a priority; how effectively they are in pursuing innovative ideas, products, processes, and services; and how successful they are in achieving the advances innovation makes possible. This research project focuses primarily on the organizational or institutional contexts for innovation and will only touch briefly on the collaboration and public policy contexts for innovation, as the scope of these issues and their complexity exceeds what could reasonably be discussed in this paper.

The Organizational Context of Innovation

Recognizing that innovation includes the ability and willingness to generate, develop and implement ideas, and the ability and willingness to take risks, it is not surprising that each and every environment in which an individual or group is situated plays a large role in shaping one's potential capacity for innovation. The capacity to innovate, or one's *innovative capacity* defines a person's underlying abilities or potential to be innovative in a given environment or set of circumstances.

⁹ Judith Gibson, Jacek Warda and Janusz Ziemiński. *Building the Future: 1st Annual Innovation Report*. (Ottawa: The Conference Board of Canada, 1999) pp. 22-24.

The context within which innovation occurs inside an organization is shaped by four basic elements—the *four pillars of innovation*.¹⁰ The four pillars, in and of themselves, do not bring about innovation to organizations and institutions, rather, they offer a framework from which the complex process of innovation can be better understood and studied. The four pillars of innovation are *People; Leadership; Cultures and Climates*; and *Structures and Processes*—see Exhibit 3 and Diagram 1, below.

1. ***People: The Human Resource Capacity***—This refers to the knowledge, skills, attitudes and behaviours of employees, at all levels. Innovative organizations seek out and hire people with a range of diverse and complementary competencies including creativity and continuous improvement skills, implementation skills, risk taking skills, and relationship building skills. Individuals who take initiative, generate new ideas, embrace change and learn are qualities that are required of all employees.
2. ***Leadership***—Innovative organizations require leaders who have a clear vision, who are passionate about the organization and its future, and who are able to think and act in new ways and motivate others to do the same. Top management sets the direction, communicates the priority on innovation, and influences whether the conditions are in place for innovation to thrive. Leaders of innovative organizations demonstrate their commitment to innovation—within and outside an organization—by what they say and where they put their priorities, and how they support their priorities with resources.
3. ***Cultures and Climates***—Innovative organizations have an entrepreneurial and risk taking spirit. They are open to sharing ideas and learning new ways of doing things. Innovative organizations encourage collaborative approaches and they provide the necessary resources and environments needed to think and act in new ways. Most importantly, innovation requires a work environment in which ideas and initiatives are celebrated, risk is tolerated, and learning and change are valued. In such working and learning environments, employees tend to behave in a way that results in continued innovation across an organization.
4. ***Structures and Processes***—Innovative organizations have systems and structures in place that enable and encourage innovative thinking, acting and doing. Structures and processes that promote and allow for the sharing of knowledge and information, the ability to work in teams, and working across departments are conducive to innovation. Most innovative organizations are structured for flexibility. They tend to be relatively flat, capable of creating and disbanding teams from across the organization, and of moving ideas and information

Exhibit 3—The 4 Pillars of Innovation

1. People: The Human Resource Capacity
2. Leadership
3. Culture and Climate
4. Structures and Processes

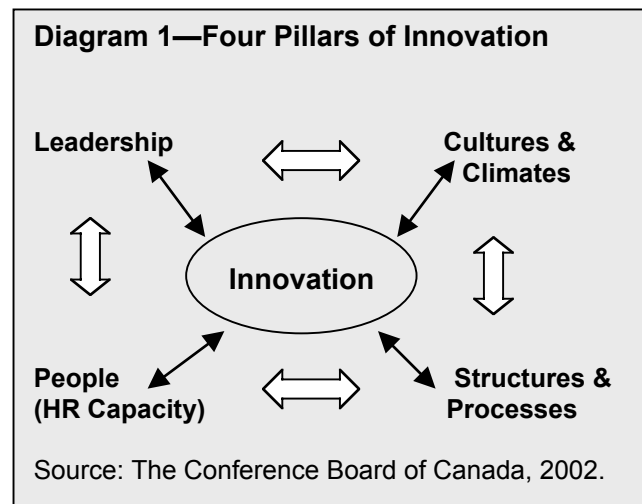
Source: The Conference Board of Canada.

¹⁰ The "four pillars of innovation" are found in: *Building The Future: 1st Annual Innovation Report*. (Ottawa: The Conference Board of Canada, 1999). pp. 22-23. The 4 Pillars of Innovation provide a framework from which innovation—an extremely complex process, driven (or inhibited) by a variety of factors—some structure, and provides a way to understand how innovation can be better understood and organized.

quickly. As well, management processes and policies, such as human resources, planning and finances are aligned with corporate priorities on innovation.

Fundamentally, innovation only happens through people. Everything else—the systems, processes, structures, cultures, climates and leadership of an organization—sets the context that defines how people approach their jobs.

- An organizational culture that discourages ideas will see few emerge.
- Systems designed to minimize risk, or follow established guidelines, will invariably minimize innovation and risk taking.
- Leaders who balk at, or shy away from new ways of doing things discourage others from thinking outside of the box, or greatly inhibit them from looking for improvements.
- Structures that impede interaction among groups or the movement of ideas between people will also undercut an organization's capacity for innovation.



No matter how different organizations may be in terms of their focus, their products or services, or their customers, the truly innovative one's demonstrate many similarities. Above all else, they put in place the processes, structures, climates and cultures that enable—or at the very least encourage—innovation to thrive. By way of example, this can mean some or all of the following:¹¹

- Innovative organizations manage innovation as a *process* like any other process, linking it directly to business strategy and performance.
- Innovative organizations introduce *processes* that directly relate to each phase of the innovation "process" itself, from the generation and incubation of ideas, through successive stages of development, to commercialization or implementation. Such *processes* may include grass-roots employee-based programs, training and development investments, formalized decision-making processes, team formation
- Innovative organizations use the organization's "*culture shapers*" to drive innovation as an organizational norm—e.g., explicit mission and value statements, compelling vision and goals, and related communications strategies.
- Innovation organizations pay careful attention to the *systems and structures* and processes that help integrate vision and values into the working reality of the organization—goal setting and accountability-frameworks, hiring and retention strategies, rewards and recognition, organizational and knowledge management.

4. Innovation in Schools

¹¹ *Laying the Foundation*, 1999. p ii.

So how do innovative schools go about being innovative? Are the foundations of innovation that are present in organizations—good leadership, enabling structures and processes, effective cultures and climates, and good people—the same foundations that enable schools to be innovative?

Under traditional models of education, educators are required to deliver mandated curriculum objectives using "chalk and talk" approaches, with students relying on textbooks and teacher generated handouts. Under this approach, subject matter lines are somewhat rigidly preserved, educators focus on specific subject matters, and students are assessed on their ability to demonstrate subject matter knowledge and relevant skills-proficiency in discrete subject areas. Innovative schools, on the other hand, tend to seek out ways to enrich their students' learning experience, by encouraging educators to consult with each other across subject matter or disciplinary lines, and by using new tools and technology in the classrooms. As well, innovative schools deliberately help students connect their learnings from one class with what they are called upon to do in other classroom learning situations.¹² Innovative schools provide the necessary tools to their students in order to make them successful learners. They have leaders who are adamant about developing a culture and climate that promotes and encourages new ways of thinking and doing things. As well, innovative schools have structures and processes in place which foster and enable educators to think beyond individual and institutional comfort zones.

As one interview participant put it, innovative schools are made up of a core group of teachers and school administrators who constantly seek out ways to:

1. Do the same thing with less (*resource reduction*—e.g., reducing the time, capital costs or staff needed for an activity)
2. Do better with the same, or less (*quality enhancement*—e.g., do things faster, better or cheaper)
3. Do things differently (*reconceptualization*—e.g., using new technologies to teach the curriculum)
4. Do different things (*transformation*—e.g., using on-line learning to engage students in learning activities from different locations)

Exhibit 4—Organizational Innovation Study Tour

In 1998, The Conference Board of Canada held an Executive Study Tour on *Growth through Innovation*. The tour visited four organizations: Motorola Inc., Sun Microsystems, Toyota Motor Sales (USA) and Starbucks Coffee Company.

How do innovative companies differ from other companies?

Findings from the study tour suggest that these innovative companies (and others like them) force change even when circumstances don't. They drive breakthrough innovation by setting and holding the organization to "impossible" goals. They are values- and vision-driven, and their leaders are open to challenge. They are also committed to their employees as the source of their success. They work hard to hire and retain the people they need, and they go to great lengths to reward them.

Source: The Conference Board of Canada, 1999.

¹² Kurtis Kitagawa, *Canada's SchoolNet GrassRoots Program: Case Studies 2000/2001. (Executive Summary of GrassRoots Project Case Studies)*. February 2001. p. 2.

5. Key Themes Emerging From the School Interviews

What it Means to be Innovative

The majority of innovations that take place in schools tend to focus on implementing new or improved ways of teaching and learning so that the students—the "clients" of the school—can learn and develop the skills, attitudes and behaviours needed in life and work. One educator said that to be innovative, schools and teachers must continually assess their teaching and learning practices, understand, and appreciate the fact that there is always room for change and improvement. Innovative schools, therefore, are the ones that most readily adapt, and adopt the philosophy of change. They have programs, people, structures and cultures that foster, encourage and allow for change to happen.

Resting on past successes is not the way to stay on top of the game, or to develop "innovative" approaches to teaching and learning. The five NIS schools participating in this research project know this well. Educators from these schools are constantly modifying their lesson plans, searching out and bringing in new practices and enhancements to their teaching techniques. Those that are driven by their professionalism and their passion to teach constantly seek new or improved ways of teaching and learning for two primary reasons: as educators they strive to do the best they can, and they want to get the best out of their students.

Circumstances in schools change all the time, as do school environments and cultures. The capacity for educators to be innovative is directly related to these changing circumstances, environments and cultures. Innovations in schools tend to be of two types—systemic or comprehensive, and incremental. In interviewing educators for this research project, many noted that often at the outset, a school will implement a comprehensive and dramatic change to its teaching and learning approaches (sometimes this change is brought about by an internal decision, whereas at other times the change may be mandated—i.e., a new provincial curriculum). Typically, systemic changes—often referred to as "great leaps of faith"—are followed by periods of incremental innovation or little to no innovation at all. Without question, being innovative can be an exhausting and time-consuming process for schools—and people, structures and systems often need to take time to adjust, rejuvenate themselves and become grounded.

Canmore Collegiate High School, for example, early on in its history implemented a strategy that called for the wholesale adoption and use of information and communication technologies within its teaching and learning practices—a somewhat radical approach compared with other traditional school practices in Alberta. Every teacher was given a computer for their desks and a school technology team was created to set the direction for the school. The "tech team" was made up of staff from every department in the school. Collaboratively they decided what technologies were most desirable for the school, how the technologies were to be used and integrated into their classes and curriculum, and the sorts of professional development needed to "up-skill" the school staff so that they could effectively teach their subject matter. Today, the sorts of innovations taking place at Canmore Collegiate tend to be incremental in nature, focusing on two primary activities: those that bridge the distance of ICT applications and approaches used among staff and departments (the breadth of use)—for example, getting all staff to use technology in their daily class and non-class activities; and those that search for more

effective ways to use and approach ICT (depth of use)—for example, having students build their own Web sites using animation software and integrating Art and English subject matter into their Web-based projects. The end results of these incremental changes are that:

- Teachers tend to consult more with each other across subject matter or disciplinary lines—thereby better integrating their teaching and deliberately help students connect their learnings from one class with what they do in other classroom situations.
- Teachers and students develop ICT skills through practical applications that they themselves devise to support their teaching and learning objectives.
- Students are exposed to the many uses of ICT as an aid to learning and communicating.

Teachers and school administrators at Canmore Collegiate are confident that it is only a matter of time, and discovery, before another systemic innovation floods the minds and halls of the school.

When asked to describe what it means to be innovative, teachers and administrators from the five NIS schools resoundingly said that innovation is all about discovery and continuous improvement. Innovation, they said, is about:

- Trying new things—different modalities of learning, using new tools and technology, or applying new or improved teaching strategies
- Instituting new or improved programs and procedures, and ways of applying knowledge in order that students come out of their schooling better skilled and more knowledgeable
- Keeping up—new curriculum, new technology, changing expectations of students and parents demands that schools and educators stay on the "leading-edge"
- Pushing beyond the norm, taking risks—willing to do things differently and to do different things
- Finding new or better ways to catch the attention of students
- Looking for other ways of doing things
- Extracting skills and knowledge to create new or improved value
- Exploring new or improved ways of teaching to help the personal development of students

Not surprisingly, defining innovation as *a process through which value is extracted from skills and knowledge by generating, developing and implementing ideas to produce new or improved products, processes and services* sits well with the teachers and administrators from the five innovative schools participating in this research project—Bishops College, École secondaire de Casselman, Ursula Franklin Academy, Garden Valley Collegiate, and Canmore Collegiate High School.

Bishops College

Bishops College integrates technology into all areas of the school curriculum. Located in St. John's, Newfoundland, the school's administrators and teachers and have received numerous teaching awards for their work with technology. Believing in the uniqueness and importance of the individual and in the empowerment of all students to succeed, Bishops College involves students, parents and the community in decision-making about learning and school life.

Innovative Schools Focus Their Attention on Students and Student Learning

A look at Bishops College's 2001 ICT Plan vision statement, for example, clearly illustrates how this school is focused on student successes and innovation—realized through continuous improvement and the generation, development and implementation of ideas to produce new or improved teaching and learning processes, strategies and learning outcomes:

"[Bishops] is committed to graduating students who possess skills to succeed in and adapt to the changes of the information age. Encouraging teacher innovation in instruction through the employment of various methodologies and teaching strategies including implementation of information and communication technologies across the curriculum is another important goal of the school. The staff, as a whole, is continually searching for better access and improving technological services to students and teachers. Our classrooms will continue to contain technological components that are intended to enhance the learning environment and enrich the delivery of instruction..."¹³

At Ursala Franklin Academy (UFA) everyone—from students, to teachers and administrators, to parents—is considered to be a learner and a teacher. "We're all learners and we're all teachers at UFA" says the school's information booklet. Students are actively encouraged to lead sessions in areas of interest or expertise. Staff are committed to collaboration, extra-curricular activities, and to being involved in programs where a responsive approach to students and parents is critical. As well, UFA staff members meet weekly—outside of school hours—for professional development activities and to reflect on and plan the school program. With a clear mandate to prepare students for the future and for a changing world, and by adhering to a set of values and principles that supports and encourages a sense of community, self esteem, and discovery, the high expectations of UFA's students and staff are being realized through innovative teaching and learning practices.

Ursala Franklin Academy (UFA)

UFA—a publicly-funded secondary school located in Toronto—was founded in 1995. The school provides its 400 students with a *choice in public education* by offering them integrated liberal arts and sciences packages at the advanced level. Integrated and cross-curricular studies at UFA introduce students to skills such as conflict resolution, computer technology, problem solving, and student leadership.

Mission statements, vision statements and school values on their own do not make schools innovative. They simply inform, and set the direction to help guide schools in their pursuits. Ultimately, it is the staff—the teachers, principals and vice-principals—and the students that make innovative schools such effective and leading edge places of learning and teaching. Through the initiatives and efforts, dedicated professionalism, tenacity and determination, and creative sense of discovery and learning of staff are innovative cultures and climates within any school truly realized.

The Four Pillars of Innovation Framework Fits the School Model

Innovation is time consuming—usually requiring teachers and administrators to spend many hours of additional time above and beyond the call of duty "in the school and in the classroom".

¹³ From: Bishops College ICT Plan (2001) Vision Statements: www.bishops.ntc.nf.ca/techno/ictplan.html.

Educators are first and foremost responsible for the effective delivery of learning to students. "Day to day" work includes the preparation, delivery and evaluation of lessons; the supervision of students inside and outside of the classroom; and leadership responsibilities in a variety of student extracurricular activities and school or board committees. Teaching a lesson is not necessarily innovative—the innovation comes in the planning and development of the lesson itself. Innovation work tends to be in addition to everything else.

Innovation, according to a number of teachers interviewed for this research project, is also a dynamic process that can often be disruptive and messy in nature—hitting "speed bumps" or obstacles along the way that, if left unresolved, can quickly lead to the demise of ideas and activities. Innovations typically upset the smooth daily operations of a school, and if left unchecked can lead to havoc and mayhem—one educator's accomplishments can be another's greatest troubles, or an administrator may tire of the demands and pressures that an innovative idea places on a school. For innovations to flourish within a school, there needs to be a culture and environment in place that strikes a balance between supporting and encouraging innovative thinking, acting and doing while maintaining a vigilant eye on the immediate learning needs and outcomes of students. Finding this balance between seeking change and working within the status quo and the current structures and systems of an education system is often the difference between innovative success and failure. Having the right people in place with the right sets of competencies—trend-spotters, creators, risk-takers, implementers, adopters, leaders and managers—is paramount.

Canmore Collegiate High School

Canmore Collegiate opened in 1995, specifically designed to incorporate technology in the classroom. Computers are accessible in labs, hallways and lounges throughout the school. Located in Bow Valley, the school requires that all learners take courses that equip them with relevant ICT skills.

Interview participants were asked if the four pillars of innovation accurately depict the complex concept of innovation within their schools. All 30 interviewees said it did. Here's what some of them had to say about the four pillars of innovation framework:

- "The four pillars clearly define the structure of innovation in schools."
- "The framework addresses the factors integral to successful innovation at the class and the school level."
- "For innovation to happen in schools a combination of the four pillars is needed."
- "The four pillars accurately reflect the main "supports" of school innovation."
- "The four pillars offer a good balance—with a strong emphasis on human resources—of what things need to be in place in order for innovation to flourish."
- "People are a school's most important resource—leadership, staff and students ultimately determine the culture of a school—and it is people, not structures that need to change in order for innovation to flourish. However, the reality is that schools and staff (and students) have to deal with structures that hinder innovation. The four pillars accurately address these issues."

Garden Valley Collegiate (GVC)

GVC is located in Winkler, Manitoba—in the heart of south central Manitoba. With a student population of approximately 1,000 this rural high school was the first in Manitoba to offer online courses over the Internet. GVC is also a pioneer in the use of PDAs in education.

- "As an educator I believe that I would be innovative no matter where I taught. However, in the school that I am in now I am surrounded by other educators who also embrace innovation—creating a climate where my innovative ideas can flourish and where I can share my ideas with those who have the same goals that I do. For innovation to be successful, the administration and staff must be committed to innovation. The leadership and staff create the culture and climate in which the students learn. The leadership also encourages the structure and the processes that foster change by actively seeking staff that is committed to innovation. In short, the leadership of a school actively searches for proper staff and develops a structure that fosters innovation, out of this an innovative culture and climate emerges."
- "The four pillars of innovation framework offers an accurate description of the factors that promote innovation in schools however it does not reflect, nor accurately capture, the cyclical nature of innovation."

Innovation in schools is cyclical in nature—going through ebbs and flows or "waves" of innovation. The capacity for a school to be innovative, and the innovations themselves, are influenced by a multitude of factors, including social, political and economic events; people; leadership styles; changing cultures and climates; and structures and processes within which a school operates. The four pillars of innovation do offer schools a framework from which they can better understand and appreciate what it takes to be innovative. The four pillars also help schools to determine what they must do in order for innovation to be realized and sustained in their learning environments. Like a fire that requires three support elements: fuel, oxygen and an ignition source, innovation excels in schools when it has four support elements in place: good people, solid leadership, the right cultures and climates, and accommodating structures and processes.

École secondaire de Casselman

L'école secondaire de Casselman is involved in many Information Communication Technology (ICT) learning projects. Students use graphic and music production software to create pictures and songs—which are accessed by the community and students from other schools. The school also engages in many partnerships with businesses, elementary schools, colleges and universities.

Rating the Importance of the Four Pillars of Innovation in Schools

Asked to *rate* the importance of each of the four pillars, 100 per cent of the interview participants stated that the *people*—or *human resource capacity* of their schools was very important to achieving innovative success.¹⁴ "Schools do not innovate, people do" was a phrase often heard throughout the interview sessions.

- 64 per cent believed that a school's *culture and climate* was very important to being innovative
- 57 per cent said that *leadership* was very important to a school being innovative
- 36 per cent said that *structures and processes* of a school were very important to being innovative

¹⁴ 26 interview respondents answered this question when asked to rate the importance of each pillar on a scale of 1 to 5, where 1 was not important at all and 5 was very important.

Ranking the Four Pillars of Innovation

When asked to *rank* the importance of each of the four pillars—i.e., which pillar was most important—the majority of respondents said that *people* ranked the highest, followed by *leadership*, *cultures and climates*, and finally *structures and processes*. Some of the comments made by interview participants include:

- The people or human resource capacity of a school is most important when talking about innovation. It is through the ideas and actions of staff and students that innovative teaching and learning activities are actually realized and developed.
- The people are the most important pillar of school innovation because, typically, a school's resources are fully allocated and the structures and process well established. It is up to the staff, therefore, to come up with new and improved ways of doing things—within these well-defined parameters. You can force structures and processes on people, but you can't force people to be innovative.
- It is hard to rank the importance of one pillar over the other as it depends on the context—for example, in difficult times versus good times, the balance of importance may shift from culture and climate to leadership. As such, they are all equally important.
- Schools, according to one teacher interviewee, are still very traditional—"bells still control the day"—and discipline is often the main concern. That being said, for innovation to happen in schools, it takes a very strong team of people along with good leadership.
- People and school culture and climate should be given the highest ratings because these two pillars have the best potential for maintaining continuity and embedding innovative values within a school. Leaders and structures—especially in the current school systems—are more likely to alter or shift their level and quality of attachment to innovative approaches.
- Innovative changes are lead by visionary staff, whereas good leadership in innovative schools tends to function in the background—helping to focus and support changes rather than driving the changes themselves.
- Innovation occurs in schools only with the support of the staff, and a culture that strives for excellence—e.g., a culture that wants to break new ground, be out in front, and go where no one has gone before.
- Together, people and leadership create the culture and climate that is necessary for innovation to happen in schools. Leadership deals with the issues (e.g., the structures and processes that inhibit or impede innovation) so that the staff is free to focus their attention on implementing new and improved learning and teaching strategies and techniques.
- Individuals who champion ideas will do whatever it takes to get them up and running—regardless of the culture and climate of the school, or the structures and process in place. On the other hand, a school with a great culture and climate but with no one willing to step forward and champion an idea will often find that little in the way of innovation gets done. Understandably, individuals who already have their hands "plenty full" are not usually as keen to take on additional hours of responsibility and work.

Placing Each of the Four Pillars of Innovation Within the Context of Schools

The report now turns its focus to the four pillars of innovation and examines, by way of example, how the five NIS schools have implemented and maintained effective innovative teaching and learning strategies overtime, and how they have overcome some of the obstacles and challenges they have faced in their journeys of innovation.

A: People—Human Resource Capacity

Innovative schools have on their staff a broad range of teachers and administrators. All of them, without question, are dedicated and committed to providing students with the best education possible. What is most striking about innovative educators is that they have a work ethic that is second to none. Innovations take a tremendous amount of work and time to see through to fruition—time that is in addition to one's regular teaching duties and responsibilities. As such innovative educators tend to work late into the evenings, early in the mornings and on weekends and holidays. They are dedicated and committed to student learning and development.

The innovative educators interviewed for this research project share a number of common traits and characteristics. Most noticeable is that they are passionate about what they do—teaching students. They are both advocates and champions of new ideas, projects and approaches. Innovative educators know that student learning is an evergreen process—subject matter constantly changes, as are the ways in which students are taught and learn. The truly innovative educator, therefore, needs to be able to direct and manage change, and be able to communicate and demonstrate the benefits of a change—i.e., a process improvement, better end-performance of students, or the financial savings to a school).

Other key skills, attitudes and behaviours prevalent in innovative educators addressed in the interviews, include:

- A desire to explore new ideas and new ways of doing things
- An ability to think outside the box—constantly looking for ways to improve
- A knack for constantly re-evaluating and improving upon current teaching practices;
- A desire to excel and succeed
- A willingness to invest extra time and resources into the development and implementation of new ideas and practices
- An ability to take on risks and new challenges with the understanding that not everything will be successful

Not all educators are inherently, or outwardly, innovative. This isn't a bad thing either—as it would be a real challenge to manage a staff of forty educators who were all independently innovative. That being said, many educators are not aware of how "innovative they truly are. Innovation in schools (and businesses) is more than being creative and generating new ideas or knowledge. To innovate successfully in any school, or in any team, organization, partnership, or collaborative initiative four key sets of competencies are required.¹⁵

Exhibit 5—Key Attributes of Innovative Educators

Innovative educators share some common traits. They tend to:

1. Think "outside of the box"
2. Approach challenges and opportunities in a creative manner
3. Be risk takers—entrepreneurial minded
4. Adapt to situations well and be flexible
5. Demonstrate great tenacity
6. Be open minded to new ideas and approaches
7. Be passionate about education and learning
8. Be proactive rather than reactive

Source: The Conference Board of Canada, 2002.

¹⁵ Brian Guthrie and Jacek Warda, *The Road to Global Best: Leadership, Innovation and Corporate Culture*. (Ottawa: The Conference Board of Canada, 2002). p. 3.

1. *Creators*—the thought leaders, idea generators, and out-of-the-box thinkers
2. *Implementers or Executors*—the producers, doers, and operations people
3. *Commercializers*—the entrepreneurs, marketers, and sellers
4. *Managers*—the organizers, team builders, networkers, collaborators, and the executives

Few individuals, schools, or organizations excel at all four innovation competencies. However, because educators are required to multi-task much more so than individuals working in a business environment—where one's skills are aligned to a specific job task or job function (e.g., marketing, research and development, or production), educators tend to demonstrate more multi-innovative competencies. In other words educators need to be the creators, implementers, and lead marketers of their own ideas. And within truly innovative schools—like the five NIS schools participating in this research project—there are at least a handful of teachers (and administrators) that make up a critical mass, or core group of risk takers, idea makers, implementers, and commercializers—needed for sustained innovation to happen.¹⁶

As well, the passion, dedication and spirit of the group of those innovative teachers who are the idea generators tends to rub-off on those educators who are not intrinsically innovative thinkers but who may decide to jump onto an innovative project and help ensure its success. At Garden Valley Collegiate (GVC), for example, a small group of educators were interested in using PDA's—mobile handsets—in the classroom. After much research and considerable discussion with other educators, businesses, and various communities of learning the group presented their PDA idea and teaching plan to the school principal and vice-principal. They believed in the project and the value that it would bring to the students learning and backed the initiative. Today the school has enough handsets for every student in the classroom, other educators are interested in applying the PDA technology and learning platform into their lesson plans, and GVC is recognized as a pioneer school in the use of handheld technology.

Innovative educators are not interested in the status quo, or the comfort zones of teaching—e.g., summers off—they are interested in pushing the bubble wherever and whenever possible. An innovative teacher at Canmore Collegiate, for example, decided to run a "triple-split classroom". In this innovative approach to teaching three grade levels (grades 10, 11 and 12) come together in the same classroom, at the same time, to engage in differentiated learning projects—one lesson plan with many different learning streams to reflect the differences in the grades and learning styles of students. Not only has this "triple-split-differentiated-learning" approach offered students a unique and innovative learning experience, it has also allowed the

¹⁶ According to a number of the teachers interviewed for this study, nay-sayers—those who constantly criticize how resources are spent or allocated—often hinder innovation from happening. Even in schools deemed to be "innovative" there are typically anywhere from 10 to 30 per cent of the staff not interested in innovation (this figure is not based on any research methodology, but on the opinions of a number of interview participants). In "non-innovative" schools this percentage tends to be much higher. If given the choice these non-innovators would rather function "as is" and maintain the status quo rather than introduce or develop new teaching techniques and practices. The reasons are as varied as the educators themselves. Some have achieved tenure, or are close to retirement and simply do not have a desire to "change", others believe that their current lessons work well and don't need to be altered, others simply do not have the time to be "innovative", still others are not the Type "A" personality needed to take risks or think-outside-the-box. On the other hand, the hard-core innovators see nay-sayers as just another challenge or obstacle needed to overcome.

school to offer the course to more students (three courses per grade/per year, instead of just one course per grade). It is innovative approaches and initiatives like this that make schools innovative. And having a core group of like-minded innovative thinkers and doers that push the limits of a school, challenge assumptions, and enjoy finding new or better ways of doing things can, and does, effectively influence the innovative culture and climate of a school.

Finally, one way in which schools and the business community differ is in the way staff are recruited, hired and retained. In the business world companies tend to seek out and hire the people they want—they "recruit through acquisition", hiring those individuals who demonstrate the skills, attitudes and behaviours needed for a particular job or project, and whose personality fits with the company's corporate culture. They are also able to keep the best and the brightest through attractive compensation packages—including performance bonuses, and stock options.

Schools, on the other hand, are much more restricted in their ability to select staff and have far less latitude in their hiring, selection and retention processes. During times when there is a surplus of teachers a school can be a little choosier. Their hiring and retention practices mirror those of the business community and focus on new hires' subject area expertise and previous experience, as well as on their demonstrated skills and behaviours like teamwork, rigor, willingness to change and grow, adaptability and flexibility. However, now that qualified educators are in such short supply schools tend to select and retain staff based on their subject areas of expertise alone—paying little attention to their innovative capabilities. Schools are getting qualified educators, but perhaps educators whose personal characteristics may not resonate with the values and vision that drive a schools innovative environment. How well new teaching or administrative staff integrates into, adapts to or even positively or negatively influences a school's culture and climate is often the "big unknown".

B: Leadership

Right across Canada, today's educational sector is filled with high profile change and uncertainty. Economic instability, the removal of resources from government funded programs, and sweeping reforms to provincial curriculums require that school administrators and teachers seek out and implement new ways of doing things—i.e., in the way students learn, how funds are raised and distributed, and on what sorts of professional development is offered to staff. The very same scenario is being played out in corporate boardrooms and CEO offices across the country. Organizations seek higher sales, greater

Exhibit 6—Key Traits of Innovative Leaders

Innovative leaders share some common attributes. They tend to be:

1. Visionaries—know where the school is heading and how it is going to get there
2. Focused—having clear goals and objectives
3. Trustworthy and Supportive—emotionally and financially of the vision and efforts of staff and students
4. Good listeners and communicators
5. Consultative—open to new ideas and new ways of working and doing things
6. Optimistic—encourages staff to take initiative and risks
7. Encouraging—by celebrating the initiatives, achievements and successes of students and staff

Source: The Conference Board of Canada, 2002.

profitability, larger global market share and greater employment creation, whereas schools seek enhanced student learning, improved teaching practices, and greater learning achievements. Without question, in today's schools and organizations necessity is the mother of innovation.

Capital "L" Leaders

A school's capacity to be innovative is, in part, the measure of its principal, vice-principal and team leaders—it's capital "L" leaders. Innovation starts with top management's commitment and passion for change—and a clear vision of where they want to take their organizations.¹⁷ School leaders set the overall tone of a school and guide its character and culture. Innovative schools have leaders that constantly seek new ways of doing things—including new processes, new learning strategies and new teaching techniques. An educator at Garden Valley Collegiate (GVC) sums up the school's innovative history nicely, saying: "somewhere in the course of the school's history something happened. A leader was brought in and got the school's innovation ball rolling. He hired some key staff, and through this leader's vision and his staff's abilities, the school changed from not being on the innovation map to being an innovative school. Together, these people pushed the envelope, and brought success, people jumped on and continue to jump on this innovation vision. The challenge that GVC faces today is keeping the ball rolling...and keeping it rolling in the right direction".

Invariably, it is through the vision and actions of a school's leaders—not only in supporting others to take risks, but also in "leading by example"—that a culture of innovation is promoted and developed. Invariably, in spite of one's best planning, there will be 'speed bumps' along the way, where even the most dedicated innovator needs encouragement and support. School leaders that believe in, and fully support their staff, as they explore new or improved ways of doing things, ultimately instill in them characteristics like creativity, passion, commitment, risk-taking, and teamwork—all essential to innovative teaching and learning.

The qualities of innovative leaders most often mentioned by interview participants from the five NIS schools include:

- Innovative leaders have vision, and they must communicate this vision to the school and its educators
- Innovative leaders inspire and motivate others to work hard to accomplish important tasks—they value the contributions of all colleagues
- Leaders develop good working relationships with staff by encouraging and supporting their teams

Exhibit 7—Leadership

- 94 per cent of study respondents believe that their school's principal and management team does what is needed to ensure the capabilities for innovation are present in their schools—i.e., proper structures, culture and climate, learning environment and people
- 100 per cent said their school's principal and management team were committed to innovation, innovative teaching and learning activities, and that they were change-ready and eager to learn.

Source: The Conference Board of Canada, 2002.

¹⁷ Brian Guthrie and Jacek Warda, *The Road to Global Best: Leadership, Innovation and Corporate Culture*. (Ottawa: The Conference Board of Canada, 2002). p. 2.

- Innovative leaders provide opportunities for staff to dialogue around shared goals and objectives and involve staff in decision-making processes—they encourage and promote a sense of community and collaborative governance in their schools
- Innovative leaders provide flexibility to educators so that they have the time and resources to create and implement innovative projects—i.e., innovative scheduling of timetables and classes, freeing up resources for professional development, or securing part-time replacements for educators to pursue new ideas and activities
- Leaders are "committed to excellence, not the economy"
- Innovative leaders work with all stakeholders—including, educators, students, parents, and community—to help foster a positive and caring community of learners
- Leaders work tirelessly to narrow any divides that arise between teachers and administrators
- Innovative leaders are open and supportive
- Innovative leaders recognize and celebrate achievements
- They take on the role of facilitator—rather than authoritarian
- Innovative leaders are creative with resources—including money, timetables, staffing and professional development

Consider Bishops College—a school that purposefully does not have a high degree of formal or "top-down" governance structures in place. Many decisions at the school are made through a democratic decision making process whereby working groups or advisory teams discuss and respond to ideas, actions and opportunities. The advisory teams—made up of subject area leaders and the principal or vice-principal, meet on a need be basis (perhaps 3 or 4 times per year) to discuss, for example, cross-curricular integration projects. The teams first agree amongst themselves on a plan and then bring it to the full staff for comment. This consensus-building process ensures that everyone in the school "buys" into the plan and agrees with it. By securing broad-based support for a project, and instilling ownership of a cross-curricular initiative into the entire school staff, the chances of it being successful are greatly enhanced.

At l'école secondaire de Casselman, school leaders realized that those educators considered to be the "change agents" were burning themselves out—having to work evenings and weekends to try new learning and teaching activities. To overcome this challenge the principal offered to secure part-time replacements for their classrooms, thereby freeing up time during the regular school hours for these innovative thinkers to work on new initiatives and activities.

Leadership Is Needed at All Levels and In All People

Important as leadership is at the top it is also required throughout all levels of a school in order for broad-based innovation to be realized. Teachers, like administrators, must also champion ideas, inspire, have vision, and create opportunities for change. At L'école secondaire de Casselman, for example, the administration does not wield the power. Everyone in the school is expected to be leaders—including the students, educators, parents and business partners, as they are all part of the innovative thought process and key pieces of the school's community of learners. At L'école secondaire de Casselman the leaders act as facilitators and guides—trusting completely in their staff and students to do their best.

C: Cultures and Climates

Innovation in organizations requires a certain kind of culture and climate—opportunity seeking, learning oriented, respectful of people, market focused, goal driven and idea friendly.¹⁸ The same holds true for innovation in schools. The only significant difference being that schools are student focused not market focused. Innovative schools have an entrepreneurial and risk-taking spirit that is shared among a core group of staff members and leaders. Although there is no "magic number" or "critical mass" of entrepreneurial-minded people needed to make a school innovative—in some schools there are just a handful, in others half or more of the staff are entrepreneurial—it is safe to say that it is the people who enjoy challenges, who have a desire to push beyond the current curriculum, and who willingly take on risks that drive a school's innovation culture.

Innovation Flows from Culture Building

Innovative schools, like innovative companies, tend to share a number of key determinants of culture, including:

- Mission statements that are simple and focused
- Vision statements that are capable of galvanizing enthusiasm and commitment
- Clearly articulated values that convey a commitment to students, staff, parents and the broader community, innovation and change, and individual and institutional learning
- Recognition systems that support and reinforce a schools' values and priorities

Exhibit 8—Culture

A culture is best defined by the behavioural norms of a group. Members of a culture generally know how other members are going to act in certain circumstances, at least within a certain acceptable and expected range of actions.

Source: The Conference Board of Canada, 2002.

Earlier, this report looked at the mission statements from Bishops College and Ursala Franklin Academy—two schools with very compelling and exciting innovation landscapes (see: page 14 and 15). These mission statements—and the vision and mission statements of the other three NIS schools—are not sacred documents that never see the light of day. Rather, they are referred to constantly and are a part of each of the schools' culture and climate. They are valued and relevant. They are a part of each of the school's ongoing conversation that communicates and reinforces their cultures of innovation. Most importantly, the missions and visions connect meaningfully with the educators and students within these schools.

Take for example Ursala Franklin Academy. UFA was born in a time of diminishing resources, 1995, and out of necessity looked at ways of doing things differently.¹⁹ Its mandate reflects the schools unique approach: *"to prepare students for the future and for a changing world."* Its mission *"...the learning experiences at UFA will reflect not only the learning expectations identified by the province and the school board, but also the students' own interests..."* supports the very pillars and processes of innovation. What innovative-minded educator or administrator wouldn't be excited by the chance to be part of such a culture?

¹⁸ *Building The Future: 1st Annual Innovation Report*. p. 39.

¹⁹ The founding principal of UFA—Dr. Ursula Franklin—was given one year by the Toronto District School Board to examine best practices and educational research in order to build a new school.

According to one teacher, the schools and school boards without a clear vision, mission or mandate, tend to jump on innovative bandwagons—at the peril and expense of students, teachers, principals, vice-principals and team leaders. A new technology or pedagogy is introduced to a school. It is seen as being "new" and "exciting" and "innovative" and is implemented without much discussion or buy-in. However, once the bandwagon passes by, the technology or the learning approach quickly loses favour, and is dropped for more familiar tools or practices, or perhaps the next bandwagon. What is known as the "innovation fallout"—where political and financial shortfalls and shortcomings need to be explained—soon begins.

The five NIS schools participating in this research project do not jump onto innovation bandwagons. There never is a bandwagon mentality at these schools because each has its own clear vision and mission—particularly when it comes to using technology in the classrooms.²⁰ And for every new project that a school looks at, both the administration and educators collaboratively and openly discuss its merits and concerns. If, at the end of the day, the group can collectively agree on how a new or improved course, program, or technology enhances the learning needs and outcomes of the school and its students the idea will gain merit and may very well be implemented. This is the same business model that is followed and used by the most successful companies. New technologies or learning approaches are not bought or implemented in truly innovative schools (and businesses) simply because they are new. They are implemented because they fit with a school's mission, and they hold promise of improving or significantly altering the learning and teaching environment.

Exhibit 9—Some Key Cultural Characteristics of Innovative Schools

1. An openness to sharing ideas and trying new things
2. Collaborative and shared-decision making processes
3. A good chemistry among staff—a spirit of trust and professional camaraderie between educators, and between educators and a school's administration
4. A climate where successes and achievements are celebrated—no matter how big or small

Source: The Conference Board of Canada, 2002.

Examples of how the five NIS schools have cultures and climates that are supportive of innovation, include:

- In many of the schools educators take on roles that best suit their abilities and interests.
- At Garden Valley Collegiate (GVC) technology has been targeted as a tool through which innovative activities and learning outcomes happen. GVC was the first school in Manitoba to develop an on-line learning program. The stakes were high but the hunch was correct, and today the school is in its seventh year of delivering on-line learning initiatives to its students.
- At UFA teachers and the school administrators go by their first names—supporting a culture of respect and equality, key ingredients for innovation to succeed.
- At l'école secondaire de Casselman integrated learning projects, like the annual Franco-Ontario show, integrates subject matter from various departments within the school. Educators and students from French, history, music, dramatic arts, visual arts, communications and multimedia work together and learn together, as cross-curricular learning and teaching approaches are realized.

²⁰ Schools that are a part of SchoolNet's Network of Innovative Schools are recognized for using Information and Communication Technology (ICT) in meaningful and imaginative ways to improve learning.

- At UFA kids and parents are committed to learning and the school. Students and their parents make a choice to go to UFA. Because enrollment is capped at 500 students, kids must successfully go through an interview process before being accepted into the school. As a result, parents, students, teachers, the principal and vice-principal have high expectations. Kids expect a lot from the school, and the school expects a lot from the students—a recipe for success, a recipe for successful innovation practices.
- At Canmore Collegiate all new grade nine students are introduced to the full range of technologies available at the school. Not only does this raise the learning expectations of the students—who are eager to try the technologies—it also encourages staff members to learn and be more productive and innovative in using the technologies in the classroom. For example, by getting the Language Arts teacher up to speed on word-processing, students can use the technology as part of the course requirement. Likewise, a math teacher can have his or her students apply and practice their spreadsheet skills in math class.

Cultures of Sharing and Openness

Innovations rarely happen in isolation—they occur and proliferate in schools (and in businesses) when knowledge and information is shared, when ideas get bounced around and when individuals and teams collaborate with one another. School cultures that encourage dialogue among colleagues and peers and extended networks of contacts both inside and outside of the education system are important for innovation. The most successful school innovations are the ones that engage and get the support of as many stakeholders possible, including for example administrators, educators, students, parents, school boards, school trustees, businesses, and the community where possible.

L'école secondaire de Casselman, for example, is a big advocate and supporter of business-education partnerships and the many innovative initiatives and activities that flow through them (i.e., co-op programs, mentoring activities, site visits, guest lecturers, and the use of new technologies in the classroom). To foster these collaborative initiatives the principal and vice-principal set aside resources to help finance the initial development and implementation of projects that engage local and regional businesses. By pushing teachers to try new ways of doing things and reach their full potential everyone wins—students, educators, schools and businesses. Students see the links between what they are learning and the world of work, educators become excited about teaching and are confident that their learning materials are up-to-date and relevant, and the school and the business community benefit by working together and supporting each other's interests.

School cultures that support collaborative approaches to learning and teaching tend to be more innovative than those schools that don't. Other examples of how the five NIS schools foster cultures of openness and sharing include:

- At all of the schools there is a tremendous amount of informal mentoring and peer tutoring that takes place. Typically, it is not scheduled or formally recognized, however, the educators recognize the value of sharing their ideas with one another and do so in the hallways, teacher rooms, and school grounds.
- At UFA the informal mentoring and sharing of ideas is encouraged and promoted by the very design and structure of its staff room—Room 208. There are no separate department rooms found in the school. Instead there is one large and open staff workroom—not a lounge—but a workroom where all of the school departments are found. With everyone together, the science

teachers, the English teachers, the math teachers and the Arts teachers there is a natural tendency for educators to share ideas and to work collaboratively on projects and exercises. Educators who work shoulder-to-shoulder tend to design class projects together. For example, a chemistry teacher that was studying forensics asked the law teacher to get involved. The end-result: a cross-curricular chemistry and law class where the science of forensics is used to solve criminal cases. When a project dictates, the desks in Room 208 are moved around and reconfigured so that those educators working on collaborative projects can be close to one another.

- At Canmore Collegiate a somewhat similar arrangement is in place. Department offices are grouped together—i.e., the math and science departments share an office, and the humanities departments share another office. In doing so, there is a lot more opportunity for educators to share information and best practices, and for cross-curricular teaching and learning activities to be implemented.

D: Structures and Processes

The Canadian education system is a complex, diverse, bureaucratic, formalized, and political system. In place are a number of important and significant processes, structures, policies and practices whose purpose is to maintain standards and quality in the delivery and testing of learning and teaching activities. In an environment of standardized testing, regulated teaching practices, and mandated curriculum there often appears to be very little room for "thinking-outside-of-the-box" type personalities to function. From the moment individuals enter the teaching profession they are bombarded with standards, protocol, regulations and guidelines. Most schools and educators happily function within the parameters of this regulated working and learning environment. Innovative schools tend not to—they are constantly searching for ways to stretch the boundaries of teaching and learning. The challenge for innovative schools and innovative teachers is to fight the tendency to rigidity that comes with size and complexity of large systems. As one educator so eloquently put it: "I try not to let the inertia of routine get in the way of my intentions."

Exhibit 10—Structures and Processes that Inhibit Innovation in Schools

1. Curriculum—too much of it, too structured
2. Timetable and scheduling
3. Standardized testing—provincial outcomes-based learning
4. Facilities and buildings
5. Working in seclusion from the world of work and the community

Source: The Conference Board of Canada, 2002

Structures and Processes that Inhibit Innovation

No matter how innovative a school and its staff may be, inevitably there are some structures and processes in place that either inhibit or impede innovations from happening. Interview respondents pointed to curriculum, timetables and scheduling, outcomes-based learning approaches, and the physical space (or structure) of buildings and classrooms as some of the top inhibitors.

Innovation requires time—time to think, time to create, time to plan, and time to implement. In most schools—even the most innovative ones—time is not readily available for innovative ideas and ways of doing things. The structured timetables and heavy workloads of educators, for example, do not give them the opportunities needed to try new things, or implement new teaching and learning approaches. And within the classrooms themselves, the sheer amount of curriculum to be taught is, in some provinces and subject areas, staggering. The time needed to teach mandated

curriculum stifles innovation as educators are restricted or discouraged from introducing reflective, problem-solving, discovery based learning structures—e.g., debates, plays, dance. Many teachers, according to one interview participant, feel that the only way to "get through" the curriculum is simply to disseminate information—reverting back to being "sages on stages." As well, another teacher interviewed for this research study said that educators have little time to collaborate because of their conflicting class schedules and excessive workloads.

Standardized testing, found in most provinces, encourages (and sometimes forces) teachers to "teach to these tests"—according to a number of interview participants. At Canmore Collegiate, for example, 50 per cent of a grade 12 student's final mark is based on the end-of-year diploma exam.²¹ As such there is little incentive or time—because of the quantity of curriculum—for teachers to initiate innovative projects or learning activities as students and educators are responsible and accountable for these final test results—educators do not want to be "experimenting" with non-tested teaching methodologies. Another interview participant noted that in option courses (non-core) there is more innovation taking place, as the curriculum is more flexible and there are no outcomes-based diploma exams to contend with.

Many schools look for ways to overcome these and other inhibitors. Most all of the NIS schools, certainly the one's taking part in this research study, try to implement structures and systems within their learning environments that allows them to manage change and be innovative without compromising the integrity of the teaching profession or education system. For example, many of the schools participating in this project tend to have relatively few layers between the principal and the educators in the classrooms—whereas most other schools have well defined layers of hierarchy and lines of communication (for example, principal, vice-principal, department heads, subject-area specialists, teachers). Innovative NIS schools also tend to create secondary structures—like working groups or action committees—to compensate for the department silos that result from the dominant design of their institutional structures. For instance, an innovative school may balance a department structure with a formal committee that brings together key expertise from across the schools subject-area departments to ensure the transfer of knowledge and to encourage collaboration.

- At UFA working committees are established as new ideas come up and innovative approaches are thought about. School administrators and teachers from various departments discuss the merits and challenges of an idea or initiative, and collectively decide to either act on it, or put it on hold a project.
- GVC has regular technology team meetings—made up of the school's technology specialists as well as other subject-area educators. In these tech-team meetings the diverse group of educators discuss the future directions and technology plans of the school. Within this team there is also an innovation sub-group that focuses on the school's technology vision and future uses and teaching in technology. This team and its sub-committee have effectively integrated technology into the overall curriculum and pedagogy of the school.

Through the efforts and perseverance of those schools and educators who are passionate about education, who are committed to empowering students in their care, and who are ready to do whatever it takes to create a dynamic learning environment come innovative teaching and learning

²¹ At many schools innovative learning and teaching activities tend to peak in grade 10 or 11—after which students and educators are driven by the provincially mandated year-end diploma test results.

initiatives. Innovative educators are first and foremost inspired to teach children how to think—not what to think—as such, they are always ready to find innovative ways to teach the curriculum.

Examples of inspired teaching practices include:

- Canmore Collegiate, for example, has implemented an innovative learning process whereby the particular learning needs and preferences of students are met and provincial curriculum is covered, however students get to choose how they present or demonstrate their learnings—either through visual presentations, written presentations, or oral presentations (or a combination). The teaching and learning process, known as differentiated learning, has enabled Canmore Collegiate to be more effective in its learning and teaching strategies.
- Cross-curricular learning is an innovative teaching and learning process that has been adopted at Canmore Collegiate, Bishop's College, L'école secondaire de Casselman, UFA, and GVC. An example of a cross-curricular learning program found at Canmore Collegiate, for example, offers students registered in an independent novel study class the opportunity to receive marks in both their English and Fine Arts classes. Students write an essay on a novel, and prepare a biography of the novel's author—as part of their English mark. As well, they receive marks for their Fine Arts class by visually portraying (e.g., a short play or skit) an important quote or phrase from the novel.
- UFA creates connected knowledge by structuring grade 9 and 10 students' timetables so that they spend half their day in core teams. This structure allows educators to integrate the curriculum between two or more of the classes to provide students with a richer and more meaningful learning experience. Grade 11 and 12 students must choose a focus area (science/math, liberal arts, or technology) for their studies. And within these areas, students do intensive independent study units that require them to integrate across at least two of their subjects. The planning of the integrated units is made easier for teachers by the fact that their desks are located in Room 208, the large, integrated teacher workroom.²²
- Another example of how a school's structure and processes enable or encourages innovative learning to take place is found in UFA's Wednesday Program. Each month students sign up for four different mini-courses. Students must choose courses from four general curricular areas: math, science and technology; personal and social studies; arts; or communications. In these

Exhibit 11—Structures and Processes

- 71 per cent of study respondents said that their school maintained a flexible institutional structure
- 71 per cent said their school involves all relevant departments in new projects, ideas, and/or technologies from the very beginning
- 65 per cent said their school encourages teamwork to stimulate innovation, creativity and original thinking.
- 59 per cent said their school uses activities such as job-rotation and secondments to promote the generation of new ideas
- 76 per cent said their school uses special tools or technologies (i.e., chat groups, e-mail) or have an office room to foster communication between staff
- 76 per cent said their school encourages the delegation of decision making among staff members

Source: The Conference Board of Canada, 2002.

²² From the UFA School Information Booklet, *Providing Choice in Public Education*.

sessions students learn how skills and information cross discipline boundaries. Examples of courses offered in the Wednesday sessions include, for example, robotics, bicycle maintenance, drumming, Tae-Bo Fitness, grammar games, Salsa and other Latin dances. The Wednesday structure is very flexible and fluid and ranges from student lead sessions, to field trips, to parent and community guest speakers.

Innovative schools, just like innovative organizations have systems and structures in place that enable and encourage innovative initiatives—the examples listed above demonstrate this. Although the structures and processes for innovation in schools typically focus on internal working environments, they also focus on the external environments in which educators and schools operate, including, for example, the communities in which schools are situated, and the political and economic contexts that schools function. Some of these external structures and process are unique to the education system and are not found within the business community.

Take for example, GVC, the only high school in its rural school board. There is very little competition from other schools when it comes to securing financial resources for innovative projects, according to a number of the teachers. It is somewhat easier for GVC to secure money from the school board than it is for other schools situated in larger urban areas—where the competition for limited resources is fierce. GVC is able to capitalize on this positive external structure further by focusing the majority of its efforts and innovative thinking on student learning. Whereas, in many city schools, time and funding are spent on devising innovative grant-writing strategies or coming up with innovative proposals—usually, at the peril and detriment of student learning initiatives. As another teacher put it: "being in such a small school division also lets GVC showcase its innovation successes, and worry less about the politics and bureaucracy that so many large school boards must contend with." In a non-competitive school board accolades typically bring with them additional support from the school division to continue implementing innovative learning and teaching initiatives.

All of the schools participating in this research project recognize the value and importance of implementing and maintaining strong relationships with the immediate communities that they are located in and the world of work. Innovations flourish when schools collaborate with community groups, businesses and government agencies. Co-op programs, mentoring activities, site visits all lead to innovative teaching and learning activities. The partnerships that l'école secondaire de Casselman—a high school located east of Ottawa in a rural setting—has with the local and regional business community has enabled it to do much more than the school would have otherwise been able to do. Technology donated by Nortel Networks, for example, is used extensively in a variety of the school's cross-curricular learning activities. And the co-op programs in place helps students gain a better understanding of the world of work.

Innovative Schools Recognize People and Their Accomplishments

Innovative schools recognize innovative teaching and learning initiatives. In the business world financial rewards are prevalent, linked variously to individual performance, team performance or organizational performance on such key indicators as customer satisfaction, employee satisfaction and quality.²³ Unlike the business community where recognition often comes in the way of praise

²³ *Building the Future: 1st Annual Innovation Report*. p. 40.

along with some monetary reward (a bonus, stock options, salary increase, or a promotion) schools are very limited and restricted financially, and they do not recognize achievements monetarily. Rather, recognition is intrinsic in nature—focusing on things like personal-satisfaction, or the opportunity to take professional development. At GVC, for example, people who demonstrate initiative and drive tend to get resources to attend professional development activities like conferences and workshops. Educators that do not show initiative tend to miss out on more professional development activities. As well recognition comes in the form of peer recognition, public celebration and small tokens. Recognition can be as simple as having a principal write a detailed thank you note to teachers commending them on their efforts, or as quick as holding an impromptu staff meeting with cake and coffee. At Bishops College, for example, there is not a lot of money available for celebrating successes. However, the school does make sure that staff members and students are duly recognized for their accomplishments, whenever and wherever possible, as it brings considerable value to the school by enhancing its climate and culture and by keeping the spirit and drive of students and staff high. According to one staff member in the school "respect and recognition breeds good things."

Innovative Schools are Committed to Professional Development

Everyone—students, teachers, principals, vice-principals, and parents—benefits from learning. Unfortunately many schools, according to a number of educators interviewed for this research project, tend not to value the importance or significance of teacher training and professional development—or at least to the extent necessary or desired. Innovative schools—just like innovative organizations—however, place great stock and value in professional development initiatives. Seventy-six per cent of study respondents said that their schools assess the individual training needs of staff. And 94 per cent said that their schools encourage individual staff members to ask for and choose the appropriate training.

- At GVC, for example, staff members are given the opportunity to design their own professional development plans. It isn't uncommon for 3 or 4 educators, interested in a particular subject matter, to get together and run their own professional development sessions—e.g., getting speakers, purchasing resources, running sessions. One interview participant said: "we are given carte-blanche to determine where and how we want to spend our professional development resources. Professional development in our school is relevant. It fits with the school's vision and mission on innovation, and it is always moving the learning agenda forward."
- Canmore Collegiate High School uses government block grants from the Alberta Institute for School Improvement (AIS) to run in-house mentoring programs. Every staff is given one day's worth of mentoring from a colleague in a subject matter of their choice. Educators learn about another subject matter, and ways to engage in collaborative teaching methodologies and cross-curricular learning activities are enhanced.

Professional development in innovative schools is not just about learning how to apply the curriculum or learning how to work within the confines of the current education system. It is also very much about seeking out new ways of doing things and taking professional development that lends to innovative thinking, acting and doing. For example, one interview participant described a pivotal time in his career. "Being selected to attend the Nortel Networks Institute for Excellence in Education changed the way I thought and acted as a teacher. I became an agent of change, and when I came back to my school I implemented many innovative things. I also became a mentor to other teachers and influenced how they thought and acted."

6. Conclusion

For innovation to occur in schools the right mix of leadership, people, cultures and climates, and structures and processes are required. The very same ingredients needed for innovation to flourish in organizations. There is no single right mix, or single recipe for success. In both environments innovation is a dynamic and fluid process that is affected by a range of influences.

Nevertheless, schools committed to innovation need to pay close attention to the context within which teaching and learning takes place. A school's culture and climate must be open to sharing ideas, and trying new ways of doing things. A school's structures and processes should enable and encourage students, teachers, principals and vice-principals to think outside-the-box, to be innovative, and to work across departments. They should also assist a school to maximize and leverage its human and capital resources in support of innovative teaching and learning initiatives. Finally, a school's teachers and principals and vice-principals must believe in, and be passionate about lifelong learning—for themselves and their students—and the never ending need for continuous improvement and development. Innovation, like learning, is a process that continuously evolves and regenerates. They must foster the conditions where risk taking is rewarded, creativity is promoted and the transfer of skills and knowledge—through collaborative teaching and learning experiences—is encouraged.

Our Thanks

The Conference Board of Canada would like to thank the teachers, principals and vice-principals who we interviewed for this research study.

About the Conference Board of Canada

The Conference Board of Canada is the foremost independent, not-for-profit applied research organization in Canada. We help build leadership capacity for a better Canada by creating and sharing insights on economic trends, public policy issues, and organizational performance. We forge relationships and deliver knowledge through our learning events, networks, research products, and customized information services. Our members include a broad range of Canadian organizations from the public and private sectors. The Conference Board of Canada was formed in 1954, and is affiliated with The Conference Board, Inc. that serves some 3,000 companies in 67 nations.

Appendix 1—List of Participating NIS Schools

Bishops College

Pennywell Road
St. John's, Newfoundland
A1C 2L6
www.bishops.ntc.nf.ca

Canmore Collegiate High School

1800, 8th Avenue
Canmore, Alberta
T1W 1Y2
www.crsd.ab.ca/cchs

École secondaire de Casselman

778 rue Brébeuf
Casselman, Ontario
K0A 1M0
www.escasselman.com

Garden Valley Collegiate

736 Main Street
Winkler, Manitoba
R6W 4C8
www.gvc.gvsd.mb.ca

Ursula Franklin Academy

90 Croatia Street
Toronto, Ontario
M6H 1K9
www.ufa.tdsb.on.ca

Appendix 2—The Four Pillars of Innovation Study Instrument

Part 1—Innovation in Schools

1. Please describe what you mean by "innovation"?
 - What does it mean to be "innovative"?
 - What does it mean to be an "innovative school"?
2. Please tell me how you think your school has been innovative? (i.e., how or why it was selected to be a part of the Network of Innovative Schools (NIS); what it does that is innovative—approaches to teaching and learning, use of resources, activities, structures in place, etc...)?
3. How does the Conference Board's definition of innovation fit with your own definition?
 - What are the similarities and differences?
4. In your opinion, what are the five elements or factors that have led your school to being innovative? Put another way, what do you consider to be the top 5 keys to innovation success?

Part 2—Incorporating Innovation into the Overall Strategy of a School

5. Does your school engage in any of the following activities?

a. The in-school development of new or improved learning activities or learning processes (i.e., tools, courses, resources)	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. The purchase of new learning services or activities (tools, courses, resources) from external suppliers	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. The acquisition of new learning tools and technologies	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. Training and development linked to the new or improved learning activities or learning processes	Y <input type="checkbox"/>	N <input type="checkbox"/>

6. Over the last three years, has your school:

a. Introduced new or improved learning tools or learning approaches (e.g. new technologies, mentoring, peer tutoring, etc.)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Introduced innovations in the way teachers teach, or learners learn (e.g. cross-curriculum teaching, integration of different subject matter, team teaching, partnerships, etc.)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Introduced significant institutional innovations (e.g., changes in institutional structure, changes in learning strategies, etc.)?	Y <input type="checkbox"/>	N <input type="checkbox"/>

7. In your opinion, is innovation a part of the learning strategy of your school?
Y N

a. Does your school continuously evaluate its learning strategy to adapt to changes in the learning environment?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school evaluate the quality and efficiency of it's learning outcomes (teaching techniques, etc.) and learning processes?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Does your school involve all of its staff (teachers, principals, vice principals) in the formulation of the overall vision of the school?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. Does your school assess the ways in which classroom learning may be altered or the techniques and approaches that the school may adopt in the future?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Monitoring, Forecasting & Responding to Technology & Learning Market Trends

8. Does your school evaluate the effectiveness of the learning technologies used in the classroom? Y N

a. Does your school maintain a technology watch/scanning to keep abreast of technological developments in the learning field?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school identify and react to emerging demand or changes in learning preferences?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Does your school conduct tests of your learning tools and learning activities with the students or educators?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. Are you familiar with any learning technologies and/or learning tools used by other schools?	Y <input type="checkbox"/>	N <input type="checkbox"/>
e. Does your school conduct road-mapping exercises to prepare your school for the future?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Accessing and Using Learning Technologies

9. Typically, does your school purchase and introduce new learning technologies and tools as soon as they become available on the market? Y N

10. Before purchasing a new learning tool or technology does your school test it?
Y N

a. Does your school perform any research, testing or product development in co-operation with other schools, or outside vendors?	Y <input type="checkbox"/>	N <input type="checkbox"/>
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11. Does your school enter into partnerships with businesses, government or other external organizations in order to foster technology transfer, or to improve your capability to innovate? Y N

Financing Innovation

12. Does your school attempt to estimate in advance, the costs related to introducing an innovation (i.e., a new teaching or learning tool, or piece of technology)? Y N

a. Does your school perform any ongoing cost/benefit analysis of innovations (i.e., a new teaching or learning tool, a new technology, or a new process or system) introduced in the past?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school use private sources of funding available for innovations (i.e., a new teaching or learning tool, a new technology, or a new process or system)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Does your school use government sources of funding available for innovations (i.e., a new teaching or learning tool, a new technology, or a new process or system)?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Creativity and Idea Generation Management

13. Does your school encourage the formulation of new ideas in its staff (i.e., classes, tools, pedagogy, teaching techniques)? Y N

a. When conducting performance evaluations, does your school attach importance to originality and creativeness in its teachers and administrators?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school reward individual staff for ideas, originality and creativeness?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Does your school tolerate staff creativity even when it is not directly productive?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. Does your school provide justification for rejecting an idea?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Organization and Process

14. Is your school organized around learning outcomes in general and not by subject areas, departments, or function? Y N

15. Does your school maintain a flexible institutional structure? Y N

a. Does your school involve all relevant departments in new projects, ideas, and/or technologies from the very beginning?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school encourage teamwork to stimulate innovation, creativity and original thinking?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Does your school use activities such as job rotation, secondments, etc. to promote the generation of new ideas?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. Does your school use special tools or technologies (i.e., chat groups) or have an office room to foster communication between staff?	Y <input type="checkbox"/>	N <input type="checkbox"/>
e. Does your school encourage delegation of decision making among staff members?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Managing Human Resources

16. When your school hires new staff, does it assess their innovative potential?

Y N

a. When your school hires new staff does it assess their ability to work as part of a team?	Y <input type="checkbox"/>	N <input type="checkbox"/>
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17. Does your school assess the individual training needs of staff? Y N

a. Does your school encourage individual staff members to ask for and choose appropriate training?	Y <input type="checkbox"/>	N <input type="checkbox"/>
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18. Does your school reward staff when they acquire new capabilities that are of use to the school? Y N

a. Are procedures for promotion in your school transparent?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Does your school ensure that staff appraisals are transparent and that the best performers are rewarded appropriately?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Leadership

19. In your opinion, does your principal and his/her management team ensure that the capabilities for innovation are present in your school (i.e., proper structures, culture and climate, learning environment, and people)? Y N

a. In your opinion, is your school principal and his/her management team committed to innovation, and innovative-teaching and learning activities?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. In your opinion, is your school principal and his/her management team change-ready, and eager to learn?	Y <input type="checkbox"/>	N <input type="checkbox"/>

Inhibitors and Enablers of Innovation

20. In your opinion, what are some of the key barriers that inhibit your school and its staff from being innovative?

a. Capital resources (costs)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Human resources (staffing)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Leadership (vision, strategy, management)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. School and/or education policies and practices?	Y <input type="checkbox"/>	N <input type="checkbox"/>
e. Culture and climate of school?	Y <input type="checkbox"/>	N <input type="checkbox"/>
f. Time?	Y <input type="checkbox"/>	N <input type="checkbox"/>
g. Others?.....	Y <input type="checkbox"/>	N <input type="checkbox"/>

21. In your opinion, what are some of the keys to your school and its staff being innovative?

a. Capital resources (costs)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
b. Human resources (staffing)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
c. Leadership (vision, strategy, management)?	Y <input type="checkbox"/>	N <input type="checkbox"/>
d. School and/or education policies and practices?	Y <input type="checkbox"/>	N <input type="checkbox"/>
e. Culture and climate of school?	Y <input type="checkbox"/>	N <input type="checkbox"/>
f. Time?	Y <input type="checkbox"/>	N <input type="checkbox"/>
g. Others?.....	Y <input type="checkbox"/>	N <input type="checkbox"/>

Part 3—Attributing Skills, Attitudes & Behaviours to the Four Pillars Framework

The four pillars provide a framework from which innovation can be better understood and organized. It gives innovation some structure and provides us with a way to understand how innovation can be influenced or managed better.

The four pillars, in of themselves, do not bring about innovative thinking, acting or doing to an organization or institution. It is the people within an organization or institution, through their skills, attitudes and behaviours (and their thinking, acting and doing) that bring about innovation.

22. In your opinion, what are some of the skills, attitudes and behaviours required by individuals in your school in order for innovation to flourish?

a. Specifically, what are some of the skills, attitudes or behaviours that your school leaders exhibit or possess (or need to exhibit) in order for innovation to happen in your school?
b. Specifically, what are some of the skills, attitudes or behaviours that school teachers and educators exhibit or possess (or need to exhibit) in order for innovation to happen in your school?

23. Can you think of any skills, attitudes and behaviours required by individuals in your school in order for the culture and climate of the school to be conducive to innovative thinking, acting and doing?

a. Specifically within school leaders?
b. Specifically within educators?

24. Are there any skills, attitudes and behaviours that you can think of that might positively influence the way in which structures and processes are implemented and maintained within a school in order for innovative thinking, acting and doing can flourish?

a. Specifically within school leaders?
b. Specifically within educators?

Part 4—An Innovation Skills Profile

The Conference Board of Canada is in the process of building an Innovation Skills Profile (ISP). It is the intent of the ISP to isolate the unique contribution that skills make to an organization's or institutions' innovation performance by focusing on the role of individuals' and teams' skills, attitudes and behaviours in achieving successful innovation. The skills found in the ISP can be applied to all 4 pillars. Your thoughts on which skills are most important are welcome.

(A copy of the draft ISP is found in this report in Appendix 3).

The ISP is divided into four primary skills categories:

- (1) Creativity and Continuous Improvement Skills.
- (2) Implementation Skills.
- (3) Relationship Building Skills.
- (4) Risk Taking Skills.

25. Please take a look at the ISP and reflect on the skills, attitudes and behaviours listed. What skills, attitudes and behaviours within the ISP do you think apply to your own school and in its ability to be innovative? (Check the most accurate ones).

26. Are there any skills, attitudes and behaviours that are missing from the list that you think should be included? Y N

a. If Yes, what are they?

27. Do you think that the ISP would be a useful tool for you to reference or use within your school? Y N

a. If Yes, why?

b. If No, why not?

Part 5—The four Pillars of Organizational Innovation

As mentioned earlier in this document, The Conference Board of Canada has attempted to put some structure around the concept of innovation by introducing four pillars: leadership, structures and processes, cultures and climates, and people. This is just a framework and is only intended to help understand the complex and diverse nature of innovation.

Your thoughts and opinions on this structure, and on the four pillars of innovation and their applicability to your school environment are welcomed.

For reference, the four pillars of innovation are:

- **Leadership.**
- **Structures and Processes.**
- **Cultures and Climates.**
- **People—Human Resource Capacity.**

28. In your opinion, do the four pillars accurately "frame" or "structure" the complex concept of innovation? Y N

a. If Yes, why?
b. If No, why not?

29. Please rate the four pillars of innovation, using the table listed below:

4 Pillars of Innovation	Please rate the importance of each pillar from 1 to 5, where 1 is not important at all and 5 is very important				
	1	2	3	4	5
Leadership					
Structures and Processes					
Cultures and Climates					
People					

30. If possible, please explain why you gave the ratings that you did. Examples or descriptions of situations within your school that illustrate your "ratings" are welcome.

31. Are there any other "pillars of innovation" that are missing? Y N

a. If Yes, what are they?

32. Of the four pillars identified and any others that you may have included, are you able to rank their importance (i.e., is one pillar more important than the other?) If so, what are their ranks?

Appendix 3—The Draft Innovation Skills Profile (ISP)

Creativity and Continuous Improvement Skills for Innovation—

the skills, attitudes and behaviours needed to generate ideas to produce *new* or *improved* products, services and processes

Acting/Doing

1. Think outside of the box: approach challenges in a creative manner
2. Be creative in exploring possible solutions—look for unexpected or surprising connections
3. Be aware and open-minded—ideas can come from anywhere at anytime, give full attention to alternative possibilities
4. Enthusiastically observe, question and reflect
5. Assess situations, identify problems, ask the right questions and seek solutions
6. Seek different points of view—ideas often come from entirely new and unexpected perspectives
7. Seek divergence and convergence on new ideas
8. Be adaptable and flexible—challenge ideas and offer constructive controversy between individuals and groups when appropriate
9. Be thoughtful and insightful—watch, listen, analyse, anticipate and predict—transform information into new knowledge and new ideas
10. Take responsibility for your own creativity—follow the courage of your convictions
11. Actively participate in discussions around possible new initiatives

Managing/Leading

12. Inspire others to be creative and innovative—nurture and promote creativity and the capacity for inventiveness
13. Be open to new ideas and new ways of working and doing things
14. Demonstrate trust in your employees' ideas
15. Constantly challenge—think beyond individual and organizational comfort zones
16. Have vision—make sound business decisions using implied and explicit knowledge
17. Monitor the success of a product, service, or process and seek ways to continuously improve it
18. Create change opportunities—actively lead change and offer support with the change
19. Promote successful practices and present new ideas on a regular basis
20. Recognize and reward originality

Considering your school and its innovative environment, which skills, attitudes and behaviours—listed above—do you consider to be most important for successful innovation to take place in your school? Please mark them with a (✓). If there are any skills, attitudes and behaviours that you consider to be inappropriate please mark them with a (X).

Implementation Skills for Innovation—

the skills, attitudes and behaviours needed to turn ideas into *new* or *improved* products, services and processes

Acting/Doing

1. Demonstrate practical know-how and ingenuity
2. Find solutions to practical concerns and conditions
3. Access, analyze and apply knowledge and skills from various disciplines, divisions and departments (e.g., research and development, engineering, manufacturing, sales, marketing)
4. Be tenacious—demonstrate initiative, commitment, perseverance and motivation for accomplishment
5. Listen to and learn from the ideas of others—keep involved in all parts of the organization
6. Adapt to changing requirements and information as required
7. Consider a possible solutions' pluses, potentials, and concerns—overcome the concerns one at a time
8. Use appropriate tools and technology to complete a task or project

Managing/Leading

9. Adopt and promote a "can do" attitude
10. Be adaptable to an ever-changing environment
11. Support initiative and be tolerant of the mistakes that may occur because of it
12. Display loyalty, commitment and enthusiasm
13. Appeal to the powers of potential—empower employees to manage themselves and their teams, and to make their own decisions
14. Understand the full range of critical business success factors
15. Accept responsibility and accountability for decisions taken
16. Take new ideas and transfer them into breakthrough solutions
17. Value, support, and reward employees who implement new ideas
18. Celebrate success and make new products, services and processes highly visible

Considering your school and its innovative environment, which skills, attitudes and behaviours—listed above—do you consider to be most important for successful innovation to take place in your school? Please mark them with a (✓). If there are any skills, attitudes and behaviours that you consider to be inappropriate please mark them with a (✗).

Relationship Building Skills for Innovation—

the skills, attitudes and behaviours needed to develop interpersonal relationships like teams to take responsibility for innovation

Acting/Doing

1. Understand and work within the dynamics of a group
2. Listen and ask questions to understand and appreciate the points of view of others
3. Engage others as resources—make use of their skills, knowledge and abilities
4. Be flexible—respect, be open to and supportive of the thoughts, opinions, approaches and contributions of others in a group
5. Show initiative to learn new skills from various internal and external sources
6. Recognize and respect people's diversity, individual differences and perspectives
7. Anticipate sources of assistance and resistance
8. Negotiate the barriers between people and teams that may impede quality results
9. Use relevant knowledge and skills to explain or clarify ideas
10. Accept and provide feedback and guidance in a constructive and considerate manner
11. Share information and expertise—speak your mind

Managing/Leading

12. Favour an atmosphere of open-mindedness
13. Foster collaboration—facilitate communication and knowledge transfer within the organization
14. Coach and encourage others to share knowledge
15. Encourage the participation of individuals, teams and end-users by involving, communicating, delegating and supporting others
16. Demonstrate tolerance and respect for others
17. Provide honest praise, constructive criticism, and fair rewards
18. Identify, acquire, develop and nurture key stakeholders
19. Leverage diversity in people and skills to deliver powerful solutions
20. Nurture and promote personal development, responsibility, and job satisfaction

Considering your school and its innovative environment, which skills, attitudes and behaviours—listed above—do you consider to be most important for successful innovation to take place in your school? Please mark them with a (✓). If there are any skills, attitudes and behaviours that you consider to be inappropriate please mark them with a (X).

Risk Taking Skills for Innovation—

the skills, attitudes and behaviours needed to take calculated risks and to act entrepreneurial in order to bring about *new* or *improved* products, services and processes

Acting/Doing

1. Demonstrate a tolerance for dealing with or coping with uncertainty
2. Be willing to accept a certain degree of risk
3. Embrace ambiguity—commit to an action without always knowing every outcome or consequence
4. Clarify the exact nature of a problem
5. Assess, weigh and manage risk
6. Identify and suggest alternative ways to achieve goals and get the job done
7. Analyse and evaluate the origins, assumptions, purposes and consequences of your actions
8. Identify the pluses and minuses of a potential solution
9. Be open and respond constructively to change
10. Learn from your mistakes and accept feedback
11. Feel good about yourself and be confident
12. Recognize your own and other people's good efforts

Managing/Leading

13. Respect and trust others
14. Encourage risk taking—actively manage risk, by understanding the nature of the risk and by constantly monitoring it
15. Be resilient—define, assess and take reasonable risks
16. Be tolerant of initiative and tolerant of the potential for mistakes
17. Be responsible—give careful consideration of the consequences to which any action may lead
18. Absorb uncertainty—transform uncertainty into a course of action
19. Understand how work impacts business and furthers growth of the company
20. Reward and recognize risk taking

Considering your school and it's innovative environment, which skills, attitudes and behaviours—listed above—do you consider to be most important for successful innovation to take place in your school? Please mark them with a (✓). If there are any skills, attitudes and behaviours that you consider to be inappropriate please mark them with a (X).