The Advanced Broadband Enabled Learning Project
(ABEL)

Learning Program

May 9, 2002
Organizational Information

CANARIE Member? Yes
Organization Type: University
Number of Employees: 5,000-9,999.
Years in Operation: Over 5 years
Annual Revenues: N/A
Main Business Area: Educational Services

Description of the Organization

York University was established in 1960. The objects and purposes of the University, as stated in the York Act, are:

- the advancement of learning and the dissemination of knowledge; and
- the intellectual, spiritual, social, moral and physical development of its members and the betterment of society.

The major activities or interests in the area of using technology to enhance learning are:

- to serve as a catalyst to re-examine current methods of postsecondary teaching and learning;
- to contribute to lifelong learning, including professional development for teachers;
- to provide increased access to university education; and
- to contribute to the research literature.

York’s Faculty of Education is one of the leading faculties in Canada with its innovative in-service, preservice and graduate programs. As part of the Ontario SuperBuild Program, York and Seneca College are creating the “Technology Enhanced Learning” facility, which becomes a focal point for this project. The university-wide Institute for Research on Learning Technologies (directed by Dr. Ron Owston) is well known for its research in the overlapping fields of broadband applications and technology-enhanced learning. Partners will provide complementary strengths and resources from their sites through broadband connectivity with the Centre.
Advanced Broadband Enabled Learning Project

Project Summary

The Advanced Broadband Enabled Learning Project (ABEL) will establish an interactive collaborative learning model for teacher development and educational delivery. The model is designed to be scalable to the national level and transferable to other educational entities, government and industry. The ABEL project will provide the basis for sustainable inter-institutional and inter-jurisdictional collaboration to support professional development of teachers across the country. ABEL will make optimum use of broadband-mediated learning environments and is designed to support cost-effective dissemination of leading-edge educational expertise and instructional design.

Project Abstract

The mission of the Advanced Broadband Enabled Learning Project (ABEL) is to:

- establish an interactive collaborative learning model for educational delivery and teacher development scalable to the national level and transferable to other educational entities, government and industry;
- support cost-effective dissemination of leading-edge instructional design and educational expertise; and
- develop the basis for sustainable inter-jurisdictional and inter-institutional collaboration in supporting professional development of teachers.

ABEL will create a learning culture in which participants (e.g., teachers with students, teachers as learners, pre-service students with faculty, pre-service students with teachers) from partner institutions move in and out of a collaborative learning space bringing ideas and tools to:

- reform their own pedagogy, collaborating with peers and expert mentors;
- build bridges between their institution and others; and
- catalyse change by providing leadership, and influencing policies and priorities.

ABEL is designed to address the major structural barriers to widespread and significant use of advanced broadband networks in education including:

1. inter-institutional barriers and inter-provincial barriers (e.g. access to research and collaborative delivery of teacher education);
2. pedagogical barriers (e.g., lack of educational models for the broadband environment that reflect changing student interaction and learning styles made possible by broadband);
3. professional barriers (e.g., differing professional development cultures and isolation of teachers);
4. technological challenges (e.g., insufficient access, availability, easy use of tools); and
5. development of an adaptive collaborative learning model, aligned with needs, learning styles, expectations and experiences with technology is designed to deal with these structural barriers.

ABEL is expected to break down these barriers and affect change at three levels:

1. the individual/collegial level where individuals/teachers will experience a totally new way to teach, and incorporate these new experiences and learning into their practice;
2. institutional, where groups/teachers will reinvent their organizations from within, encouraging leaders to think about new ways of doing things, and new policies and structures to facilitate change; and

3. inter-institutional and inter-jurisdictional where collaboration will break down barriers such as accreditation policies, differing “PD cultures” and foster joint development and delivery of programs.

The potential impact on learning in Canada will be to:

- transform professional development by creating a collaborative learning space for cross-institutional and inter-provincial learning, professional development and sharing of knowledge and resources;
- establish an interactive collaborative learning model for educational delivery and teacher development scalable to the national level and transferable to other educational entities, government and industry;
- advance teacher learning and skills to support students in acquiring the skills and knowledge required in a knowledge-based economy; and
- support cost-effective dissemination of leading-edge instructional design and educational expertise, adding to Canada’s profile in innovative learning resources and technologies.

ABEL’s multidisciplinary project team has a unique combination of knowledge, experience and capability in education, professional development practice, technology and business. Several of the partners have successful experience with CANARIE Learning Program Projects. All have a history of collaboration with others in innovative projects. The technology partners bring a wide range of complementary strengths and leadership in their areas of expertise that enable the ABEL project to put powerful technical systems in place quickly.

The project will use an Integrated Project Management Team to manage the project, capitalizing on the expertise of the project partners. Led by the Project Manager, and a Lead for each of the components: Learning, Technology, Research and Evaluation, the Integrated Project Management Team will be responsible for project and component deliverables, and inter-component communications. The integrated management team is described in more detail in the Governance Model on page 13.

The project will develop a collaborative space, accessing the best resources currently available from the partners in conjunction with applications developed in the project, and using a variety of technology tools to create a robust technology-mediated environment.
Advanced Broadband Enabled Learning Project

Project Description

The conventional classroom is often characterized by 75% independent sit-still work and 25% other activities (hands-on, group work, computer lab time). Students are passive consumers of mandated information delivered to them. There is a disconnect between student reality and school reality – it is a sense that *something is not quite right* with the way we deliver education.

Teachers recognize the need to migrate from the traditional paradigm to an approach more consistent with real-world relevance. Students’ real-world context is fast paced, interactive and multi-tasked. Students grow up with technology and don’t think about integrating technology into their lives.

The Advanced Broadband Enabled Learning Project (ABEL) mission is:

- to establish an interactive collaborative learning model for educational delivery and teacher development scalable to the national level and transferable to other educational entities, government and industry;
- to support cost-effective dissemination of leading-edge instructional design and educational expertise; and
- to develop the basis for sustainable inter-jurisdictional and inter-institutional collaboration in supporting professional development of teachers.

Key ABEL objectives:

1. To establish a collaborative learning space on CA*Net.
2. To develop ABEL professional Learning Programs based on teacher needs in professional development, Faculties of Education /pre-service teachers in training, and accreditation/academic requirements.
3. To provide easy access to appropriate digital, multimedia learning resources for participating teachers and students from three sources: proprietary resources provided by ABEL partners; linkages with other repository projects (e.g., BELLE, POOL); and processes for teacher sharing and evaluation of learning resources created in the project.
4. To design and deploy a broadband network for all ABEL sites on CA*Net.
5. To adapt existing technologies to create an advanced learning content management system which meets the requirements of ABEL Learning Programs, i.e., simple, integrated interface and learning content management system, videoconferencing (Telepresence), peer-peer collaboration, videostreaming (VoD).
6. To conduct research and evaluation of ABEL Learning Programs on learning outcomes for teachers and students.

To begin the project will work with a cadre of educators from participating education institutions in Ontario and Alberta:

- practicing K-12 teachers from three leading school districts:
  - Edmonton Public Schools (EPS)
  - York Region District School Board (YRDSB)
  - Toronto District School Board (TDSB)
- Practising postsecondary professors (including those from Faculties of Education along with pre-service candidates) in:
Participating Boards and postsecondary institutions will designate teachers in broadband enabled schools or departments who will adapt their classrooms and programs to make extensive and regular use of ABEL's learning resources and learning content management tools as an integrated part of their teaching. ABEL teachers will be provided with ongoing, integrated training and support developed in the project to develop their skills. Training and support systems include online mentoring and facilities for peer-to-peer collaboration and sharing of ideas and resources. ABEL teachers will engage in the research component of the project, evaluating the resources and training, and providing data for project research activities. They also will develop learning resources to be added to the ABEL content library.

The project will unfold in three stages. It will be evaluated, as outlined in the Evaluation Plan, on the basis of success in accomplishing the deliverables outlined below within the time frames for the successive stages.

**Stage 1: Preparation (January-August 2002)**

**Activities**

The first and most important step in this phase is to identify the project sites and participants. Because of the complexity of the project and the large number of partnering educational institutions, the first group of teachers (K-12, postsecondary and pre-service teacher candidates) will relatively small. In the first year we will select and work intensively with 40-50 practicing teachers (K-12 and postsecondary), 15-20 Faculty of Education professors/mentors along with 20-40 pre-service candidates. At least eight education sites in Ontario and Alberta (EPS, YRDSB, TDSB, U of A, York U, Banff Centre and Netera) will be established for the projects with specific contributions of ideas, expertise and content being shared from each site.

Also during this preparatory phase the project team will establish the ABEL collaborative space in which all project sites will be connected on a grid network over CA*Net. This collaborative learning space will provide access to a rich array of suitable digital learning resources. Enabling technologies will allow participants to be producers as well as consumers of knowledge in the collaborative space. There will be opportunities for synchronous and asynchronous collaboration (online, videoconferencing), accessing expert mentors and innovators in industry, creating and sharing learning resources, and ongoing conferencing and dialogue.

The ABEL collaborative space creates an on-line environment for the development of new pedagogy and new collaboration (e.g., Goodlad, Laferrière). This space enables collaboration between the essential partners who represent different cultures within the new enterprise of teacher education; this includes input from school boards, post-secondary institutions and the

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private sector. These different cultures “bump together” in the ABEL collaborative space, each being enriched by the interaction with the other.

The collaborative space will include integrated tools designed to exploit the power of broadband connectivity to meet the unique needs of teachers and students. The ABEL Learning Content Management Platform design brings together the following elements (web-based software and middleware applications, support system):

1. **Learning content management system tools** for both on-line multimedia course developers and classroom teachers for authoring and use of digital content will be adapted to provide the project’s web-based platform for authoring and delivering interactive online learning programs. Required functionality includes:
   a. the capacity to import, index and edit multimedia content from various sources and integrate it with local teachers’ and course developers’ own content to develop customized learning resources;
   b. peer-to-peer collaboration;
   c. assessment and monitoring modules; and
   d. full compatibility with videoconferencing and whiteboard applications.

ABEL will use a unique development of one of its partners, “TelePresence”, to enhance development of training modules and will be compatible with WebCT and other learning management systems in its content management platform.

2. **Broadband delivery system** scalable to include other sites in Canada. ABEL will develop the network to provide for all sites broadband access to each other though CA*Net.

3. **Interface** to facilitate videoconferencing and collaboration. ABEL will adapt and develop educational interface software to provide an educator-friendly interface that facilitates use of videoconferencing and supporting collaboration tools. Prototypes will be created in consultation with the users.

4. **Peer to peer networking tools** for collaborative learning with multimedia learning objects designed to meet user needs.

5. **Digital content library**: A digital content library of proprietary materials that have been tested in a variety of educational settings will be made available to the project. ABEL will look particularly at materials for students making transitions between levels of the educational system, e.g., secondary to post-secondary. Initially learning materials already developed will come from a number of private resource providers and public institutions. These include:
   a. over 2000 titles from Tutorbuddy appropriate for Canadian K-12 context;
   b. learning resources and applications from Learning Station;
   c. other content sources (e.g. Ontario’s Independent Learning Centre and TV Ontario);
   d. related projects (e.g. LearnCanada and the Broadband Enabled Lifelong Learning Environment (BELLE) project; and
   e. materials developed by teachers and students in the project.
Advanced Broadband Enabled Learning Project

Deliverables
The deliverables for this stage will include:

1. ABEL Profiles of participating teachers and pre-service students that reflect the needs, expectations and learning styles in the context of a broadband learning environment.

2. Adaptive Collaborative Learning Model describing innovative ways to use a broadband learning environment for teachers (K-12 and postsecondary) and students; for teachers as professional learners; and for pre-service students (in Faculties of Education and during practicums). The model will be aligned with the technology, learner needs and experiences drawn from the Profiles and will be tested, revised and proven in the project.

3. Prototype Design of ABEL Collaborative Learning Space providing:
   a. access to a rich array of suitable digital learning resources;
   b. enabling technologies that allow participants to be producers and consumers of knowledge in a new medium;
   c. opportunities for synchronous and asynchronous collaboration (online, videoconferencing);
   d. delivery of broadband enabled Learning Programs;
   e. access to expert mentors;
   f. sharing of learning resources (learning objects); and
   g. opportunities for ongoing conferencing and professional dialogue.
   The prototype design will be developed, tested and proven in the project.

4. Instructional Design for Learning Programs defining characteristics, standards and protocols to be used in the adaptation and development of Learning Programs available in the collaborative space. The Instructional Design is expected to evolve during the project.


Activities
In the summer of 2002, we will bring together, in a combined residential and virtual environment, the selected participants to launch the implementation process. At this summer institute teachers will have their first experience in working in the ABEL collaborative space. At this time we will test prototype learning programs that will be fully developed throughout the Implementation Phase. The Summer Institute teachers will have their first experiences with ABEL and will be prepare with skills to begin using ABEL learning programs and resources when they return to regular classes with their students in September.

The ABEL Professional Learning Programs will evolve in response to teacher needs during the implementation stage. The partners will share their related expertise along with existing courses and modules already developed by the partners; they will work with participating teachers to adapt and repurpose these materials so that they exploit the full potential for interactivity and collaboration in a broadband enabled environment. We are planning learning programs for both practicing teachers and pre-service teacher candidates.
1. **Integrated Skill Development and Training:** Teachers will participate in professional learning programs integrated with development and implementation of digital learning resources. Programs will combine existing exemplary courses or programs already developed in participating Boards or postsecondary institutions and new activities designed specifically for the project.

Activities will be ongoing and continuous throughout the project, featuring collaboration among instructors and teacher learners. Instructors will be selected from the partner organizations (public and private sector) for their expertise in both innovative pedagogy and integration of technology with teaching and learning.

Programs will consist of a combination of face-to-face and distance delivered learning activities (modules, mentoring, video conferencing, workshops, professional dialogue). Programs will focus on collaborative projects related to teacher skill development in utilizing and integrating broadband resources in teaching and learning. The programs will be driven by teachers' learning needs emerging during implementation and will be flexible to accommodate participants at various levels of competency.

Included will be a set of core modules required for all participants plus a series of optional modules. The theme for the core modules will be the development of skills for effective integration of the videoconferencing and learning content management technologies to improve teaching and learning. The optional modules will be designed to adapt these skills in various subject areas and learning contexts encountered in K-12 and postsecondary education.

Some professional learning programs may be used for accreditation purposes depending on provincial requirements and policies (e.g., Ontario’s Professional Learning Program).

The use of a high-speed broadband network will facilitate collaboration between participants and institutions across the country, permitting simultaneous instruction and two-way discussion in multi locations without requiring high-cost facilities. Learners will meet regularly via broadband TeleLearning sessions, use on-line collaboration and peer-to-peer networking tools and phone conferences. Participating teachers and high calibre educational experts (e.g., Professors Max van Manen, Mike Fuller and Marlene Scardamalia), identified by educational stakeholders, will form a unique broadband 'cohort' for collaboration and sharing throughout the program. This experience will culminate with a virtual international educational conference and forum for dissemination and sharing of knowledge.

2. **Faculties of Education Pre-Service Program:** Participating Faculty members and pre-service students are an integral component of the ABEL learning culture. Extensive exploration and use of ABEL’s learning resources and learning management tools will be included in their programs. Participating Faculty of Education students will be expected to develop digital new learning resources that can be tested and refined during practice teaching before being added to the ABEL content library. Wherever possible Faculty of Education students will do their practice teaching in classrooms of participating ABEL teachers. Faculty colleagues will collaborate with ABEL’s Faculty of Education students and co-operating teachers in the field research for the project.
Throughout the Implementation Phase, teachers will create a new learning culture characterized by a high degree of interaction with peers and other individuals. Teachers, student teachers and students will connect to the ABEL collaborative learning space, accessing quality learning opportunities and resources provided by educational leaders and innovators in industry across Canada. They will have the support and resources to try new methods more in line with the new age learners in the classroom.

Participants from partner institutions (e.g., teachers with students, teachers as learners, pre-service students with faculty, pre-service students with teachers) will move in and out of the collaborative learning space bringing ideas and tools to:

- reform their pedagogy through collaboration with peers, expert mentors and innovators from ABEL institutions and industry. They will experience a totally new way of teaching and integrate their learning into practice in the classroom.
- build bridges between their institution and others. Interacting in real-time with peers (on-site and distant) and a facilitator through a series of regularly scheduled events, they will create, demonstrate and share a variety of multimedia learning objects.
- catalyse change by providing leadership, influencing policies and priorities. They will shape and drive professional development, sharing resources and leveraging student learning and achievement.

Teachers, student teachers and students will be connected to learning opportunities and resources across Canada. Using regularly scheduled series of events and rosters of experts, they will interact in real-time with peers and a facilitator, to access, demonstrate and share multimedia learning objects. Teachers will be able to discuss resources used in a lesson with colleagues and experts across the country, and ask for comments on what could be done differently.

In addition to regularly scheduled events, teachers can schedule smaller sessions to develop joint projects and follow up on issues. Student teachers can talk to other pre-service teachers, not just classmates on campus.

Teachers will have the support and resources to try new methods and won’t have to leave the classroom to meet professional development goals. They will be able to draw on the expertise of faculty from different universities, teaming on line to obtain different perspectives on the work they and their students are doing.

Having collaborated in the space with colleagues from various institutions, teachers will return to their home institutions to enhance their practice. They will also have an impact on their institutions as they influence colleagues, impact on leaders’ attitudes leading to institutional change/reform.

Based on this experience in the ABEL collaborative space, significant changes to teaching pedagogy and curriculum occur, and new forms of collaboration across sectors are sustained.

**Deliverables**

The deliverables for this stage will include:

1. Professional Learning Programs for Teachers incorporating series of learning events and activities, synchronous and asynchronous, available in the Collaborative Learning Space.
Space through videoconferencing, online collaboration and face to face sessions. Components of the Learning Programs may be combined to constitute accredited courses that meet teachers’ professional or academic requirements.

2. Pre-Service Learning Programs for Teacher Candidates encompassing series of learning events and activities, synchronous and asynchronous, available in the Collaborative Learning Space in a blend of videoconferencing, online collaboration and face to face sessions. Pre-service students will, wherever possible, be placed as part of their practicums in classrooms of teachers participating in ABEL. Pre-service students will also develop learning resources as part of their course assignments and contribute these to the project learning resources.

3. Learning Resources Management and Sharing Processes for managing, evaluating and sharing digital learning resources integrated with the curriculum in classrooms. The Processes will be designed to optimise use of the learning content management systems and access to digital resources made possible by the platform developed in the Technical System phase of the Project. These processes may be replicated and extended for use by a wider group of teachers at the end of the project.

4. Distributed Repository of Learning Objects through linkages with external CANARIE-supported and other content repositories to access materials, contribute to the repositories and inventory curriculum relevant sources.

5. Series of regularly scheduled events including large scale on-line demonstrations, outreach and dissemination.

**Stage 3: Refinement and Institutionalization (July 2002 to December 2003)**

**Activities**
Throughout the project, the evaluation team will collect research data as outlined in the Evaluation Plan. During this stage we will use the formative evaluation data to assess the various components of ABEL (collaborative space, adaptive collaborative learning model, instructional design, learning programs, learning resource management and sharing processes) and use the data to revise them for the next round of implementation.

In addition we will host a second summer institute and a virtual International Conference for sharing experiences and dissemination of project findings.

We also expect that existing sites will continue to implement the project resources and that plans will be developed to add new sites and participants to the project as outlined in the section on Project Sustainability and Dissemination

**Deliverables**
The deliverables for this stage will include:

1. Summer Institute for teachers and educators for Professional Development and presentation of research.

2. Virtual International Conference for participants and others from around the world to share knowledge and experience and as a forum for dissemination of project results.
3. Adaptive Collaborative Learning Model (Final Version) incorporating findings from the Project.

4. Instructional Design for Learning Programs (Final Version) incorporating findings from the Project.

5. Final project report.

6. Research reports and Interim and Final Evaluation Reports

7. A sustainability plan for the project.

**ABEL Outcomes**

1. Individual/collegial change (teachers and Faculty of Education students with enhanced capacity to integrate broadband enabled learning environments and digital learning resources in their practice).

2. Institutional change where individuals/collegial groups reinvent and catalyse change from within.

3. Breaking down inter-institutional and interjurisdictional barriers (e.g., accreditation policies, differing PD cultures).

4. Broadband-enabled learning programs, research and collaborative pedagogies to support learning. Potential scenarios for national deployment of broadband enabled learning environments include: open systems and interoperability.
**Project Team**
Detailed descriptions and proposed contributions of Project Partners are provided in Section 3, Appendix 1.

**Project Management**

The project management structure is based on an Integrated Project Management Team and multi-tiered governance model:

- **The ABEL Policy Advisory Board** is responsible for overall direction and policy to the lead contractor York University. It is chaired by Stan Shapson, York’s Vice President Research and Innovation and meets quarterly or more frequently as needed. One representative from each partner sits on this Board.

- **Executive Committee of the Board** will be comprised of the lead contractor (Ontario), and representatives from Alberta, K-12, the private sector, and government/non-profit, the Project Manager and Administrative Team. The Executive Committee will be responsible for communication across all components and will meet regularly with the Administrative Team to ensure cohesion across the project.

- **The Operational Team** is responsible to the ABEL Policy Advisory Board for the day-to-day development and implementation of the project. The Administrative Team includes the Project Manager and Lead for each component: Learning, Technology, and Research. The Project Manager will schedule and chair regular weekly meetings.

- **ABEL Site Coordinators** will be created in educational institutions to meet via videoconferences and will reflect the views of users and provide advice and linkages with their institutions to members of the Administrative Team. The input of the Site Coordinators will complement the data collection by the Evaluation team.

**Project Manager:** The Project Manager plays a pivotal role in the project and is assigned to the project on a full time basis.

Through the development of the proposal, the partners have put in place several strategies for strengthening the consortium. A group of senior people from each of the partners has defined the following processes to sustain and build the consortium over time:

- A solid governance model with people from the various components of the partnership involved in decision-making at all levels.
- A series of regularly scheduled meetings at all levels of the governance structure at which issues will be resolved at the appropriate level.
- Accountability processes to ensure that the Project Manager has a clear understanding of project parameters and requirements, and the authority to implement the plan coupled with a monthly reporting process to ensure that the project stays on track and meets targets for deliverables within the budget for the project.
- Dispute resolution processes in which The Project Manager working with the Operational Team will handle disputes within the project team. If they are unable to resolve a dispute it will be decided by the Policy Advisory Board following rules of procedure to be developed or set out by the university. If a situation or dispute leads to
a request from a project participant to withdraw from the project the matter will be dealt with by the Policy Advisory Board following agreed upon procedures as outlined in the Memorandum of Understanding.

*Intellectual Property*

The use, protection and exploitation of intellectual property will be agreed among the partners and will be guided by the following principles:

- Respectful of existing legal policies and agreements;
- CANARIE/ABEL own rights for a limited time;
- The creator retains the rights at the end of the project.

The ABEL Intellectual Property policy will be based on existing examples and include a disclaimer that products are not for commercial use.
Advanced Broadband Enabled Learning Project

Project Rationale

Canada is facing a shortage of teachers and educational leaders. As newer and less experienced teachers enter the system, school boards are faced with the need to provide opportunities for them to enhance and develop their knowledge and skills as teachers and leaders. The problem can be particularly acute in rural and remote communities, which experience greater hardship in attracting and retaining teachers, particularly in times of teacher shortage. Most research has shown a positive connection between better-educated teachers and improved student performance.

Teachers need convenient, relevant professional learning opportunities throughout their career beginning with pre-service training in Faculties of Education, continuing with in-service in the Boards where they work as well as graduate level courses. The ABEL project is designed to create a model of related professional learning programs that fully use potential of broadband technology.

Teachers wanting to pursue continuous learning and professional development face significant barriers including:

1. Inter-institutional and interprovincial barriers in the collaborative delivery of accredited training, and access to advanced content and research. Partners from K-12 and postsecondary educational institutions in various provinces will work together to eliminate barriers in the collaborative delivery of accredited training, advanced content and research.

2. Insufficient training of teachers in the development and use of new learning materials and technologies applicable to solutions in classroom situations. The project will develop and deliver on-line training coupled with on-site and on-line support for teacher and teachers in training to apply solutions to classroom situations.

3. Lack of easy access to appropriate, high quality educational content. To leverage work already done in this area, related projects such as CANCORE and BELLE will be linked to the ABEL project.

4. Insufficient access to tools for developing, delivering and evaluating learning content. ABEL incorporates knowledge management and e-learning systems and tools (provided where possible by private sector partners) for training and professional learning developers and classroom teachers participating in the project.

5. Lack of engaging models, supported by research, for effective teaching practice, that integrate digital learning resources in the broadband environment. ABEL will incorporate instructional designs based on current research in the development and delivery of learning programs models. During implementation, the research teams and participants will conduct research to assess and document the impacts of these models.

6. Isolation of teachers and lack of opportunities for collaboration and sharing. ABEL will develop model processes for collaboration to develop and deliver course content and for collaboration among learners. These models will show how participation from a broad mix of institutions can be managed in ways that take full advantage of the specialized resources, particular insights and experiences that these institutions have to offer for the
development of course materials and the utilization of learners. Due to the “sharing”
nature of education and educators, peer-to-peer computing is a natural application for
collaboration.

The state of learning in classrooms is in several ways a mirror image of the professional
learning scene. Students’ real-world context is fast paced, interactive and multi-tasked. Their
life experience is not in synchrony with their school experience.

Students have very limited access in most subject areas (e.g., science), to multimedia web-
based learning resources during class time. Although classrooms are becoming equipped with
networked computers, many teachers are still unprepared to integrate technology in their
lessons and many of the learning resources available on the Internet are inappropriate or
irrelevant to the curriculum

Internet learning delivery remains underdeveloped and is characterized by:

- Courseware for adult learners that provides access to high-end instruction, and in rare
  instances, courseware that provides a truly innovative, collaborative and well-designed
  environment for learners.
- Collaborative learning environments mostly within the research context or in social
  spaces on the Internet – not integrated into user friendly or professional environment.
  Positive exceptions include well organized networks that enable teachers to exchange
  methodologies, give peer support and tutoring and have a human advocacy group
  behind them (e.g., Talus Learning Initiative).
- Strategies paralleling classroom, text based or television delivery and failing to take
  advantage of the strengths of new media such as peer-to-peer counselling, just in time
  information refreshing.
- Strategies that fail to bring teachers up to par with the level of media and computer
  literacy of their students.
- Video delivery: poor resolution, talking heads, long download time if Internet, poor
  quality if real time, too much text, not enough audio or graphics.
- Audio delivery: no design, inadequate use of audio for navigation and as resource.
- Daunting technical challenges for users, lack of easy authoring tools.
- Boards confusing the substitution of Internet learning tools with cost-savings, whereas
  in fact increased human resources are needed in the transition phase.

Numerous groups and institutions around the world are involved in studying advanced learning
systems, developing content repositories and assessing new pedagogical methods for delivery
of such content. The Telus Learning Community in Alberta, OCRI Advanced Learning
Technologies in Ottawa and SchoolNet are good examples of Canadian efforts to cope with
professional development of staff and e-learning for both students and staff. CANARIE
supported projects such as LearnCanada, the Portal for On-line Objects in Learning (POOL),
Partnerships for Learning, Innovation and Technology (PLIANT) and Broadcast Enabled
Lifelong Learning Environments (BELLE) are all valuable efforts in this direction.

ABEL differs from Learn Canada in that it cuts across K-12 and postsecondary, involves
students directly, includes pre-service students, and offers a range of professional learning
choices that, although originating in various institutions, appear seamless to ABEL participants.
ABEL will maximize the use/adaptation of existing resources and experience (e.g. content inventory, review of other related projects) and maintain an awareness of other similar projects (e.g. Telesat/SchoolNet).

The most significant innovation in this project is the way in which partners from the public sector with responsibilities for teacher education (Ministries, Boards and colleges/universities) and private sector are combining strengths to maximize their resources and effect change on an area that desperately needs reform. The current state of art is to work alone with some communications based on needs of individual institutions for their own programs. Consequently teacher education is fragmented and lacks continuity from K-12 through postsecondary. In ABEL partners will be developing programs together and providing opportunities for their teachers, pre-service students and faculty to collaborate in developing a continuum of learning for teachers from pre-service to graduate school.

In terms of the use of broadband technology to improve professional learning, ABEL will be innovative in:

- Enabling teachers to learn with colleagues and experts through interactive dialogue (constructivist learning).
- Enabling teachers to explore the ways their students learn (e.g., using games, puzzles, chat).
- Enabling practising teachers to share learning resources within the ABEL network, with other related projects, (e.g., LearnCanada) and with other schools as broadband availability expands.
- Providing easy to use authoring tools, enabling technical literacy by providing resources that explain the technical context in lay terms, exploring how best to use video based delivery over the Internet, working with dramatic techniques, point of view and interactive drama.
- Creating a unique Canadian professional learning culture.
- Providing a forum for cross-disciplinary exchange and collaboration (e.g., how to use music resources in designing a mathematics course).
- Enabling professors and teachers as adult learners to access a far more extensive array of institutions and resources in developing courses and acquiring knowledge.

Broadband access through CANARIE allows ABEL:

- To develop high quality multimedia resources and teaching methods that provide best practice models for future use.
- To create interactive experiences in relation to video delivery, such as chat, multimedia resources that can run at the same time, or in the background of video.
- Access across Canada that allows testing, global and local communication and resources.

ABEL meets all the mandatory criteria for the CANARIE Learning Program and will make a number of major contributions related to CANARIE’s specific program goal of encouraging innovative projects that advance the state of the art in education and training, exploring and utilizing the potential of broadband technology.

With respect to CANARIE’s strategic objective of leveraging the enabling capacity of the Internet to deliver the benefits of the information age to Canadians, ABEL is designed to
make optimum use of the highest broadband bandwidth available, for developing networks for the use of teachers and their students. While the project is innovative and leading edge at this juncture, it will develop models that will make it possible to take broadband enabled learning to the mainstream as connectivity develops.

With respect to CANARIE’s overall objective of catalysing Canada to become a world leader in the use of advanced, broadband networks for the development and delivery of education and training, ABEL will establish a new model of collaborative teaching and learning utilizing broadband technology that will be replicable, lending itself to a broader application across Canada and internationally. The model is expected to be applicable to a range of professional learning contexts and to be scalable for use in any or all regions across Canada or in other countries.

With respect to CANARIE’s specific program goal of reducing the structural barriers to the effective use of broadband networks in education, ABEL will make optimum use of two complementary technological approaches to broadband-enabled learning: distributed development and delivery and high speed exchange of multimedia learning objects; and the distance delivery of learning using broadband video conferencing. These approaches will be deployed to deal effectively with structural barriers to widespread and significant use of advanced broadband networks in education and training:
Project Sustainability and Dissemination

The sustainability of ABEL will ultimately depend on the extent to which the results add value to educators or adult learners in general. Provision of a broadband enabled learning environment to enhance advanced professional development within the individual’s work site has the potential for both innovative research and delivery of educational programs and maximizing available resources in a cost effective manner. The Canadian and international K-12 education sectors represent a major market for innovative technologies to support professional development.

ABEL’s sustainability plan will be based on the following inherent principles:

- Start with a small but solid foundation and build deliberately towards a critical mass of committed participants in key sites that support replication and/or upscaling of the project.
- Develop capacity and leadership within the educational community by selecting and training key groups of teachers and instructors who stay together for the entire project.
- Make key deliverables available for uptake by major clients such as provincial Ministries of Education.
- Demonstrate concrete ways to overcome traditional barriers, which in this context includes: lack of teacher/instructor time, skills and access to learn and apply new ideas and transform their practice through on-line professional development.
- Build a solid infrastructure around the CA*Net backbone that ensures reliable broadband access and scalability along with easy to use functionality required in a variety of broadband enabled learning environments.
- Create a substantial body of high quality, curriculum relevant, multimedia content.
- Use open, interactive, and exciting forms of communications that not only support project members but also engage others from outside to become interested in the project.
- Incorporate managed research processes that yield information that is useful not only for project management but also to provide information that can be used to overcome structural barriers in similar efforts in other parts of the country.
- Develop business models and capacity to generate revenue to sustain the project.

ABEL is designed to be replicated and to expand from the initial core. It will begin with eight educational sites in the ABEL network including the original education partners of the project (York University, Edmonton Public Schools, York Region District School Boards, Toronto District School Board, University of Alberta Seneca College, the Galileo network and the Banff Centre).

In the second year ABEL will develop arrangements to include additional sites in other Ontario and Alberta school Boards and/or colleges and universities. The process of expansion across Canada via CA*Net will be worked out with support from five of our partners:

- Alberta Learning (within the province of Alberta)
- Ontario Knowledge Network for Learning (within the province of Ontario)
- The Galileo Network (within the province of Alberta)
- COHERE (across Canada)
- CANARIE (across Canada)
ABEL is prepared to add partners from the private and public sector in each of the new learning communities. Initially, to facilitate the process, observers from other institutions and school boards will be invited to participate in the monitoring, to provide assistance and to disseminate information about the project. They will also participate in the development of a detailed plan for extending ABEL’s ideas and programs to other areas in the country. ABEL has established contact with provincial Ministries of Education and continuous updates and follow-up meetings with Ministry officials and teacher associations are planned. The ABEL team will also undertake discussions as to how the project might address the barriers school boards face in dealing with the critical shortage of teachers, the unique challenges faced by rural and remote communities, and meeting their mandate of cost effective professional development for Canadian educators.

The educational partners are committed to finding resources and building staff support widely within their jurisdictions to implement the project.

The private sector partners in the project see growing market value in the intellectual property as well as the infrastructure (human and technological) being developed in ABEL. Through the development of tested advanced learning content management systems ABEL will add significant value to the content and service resources they bring to the project and position them to be more competitive in domestic and global markets. Some early commercial successes planned for the project are intended to sustain project growth beyond the time frame for this proposal.

Similar collaborative relationships will be formed with multimedia content agencies and other agencies and organizations to support transfer of project results to a broader context of adult learners. The ABEL team is currently in discussions with other universities who are very interested in the results of the project, and in adopting the model as part of their ‘corporate university’ and other university initiatives to provide corporate training and meet the future needs of adult learners. The Banff Centre will be exploring the potential for strategic international alliances that will contribute to disseminating Canada’s expertise as a leader in developing technology for the global knowledge economy.

ABEL promises to have a positive impact on collaborative activities among private and public sector organizations for purposes of providing flexible, high quality learning. The partners have begun developing collaborative business models and dealing with intellectual property rights. As ABEL matures, these practices can serve as exemplars to remove significant barriers to shared investment by business and educational institutions in Canada’s learnware industry. Advanced learning systems being developed in the project are applicable not only to public education but also to a much broader audience that includes the adult training sector where spending by corporations would increase the potential market several fold. Clearly, there is sufficient market potential here to make ABEL worthwhile as a source of knowledge as well as a productive site that would help to build and support this industry.

ABEL will integrate the intellectual properties contributed by the partners and develop new intellectual properties and expertise for commercialization nationally and internationally. ABEL will draw on the marketing and commercialization expertise of its members and CANARIE to support the commercial development of intellectual property developed by the project. There is significant potential to leverage CA*Net into a high-speed national and international channel for marketing Canadian educational services and products. The ABEL model will provide a direct benefit to Canadian content developers and represents a viable solution for export.
ABEL Learning Centres will be scaled up during the project to provide increased infrastructure (technical and content) and support needed to sustain an expanding project. Lessons learned will be documented to inform similar initiatives elsewhere. ABEL’s location on CA*Net will enable direct feed to new start up sites so that they can skip the process of developing new data centres and concentrate on local infrastructure, training and learning using a tested body of advanced content.

**ABEL results** will be disseminated using a variety of methods including:

1. The ABEL web site: An important feature related to both project evaluation and sustainability is the plan to publish ongoing research and assessment data on the ABEL web site as a means to engage all other interested parties in the process. The site is designed to facilitate interaction with project information by project members as well as prospective participants in future project development. Through the web site, observers from other institutions and school boards will be invited to participate in the monitoring as part of an extended "virtual action research" to which they can bring related experiences and data from their own initiatives in broadband-enabled learning. They will also be invited to participate in the development of a detailed plan for extending the ideas and programs of ABEL to other areas in the country.

2. Published research in journals, and on-line: Members of the collaborative Learning Centre along with members of the Teacher/Instructor Groups will be encouraged to communicate using a variety of media to spread the word about the activities and what is being learned in ABEL. Vehicles include web pages and forums for professional dialogue on the web site and various professional journals (print and on-line). These vehicles will incorporate live and recorded video from classroom learning environments, video annotation (attached voice, text, graphics and hypertext) that become possible with broadband connectivity available with CA*Net.

3. Professional dialogue between teacher/instructors involved in ABEL and their colleagues.

4. Dissemination through the various real and virtual networks to which partners in the project belong (e.g., COHERE, ASP Industry Consortium, Ministries of Education and Higher Education).

5. Participation in conferences with themes that correspond with project goals: Members of project teams and the Teacher Instructor groups will be encouraged and supported through ABEL to present seminars and workshops at practitioners’ conferences such as the Education Computing Organization of Ontario (ECOO) and academic conferences such as the American Educational Research Association (AERA).

6. Summer institutes for teachers and leading educators in the various provinces that become involved in ABEL.

These initiatives will make available for audiences, both locally and around the world, tangible demonstrations of viable solutions that help to position Canada as a world leader in applying broadband access in overcoming barriers that hinder learning. In addition, the ABEL project will develop a marketing and business plan to disseminate results both nationally and internationally. A series of demonstrations will be conducted to communicate ABEL results and an international K-12 professional development virtual conference is planned at the end of the project to discuss and showcase the final results of the project.
Evaluation Plan

Project Evaluation

An independent Evaluation Team working closely with the ABEL Research Team will carry out evaluation of the ABEL project. The Evaluation will comprise two complementary components:

1. A Formative Evaluation carried out under the leadership of York University within the project (monitoring and critical inquiry) providing data that informs and adapts the process; and
2. A Summative Evaluation carried out by the University of Ottawa.

The evaluation processes for each will share data derived from the processes outlined below. The Summative Evaluation will gather additional data as necessary to evaluate the success of the project.

Summative Project Evaluation

The independent Evaluation Team, to be led by The University of Ottawa, will be established for the project. Evaluation activities will include:

- Establishing benchmarks based on project deliverables outlined in the Project Description using qualitative and quantitative techniques.
- Regular and periodic tracking and monitoring of teams and project progress against the established benchmarks. This will include techniques such as interviews, questionnaires, self-evaluation, surveys, focus groups, facilitated meetings and observation. Project participants will be the primary sample for data collection
- Ongoing and regular dissemination of results to all stakeholders
- Final evaluation at project end to determine project success in relation to overall objectives, identify project results and make recommendations.

A variety of methodologies will be designed and used to engage project participants without being too burdensome. Evaluators and researchers will move in and out of the collaborative space to observe and experience the learning that is happening.

Formative Evaluation

The York University Institute for Research on Learning Technologies (directed by Dr. Ron Owston) will coordinate project research in collaboration with the University of Alberta. Other researchers, still to be chosen, will be selected on the basis of their knowledge of the overlapping fields of broadband applications and technology-enhanced learning, and their abilities to interact positively with the full range of project partners and participants to collect and analyze the rich and extensive data from this project. The research team will coordinate their work closely with research activities being planned by the Ontario Knowledge Network for Learning (OKNL) and Alberta Learning.

Members will engage in research to determine, develop and implement pedagogies and structures, which will support an advanced e-learning environment. Research activities will include action research integrated with training. All participating teachers in the project will be expected to contribute through processes of “action research” in their classrooms. ABEL Project
partners with their respective strengths in learning and advanced technology, will advance research in areas such as:

- The impact of broadband access on classroom learning: (e.g., effectiveness of interactive, real time multimedia in instruction, pedagogical models for enhanced learning, integration of real and virtual learning environments).
- The impact of broadband access on professional learning (e.g., the effectiveness of videoconferencing, peer to peer collaboration).
- Technological solutions for the effective application of broadband access in various educational contexts by documenting network traffic patterns in education settings, effects of various control methodologies to maximize bandwidth, technical support in the broadband network environment of schools).
- The impact of broadband networks on elimination of barriers between education institutions and private sector partners (e.g., collaboration practices and business models that are effective in the broadband environment provided in a variety of contexts).

Formative Evaluation Methodology

Assessment and monitoring of the outcomes of the project are built in throughout the project plan. The four phases of the project run concurrently and provide opportunities for building and using an evaluation cycle that: begins with assessment of user needs and related baseline data; proceeds to a design and testing of prototypes; and is followed by piloting of these prototypes. At all stages data are collected and analyzed to be fed back into the cycle to improve outcomes. This cycle is an important component of the project planning and management tasks. As the project scales up, data will be used not only for redevelopment of project programs, but also to yield a collection of research-based exemplary practices and e-learning standards that will be useful beyond the project.

Data gathered through the research program will be made available for the evaluation process and will include:

- User needs assessments, initial and ongoing through surveys and group interviews with all user groups and user support group.
- Testing of prototype education and training models in various realistic contexts; utilization assessment. This assessment involves quantitative measures (e.g., server usage file analysis) and qualitative measures (e.g., interviews and questionnaires) in order to measure utilization and value to teachers/instructors and learners of the advanced learning systems and content. In addition, functionality and use of technological solutions in the application of broadband access in various educational contexts (e.g., traffic patterns specific to various types of educational sites, effects of various control mechanisms to maximize bandwidth and effective technical support in the broadband network environments of schools, colleges and universities).
- A series of case studies of teacher/instructor use of the project’s learning resources that describe exemplary use of broadband-enabled access to learning resources and collaboration in various learning environments of schools, colleges and universities (e.g., classroom-based observation, teacher/instructor interviews, analysis of student work).
- Questionnaires/surveys on use of broadband access and resources developed during the project.
- Evaluation of the effectiveness of all training sessions by the participants through surveys and self-assessment instruments.
- Peer review and quality assessment of learning objects-vetting on-line by users based on relevance and recognized standards such as those developed and used by The Ontario Curriculum Centre
- Benchmarking: Baseline metrics established for each project phase at the outset of the project (reflecting CANARIE objectives and related best practices in other projects that are studying and creating relevant solutions for broadband enabled learning).
Advanced Broadband Enabled Learning Project

Other relevant information
Part 3: Participants
A summary from Appendix 1 for each of the Project participants.

The Participants and What They Will Provide

<table>
<thead>
<tr>
<th>Institution</th>
<th>What They Will Provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>York University (Stan Shapson)</td>
<td>Project management, research, technology infrastructure, pedagogical and technological expertise, faculty and pre-service teacher participants</td>
</tr>
<tr>
<td>Edmonton Public Schools (Karen Andrews)</td>
<td>Instructional design, teacher participants, technology infrastructure, teacher professional development programs</td>
</tr>
<tr>
<td>York Region DSB (Bill Hogarth)</td>
<td>Access to schools and teachers, technology infrastructure, teacher professional development programs, program development</td>
</tr>
<tr>
<td>University of Alberta (George Buck)</td>
<td>Educational expertise and program development, research, technology infrastructure, pedagogical and technological expertise, faculty and pre-service teacher participants</td>
</tr>
<tr>
<td>Toronto DSB (Dennis Hitchmough)</td>
<td>Instructional design, teacher participants, technology infrastructure, teacher professional development programs</td>
</tr>
<tr>
<td>Seneca College (Cindy Hazell)</td>
<td>E-learning and program development expertise, teacher professional development programs, teacher participants</td>
</tr>
<tr>
<td>Galileo Education Network of Alberta (Pat Clifford)</td>
<td>Instructional design, teacher participants, teacher professional development programs</td>
</tr>
<tr>
<td>COHERE</td>
<td>Inter-institutional network and outreach to postsecondary institutions across Canada</td>
</tr>
<tr>
<td>Banff Centre (Sara Diamond)</td>
<td>Development and delivery of “Telepresence” and training modules for teachers</td>
</tr>
<tr>
<td>Netera Alliance (Ken Hewitt)</td>
<td>Network manager, creation and maintenance of broadband and supporting applications, access to a learning object repository</td>
</tr>
<tr>
<td>Computer Integration Resource Centre (Peter Holgersen)</td>
<td>Videoconferencing applications development, systems design and operations</td>
</tr>
<tr>
<td>Principal Communication (Michael Morgan)</td>
<td>E-learning platform, systems design and operations</td>
</tr>
<tr>
<td>Learning Station (Robert Martellacci)</td>
<td>An Application Service Provider with expertise in aggregating and distributing digital content; expertise in network architecture</td>
</tr>
<tr>
<td>Tutorbuddy (George Wright)</td>
<td>Videostreaming technology and video content</td>
</tr>
<tr>
<td>Rogers Communications (Colin Ross)</td>
<td>Multimedia educational resources</td>
</tr>
<tr>
<td>Shaw Communications (Alex Park)</td>
<td>Connectivity, network management and development</td>
</tr>
<tr>
<td>GT Group Telecom (Don Grant)</td>
<td>Connectivity, network management and development</td>
</tr>
<tr>
<td>OKNL (Baiba St John)</td>
<td>Ontario government support</td>
</tr>
<tr>
<td>Alberta Learning/Alberta Online Consortium (Gary Popowich)</td>
<td>Alberta government support</td>
</tr>
<tr>
<td>TVOntario (Blair Dimock)</td>
<td>Digital learning resources, program development expertise</td>
</tr>
</tbody>
</table>
Appendix 1: ABEL Partners and Contributions to Project

York University
York University is the lead contractor for the project. York will be responsible for activities defined in the Statement of Work as well as incur the related costs. York University has considerable experience in research, teacher education and in the successful completion of innovative projects in which information and communication technology is integrated into collaborative partnerships. York’s Institute for Research on Learning Technologies will lead in research on the application of technology to teaching. York’s Faculty of Education is one of the leading faculties in Canada with its innovative in-service, pre-service and graduate programs. As part of the Ontario Superbuild Program York and Seneca College are creating the "Technology Enhanced Learning" facility, which becomes the home for this project. Proposed Contribution: Faculty of education pre-service participants; program development, research and Project lead,

Alberta Learning
Alberta Learning has responsibility for Basic Learning, Apprenticeship and Industry Training and Adult Learning in the Province of Alberta. The Ministry develops and evaluates curriculum, certifies teachers and assesses learning outcomes. The Ministry approves programs of study, funds providers (including research) and licenses and certifies providers. Proposed Contribution: Government support

Banff Centre
The Banff Centre has a research and training mission dedicated to the ongoing support and development of highly skilled Canadian and international researchers. Research includes new media creative content development and production methods, art and virtual environments, social and cultural analysis, implications of culture and technology, cultural difference and new media, 3D web development, artist/engineer and computer science collaboration, user driven technologies policy analysis and development, and accessibility issues. The Banff New Media Institute stimulates dialogue and creative innovation in new and converging media, and provides new media research, artistry and training; creation and delivery of leading-edge seminars, on-demand think tanks, workshops and fast prototyping sessions. Proposed contribution: Development and delivery of “TelePresence” and training modules for instructors.

Collaboration in On-line Higher Education and Research (COHERE)
COHERE is a national cooperative of seven research intensive universities dedicated to the sharing of on-line courses, faculty development, and pedagogical research about technology (Simon Fraser University, University of Alberta, University of Saskatchewan, University of Waterloo, University of Guelph, York University, and Dalhousie University). In the third stage the project will develop plans to expand to include additional learning communities of Boards and postsecondary institutions anchored in one or more of its COHERE Partners. Proposed Contribution: Expansion links to other universities/provinces, expertise.

Computer Integration Resource Centre, Edmonton Alberta
The Computer Integration Resource Centre (CIRC) has been providing Management of Information Systems (MIS) products and support since 1989. CIRC is committed to providing outstanding support and technical expertise in Network Services, End User Support, IT Management, Security, Videoconferencing, Software development, Web Development, and E-Commerce. Proposed Contribution: Application development.
Edmonton Public Schools, Edmonton Alberta
Edmonton Public Schools serves over 81,000 students in 209 schools as well as 40,000 non-school based learners, and has a budget of $548.9 million for 2001–02. The mission of Edmonton Public Schools, as an advocate of choice, is to ensure that all students achieve success in their individual programs of study. It is the belief of Edmonton Public Schools that parents, students and community members are committed as partners and accept their respective responsibilities in education. The mission is being accomplished through exemplary staff performance, program diversity, measured student achievement of outcomes and decentralized decision-making. Edmonton Public Schools is a leader in innovation, actively seeking partnerships with other service providers that enrich the school environment for staff and students. We have participated in a number of broadband-mediated learning projects and sustained a high-speed network connection to CA*Net3 since September 1998. Our school district has provided leadership and participation in the LearnCanada Project, in partnership with CANARIE, has staff experienced in working within the broadband environment and has an efficient and effective framework for administrative project management. Proposed Contribution: teacher participants; Instructional Design, Teacher Professional Development resources and expertise.

GT Group Telecom, Toronto Ontario
GT Group Telecom is Canada’s largest independent telecommunications provider, specializing in data, Internet applications, voice products and services, and secure data networking across the country. With a coast-to-coast fibre-optic network, Group Telecom’s unique backbone architecture is built with technologies such as Gigabit Ethernet for delivery of enhanced network performance and Synchronous Optical Network (SONET) for the highest level of network reliability. Proposed Contribution: Connectivity; network management and development.

Magic Lantern/Tutorbuddy
Magic Lantern and Tutorbuddy bring to the project extensive digital resource libraries (including rights for educational use) and authoring tools for educators, which enable customization and repurposing of content. Encoding systems are part of a complete solution, including content storage, management, distribution and access to the digital video content over all network architectures. Proposed Contribution: Provider of digital video resources.

Martellacci & Associates, Inc.
Martellacci & Associates, Inc. is an education-focused application service provider (ASP) and brings to the project a library of education applications for both teachers and students that can be used immediately in the project. Proposed Contribution: Application service provider.

Netera Alliance, Calgary Alberta
Netera Alliance is a not-for-profit corporation of universities, research institutions, government and small and large private-sector companies facilitating advanced information infrastructure in Alberta. Its core role is to design and implement the next-generation Internet in Alberta – a high-speed research network. This network, currently the world’s longest Gigabit Ethernet network, is called NeteraNet. Netera is also working to test and improve services in three areas directly related to high-speed networking: video serving, videoconferencing, and networked visualization. Netera fills a role on the front edge to continually test and develop technology on a pre-commercial network. In this way, it plays a part in a larger Alberta ICT strategy. Netera has a strong history in the development of advanced networks in Canada, and works closely with its funding sources both in the province and nationally to contribute to the development of...
interconnected information resources. *Proposed Contribution*: Network Manager, creation and maintenance of broadband networking and supporting applications.

**OKNL-Ontario Ministries of Education and training, Colleges and Universities**

The Ontario government has established the Ontario Knowledge Network for Learning (OKNL) as its key strategy to roll out educational technologies, including broadband-enabled learning to its schools. The OKNL interests in infrastructure, learning object repositories, teacher/instructor training and related research closely parallels the goals of this project. OKNL will work with project staff to share expertise and learn from the results of the project as it unfolds. *Proposed Contribution*: Government support.

**Principal Communications**

Principal Communications will provide its Anlon eLearning Platform designed for enterprise-wide course development and delivery, and test/exam development and delivery for networks. It is designed to for integration with other applications commonly used in education and e-learning (e.g., WebCT, SAP and ERP). *Proposed Contribution*: Learning content management tools and processes

**Rogers Communications**

Rogers is the cable telecommunications service provider for large parts of the country including the York and Simcoe regions. eLibrary Canada, a division of Rogers Publishing, is the major online research service for students, teachers and libraries across Canada. bigChalk Library Canada Get the Picture, provides users with an efficient and intuitive online research environment, offering access to 450,000 images, streaming audio and video, plus integrated access to 150,000 editor-selected Web links. The project is designed to take advantage of the existing connectivity to York Region District School Board and to explore with Rogers how to maximize broadband access by developing the "middle mile" between CA*Net and the schools. *Proposed Contribution*: Broadband technology, access to multimedia educational resources, e.g., bigChalk Library Canada,

**Seneca College**

Seneca College brings technical expertise in information technology and on-line course development and delivery. They are actively pursuing e-learning in their Centre for New Technologies in Teaching and Learning where they develop world-class resources in several areas including on-line courses that will be used by teacher/instructors in the project. *Proposed contribution*: Educational expertise and program development.

**Shaw Communications**

SHAW Communications Inc., a diversified Canadian communications company with significant interests in telecommunications, Internet infrastructure and interactive television companies in North America, provides broadband cable television, Internet and satellite services to approximately 2.8 million customers

SHAW’s mission is to provide high-quality entertainment, information and communications services, utilizing a variety of distribution technologies. The development of technology whereby home television receivers become capable of supporting a wide range of interactive services will create further demand for Internet access. SHAW is well positioned to take advantage of these emerging trends. SHAW is bringing the connected world to everyone and, in the process, will be one of the leaders in the way people communicate now and in the future.
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Proposed Contribution: Broadband technology connectivity; network management and development; establishment and maintenance of relationships with project partners.

Toronto District School Board, Toronto Ontario
The Toronto District School Board (TDSB) is the largest School District in Canada, with 565 schools, 300,000 students and 30,000 staff. The TDSB mission is to enable students to reach high levels of achievement and to acquire the knowledge, skills and values they need to become responsible members of a democratic society. The TDSB clearly states its belief in the importance, potential and power of public education for individual students, their families, and for Canadian society. Specific emphasis is placed on the effective use of innovations in education to support and empower the learning of students, staff, parents and community. The TDSB has a world-class technical infrastructure supporting over 60,000 PCs connected to a wide area network that provides high-speed access to the Internet, and has maintained a CA*NET3 connection since 1999. Proposed Contribution: Project management; Teacher Participants; K-12 networking to support learning.

TVOntario
TVOntario's mission is to support lifelong learning in Ontario by providing quality educational programming services in English and French using television and other communications technologies. TVOntario is committed to delivering new media strategies incorporating and supporting quality of lifelong learning opportunities for adults and children, using the power of educational television and interactive learning. Proposed Contribution: Instructional design, video and learning resources.

University of Alberta, Edmonton Alberta
The University of Alberta is one of Canada’s largest research-intensive universities and serves more than 30,000 students in 200 undergraduate programs and 170 graduate programs. Students and faculty strive to advance knowledge through research, to seek innovation in teaching and learning. The Faculty of Education, the oldest and one of the largest faculties in the country and rated the best overall in Canada, is committed to the discovery and dissemination of knowledge about teaching and learning. Proposed contribution: Educational expertise and program development.

York Region District School Board
The York Region District School Board (YRDSB) has a long history of innovation and expertise in information technology and curriculum. It is a rural/urban board stretching from Toronto to Lake Simcoe. It currently has in place a broadband network (WAN) connecting its schools and robust networks within the schools. YRDSB will provide access to a test-bed of selected schools and support participation by selected staff and administration required for successful implementation (instructional design, content expertise, instruction, evaluation). York Region is well served by Rogers Cable and high-speed connections exist to many homes in the region. Proposed Contribution: Learning Program development, Teacher Participants; K-12 networking to support learning, technical support.
Part 4: Work Plan