

Preparing for the Future: Identifying Advanced Essential Skills Needs in Canada

Highlights of Current Literature



Advanced Essential Skills Project Steering Committee

May 2003



The Canadian Association for
University Continuing Education



Association of
Canadian
Community
Colleges

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- Association of Canadian Community Colleges (ACCC)
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DISCLAIMER

While this project was initiated under the administrative umbrella of the Canadian Alliance of Education and Training Organizations, its reports and outcomes do not necessarily represent the views of all CAETO members.

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Introduction

This review of literature highlights material used in preparing the Report of the Project on Advanced Essential Skills. It provides an overview of current publications and presentations related to skills acquisition in the workplace and the degree to which post secondary graduates are prepared to meet the needs of employers in the workforce in Canada. The review is divided into two sections. The first section, General and Specific Skills Acquisition, deals

with the learning issues and work preparedness of post-secondary graduates confronting employers. The second section, Educational Needs and Training in Advanced Skills in Higher Education, highlights the present state of training of advanced level skills in universities and colleges (includes CEGEPS). A list of some other current reports and public media articles on advanced essential skills is included at the end.

General and Specific Skills Acquisition

Anisef, Paul, Paul Axelrod, Etta Baichman-Anisef, Carl James and Anton Turriffin, in collaboration with Fred Ashbury, Gottfried Paasche and Zeng Lin. *Opportunity and Uncertainty: Life Course Experiences of the Class of '73*. Toronto, ON: University of Toronto Press. 2000.

The authors of this book report on an extensive 21-year longitudinal study of the Class of '73. The panel consists of a group of late baby-boomers, first contacted when they were in grade 12 classes in different regions of Ontario. Life course and school-to-work-theories (rather than the human capital and status attainment theories that the authors used in previous works) are employed effectively. A sophisticated multi-method approach is used. Analyses at the beginning of the study in the 1970s were based primarily on surveys of over 2,000 members of the Class of '73. In later stages of the research, follow-up surveys were supplemented with interviews and life course analyses. In addition, some Canadian data from Statistics Canada and other sources are reported. Quantitative and qualitative results are integrated throughout and add to the richness of the findings.

The workplace that the Class of '73 entered was at the beginning of major changes in work and the way organizations were structured. The authors use the "spiral" and "transitory" career concepts of Venne (1996), instead of the traditional career concepts of "steady state" and "linear" due to the changes faced by the panel. The authors also examine employment in terms of social, career and geographic mobility.

The title *Opportunity and Uncertainty* conveys the dual nature of the future that the Class of '73 faced – opportunities in a strong economy and dynamic post-secondary education system, but uncertainty because of the changes underway in education, work, social norms and the economy. The authors note that

by 1995 the members of the Class of '73 had held an average of four full-time jobs. But there were many opportunities as well, e.g., "overall, the respondents appeared to enjoy their work, with women enjoying a slight edge in job satisfaction."

Assiter, Alison and Eileen Shaw. *Using Records of Achievement in Higher Education*. London, UK: Kogan Press. 1993.

This book is allied closely with *Developing The Capable Practitioner – Professional Capability Through Higher Education* (O'Reilly et al. 1999). It advocates using records of achievement and portfolios for access, admissions and accreditation of prior learning. It proposes a credentials passport that individuals would keep and get updated throughout their life-long learning. It supports the development and the transferability of skills in the workplace. The book's last section is devoted to learning in employment and a look toward the future.

Baxter-Magolda, Marcia B. *Knowing and Reasoning in College – Gender Related Patterns in Students' Intellectual Development*. San Francisco, CA: Jossey-Bass. 1992.

Interpretation of students' stories results in an "epistemological reflection model." Therefore, it is based on students' perceptions of the nature of knowledge. It describes four ways of knowing and their development through the college experience. Patterns of learning are related to gender and ways of knowing are socially constructed. Ways of knowing can be best understood through the principles of naturalistic inquiry. Students' uses of reasoning patterns are fluid and their stories are context bound.

Ways of knowing – Epistemological reflection model

- Absolute knowing
- Transitional knowing
- Independent knowing

- Contextual knowing

Domains within model

- Role of the learner
- Role of peers
- Role of instructor
- Evaluation
- Nature of knowledge

The book includes interview protocols and questionnaires used in the research.

Carnevale, Anthony P., Leila J. Gainer and Janice Villet. *Training in America. The Organization and Strategic Role of Training.* San Francisco, CA: Jossey-Bass. 1990.

This paper examines who provides training –institutions, employers and trainees. It says partnerships are needed to meet training needs such as linkages, selecting and using providers. It examines building the strategic role of training into organizational strategies. What are the right questions to ask and how do we connect training to strategic decision making? It offers policy recommendations on how employers and educators and government can improve training. It concludes that apprenticeship is the ideal job-related program as it mixes academic and applied learning, allowing learners to support themselves while they learn. The paper also contains a set of recommendations on how employers, educators and government can improve training.

Carnevale, Anthony P., Leila J. Gainer and Ann S. Meltzer. *Workplace Basics – The Essential Skills Employers Want.* San Francisco, CA: Jossey-Bass. 1990.

This book is divided into nine parts:

1. Setting standards for competency at work
2. Foundation: learning how to learn
3. Basic competency skills: reading, writing, computation
4. Communication skills: speaking and listening effectively
5. Adaptability skills: solving problems and thinking creatively
6. Developmental skills: managing personal and professional growth

7. Group effectiveness skills: working with others, interpersonal skills, teamwork, negotiation
8. Influencing skills: making a difference, understanding organizational culture, sharing leadership
9. A blueprint for success: an eight-step guideline for establishing an effective workplace basics program

An Applied Approach is outlined in chapter 19 with three key points included in the guidelines:

1. Employers need to have a training program that will consistently improve job performance.
2. The best method for improving job performance is to approach training needs systematically.
3. A functional content/applied approach improves retention.

Carnevale, Anthony P., Leila Gainer and Ann S. Meltzer. *Workplace Basics Training Manual.* San Francisco, CA: Jossey-Bass. 1990.

This manual reviews essentials skills and identifies job changes and problems related to basic workplace skills. It recommends that employers perform a job analysis to discover additional skills that may be required. Basic support is built with alliances between management and unions. Together they build a strategy for an action plan. With the results from the task analysis, a curriculum is designed and a program developed to meet the educational needs that were identified. The program is implemented and evaluated. The providers and where to get help (especially from colleges and universities) is recommended. Glossary G.1 DACUM covers developing a curriculum. Assessment techniques such as a quality check and minute papers are also presented.

Chickering, Arthur W. and Linda Reisser. *Education and Identity, 2nd edition.* San Francisco, CA: Jossey-Bass. 1993.

Gender and multicultural difference are important in education. A framework for thinking systematically about students' developmental patterns, as well as suggestions for fostering growth in interpersonal relationships and identity, purpose and integrity are very important in learning and teaching.

The book outlines seven vectors of student development:

1. Developing competence: intellectual, physical and manual skills and interpersonal competence
2. Managing emotions
3. Moving through autonomy toward interdependence
4. Developing mature interpersonal relationships
5. Establishing identity
6. Developing purpose
7. Developing integrity

Chickering states that institutions must impart transferable skills and relevant knowledge, bolster confidence and creativity, and engender social responsibility with self-directed learning. Chickering advocates the need to 1) integrate work and learning, and 2) recognize and respect individual differences, keeping in mind that significant learning and development move in cycles of challenge and response; differentiation and integration; disequilibrium and regained equilibrium.

Demerse, Clare. "Knowledge Gap? What knowledge gap? Canadians possess more job skills than they're given credit for." (Interview with David Livingstone.) Ottawa, ON: *University Affairs*. October 2002.

Livingstone suggests that Canada's workforce has more than enough skills already—all we need is a chance to use them. He discusses his latest work, *Working and Learning in the Information Age: A Profile of Canadians*, which documents the participation of Canadians in "informal learning" or all the intentional learning we do outside of organized educational programs. The average Canadian spends 15 hours per week in informal learning activities. When employers fail to look at prior learning they are missing some of the major and most passionate kinds of learning that Canadian adults are involved in. Livingstone believes that the report released by the federal government in February 2002 on skills and innovation in Canada's workforce fails to recognize that we have a very highly educated population. People have at least as much skill and education as they need, and in a growing number of cases they have more.

The gap we have now between a highly educated part of the workforce and a part with a lower level of edu-

cation and the projections of what is needed in the economy in the next 10 years will not be solved by more education. More education is always a good thing, however, it will not solve the lack of competitiveness issue. It is a matter of shifting our optics from blaming ourselves to celebrating the knowledge and skill base that we have already, and cooperating in order to use it more effectively.

Industry has to take an inventory of workers' knowledge. In a project on working-class learning strategies, trade unions did that and were amazed by the array of skills available within their membership. To reflect these findings, jobs must be redesigned to allow people who are doing routine tasks to have more input in the planning and design of work, perhaps to allow for the use of their creative skills. Workplace democratization would mean more consultation and decision-making roles for "lower-level workers" in the workforce.

There is a polarization of the workforce between, on the one hand, a growing number of workers doing a lot of overtime and, on the other hand, a growing number of people who cannot get a full-time job. Livingstone feels that to democratize work in Canada would take a national initiative based on public dialogue involving government, business, labour and the general public, and we need to have that dialogue urgently.

Evers, Fred, James Rush and Iris Bedrow. *The Bases of Competence – Skills for Life-long Learning and Employability*. San Francisco, CA: Jossey-Bass. 1998.

This book is based on a long-term research project: *Making the Match Between University Graduates and Corporate Employers*. The project was a survey-based analysis of skill competencies of university students and graduates working in organizations in Canada. Phase One, commissioned by the Corporate-Higher Education Forum, examined the adequacy of university education for corporate employment. The Phase Two study was conducted to investigate the skill development process from the early years of university to the 10-year point in individuals' careers within Canadian corporations.

In 1986, 20 of the Corporate-Higher Education Forum's corporate members and five of its university members agreed to have their organizations participate in Phase Two. The participants represented five

career stages (early university, pre-graduate, job entry, job change and stabilized career) and were surveyed in three waves. A total of 1,610 respondents completed all three questionnaires.

A set of 18 skills form the heart of the questionnaires. The students and graduates were asked to assess themselves while managers (nominated by respondents) assessed university graduates working in their departments. The skills inventory was analyzed to determine if any logical groupings existed within the 18 skills. Four distinct combinations emerged, which were found to be consistent with the evolving literature on skills and to capture the current Bases of Competence necessary in today's workplace: 1) *Mobilizing innovation and change*: ability to conceptualize, creativity/innovation/change, risk taking and visioning; 2) *Managing people and tasks*: coordinating, decision making, leadership/influence, managing conflict and planning/organizing; 3) *Communicating*: interpersonal, listening, oral and written communication; and 4) *Managing self*: learning, personal organization/time management, personal strengths and problem solving/analytic. Technical skills did not group with any of the four base competencies. While clearly important to today's workplace, computing and other technical skill areas should be dealt with as a distinct skill set.

The overall ratings by students, graduates, and managers are between "high" and "average" on a five point scale for all the skills and, hence, the base competencies. Within this range there are interesting differences. *Communicating* and *Managing self* are consistently rated higher than *Mobilizing innovation and change* and *Managing people and tasks*. New hires (job entry group) consistently gave themselves lower *Mobilizing innovation and change* and *Managing people and tasks* scores than the other groups and rated themselves higher on the other two bases.

Respondents were also asked which skills they felt would be in greatest demand in the future and which ones needed to be improved. Visioning, creativity, and risk taking (from within the *Mobilizing innovation and change* base) were felt to be in the highest demand in the future and yet were rated the lowest in terms of competence. Also, leadership and managing conflict from the *Managing people and tasks* base were viewed as critical skills for university graduates in

corporate employment. Leadership ranked first among the 18 skills most in need of improvement.

A major application of this research is to the development of competency-based education. Given the changing nature of organizations and the rapid evolution of knowledge, college and university graduates need a sound foundation of skills within the base competency areas. Various universities and colleges in Canada and the United States are using the Bases of Competence model in their curriculum development and as a framework for skills portfolios and other applications.

Goldratt, Eliyahu. *Critical Chain, A Business Novel*. Great Barrington, MA: The North River Press. 1997.

This book is a business novel by the author of *The Goal* and *It's Not Luck*. It is written as a management case that puts forward the theory of efficient project development. This is required reading for every new hire at one small company in Southern Ontario. Using the critical chain symbolism it defines a project in links, dependent upon one another. The critical links keep the project moving forward to completion and when a critical area is in crisis, all the team focuses on getting that critical link back on track. The model follows a housing development construction site. Each team comes into the target house at the proper time, keeping all houses moving toward the promised occupancy goal. The language is simple and the novel form makes the book easy to read. The model of where the best-placed buffer zones should apply is easy to understand. The company employees need to subscribe to the theory in order to fit comfortably within the organization. Since the organization has instilled the book's philosophy into their company and projects, all employees are focussed on completing projects on time with a floorless transition to the next project.

Government of Canada. *Essential Skills Research Project*. Ottawa, ON. 1994.

Earlier work in Canada, the United States, Australia and Great Britain identified a set of skills that were used in virtually all occupations. In 1994, Human Resources Development Canada launched a national research study to examine how these "essential skills" were used in various jobs. More than 3,000 interviews were conducted across Canada with people working in some 180 occupations. Essential skills, such as

reading, writing, numeracy, oral communication and problem solving, are also used throughout the activities of daily life: from shopping to food preparation, from recreational activities to community involvement. The research project is described in detail and is linked online at <http://www15.hrdc-drhc.gc.ca/english/esrp.asp> to publications arising from it.

Government of Ontario. *Portals and Pathways – A Review of Post Secondary Education in Ontario – Resource Document. The Report of the Investing in Students Task Force.* Toronto, ON. 2001.

The five reports in this document include:

1. Summary of proposals
2. Summary of roundtable discussions
3. Summary of stakeholders
4. Student experiences and priorities from a survey of Ontario colleges and universities
5. Financial health review and administration cost effectiveness

In a series of roundtables, the Student Task Force investigated what was needed for high-quality education while ensuring accessibility, affordability and accountability. Students want “one-stop shopping” for receiving information on their program, registering and applying for financial assistance. The report sought formative information on what was working well and what needed improvement. Much of this report was not directly relevant to extending the definition of Advanced Essential Skills but the roundtable reports did provide a current snapshot of various aspects of colleges and universities –libraries, laboratories and the Ontario Student Assistance Plan. The issue most in need of remediation was the inability to transfer between programs, courses and institutions (e.g., college credits to university). The sample of the survey used for the telephone interviews was quite good, including the introduction and the focussed questions.

Jenkins, Alan and Lawrie Walker, editors. *Developing Student Capability Through Modular Courses.* London, UK: Kogan Press. 1994.

If we want to enhance student capability, the challenge is to group the opportunity presented by the modularization of courses to change the nature of the relationship between tutors and students in favour of more participative modes of learning. Then we can

enable students to engage more directly with key learning processes such as planning and reviewing their own progress, assessing their own and their peers’ performance relating to the needs of the wider community, and developing personal skills and qualities.

Interest in restructuring university courses into modules of standardized interchangeable units of credit has grown rapidly in the United Kingdom since the 1970s. The development has been driven by the need to provide a more flexible response to the greater variety of students now entering higher education and to make course components available to outside groups. The challenge for the modern university is to ensure that this initiative can be reconciled with the urgent case for *capability* – skills and attitudes that empower students and give them an edge in the labour market.

Case studies show how the two demands can be successfully combined. Taken from leaders in the field, the examples in this volume represent best practices and give a summary of likely developments. Topics covered in detail include:

- Developing modular frameworks
- Core modules and core skills
- Developing skills through student choice and independent study
- Capability and the future of modularity

Jenkins defines capability as the ability to turn ideas into action through knowledge, imagination and skill. To do this we need information and the knowledge to find and use the information. We have to be able to plan and carry through intentions. We require technical and professional skills along with the skills to persuade people to take ideas seriously and to work with others toward a common end. In addition, we need the courage and independence to carry work forward and test it against the judgment of others. Knowledge alone is insufficient.

The argument for capability is for a particular kind of student experience (based on skills development as well as knowledge, the growth of learner autonomy, extracurricular and work-based learning) as a particular kind of methodology (active learning, problem-solving and profiling) and a particular set of

attributes that define a desirable graduate. Recording one's own achievements (profiling) is an integral part of self-management, involving the collection of evidence, reflection on learning, recording of achievement and planning of future learning. While a final record of achievement is a useful document that may help a graduate get a first job, the process of self-understanding and communication encouraged by profiling is a requirement for life-long learning and career development.

Design issues for extracurricular work-based learning include the questions of how to credit learning that cannot be observed or that is unexpected (usually through a portfolio, reflective journal/external commentary arrangement) and the levels at which to credit the learning (including the ways that the learning can be contextualized and used beyond the experience itself). The involvement of employers is critical in developing an outward-looking culture for universities. Capability is best developed in a university that shares in the creativity and everyday realities of society as a whole. Universities that offer modular programs are particularly well placed to involve employers in a wide variety of roles beyond the provision of work placements.

The Partnership Degree is a state-of-the-art example. A university is asked to design and deliver a customized degree program in partnership with a company or a group of companies. The employer identifies the expected outcomes for its employees and negotiates with the university about the learning experiences and the evidence required. The university ensures the program is of degree standard and provides teaching input, with other partners supplying technical expertise and workplace mentors. Modes of attendance are negotiated for individual students (employees). Learning can be a mixture of class-based teaching, in-company research, work-based learning, intensive study weekends and distance/self-supported learning. The Partnership Degree incorporates a whole set of developmental issues such as Credit Accumulation and Transfer Scheme (CATS), Assessment of Prior Experiential Learning (APEL), National Vocational Qualification [Apprenticeships] (NVO), learning contracts and work-based assessment: the authors note that it cannot be delivered effectively other than through a modular arrangement. When universities can expect less funding from student fees and must

generate more income from external sources, their ability to provide customized, flexible accreditation arrangements for students who are also workers may be essential.

Livingstone, D. W. *The Education-Jobs Gap: Underemployment or Economic Democracy*. Toronto, ON: Garamond Press. 1999.

Livingstone's definition of the education-jobs gap refers to the discrepancy between our work-related knowledge and our opportunities to use that knowledge in interesting and fairly-compensated work. The human capital theory stresses the value of people's learning capacities as a factor of economic productivity. The "learning-earning" theory is still valid at the individual level although with diminishing marginal utility. We are wasting large human learning capacities and achievements through our failure to recognize the existence of a massive "knowledge society" in a vast array of current formally organized and informal learning practices. It is not inadequate education that is the primary cause of the education-jobs gap but, rather, the lack of "decent jobs." Most of us learn continually and therefore have much more work-related knowledge than we ever have a chance to apply in paid employment. Thus, there are more highly educated people than ever before and their learning efforts continue to grow rapidly. In addition, Livingstone argues that there is more unemployment and underemployment of capable people. Therefore, the gap between the unprecedented extent of collective knowledge of the people and the diminishing number of meaningful, sustaining jobs has become a major social problem: wasted potential.

Livingstone, D. W., D. Hart and L.E.Davie. *Public Attitudes Towards Education in Ontario*. Toronto, ON: OISE/UT Press. 1998.

This survey found that 72 percent of Ontarians take courses because they are job-related. Attendance at a community college is seen as the minimum credential needed for entry into today's workforce, while 25 percent of Ontarians say that a university degree is the minimum needed. There is also a belief that we are living in a "credential-based" society in which advanced formal education is increasingly highly valued. This research looked at the relationship between universities and labour-force needs. The authors concluded that a strong economy brings "good" jobs and these good jobs, in turn, need university graduates.

Business-university partnerships have been extolled by government, business and some university administrations. Large numbers in the survey reported a mismatch between educational attainments and the knowledge required in their jobs, resulting in an under-utilization of their education.

Mentkowski, Marcia et al. *Learning That Lasts: Integrating Learning, Development and Performance in College and Beyond*. San Francisco, CA: Jossey-Bass. 2000.

The concept of *capability* coming from research in the United Kingdom on abilities is gaining importance. Capability is meant to promote this confluence of integrated competence and life-long learning (Stephenson and Yorke, 1998). These integrations of performance with learning and ability factors empirically clarify the relationship between competence and what Stephenson and Yorke called capability, which is a more future-oriented construct.

National Post. "Graduates to Be Better Prepared for Workforce: Ministry. Victoria, BC." September 19, 2002.

British Columbia announced that the province will revamp the education system to better prepare graduates for the workforce. The new system will promote English and math skills plus evaluate students for job readiness and community involvement.

Ontario Veterinary College. *Professional Competencies of Canadian Veterinarians: A Basis for Curriculum Development*. Ontario Veterinary College, University of Guelph. 1996.

This document formed the basis of the curriculum reform for the Ontario Veterinary College. It contains all the general and specific graduating competencies expected upon completion of the Doctor of Veterinary Medicine program. The range indicators are also given as a means of describing a student's degree of mastery of as he or she moves toward competence. It is in great detail due to the number of species and procedures involved. The new curriculum was implemented with the entering class in September 2000. The first graduates will be the Class of 2004. The document has been distributed world wide as a frontier-breaking, learning tool for a professional program.

O'Reilly, Dave, Lynne Cunningham and Stan Lester, editors. *Developing the Capable Practitioner – Professional Capability Through Higher Education*. London, UK: Kogan. 1999.

The "capable practitioner" notion is not new but is relevant as we move from an industrially dominated society to an information-based society characterized by discontinuous change and challenges to some of our most basic assumptions. Professional development has moved from the classical notion of the educated person to the search for models based on competence and proficiency in the workplace.

Higher education has tended to focus on the classical and the technical-rational, concentrating on understanding and developing the intellect and on the principles, information and facts pertaining to a given field. The competence agenda is beginning to have an impact on higher education, prompting institutions to question their curricula, teaching and assessment methods. Competence, in the sense of effective practice, has a pragmatic validity and sense of appeal, so there has been a move to be more explicit about what practitioners can do, even if some methods are too fragmented and simplistic to have any fitness for the purpose.

There is more to the "capable practitioner" than command of a professional body of knowledge or the ability to demonstrate competence at work. Those involved in professional development and higher education face a challenge to move beyond considerations of knowledge and competence to helping people develop as capable practitioners equal to the challenges of fluid environments and unpredictable change. Capable practitioners must take responsibility for their careers and their learning, and exercise practical judgment and systemic wisdom for a sustainable future. David Blunkett, Secretary of State for Education and Employment for the United Kingdom, emphasized the importance of learning in the green paper, *The Learning Age: A Renaissance for a New Britain*, in which he stated that "Fostering an enquiring mind and the love of learning are essential for our future success." The report also recommends widening and expanding higher education, increasing flexibility and quality, and establishing more visible relationships between institutions and the needs and contributions of individuals, employers and society in general.

Pascarella, Ernest and Patrick T. Terenzini. *How College Affects Students*. San Francisco, CA: Jossey-Bass. 1991.

This document encompasses two years of research. The researchers focussed on career choice and how these choices were developed. Also, they looked at occupational productivity: success as well as job satisfaction. They concluded that colleges have both a direct and indirect effect on employment and a graduate's job satisfaction.

Public Service Commission. *Developmental Recommendations and Resources – Leadership Competencies for ADMs and Senior Executives*. Ottawa, ON: Government of Canada. 2001.

This report is aimed at helping senior executives stay successful through continuous personal growth. The report identifies competencies needing improvement from a process of self-analysis then helps formulate a "learning plan" to improve the areas of weakness. In the roundtable discussions, all parties shared ideas in turn and discussed disagreements only after each had a turn to speak. The representatives clearly identified the desired objectives. Leadership competencies were a priority and were divided into the following: action oriented; builds team spirit; has ethics and integrity; has interpersonal savvy; and, has managing vision and purpose. The leader needs to be motivating and have the ability to inspire others, be good at problem solving and decision making. A leader needs to show quality results orientation and strategic agility, defined by Watson (1998) as someone who translates business vision into clear strategies and specific priorities to help others focus their efforts for business success. The leader with strategic agility has a broad knowledge and perspective and can anticipate and adapt to future consequences and trends accurately. There are three categories involved in strategic agility –learning, performing and excelling.

The Public Service Commission recognizes that ADMs and senior executives need specific competencies in order to ensure success. Their summation of core skills includes:

- Intellectual competencies: cognitive capacity, creativity
- Future building competences: visioning, flexibility, self-confidence

- Management competencies: action management, organizational awareness, teamwork, partnering
- Relationship competencies: interpersonal relations, communication
- Personal competencies: stamina, stress, resistance, ethics and values, personality and behaviour

Resnick, Lauren B. and John G. Wirt. *Linking School and Work – Roles for Standards and Assessment*. San Francisco, CA: Jossey-Bass. 1996.

The changing workplace offers new challenges. The standards-based education for workplace readiness implies learning and teaching on demand. Learning and teaching on demand implies the ability to learn or help someone else to learn when new knowledge and/or skills are needed. Such learning must be accomplished in a fixed time period and respond to some particular need, i.e., changed job, new process etc. In this sense, the demand is external. In most cases, the process of learning is more like learning in a higher education setting than in early schooling.

Self-responsibility in learning depends on the individual's capacity to figure out what must be learned and to locate the appropriate learning tools. It calls on capabilities for self-assessing and finding good sources of information, including others, and structuring the learning process for oneself. This book offers a Career Technical Assistance Package (C-TAP).

The C-TAP portfolio has four components:

1. A career development package (completed job application, letters of recommendation and a resume)
2. Work samples
3. Research project or Capstone example
4. Supervised practical experience

A matrix of competencies and task contexts related to credentials and profiles is also included.

Schön, Donald A. *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions*. San Francisco: Jossey-Bass. 1987.

This important book is based on Schön's earlier work, *The Reflective Practitioner* (1983), which established a new epistemology of practice. This model takes as its "point of departure the competence and artistry already embedded in skillful practice" (p. xi).

This is related to the way experiential education is now formulated with the essential component of self-reflection. Another way to look at what he advocates is through his “coaching” approach to teaching where students are helped to learn, rather than being taught. Many colleges and universities, such as the University of Guelph, advocate a learner-centred model of higher education. Professors provide the theories, principles, abstract models and methods for students to become self-reliant learners.

Schön carefully describes the “dialogue between coach and student” in Chapter 5. This dialogue helps students learn the processes of learning and discovery, which also relate to the way research is conducted. Chapter 8 focuses on using a reflective practicum to develop professional skills. Here again, Schön dissects the process involved in learning. He also describes in detail a master class in musical performance: a type of education in use for hundreds of years.

Spencer, L. and S. Spencer. *Competence at Work: Models for Superior Performance*. New York, NY: Wiley & Sons. 1993.

This book is related to *Capability and Quality in Higher Education* (Stephenson and Yorke, 1998). The authors found that underlying personal characteristics such as achievement, motivation, initiative, information seeking and self-confidence are crucial to good performance. There is a relationship between learner responsibility and quality of performance. There is growing interest among academics for funding for examination of topics such as: the learning society, work-based learning, guidance and learning autonomy – all high level skills (Yorke, *The Assessment of Higher Order Transferability Skills: A Challenge to Higher Education in Assessing Capabilities in Degree and Diploma Programs*, 1995). There is also concern from institutions to raise the quality and relevance of their students experience in higher education.

Stephenson, John and Mantz Yorke. *Capability and Quality in Higher Education*. London, UK: Kogan Page. 1998.

Individuals, industry and society as a whole benefit when all of us have the capacity to be effective in our

personal, social and working lives. Employers have moved to capability’s most distinctive features, particularly the importance of helping students and employees with responsibility for managing their own learning and development. There are dramatic changes in the work environment with regard to technical change, information growth and flatter structures in management with fewer points of supervision. You can now expect to change jobs every 24 months and careers every 10 years. There is an increase of people working part time or becoming self-employed and becoming “portfolio” workers.

Zwell, Michael. *Creating a Culture of Competence*. Toronto, ON: John Wiley and Sons. 2000.

This book identifies competencies critical to success. Success integrates corporate culture and competency. Success makes competency-based selection work. Successful companies develop competency-based performance measures and assessment. In a culture of competence, people work at full capacity. There are three cornerstones supporting organizational success: 1) competent leadership, leadership with vision; 2) competent employees; and 3) the degree to which the corporate culture fosters and maximizes competence.

When cultures change one must have a strategy with which to respond. Zwell proposes the following approach:

Methodology

- Identify educational need: roundtables, interview, survey (electronically)
- Planning to meet those needs

Modes of educational delivery based on adult education theory

- Implementation of learner-centred strategies
- Fostering creativity and originality

Assessment of competencies

- Degree of mastery, assessment of progress
- Assessment of pedagogically-sound use of technology

Educational Needs and Training in Advanced Skills in Higher Education

Association of Canadian Community Colleges. *Colleges and Institutes and Canada's Innovation Strategy*. Ottawa, ON. 2002.

This background paper describes how Canadian colleges and institutes are responding to the Government of Canada's Innovation Strategy through community capacity development, individual learners and adult learning, employers and the workforce, and applied research and innovation.

Colleges and institutes contribute to community development by:

- acting as catalysts for increasing economic and education opportunities in their communities and act as partners or agents for local innovative community development;
- providing anchors to local community innovation by complementing the economic and environmental assets for communities to build local strategies;
- building community networks of employers, community groups and local/regional governments;
- creating a national dialogue on rural and remote communities' socio-economic development, including Aboriginal participation; and
- being the only post-secondary presence in many Canadian communities.

It is useful to note that colleges and institutes are:

- the largest suppliers of advanced adult training and education in Canada with 2.5 million full- and part-time students on campuses in over 900 communities providing learning opportunities in over 3,000 communities in all regions of Canada;
- the primary national network mandated to support government, industry and labour in the design and

implementation of a national human resource strategy that provides Canadians both employed and unemployed with the tools required to become lifelong learners; and

- supportive of the integration of immigrants in the workforce.

Moreover, when it comes to employers and the workforce, colleges and institutes:

- are key providers of training and skills development programs for an innovative and competitive workforce;
- provide training in essential employability skills to the existing and future workforce;
- work with employers to increase training and apprenticeships in trades and technical sectors;
- use advanced technology to facilitate on-site training; and
- work with sector councils to identify and meet future requirements for human resource development within sectors and SMEs.

Colleges and institutes are also well positioned to:

- spur innovation and economic revitalization within the regions they serve;
- provide targeted applied research and rapid technology transfer support to regional business and industry;
- strengthen capacity of SMEs and their communities to be innovative and to adopt and adapt technological processes; and
- develop new products or processes and bring products to market rapidly.

Specifically, the ACCC identifies a number of ways in which government, colleges/institutes and the private sector can work together to meet the challenges posed by the Innovation Strategy, for example by providing more tax incentives to employers for skills upgrading of workers, expanding access to Employment Insurance benefits for those in the workforce and the self-employed and expanding the Lifelong Learning Plan to allow part-time learners to access funds from their registered retirement savings plans.

Association of Universities and Colleges of Canada. *Advanced Skills for the Knowledge Economy*. Ottawa, ON. 2002.

This background paper along with 13 others was the first step in putting together *A Strong Foundation for Innovation – An AUCC Action Plan* (July 2002).

Issue

Between 1990 and 2001, individuals with post-graduate degrees grew from 600,000 to one million. Individuals with bachelor's degrees rose from 1.3 million to 2.1 million. Since 1990, the number of jobs filled by youth with bachelor's and graduate degrees increased by 30 percent, while there was an 11 percent increase for youth with college and trade/vocational diplomas and certificates.

Wages of bachelor's graduates had the highest rate of income growth, at more than 12 percent. University graduates have the lowest rate of unemployment and the highest incomes. Engineering, health professions, biotechnology, education, law, business and computer science have been among the fastest growing occupations, accounting for less than 20 percent of all employment but 40 percent of the job growth. This shift in the job market has caused record highs in university applications and enrolment levels. Universities have responded by increasing enrolments in high-demand disciplines such as computer science and high technology engineering programs.

The knowledge economy requires "soft skills," defined by the Conference Board of Canada in *Employability Skills 2000+* as a "wide range of abilities including managing information, the ability to communicate effectively, problem-solving skills, analytical and critical thinking, leadership skills, flexibility and adaptability to change." High-tech companies

are looking for employees not just with technical skills but those who have demonstrated an ability to think logically and analytically, and who have the ability to communicate the results of their work in a multitude of settings, to work both independently and in groups and to be real problem-solvers. Thirty Canadian CEOs say liberal arts and science education nurtures skills and talents increasingly valued by modern corporations.

Challenges

The key university contribution to the knowledge economy will be the learning environment that prepares graduates for a career by providing them with a range of skills, from technical to interpersonal and problem-solving skills. Universities need to develop learning opportunities that provide a mix of skills that allows students to adapt well to shifting demands in a changing world. Since flexibility and adaptability are increasingly valued by employers, universities must ensure that they respond to the needs of the private sector by continuing to develop a range of skills across all program areas.

Confronting the Challenges

A. Universities

Universities should continue high quality programs that develop the range of skills that are valued by various labour markets and should work with:

1. Public and private sector employers to ensure employers are aware of the skill set obtained by all university graduates that allows graduates to adapt effectively to changing demands;
2. University advisory committees; and,
3. Industry sector councils –where appropriate – to understand labour market needs and ensure accurate and reliable market information is made available to students to inform their career decision-making process.

B. Governments

1. Governments should provide required core funding.
2. Governments should help to create sector councils to provide and share accurate and reliable

labour market information with universities, students and employers.

C. Private Sector

1. The private sector should work with the education community to ensure that universities are aware of the skills required by employers.
2. The private sector should demonstrate an increased commitment to skills training and development.

Conference Board of Canada. *Addressing the Challenge: Deliberations at the TD Forum on Canada's Standard of Living*. Report. Ottawa, ON. 2002.

The discussions for this report were moderated by the Honourable Bob Rae. Rae asked participants to think 15 years into the future and imagine a Canada that had succeeded in having the highest standard of living in the world, to think about what this Canada would look like and what changes had to be made to get there. For Canadians to have a consensus that prosperity is a common goal, a high quality education is key.

The TD forum focussed on five themes:

1. Leadership and attitudes
2. Human capital
3. Smart social policy
4. Strengthening the national socio-economic framework
5. Redefining Canada's external relationships, especially with the United States

Participants noted that the style of leadership must change in that leaders have tended to come from a narrow group. Leadership in the future must better reflect Canada's diversity as the views of too many have been omitted. Also, discussion of the policy options has not been open or had broad-based participation. Leadership must make information more available, perhaps by using mechanisms such as the Internet.

Human capital development needs to ensure mobility of skilled individuals. Centres of excellence should be developed in post-secondary institutions. A culture

of life-long learning must be created. We need to address the student debt problem, strengthen the link between academia and business, and encourage immigration of people who have the skills and training Canada needs. By creating smart social policy, the child support system would be enriched, and a set of incentives would be needed to return people to the economic mainstream. Rather than making incremental changes to the present system, there is a need to review how the various social systems interact. One possibility for reform is to move from the current system to an integrated wage-based training program. By removing the international barriers to trade and to labour, capital mobility and the national socio-economic framework would be strengthened. An integrated tax system that encourages growth and innovation is needed as well.

In the evolving global economy, national economic success depends on having cities that are engines of growth, that provide a welcoming business, cultural and recreational environment while minimizing social tensions through fair and effective social development policies. External relationships are also in need of development and a dialogue on Canadian foreign policy should be initiated. The discussions fell into two categories: what are the interim objectives Canadians should strive for and what are the means of getting Canadians to strive for these objectives by changing their attitudes and pursuing the necessary policies. The policies should reflect Canada's diversity.

Discussions frequently came back to leadership. Leadership is much valued, though usually noted for its absence. Leaders could be people from any walk of life who are prepared to step outside local or special interest concerns and put the future of Canada first.

Human Resources Development Canada. *Knowledge Matters, Skills and Learning for Canadians. Canada's Innovation Strategy*. Ottawa, ON: Government of Canada SP-482-02-02. 2002.

A discussion paper addressing skills and learning in Canada that outlines the Canadian government's analysis of where citizens stand currently and where the government would like Canada to be positioned going forward in a global marketplace.

Industry Canada. *Achieving Excellence, Investing in People, Knowledge and Opportunity. Canada's Innovation Strategy.* Ottawa, ON: Government of Canada. Cat. No. C2-596/2001E-IN2. 2002.

This document deals with issues surrounding research and development in Canada. This paper and *Knowledge Matters* challenge all segments of Canadian society to develop plans to ensure Canada's prosperity in the knowledge-based economy.

Royal Roads University. *Academic Calendar 2002-2003.* Victoria, BC: Organizational Leadership and Learning Division. 2002.

To respond to the current need for education in advanced skills, this university has widely advertised its distance education programs aimed at executive development, leadership and collaborative learning.

Accreditations include: graduate certificates in leadership, a graduate diploma in leadership and an executive Master of Arts in leadership and training. In 1995, the mandate for Royal Roads was to provide programs for professionals working in the global economy. Royal Roads' learning model emphasizes learning teams that reflect virtual teams increasingly found in the workplace.

There are four founding themes:

1. Entrepreneurship and management
2. Leadership
3. Environmental sustainability
4. Conflict resolution

Some Current Reports and Articles on Advanced Skills

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- Conference Board of Canada. *Success by Design – What Works in Workforce Development*. Education and Learning Series. December 2002.
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