Experiments in Knowledge Management in CPD

Bert Einsiedel, Wayne Lamble, Michael Aherne, Stephen Downes, Sherrell Steele and Brenda Gladstone, Lili Liu, Norma Nocente

The Faculty of Extension at the University of Alberta established a research and development (R&D) unit called the Institute for Professional Development (UofA-IPD) in 1998. Its mission is to promote advanced study and innovative practice in continuing professional development (CPD). This case study describes some of the experiments in which the UofA-IPD and its partners have applied the principles and tools of knowledge management (KM) in continuing professional development.

UofA-IPD's Role as an R&D Unit for Continuing Professional Development

The Institute for Professional Development (UofA-IPD) was created in 1998 as a University-wide strategic service to promote the advanced study and innovative practice of continuing professional development (CPD) at the University of Alberta, across the province, and around the world. *UofA-IPD serves as a research and development locus and focal point in the University of Alberta's efforts to make CPD and lifelong learning relevant, responsive and accessible for alumni and knowledge workers.*

The research and development work of the UofA-IPD serves as a touchstone – in diagnosing and addressing the emerging needs of professionals and other knowledge workers. Members of the Institute provide strategic academic and institutional leadership to many faculties at the University of Alberta (Business; Education; Engineering; Extension; Medicine and Dentistry; Rehabilitation Medicine; and Agriculture, Forestry and Home Economics), other educational institutions, professional associations, private industry and government. We work with leaders in these diverse contexts to

coordinate, align, leverage, and apply established capabilities for creatively responding to, and capitalizing on, rapidly evolving developments, needs, and opportunities in continuing professional development.
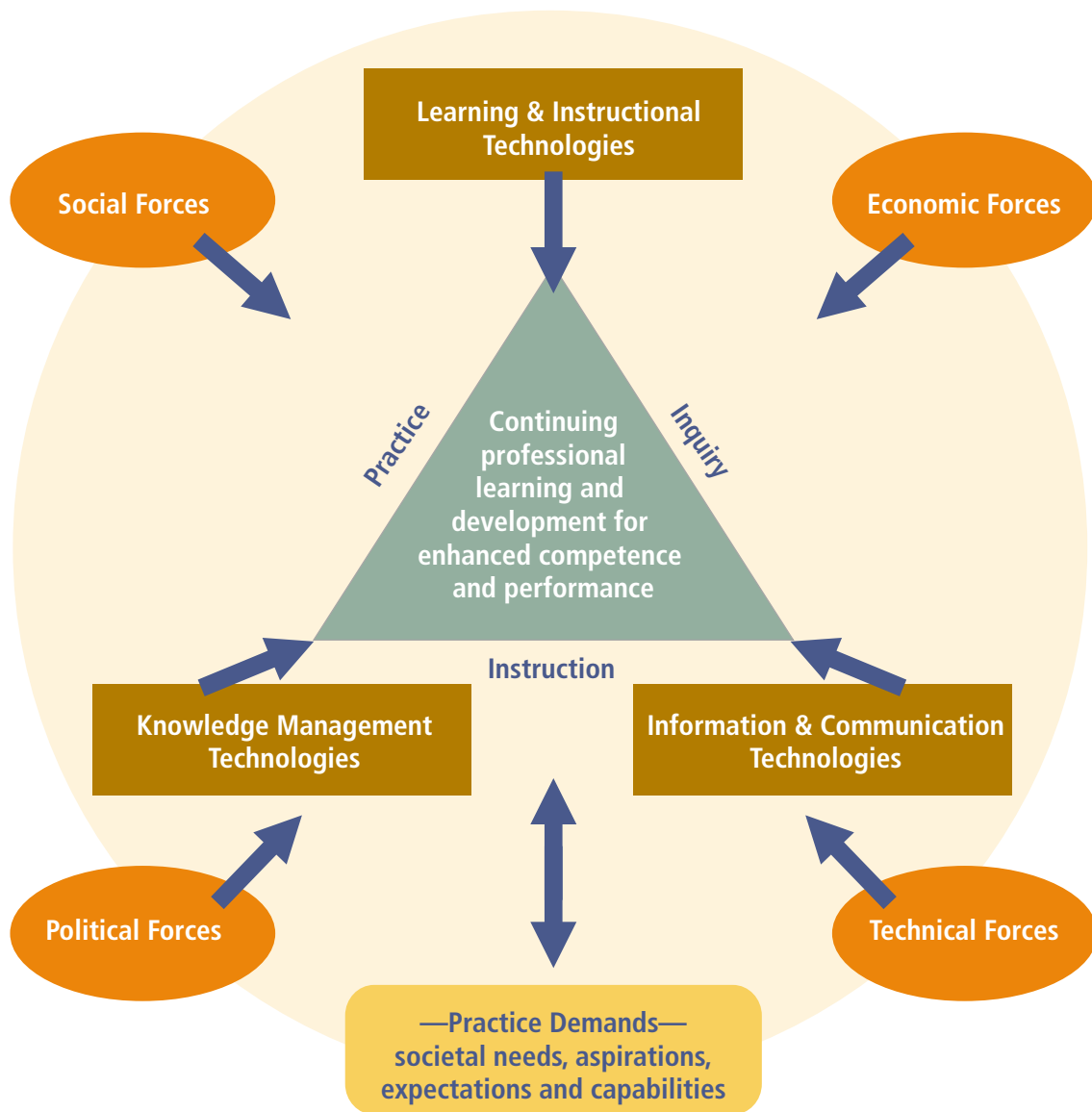
A Conceptual Model

(Contributed by Bert Einsiedel and Wayne Lamble)

New technologies have emerged from advanced studies in the fields of learning and instruction, communication and information, and knowledge management. These technologies, individually and particularly in combination, have promoted greater understanding, encouraged innovative practices and, in many cases, enhanced performance in these fields.

Technological developments are causing us to review existing relationships between and among education, instruction, learning, knowledge management, and professional development. We are also seeing the effect of new technologies on our educational institutions. For example, "virtual universities" are experimenting with online courses and virtual communities of researchers. Libraries are more wired, digitized, and networked; they support electronic journals and other learning resources accessible at a distance. Leaders are developing new strategies for managing the institutional changes caused and required by these emerging technologies. For example, more money is being spent on creating the high-speed network infrastructure and integrating information and communications technology into the technology-rich teaching, learning, research and administrative environments.

A number of converging forces are shaping the way knowledge workers learn. The figure on page … illustrates a model, developed by Lamble and Einsiedel (1999), of the relationships among converging forces that contribute to the efficacy of individual and group learning experiences and, more importantly, performance outcomes attributable to those learning experiences.

Convergence of Forces within the Context of Contnuing Professional Learning, Development, and Practice

This model recognizes the importance of different technologies, as well as the settings in which knowledge workers can sharpen their craft.

Our task was to test the model in the workplace. We asked stakeholders: "How well does this conceptual framework reflect the issues and trends in the work environment of knowledge workers?"

Issues Raised by CPD Stakeholders

In September 1998, the UofA-IPD invited leaders from private industry and government, professional associations, provincial regulatory bodies, professional schools, university faculties to a symposium to examine issues surrounding the facilitation of performance-based CPD.

The six participating groups recorded more than ninety issues. Many of the priorities and strategies set by the UofA-IPD since 1998 have been directly related to these issues. Here are a few of the slightly edited "top themes" reported by the groups:

- The term "knowledge worker" is preferred over the term "professional" as the former is more inclusive.
- Knowledge workers in a rapidly changing knowledge economy need to obtain new information quickly.
- New discoveries are frequently being made. The task is to codify information as it is being discovered. Innovation in the university comes slowly. Industry has to push the university to respond more efficiently to its needs.
- There is a need to facilitate the conversion of new information (research) into knowledge so that real-life problems can be quickly identified and solved. We need a more efficient system, one that enables educators to capture information and disseminate it to organizations and individuals who need it.
- Research needs be related to real-world practice. There must be a transfer of knowledge that can meet the needs of the entire community.
- New partnerships need to create new value, and be of mutual benefit. We need to acknowledge all of the players and find

appropriate roles for each one. A challenge will be to learn to trust each other, and work toward a common goal for the collective good rather than being in competition.

- There is never enough time. We have to have high quality and appropriate (content, forum, time, place) learning that makes the investment of time worthwhile for learners and their employers. Professional development programs must be of outstanding value.

- There is a need to look at our methods of delivery. Technology is making it possible for instruction to be different. "So much to learn, so little time, so little resources – we are saturated, physically exhausted, almost burned-out – let's make it so that learning is not so much work."

- The importance of sharing knowledge and expertise within and between professions was emphasized. "We are professionals in a world where the client often knows more than we do. Everyone is an expert on something. We must share knowledge and information examining the credibility of the source in light of the circumstance."

- The challenge is how to change the focus on learning to work skills, to learning-to-learn, and to apply this learning. It is necessary to plan for constant change.

- Move away from traditional conceptions of training and continuing professional education to learning through performance, inquiry, and on-the-job activities.

- Corporations and institutions have to be convinced to give more respect to other forms of education, such as diplomas, weekend programs, and so on. There is a need to be more creative, not restricted to degree and non-degree programs. The need is to develop a culture that supports broad-based continuing professional development rather than narrowly focused training for skill development.

- We need a dual process. UofA-IPD needs to go out to the workplace to ascertain learning needs and to educate the workplace about delivery systems and options in order to ensure relevancy and accessibility of continuing professional

development. The University needs to become more adept at assessing needs. It needs to become anticipatory and proactive, not just reactive.

- Design programs that support a sharing of expertise, that involve all participants, where everyone brings something to the table. More and more work is done in teams but training is based on the individual.

- Build the links to intuition). Make sure that experience is leveraged. Nurture the acquisition of knowledge in a different way. "Look at the Outward Bound model. People are not there to learn a specific skill. They are there learning to work together."

- One role for UofA-IPD is to communicate best practices in an area and to try to have an influence in developing an investment and exploration mentality.

- The need is for innovative programs for learning that are accessible from the workplace. The university needs to be responsive to the community need for "moments of learning" in a rapidly changing environment. The need is for just-in-time learning. "We can no longer resort to just-in-case learning (developing programs that simply sit on the shelf)." The challenge is real-time learning. It is different – not proactive – but learning moments and quick learning concepts. The challenge is to go beyond responsiveness to anticipate needs, then to provide tools and solutions that are cost effective and time effective. UofA-IPD should show organizations how new delivery systems (such as teleconferencing) can ease the process.

For more information, see www.ipd.ualberta.ca/library_files/ library_docs/rons_paper.htm.

UofA-IPD's Experiments in Knowledge Management

The issues that were identified from an environmental scan of the CPD literature and during the CPD Symposium suggest the importance of creating more responsive and efficient learning systems that knowledge workers can use to keep current with the significant developments in their fields. We now must ask: "To what extent can the emerging information and communications technologies, knowledge management technologies, and instructional technologies contribute to the learning and development of knowledge workers?"

The following projects apply some of the principles and tools of knowledge management. These collaborative projects involve UofA-IPD, either as the lead agency or as one of the participating organizations.

The Amazon Project

The Amazon Project is at the core of UofA-IPD's experiment with knowledge management. Its initial objective was to map out the CPD resources at the University of Alberta and the larger community that the University serves. The term Amazon was adopted to reflect the image of a complex environment, similar to the Amazon rainforest, which features a rich, diverse, and dynamic ecosystem. It is challenging to navigate but promises wonderful discoveries for those who meet the challenge.

Project output was originally limited to a searchable database, starting with CPD programs and courses offered by various faculties at the University of Alberta. The Project has since expanded to include the design and building of a one-stop web-based system that will:

- serve as a dynamic knowledge repository of learning resources;
- provide information on important and current CPD-related research;
- access searchable databases of professional associations and other contacts;

- provide a newsletter that features new trends and developments in CPD;
- provide opportunities for participation by the virtual community of CPD specialists;
- enable innovators to contribute to the CPD knowledge repository;
- report the progress of collaborative R&D projects sponsored by UOFA-U OF A-IPD;
- facilitate learning at a distance with the use of learning technologies;
- encourage learning through participation in virtual communities;
- bridge the gap between disciplines, work organizations, professional associations, et cetera; and
- connect scholars, practitioners, and others worldwide.

The following projects exemplify application of knowledge management concepts and tools in specific contexts.

Improving Engineering Management Education: Identifying Options for Relevant, Responsive and Accessible Learning Supports

(Contributed by Michael Aherne)

In 1999, UofA-IPD and the Faculty of Engineering entered into a Government of Alberta Learning Enhancement Envelope (LEE 3) sponsored project to examine program renewal of an existing Engineering Management (EM) program. The Faculty of Graduate Studies and Research had suspended the EM program in 1998, primarily because of insufficient resources and also because the program was using a program administration/support model that was inconsistent with the Engineering faculty's structure and culture.

Engineering faculty leaders determined that the original EM program had been modestly successful and had excellent growth potential. There are virtually no EM programs in Canada, despite an explosion of 212 engineering and technology management programs throughout the world (mostly in the United States) since 1947.

Using an evolving Market Research Template (MRT), the UofA-IPD has developed a market-oriented needs assessment. Action research and in particular, appreciative inquiry provided the conceptual base that guides this study. As a knowledge management journey, we used appreciative inquiry to understand and codify three elements:

Discovering the best of… Appreciative interventions begin with a search for best examples of organizing and organization within the experience of organizational members.

Understanding what creates the best of… We seek to create insight into the forces that lead to superior performance, as defined by organizational members. What is it about the people, the organization, and the context that creates peak performance?

Amplify the people and processes that best exemplify the best of… Through the process of inquiry itself, the elements that contribute to superior performance are reinforced and amplified.

We applied the MRT to this study through a phased approach that included:

- an extensive search and review of literature of post B.Sc. education and professional development topics relevant to professional engineering and engineering management;
- a document review and a World Wide Web activity profile of peer EM programs at post-secondary institutions throughout the world (with a detailed review of 90 EM programs). [A www activity profile is a new protocol that the U of A-IPD is developing to gather competitive intelligence for benchmarking and for undertaking best-of-class analysis of educational programs and professional development at peer institutions];
- consultation with eighteen key academic and administrative leaders from the Faculty of Business, Faculty of Engineering, Faculty of Extension and Faculty of Graduate Studies and Research;
- interviews with twenty-one senior engineering leaders (i.e., senior engineering, vice-president, president & CEO level) from a broad base of Alberta private and public sector organizations;

- organization of ten focus groups with Alberta professional engineers preparing for, or in early-to-mid career management, technical leadership and specialist professional roles; and
- data collection on issue identification, perceptions of what might create market demand (i.e., valued and desired characteristics of a program), and best-of-class educational programming in engineering management from other post-secondary institutions.

This needs assessment is radically different from traditional educational needs assessments (for example, discrepancy analysis, survey of felt needs); however, it is central to the reorientation of a CPD enterprise from one that is provider-oriented to one that is learner-centred and market-oriented.

New tools also enabled us to actively and meaningfully engage stakeholders, and construct new knowledge through the organization of information using hyperlinks and TCP/IP protocols on the web. The collaborative development of an online project enabled us to publish project documents, as well as an interactive, one-window inventory with links to 90 EM programs at peer institutions. All project stakeholders and project investigators had access to the same information sources. This enabled us to engage a significant cohort of stakeholders in a timely, affordable manner and in a way that increased the transparency of information sources. Moreover, the project collaboration enabled our project team to easily share project information with higher-education colleagues in the United States and United Kingdom who are also exploring how to most appropriately provide EM education to their local/regional markets.

The use of the new tools transforms the work product into a compact and easily archived project-legacy knowledge product; it meets accountability criteria for a government sponsored project and serves as a future reference. The online project collaboration can be easily transferred in HTML format to a CD-ROM. All project documents can be saved in final format on CD-ROM using Portable Document Format (PDF) technology; the documents are easily accessed using a free Adobe Acrobat Reader utility.

The need for EM CPD is clearly indicated by the interest and engagement of the stakeholder community, and the findings of our background research. It is questionable, however, if need will translate into demand unless the University of Alberta re-positions the EM program, making it market-oriented. Our inquiry highlighted several critical success factors that would contribute to the development of market-oriented EM CPD:

1. **a relational approach to CPD that is linked with University/Engineering strategic directions.** The University of Alberta and the Faculty of Engineering must offer a quality EM program that embodies their desire to contribute to social and economic development in Alberta, Canada and the world. One of the interesting implications of such a move is the transformation of the relationship Canadian institutions have with their alumni: the relationship will shift from one that is affinity-based (model adopted from the United States) to one that is value-based and has a very clear value proposition that is easily understood by alumni (for example, this is how we will meet your life-long learning needs and this is how you benefit).

2. **shorter term professional development and programs of graduate study** (i.e., certificates, diplomas, professional master degrees) based on a Graduate Professional Education (GPE) model. Features of GPE include: flexible residency requirements; bridging opportunities for prior learning; capstone projects that thoughtfully integrate research and practice; course content driven by the requirements of professional practice; and cohorts of learners with requisite professional skills and experience to enrich the learning environment for all.

3. **active advisory and financial participation of industry.** The activity profile of peer institutions is rich with examples of how universities and industry have come together in new forms of partnership in EM CPD. Their collaboration ultimately contributes to capacity building of the engineering in management/leadership and local/regional economic development.

4. **a program-based governance model.** Modern EM is interdisciplinary by its very nature. The sustainability of an interdisciplinary program is predictably poor if the program resides in any one Engineering discipline-based academic department. We found many graduate business programs (including a program in the University of Alberta's Faculty of Business) that have a long history of success in offering interdisciplinary professional programs. These programs use a program-based model that draws expertise from several independent departments within the faculty. The departments maintain unique identities and programs of research, scholarship and teaching.

5. **distributed learning delivery model.** Learners clearly indicate that they are looking for accessible EM CPD that is flexible within the context of other life priorities. Graduate CPD is not the first priority in their lives, but they want access to quality CPD experiences to help them construct meaning and excel in professional practice. A critical success factor for renewed EM CPD is the identification of ways to reduce (not necessarily eliminate) the need for learners to participate in classroom-based instruction (on-campus/off-campus), while at the same time providing them with a "contact rich" environment with faculty and fellow learners.

6. **one window into the university.** Learners are also looking for a single-window into the university. Development of a web-based portal for Engineering CPD would be a very welcome contribution.

The findings of the needs assessment also highlight an emerging knowledge management imperative – effective management of relationships. Nick Bontis suggests that the nature, quality and knowledge of an enterprise's relationships constitutes Relational Capital, one of three critical forms of modern organizational intellectual capital. By understanding and studying needs in the context of enhanced competence and performance in professional practice/workplace, we were able to become aware of the

philosophical and programming limitations of the existing EM. This has enabled us to provide suggested directions to Engineering on how they can reorient an EM program to meet the CPD needs of the working professional engineer and ultimately improve their EM CPD product offering and their relationships with the professional engineering community.

Assessing CME Needs of Rural Family Medicine Physicians in Northern Alberta: Identifying Options for Relevant, Responsive and Accessible Learning Supports

(Contributed by Michael Aherne)

The UofA-IPD conducted an assessment of the CPD needs of rural family medicine (RFM) physicians in Northern Alberta. The assessment identified factors that could improve access to relevant and responsive continuing medical education (CME) needs of RFM physicians.

In Alberta, and in many other jurisdictions, recruitment and retention of rural physicians has been an ongoing public policy issue. The practice of modern medicine has moved from being expertise-based to being knowledge-management-and-utilization based. At the pre-service professional education level problem-based learning approaches have helped to facilitate this shift.

The focus of the RFM CME needs assessment was to understand the issues and underlying drivers of modern professional practice, and to identify ways in which CME could help RFM physicians respond to these issues. Thus, in this instance, CME has moved beyond its traditional role as an "information pipeline" for clinical information updating to another role.

As with the Engineering Management (EM) program needs assessment, we approached the study from the perspective of appreciative inquiry. We used the Market Research Template (MRT). Specific methods of gathering information included:

- analysis of a customized comparative data run for Canada and Alberta on medical services and procedures performed by family physicians, furnished from The JANUS Project of the College of Family Physicians of Canada (CFPC);

- review of secondary data from the Alberta Rural Physician Action Plan (RPAP), the CFPC/Rural Society of Physicians of Canada (RSPC) working group on Advanced Skills Training, and the College of Physicians and Surgeons of Alberta;
- key informant interviews with fourteen system-level/physician leaders familiar with current issues, drivers and trends in RFM practice; and
- an extensive review of the literature with a focus on best practices and innovation in family medicine applicable to northern Alberta RFM.

We found that Alberta RFM physicians adopt knowledge management orientation to their practice within the following contexts and limitations: keeping up-to-date with diagnostic and pharmaceutical technologies and patient-initiated web-based information; provincial health system regionalization; pressure to practice evidence-based medicine; licensing renewals involving demonstration of continued competence; physician skill mix that matches the population health profile; gradual reduction in rural surgical capacity; and the medical legal risk management implications of new skill utilization.

The study highlights a new role for CME in providing leadership within the academic medical center. Rural medicine is a distinct area of clinical practice. Thus, in this context, CME must offer more than traditional "information updating"; CME must "broker" a range of knowledge resources that RFM physicians require to manage highly individualized clinical practices. The market sees the CME function better serving RFM by piloting, pioneering and advocating new approaches to lifelong learning and knowledge management in medical practice.

CME providers could potentially offer an online, up-to-date, web-based information portal that serves as a clearinghouse for online and traditional courses, clinical-skills development opportunities, and new forms of CPD for physicians. One of the new KM products yet to be explored is an extension of the biomedical library to affordable online formats using a CME-led brokered business model.

Other areas where a transformed CME function is positioned to make a contribution to RFM within a KM approach include:

- Move from a traditional "course offerings" model to individual practitioner attention and remediation, recognizing that each medical practice and community has its own needs. Tailored learning plans and support, in addition to courses (consultative, supporting self-directed learning), could be offered.
- In collaboration with Alberta regional medical centers, broker or offer advanced clinical skills (for example, anesthesia, obstetrics, emergency medicine).
- Show the innovation and then tell physicians how to acquire the resources to implement the innovation locally: (1) resources to get skills, (2) money for equipment, and (3) modeling for how to do it.
- Use information and knowledge management technologies to put CME in "the doctors' back yards but not in their living rooms."
- Pilot Internet-based conferencing tools to enhance or replace the telephone-based teleconference/regional conference program and the WWW as a new medium for KM

RFM physicians, much like their counterparts in the Engineering Management Program, clearly identified a need for CPD to support their performance in practice. Whether that need translates into demand for CPD solutions, however, is largely dependent on whether CME providers can supply solutions that place paramount value on the practitioner's time. Moreover, RFM physicians must see solutions as relevant to their practices and responsive to changes in their practices brought about by an aging and changing population, health service restructuring, and myriad technology changes.

For further information, see
www.ipd.ualberta.ca/rfmcme

Master of Arts in Communications and Technology Market Study

(Contributed by Sherrell Steele)

In April 1998, the Institute for Professional Development (UA-IPD) undertook a study to determine the demand for Masters Degrees in Communications. Our clients were the Faculty of Extension and the Faculty of Business at the University of Alberta and the Faculty of General Studies at the University of Calgary. This market study was exploratory, focusing primarily on the discovery of marketing insights. In this aspect, the anecdotal feedback from the participants proved to be invaluable.

The study documented demand for the following existing and proposed degrees:

- Master of Communications and Technology, Faculty of Extension, University of Alberta
- Master of Communications Studies, Faculty of General Studies, University of Calgary
- Master of Communications Management, Faculty of Business, University of Alberta
- Master of Business Administration*, Faculty of Business, University of Alberta

(* Master of Communications Management plus one year of study)

UofA-IPD developed a database of communications professionals who formed the sampling frame for the market study. Members of professional associations such as CPRS, CWC, IABC, ICA and NCMPR were included in the database. A questionnaire, including seven items and a comparison table, was sent to respondents via the World Wide Web (on-line survey) electronic mail, fax or ground mail. A brief summary of significant findings follows.

About half (53.8%) of the respondents:

ç   currently have educational qualifications (bachelor's degree or higher) that make them eligible to enroll in the master's programs, and

√   stated that they would definitely enroll, or would be "very likely" or "somewhat likely" to enroll.

Respondents were eager to start: they stated that 1999 was the year in which they were most likely to apply for admission. The top three predisposing factors to enrollment were compatibility with current commitments; flexibility of program options; and the credentials and the credibility gained upon program completion. The top three barriers to enrollment were current workload, family or community commitments; financial requirements; and lack of program prerequisites.

As for long-term career aspirations, the greatest number of respondents chose communications management. A smaller number of respondents chose public relations and consulting as future career fields.

Responses to open-ended questions were rich and diverse, and included extensive feedback on content, technology, attractive factors, concerns, and barriers. Respondents also provided valuable insights and useful recommendations for the new degrees. Respondents were eager to see processes instituted for prior learning assessment, course challenges, and advanced credit. A frequent question centered on the impact the degrees would have on future employment and promotions.

Overall, respondents showed a great deal of interest in and enthusiasm about master's degrees in Communications. Both the University of Alberta and the University of Calgary have responded to this interest by initiating the first stage of joint curriculum planning.

For further information, see
www.extension.ualberta.ca/mct

MuniMall

(Contributed by Stephen Downes)

MuniMall is a dynamic, *virtual* meeting place for municipal and provincial officials, suppliers of services to municipalities, and teachers and students interested in municipal government. The MuniMall project has three major components:

- the *Let's Get Wired* program, which provided computers to many communities in Alberta;
- online courses, which enable municipal staff and officials to work on Government Studies' Local Government Certificate Courses on the web; and
- MuniVille, a municipal website simulation providing information and resources for municipal staff and administration.

In the fall of 1998, Alberta Municipal Affairs approved a three-part, $1.85 million program to move municipal governance onto the Internet; of the total program monies, $600,000 went to the University of Alberta to develop a web site called *MuniMall.net*.

www.munimall.net

The MuniMall website was originally envisioned as a one-stop online resource for all aspects of municipal affairs; its slogan was "Many Communities, One Meeting Place." Through the spring and summer of 1999, MuniMall developers heard the concerns of municipal sector stakeholders, specifically that MuniMall would duplicate existing or planned services and that the University should remain within its traditional mandate as a research and educational institution.

University staff responded to these objections by creating a new 'blueprint' for the project. They put together a *simulation* of a town or municipality website that would serve as an example of what could or should be done in a community website. The simulation was to be used as the base for a set of educational materials describing components of municipal governance. Through research and study of actual municipal practices, a set of resources and tools would be identified which would aid municipal governance and service provision.

Current Research Activities

We have contacted key people throughout the municipal community to heighten awareness of the project and to solicit input on the current plans for MuniMall. We also have asked these individuals to identify the services they believe should be included on the MuniMall site as it continues to evolve.

A comprehensive survey of municipal managers across the province has been conducted, with a twofold purpose:

(a) to determine the current level of Internet adoption by municipal administrations, and

(b) to determine the specific educational and training needs of municipal employees with respect to use of these emergent technologies.

We plan to do two follow-up surveys, conducted at six-month intervals, to determine the changes in adoption and use patterns, and the efficacy of training materials that were created as a result of the original needs assessment.

Alberta Rehabilitation Continuous Learning Network

(Contributed by Lili Liu)

In 1998, the Faculty of Rehabilitation Medicine at the University of Alberta (U of A) contracted Banister Research & Consulting to conduct a needs survey across Alberta. Banister conducted telephone surveys with a random sample of 203 rehabilitation professionals, and qualitative interviews with six representatives from the three provincial rehabilitation professional associations; fifteen representatives from Regional Health Authorities; six employers; and eight representatives from post-secondary educational institutions. There was a general agreement among these stakeholders that:

• Continuous education is extremely important for personal development, ensuring good quality patient care, and recruiting and retaining employees. Continuous education may be required under the new Health Professions Act.

- Current methods of obtaining continuous education do not make the most of existing and emerging technologies. The stakeholders wanted planners to use technologies to "build in" complimentary resources: for example, stakeholders viewed workbooks or reading material as enhancements to live or videoconferenced talks.
- Frustrations or barriers to the pursuit of continuing education included inadequate time during the work day, or in one's personal life, and costs associated with tuition, travel and accommodation
- A provincial body is needed to coordinate credible and reputable continuous education opportunities for rehabilitation service providers.
- The costs associated with these continuous education opportunities should be shared among post-secondary education institutions, professional associations, employers, regional health authorities, and the learners themselves.

The Alberta Rehabilitation Continuous Learning Network (ARCLN) was created in response to the survey results. Its Advisory Group consists of representatives from the University of Alberta Faculty of Rehabilitation Medicine, Alberta Association of Registered Occupational Therapists, Alberta Physiotherapy Association, College of Physiotherapists of Alberta, and the Speech and Hearing Association of Alberta. Other partners at the University of Alberta are the Institute for Professional Development, the Telehealth Technology Research Institute, and the Alberta Area Health Education Partnership Program. The Reliance Training Network (RTN) is also a partner in this project.

A number of project sites are hosting continuous education sessions for learners who are affiliated with the sites or with regional health authorities. These partner sites are:
- Faculty of Rehabilitation Medicine, University of Alberta
- Glenrose Rehabilitation Hospital, Capital Health Authority
- Keeweetinok Lakes Regional Health Authority
- Lakeland Regional Health Authority

- Alberta Mental Health Board
- Palliser Regional Health Authority
- Calgary Regional Health Authority

The ARCLN Project's main objective is to determine the feasibility of offering practitioners four types of professional continuing education delivered at a distance, specifically:

- programs purchased from Reliance Training Network (RTN) to be broadcast by satellite from the US to 10 sites in Alberta and beyond;
- web-based modules on Research Methodology delivered from the U of A to the health care community;
- seminars delivered, by means of videoconference, by experts from the U of A to the health care community; and
- presentations of interdisciplinary case presentations (or grand rounds) delivered from a provincial rehabilitation hospital site (Glenrose Rehabilitation Hospital), and from Calgary to the ARCLN network using videoconferencing or telehealth technology.

With funding from the Office of Learning Technologies (OLT), the ARCLN is conducting a 12-month study on the sustainability of a provincial coordinated body that provides continuing professional development opportunities to rehabilitation service providers.

For further information, see www.arcln.ualberta.ca .

The Galileo Educational Network: CPD for Teachers and Principals

(contributed by Brenda Gladstone)

Background

The Galileo Educational Network is province-wide education reform initiative focused on the fundamental changes to teaching, learning and schooling that technology both requires and enables. The Galileo Network works on-site (creating new images of teaching, learning, student capabilities and staff development); on-line (sharing new images and sustaining face-to-face initiatives); and on-target (grounded firmly in current educational research and contributing to research with a publication program).

The Galileo Educational Network was formed in response to a call from a variety of education stakeholders for an independent provincial organization. On November 12th, 1998, the Alberta Science and Research Authority (ASRA) unveiled a report outlining an aggressive strategy to position Alberta as a leader in Information Communication Technology (ICT), one of the world's fastest growing economic sectors. Rocky View School Division commissioned an external evaluation of Rocky View School Division's Galileo Centre at Banded Peak School in Bragg Creek, Alberta. The Galileo Centre's purpose was to establish new images of teaching and learning by integrating information and communications technology into the Banded Peak School's curriculum.

The success of this initiative, along with the other calls for education reform, led business and education leaders in Alberta to create a new provincial structure for professional development, the Galileo Educational Network. The Galileo Educational Network is now providing and supporting transformational leadership in ICT implementation in Alberta through

- leading and learning;
- capacity building;

- effective integration of technology; and
- research and development.

Alberta Learning has introduced a new interim program of studies in ICT integration that will be implemented into all grades beginning September 2000.

Leading and Learning

ICT both enables and requires innovation in fundamental educational structures. However, schools are inherently conservative organizations, slow to respond and adapt to changes in the larger society. Thus, innovations in teaching and learning often have an abrasive effect on the status quo. As a result, bureaucracies, however unconsciously, raise systemic barriers to change. These barriers most often affect the innovators, those teachers and schools Alberta most needs to provide leadership in changing times.

Emerging international experience with educational innovation suggests that it is not enough to train teachers and administrators in the use of ICT. We must provide powerful layers of political support for their efforts, and training and coaching in issues related to leadership and change management in organizations. At the early stages of ICT implementation, we must provide, document and research the changing nature of leadership support required for innovation.

Current Status

In developing new visions of educational partnerships, the Galileo Educational Network has developed partnerships and/or sponsorships with the following education and industry leaders:

- IKON Office Solutions
- Pacific Institute of Mathematical Sciences
- Private donors
- Rocky View School Division
- Shaw Communications
- Stellarton Energy Corporation

- University of Alberta, UofA-IPD
- University of Calgary, Faculty of Education
- University of Lethbridge, Faculty of Education

The Network has just been awarded one of three National Conference Board of Canada partnership excellence awards.

New images of post-degree continuous learning are being piloted in partnership with Foothills School Division, the University of Lethbridge, and the University of Calgary beginning in September 2000. This project combines pre-service, in-service and graduate work within the school environment.

New images for K-12 schooling can be found on their website.

www.galileo.org/tips.html

Capacity Building

The ability of schools to sustain technology integration will depend on the overall capacity of a school staff to create learning environments that amplify and enhance students' learning. Through the *The Galileo Network*, we work to promote new approaches to teaching, learning and staff development that are enabled and required by the infusion of ICT throughout the K-12 curricula. Ideally entire school staffs will work together to create meaningful learning environments for the seamless use of technology by students. We now know that traditional modes of professional development do not actually transfer into classroom practice. As opposed to professional development that focuses on individual teachers away from their classes, *the Galileo Network* proposes to work alongside staff in their classrooms with students.

Current Status

The Galileo Educational Network has created a framework that nurtures, supports and champions the development of technologically innovative schools. Compelling images of transformed professional development practices and programs are apparent as a result of *The Galileo Network*. Both face-to-face and on-line learning environments are featured on the Network's extensive web site.

www.galileo.org

Effective Integration of Technology

Complex technical problems may arise in the design and maintenance of school-based networks in the K-12 settings. In particular, design issues such as access, interactivity, security and architecture call for both technical and educational solutions. Educators often lack the technical expertise to frame their requirements in technological terms, and network designers often lack experience with the educational nuances of technological solutions. Designing infrastructures that are driven by educational vision and a deep understanding of the demands of the new ICT curriculum will require much more effective collaboration between industry and education. Total-cost-of-ownership issues for school systems are significant and dynamic.

Current Status

The Galileo Network provides focused support structures that work to promote and protect the work of ICT innovators throughout Alberta. The Galileo Network assists the participating school in creating seamless technical infrastructure for Alberta.

Research and Development

The Third International Mathematics and Science Study (TIMSS) found that new approaches to instruction require new ways of supporting, preparing, and strengthening teachers. Holding teachers accountable to curriculum and performance standards is not enough; we must change the processes that lead to classroom learning. The TIMSS research offers some innovative ways of thinking about teaching and about professional development. Effective ICT implementation requires us to draw upon, as well as contribute to research in professional development.

Current Status

The Galileo Network is contributing to the body of research on effective ICT implementation in K-12 educational institutions and in post-secondary institutions. Examples such as MathWorks and Mathematicians in Electronic Residence can be found on the website. Technology is leveraged to promote student proficiency within the ICT curriculum. Student results and samples of work will be added to the website over the next two years.

Computers in Education Diploma

(Contributed by Norma Nocente)

This project will focus on the redevelopment of the Computers in Education Diploma Program at the Faculty of Education, University of Alberta. Our goal is to make the program more flexible and accessible to Alberta teachers by recognizing prior learning through special assessment, and by offering existing courses through a variety of alternative delivery formats.

The project is designed to address teachers' training needs in technology integration. Teachers are willing to participate in technology courses and workshops, but time, distance, and scheduling often limit their professional development opportunities. The redevelopment of the Computers in Education diploma program will address these barriers as it provides teachers with the knowledge, skills and attributes identified in the TLT document.

The goal of the program is to provide teachers with the skills and pedagogical strategies required to effectively integrate technology into K-12 classrooms. The following sub-goals are identified for the program:

- The teacher will understand the role of technology in learning and teaching.
- The teacher will use and create learning activities in which students use technology.
- The teacher will know how to use technology to support student learning.
- The teacher will contribute to professional knowledge about the effective use of technology in education.

As mentioned, the project will redevelop the diploma program so that it better meets the needs of teachers in terms of content and delivery. The content will be redeveloped and then delivered through a variety of alternative strategies that will make the program more flexible and accessible. Our goals for the project are:

- to redevelop the program so that it closely parallels the consortia's professional development initiative and uses the TLT document as a guide for program restructuring;
- to redevelop four undergraduate courses to establish a common curriculum at the three universities. These courses will be offered through alternative delivery and will be open for special assessment. Special assessment allows students to receive credit for a course by demonstrating an acceptable mastery level of the course content.
- to provide the tools and a mechanism for special assessment;
- to redevelop four existing courses for alternative delivery; and
- to evaluate both the project and the program.

The final deliverable will be a web site that describes the program's rationale and goals. This site will have links to the eight courses. The courses available for special assessment will have very specific outcomes. Each outcome will be linked to modules or other sites that provide instruction to help the student achieve the outcome. Students will have access to a self-test to help them determine if they are ready to apply for special assessment. The web site will provide students with information on the special assessment process and the nearest location for the assessment. In addition, numerous papers written as a result of the program and project evaluation and describing development, implementation, and results will be submitted to conferences and journals.

Alberta Motion Picture Industries Association Industry Development Initiative

(Contributed by Sherrell Steele)

The Alberta Motion Picture Industries Association (AMPIA) is a non-profit professional service association serving the independent motion picture production community in the province of Alberta. AMPIA was founded in 1973 with the single aim of furthering the independent motion picture industry as a viable economic force within the province.

This project is a major business development initiative to increase the profile and prosperity of the film, video and related creative community in Alberta. An important outcome of the Industry Development Initiative (IDI) will be a 3-year professional development plan for business skill development within the industry. In detail, the initiative comprises development of a Web site, a comprehensive needs assessment, workshops and business forums, and mentoring opportunities for those wishing to build their businesses.

The AMPIA Industry Development Initiative is funded by the Alberta film and television industry, with a lot of help from friends. Over the two years of the project money will come from Western Economic Diversification (WD), Alberta Economic Development, CFRN-TV Fund, CBC, A-Channel, WIC, Telefilm Western Office and industry user fees. The Institute for Professional Development at the University of Alberta, The National Screen Institute - Canada (NSI), the Television and Film Institute for Screenwriters (TFI), Northern Alberta Institute of Technology (NAIT), Alberta Motion Picture Industries Association (AMPIA), the Alberta Film Commission, the Alberta Cultural Industries Association (ACIA) and other industry stakeholders will provide resource support.

This initiative is primarily for AMPIA members, however non-members may benefit from some of the workshops and trade forums. These functions will be of interest to those in film, television and related cultural industries in Alberta and Western

For further information, see www.ampia.org .

Canada. Students as well as industry related professionals are also encouraged to participate as much as possible.

A detailed needs assessment has been completed. This has provided an excellent picture of the business development/professional development needed in the Alberta film and television communities.

Initial plans include business-related workshops; a province-wide, cross industry business forum; one-to-one consulting services; and mentoring.

The first phase of this initiative is in progress and will continue until March 31, 2001. At that time, a comprehensive, industry based, business development plan will be considered by AMPIA for implementation over the subsequent three years.

Knowledge Management for Continuing Professional Development Project

(Contributed by Wayne Lamble)

Purpose and Anticipated Benefits

The purpose and anticipated benefits of this project are

- to develop greater understanding, particularly from the perspective of the University of Alberta, of the nature and implications of knowledge management, as a field of study and practice, for various disciplines, professions, and sectors of our community/economy;
- to identify the various ways in which knowledge management is viewed and pursued, conceptually and practically;
- to identify related trends, issues, needs, opportunities, and possible applications and implications;
- to develop a strategy, or strategic options, for promoting advanced study and innovative practice – its scholarship of discovery/creation, integration, application, and dissemination – in knowledge management across various sectors, disciplines, and professions; and

- to provide an enriched basis for planning and conducting knowledge management initiatives, particularly those intended to advance the knowledge management aspect of continuing professional development and workplace learning

Definition and Scope

Knowledge Management is used to refer to the processes of facilitating and supporting the efforts and activities in the development and use of knowledge by and among people within work groups, organizations, sectors and communities.

The development process may include sub-processes ranging from discovery, creation, acquisition, validation, codification, integration, storage, and retrieval to dissemination, interpretation, and application of knowledge.

Underlying Assumptions

There are three underlying assumptions for this project:
- The importance of knowledge management is growing in our knowledge-intensive economy.
- Knowledge management is evolving and being applied in many different ways, under many different labels, in different disciplines, professions and sectors.
- Knowledge management has implications for continuing professional development.

Approach

- Identify individuals within various faculties/departments/disciplines at the University of Alberta and in the larger community, who have a special interest and expertise in knowledge management as a field of study and practice.
- Commission a series of articles/papers on emerging knowledge management trends, issues, and opportunities, using examples and case studies from the University of Alberta as well as those from private firms and public sector organizations in Alberta.

For further information, see www.KM.ualberta.ca .

- Commission several articles that synthesize and draw conclusions and recommendations from the other articles.
- Publish the resulting articles as a book, electronically and in hard copy.
- Conduct a 'by invitation' symposium to discuss the articles, and to inform the final version of all of the articles.

These experiments, like many other experiments, may produce intended as well as unintended results. They may exceed or fall short of our expectations. Whatever the outcome, we expect to learn more about managing and sharing knowledge in multi-disciplinary work environments.