



Call for Participation

Dedicated Notebook Computer Research Project

*An Initiative of the
Quality Learning Agenda*

Department of Education
Educational Programs & Services Branch
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PROJECT INFORMATION

Project Overview

The Department of Education proposes to implement an action-based research project to evaluate the impact of providing dedicated notebook computer access to students and teachers to support learning and teaching practices. Four schools will be selected to participate in this two-year research project. They will be equally representative of both language sectors, with two Francophone and two Anglophone schools. Of the two schools in each sector, one will be urban and one rural. The research project will be limited to a total of four classes per sector. It is expected, for example, that a rural school will have one class and an urban school will have three classes. In the first year, the project will target grade seven classes. In year two, the project will continue with the same classes at grade eight and expand to include the same number of grade seven classes in the same schools. The research will be conducted in partnership with both Anglophone and Francophone post-secondary research partners. The project is designed to support New Brunswick's long-term vision for economic growth and lifelong learning as found in *Greater Opportunity: New Brunswick's Prosperity Plan* and specifically the *Quality Learning Agenda (QLA)*.

Each school participating in the project will have dedicated access to a technician and be provided with the pedagogical support of a technology mentor. The short and long-term success of the dedicated access project is linked to both the quality and quantity of human resource support made available. The Department of Education, districts, and schools, will need to share ownership of the project and actively participate in the research, evaluation and shareable resource development. The future direction of this project after implementation will be determined after examining research findings following the first and second years.

The Department of Education will identify potential partners in this project from among major hardware and software manufacturers. These partners will contribute to the technical design of the project, share in the planning and research, and contribute to the cost of the project. Participating schools may also have partners in the private and public sector that could enrich a school's participation in this project. It is anticipated that schools electing to apply for consideration in the dedicated access research project would have previous experience, through past projects, in seeking the support and expertise of external partners.

A dedicated notebook computer access research project will contribute to the fulfillment of our *Quality Learning Agenda* by supporting a vision of a culture of excellence and high achievement exemplified by innovation and lifelong learning. By researching the expanding use of technologies in the classroom to support learning, by challenging and supporting students with a range of needs, and by promoting quality teaching, the New Brunswick education community will better understand the potential of Information and Communication Technology (ICT) to

impact on student learning. Notebook use in the classroom can act as a catalyst to encourage the ongoing improvement and the re-visitation of current teaching practices. As part of the research, teachers will be encouraged and supported to differentiate teaching and learning approaches to meet individual learning styles of students.

The New Brunswick Department of Education is renowned as a leader in the implementation of educational ICT initiatives. Our province is now uniquely positioned to continue its national leadership role by initiating and researching the impact of dedicated one-to-one computer access on student learning and teaching practices. This project has the potential to be a catalyst that challenges educators to rethink teaching strategies for a diverse student population and better understand the role Information Communication Technology plays in assuring a quality education for all.

Rationale

The pedagogical impact of dedicated computer access is noted in much of the current literature. Research indicates that providing dedicated computer access can have a significantly positive impact on student learning and teaching practices. The interest of the New Brunswick education community in this trend is demonstrated by the thoughtful proposals and action plans for notebook implementations that have been submitted to the Department of Education by interested schools and districts. In light of current research findings, Community interest in learning and the release of the *Quality Learning Agenda* in the spring of 2003, the timing is right to assess the benefits of giving teachers and students dedicated access to personal computers.

Dedicated notebook computer access programs, if properly implemented, can improve the performance of students and the quality of learning. The intent of implementing a dedicated notebook project for students and their teachers is to research the impact on student achievement and motivation, and the learning environment. It is noted in current literature that work quality in content areas, essential learning skills, higher-order thinking skills, and problem-solving and research skills have all increased when technology has become part of the learning process. This project will allow New Brunswick to assess these findings with our teachers and students and gain valuable knowledge for future planning.

Research indicates that students who have the opportunity to use 21st century learning and working tools can achieve a deeper understanding of complex topics and concepts. They are also more likely to recall information and use it to solve authentic problems. Students who develop the ability to work independently, collaborate with peers, and communicate their learning with the tools of modern technology will have mastered the Conference Board of Canada's *Essential Workplace Skills*. Possessing this valuable set of competencies will place New Brunswick students in a more competitive position in the global knowledge economy.

Research indicates that all students, male and female, from different social and economic backgrounds, can develop strong computer skills if they are provided with access. Providing notebooks and equitable access to all students goes a long way toward eliminating any existing or future digital divides in the use of technology. Just as the presence of technology has the potential to equalize opportunities for students, the absence of these resources has the potential to widen the gap and build new barriers. A school-issued notebook computer ensures that participating students have equal access to ideas and information. A successful implementation of the notebook research project could also have tangible social and economic benefits within the entire community.

Another objective of this research project is the continuing improvement of teaching practices by providing teachers with tools to integrate technology into the curriculum. Successful implementation of a dedicated notebook computer access project is dependent on adaptation in instructional methodologies. Professional development that focuses on the student learning process and on the integration of technology into the curriculum is an underlying principle of this initiative. The co-ordination and implementation of these professional development activities are fundamental in assisting our teachers in broadening the way in which students acquire knowledge and apply the information to the world around them. The *Quality Learning Agenda (QLA)* supports the premise that professional development for teachers is a necessary action to assure enhanced student learning.

Project Goal and Objectives

The goal of the dedicated notebook computer access research project is to evaluate the impact of dedicated computer access on learning and teaching practices. The objectives of the project include the following:

- To enrich teaching and learning practices to support the skills required to succeed in the global knowledge economy;
- To improve both teacher and student ICT competencies;
- To impact positively on student motivation and achievement;
- To increase parental and community involvement in education and life-long learning.

Connection to the Quality Learning Agenda

“New Brunswick will have a quality education system that fosters a culture of lifelong learning for citizens from the earliest moment, aspires to excellence and achievement at all times, and ensures graduates have the knowledge and are well prepared to successfully participate in today’s knowledge-based economy.”
(*Greater Opportunity: New Brunswick’s Prosperity Plan*, pg. 20)

To create greater opportunity for all New Brunswickers, we must above all invest in people and focus on quality learning. We need, collectively, to value learning as our greatest source of potential, not just during the early stages of our lives but throughout our lives. The proposed dedicated access research project is carefully designed to address several of the objectives and initiatives outlined in the *Quality Learning Agenda* (QLA) with a focus on the life-long learning skills that will prepare our youth to work and prosper in their home province.

Pedagogical Implications

It has been shown that dedicated notebook computer access has a revolutionary impact on the way teachers teach and the way students learn. This is a highly desirable and essential outcome for the digital-age and knowledge-based economy our students will face. Leading researchers in the field of computer-based learning have identified ubiquitous one-to-one computing as one of the most compelling school-change interventions to be seen in decades. The focus of successful implementations is not about the notebooks, but rather it is about what students and teachers do when they have fulltime access to a tool for writing, researching, simulating, problem solving, presenting and organizing. A review of current literature in the field of notebooks for K-12 learning indicates that there is positive impact on both teaching practices in all pedagogical areas and student learning. A brief summary of the pedagogically related research findings is included, and more detailed information can be found in the full studies, which have been cited in the bibliography (Appendix B).

Possible Impact on Teaching Practices

- Teachers are more readily transformed from a knowledge provider to a facilitator of learning.
- Teachers in dedicated access learning environments tend to promote pedagogical practices that encourage students to take ownership and responsibility for their learning.
- Teachers as facilitators differentiate the instruction and presentation of the curricular outcomes to better meet the individual needs of learners.

- Teachers support a more student-centred approach to instruction, which will be designed according to the needs of learners.
- Teachers have the tools to organize varied content and rich learning experiences for students, which should improve student attitudes, motivation, behaviour and achievement.
- Teachers will emphasize opportunities for project-based and hands-on learning. Lecture-based learning will not disappear; however, the information manipulation environment provided by dedicated notebook computer access allows teachers to use an enriched variety of teaching techniques.
- Teachers will have the technological tools to gather and analyse data, simulate systems and real-life situations that might otherwise be unsafe or impossible to access.
- Teachers will be able to plan learning experiences based on the assumption of equitable access to technology resources.

Possible Impact on Learning

- Students will take more responsibility for their performance, learning and work products, which should result in higher levels of comprehension and greater transfer of knowledge and skills to other learning experiences.
- Students will be given increased opportunities to manipulate data, information and written text with greater ease. This additional practice and often higher-order use of information will have an impact on the acquisition and improvement of literacy skills.
- Students will have the ability to produce higher-quality work, which will result in improvements in pride, self-confidence and self-esteem.
- Students with learning disabilities will experience improved academic success with the support of dedicated computer access and ICT tools to support their learning styles, preferences and needs.
- Students will tend to score higher in writing and reading assessments, demonstrate improved research and analytical skills and engage in more collaborative work.
- Students will have greater access to the vast wealth of current learning materials, and with the access to information more immediate, students will be able to create more media-enriched presentations.

- Students studying languages will have broader access to media and cultural resources, which enrich the learning experience and allow students to spend more time listening and speaking in the language of instruction.
- Students will be empowered to make informed decisions on the use of technology to enhance and enrich their learning experiences.

Project Implementation

The Department of Education will implement the use of notebook computers for teachers and students in order to research the pedagogical impact. The research project will be conducted in consultation with educational stakeholders, including district superintendents, directors of education, technology supervisors, information systems managers, school administrators, the teachers' association, teachers, parents and students. The proposed research will be conducted in partnership with post-secondary research partners, as well as other private-sector partners. Any successful implementation of a dedicated access project will need to be fluid. That is, it will also need to be responsive to changing internal and external factors, new information, and feedback from participants.

A review of current research indicates varying models of dedicated notebook computer access. Of the existing models of mobile notebook learning programs, research suggests that dedicated one-to-one student and teacher access will produce the greatest impact on teaching and learning practices and student achievement. Research notes that when assessing student performance consideration should be given to allowing students to use the ICT tools provided in the learning environment and reflective of the 21st century global-economy work environment.

This proposed one-to-one dedicated access will support a constructivist approach to learning, building on student knowledge and interest. In this model, students will have autonomous control of the notebooks at school.

Phases of Implementation

The notebook research project will be phased in and revisited on a regular basis and reviewed after the pilot period. Teachers of the participating students in the selected schools will be provided with a notebook, appropriate software, ongoing professional development and technical support. It is an expectation that all teachers participating in the research project will be responsible for generating shareable learning resources and will contribute to the evaluation of the project.

The project implementation will be monitored and evaluated in partnership with post secondary research partners.

Phase 1 (January 2004 to June 2005): A background review of research on dedicated access programs and consultation was initiated in early 2004. Districts will have until June 4, 2004, to submit their applications to the DOE. The participating schools will be selected by a departmental committee and notified by June 11, 2004. All teachers of participating students/classes in the selected schools will receive notebooks by October 2004, to allow adequate time for orientation, professional development and curricular resource planning. Teachers from participating schools will be given an opportunity to actively participate in designated professional development, which will support collaborative planning and preparation, and the development of shareable web-based learning resources. The training will be conducted in partnership with department and district support staff and the technology mentors. By the end of June, Information Systems (IS) managers and supervisors of Technology and Learning will be asked to determine, in collaboration with the Department, the infrastructure requirements of participating schools to support this initiative. All necessary technical issues that relate to the successful implementation of this project will be addressed by October 1, 2004. This phase will be evaluated, and the findings on project progress will be communicated to stakeholders.

In January 2005, the selected schools will receive notebook computers for use with grade seven students. The distribution of notebooks, with an orientation for proper use and care by students, will be led by participating teachers with the support of district consultants. All distributed notebooks will be wireless and will provide for flexible computing access for teachers and students in these schools. The teacher professional development (PD) to support this project will be ongoing throughout the school year. This PD will include a combination of site-based, face-to-face and online interaction. The schools' teachers, their technology leaders and district technology mentors will deliver the site-based PD. These teachers will be expected to participate in ongoing curriculum resource development and distribution of shareable learning resources. The post-secondary research partners will implement the research model, familiarizing teachers with expectations and gather data throughout the academic year. The IS team will monitor infrastructure and technology issues relating to broader use of wireless and mobile technologies. This phase will be evaluated, and the findings on project progress will be communicated to stakeholders.

Phase 2 (July 2005 to June 2006): On the basis of the previous year's experiences and the post-secondary research partner's project evaluation, the objectives will be reviewed. It is currently planned that the project will continue with grade seven and will expand to include grade eight in the same pilot schools. The students, now in grade eight, will continue with their dedicated access, using the previously provided notebook, and the new grade seven students will be provided with notebooks. The project will continue with the

support of the experienced grade seven teachers. Teacher professional development and the production of shareable learning resources will continue. Adjustments will be made to the technical and administrative infrastructure as indicated by research. This phase will be evaluated, and the findings will be communicated to stakeholders. The future direction of this project, following the two year implementation, will be determined after examining research findings from the post-secondary partner.

Human Resources

The short and long-term success of the proposed research project is reliant on the quality and quantity of human resource support that can be provided. In the early stages of this project, the Department of Education will need to ensure that the participating school district and schools have identified resource persons and the means by which to provide their expertise and time to this project.

The success of the project will greatly depend on the active participation and proper representation of the different stakeholders participating in key leadership roles at the recommended provincial, district and local committee levels. At the provincial level, representation should include DOE officials, school district officials, an ICT/IS expert, a research partner, a teacher association representative, a school representative and the project coordinator. At the district level, school districts should ensure proper representation from school district, IS, school administrators, teachers, parents, project leaders and the provincial coordinator. At the school level, administrators should assure proper leadership of the project by providing the necessary human resources to the teachers and students and ensuring proper representation of teachers, students, parents, IS and mentors on their school committee.

Resources	Members
Planning and Evaluation	
DOE Committee	Executive, Curriculum, IS, Communication
Provincial Committee	Executive, Curriculum, IS, Evaluation, Communication, School District, Research, Teacher Association, Coordinator, School Administrator and Teacher
Provincial Coordinator	
Public relation/communication committee	Executive, Communication, Curriculum
Preparation, Organization and Administration	
School District Committee	Education Director, Supervisor, Coordinator, IS, Mentor, School Administration, Teacher, Parent
School committee	Administration, Supervisor, Mentor, IS, Teacher Leader, Parent, Student
Mentor	
Technical support	
Content leaders	Provincial and District Supervisors

Professional Development

Professional development (PD) will be essential to ensure that teachers possess the necessary skills to make a successful transition to the practice of facilitated learning. The proposed learning environments and varied teaching methodologies are dependent on participating teachers effectively guiding students in the adopting of their roles and responsibilities in this learning process. The PD plan will include orientation and ongoing support during implementation. The plan of implementing the notebook research project as proposed, with the teachers in October 2004 and with students in January 2005, is desirable as it allows for the maximum PD support from the district technology mentors. If delivered as suggested, the participating educators will have the benefit of being part of a project with the human support to assure a permanent culture of ongoing professional development and action research at the school level.

Goal	Responsibility	Target
Preparation		
Project strategic planning	DOE	School and District Committee, Teachers
Technical and pedagogical PD	DOE, School District	School Administration, Teachers
Support		
Technical and pedagogical teacher support	Coordinator and District	Teachers
Evaluation		
Project evaluation	DOE, Coordinator, School District, Post Secondary Research Partner	School and District Committee, Teachers

Research

The Department of Education will work with the post-secondary partners and will undertake a study to assess the impact of notebooks on teaching practices, learning environment, and student motivation and achievement. The study will include a documentation of the implementation process, an examination of the expectations held by stakeholders, and an assessment of the impact of the project on teaching and learning in the classroom. It is anticipated that multiple approaches will be used in gathering data to gain greater confidence in the findings. The methodology could include surveys, interviews and site visits. During the research, information will be obtained from students, teachers, school and district administrators, and parents. (Appendix C)

SELECTION CRITERIA

Selection Criteria

The DOE has identified specific criteria that will be used for the selection of those who will participate in the dedicated access research project. Applying schools/districts will be considered only if all criteria are met. The areas of consideration are described below. The application procedure has been designed to allow a school to present its strengths, abilities and experiences in the five areas of consideration that follow:

- 1) School Improvement Plan (to include a Vision Statement and Technology Plan)
- 2) School and Project Leadership
- 3) Professional Development/Learning Opportunities
- 4) Demonstrated Efforts in Partnership, Networking, Communication and Promotion
- 5) Experiences, Innovations and Achievements

Criterion 1 - School Improvement Plan

The School Improvement Plan includes a long term Vision Statement (three to five years) and an integrated up-to-date Technology Plan. It should also contain pedagogical strategies used to support the integration of technology and learning.

Criterion 2 – School and Project Leadership

There is specific evidence that the principal initiates/supports/facilitates ICT use in the school and that an effort has been made to include as many staff and students as possible in the use of ICT to support learning. This includes making the staff aware of the expectations regarding the use of ICT as a teaching tool, the participation in professional development, and encouraging staff to undertake innovations without any fear of negative consequences.

Criterion 3 – Professional Development/Learning Opportunities

The number of ICT professional development/learning opportunities has met the needs of the staff. The topics are related to the information in the Technology Plan and Vision Statement. The list of participants includes the school's administrator(s) and a good cross section of staff in terms of teaching assignments. The professional development/learning opportunities may include, for example, the "expert" workshop, study groups, ongoing peer or student-teacher coaching, university courses, individually designed learning experiences and on-line courses.

Criterion 4 – School’s Partnership, Collaboration, Networking, Communication and Promotion

There is specific evidence of the collaborative relationships and partnerships between the school and different stakeholders, such as parents, community, post-secondary institutes, school district and DOE. There are specific examples of ways the school shares information about its projects and showcases/promotes its teacher and student successes.

Criterion 5 – Experiences, Innovations and Achievements

There is specific evidence of staff experience using ICT as a teaching tool. There are different examples of multimedia use and innovative ICT projects. The corresponding curriculum subjects/units and grade levels for each example are stated. It is clear that the specific examples of new programs/strategies are designed to improve student learning.

Characteristics of a Dedicated Access Research School

The selection committee will look for the following characteristics in the applicant schools as indicators that they will be successful in implementing the dedicated access project and participating in the research.

- 1) The school has a student-centred philosophy; that is, the focus of the school is on meeting the learning needs of every student. The educators in the school follow the provincial curricula and design relevant curriculum units. They are knowledgeable about and use current learning research and theories and employ a variety of effective teaching and assessment strategies based on sound pedagogical research.
- 2) The school has collaboratively developed a long-term ICT vision statement and a technology action plan. The plan is supported by everyone in the school (the administrators, staff, parent advisory committees, and in some cases, students and community members), and the plan objectives are being implemented by the majority of staff.
- 3) The school has a culture of innovation, and the teachers are willing to take risks in meeting the needs of their students. The majority of the school’s teaching staff is currently employing innovative and creative pedagogical strategies, not limited to the integration of ICT to improve student learning.
- 4) The majority of school staff participates in ongoing professional development opportunities. The staff members can demonstrate learning in both the applied use of technology and the integration of these technologies into the curriculum.
- 5) The school has an established framework of support for teachers using ICT in their classes. This may be demonstrated through creative use of peer support, site-based PD, school and district mentoring, project development and budget.

- 6) The practice of using ICT as a teaching tool is spearheaded and supported by school leaders, who include both the administration and those staff members who take the lead in ICT innovations. There is clear evidence of leadership and administrative support, and a demonstrated ability to promote the sharing of knowledge and resources, especially through the school web site.
- 7) The school has a culture of being connected to and supportive of the broader community. It works with parents, volunteers, other schools, community organizations, universities, community colleges or businesses. It collaborates with the local, national and global community, and may already have some form of established partnership with community organizations or private industry.
- 8) The teachers in the school have demonstrated the ability to collaborate with each other in planning, implementing, mentoring, assessing and reflecting upon instructional units and strategies. They work together to provide cross-curricular learning opportunities. Collaborative relationships for both students and staff extend beyond the classroom walls to other classes, to the students' homes and to members of the local and global community.

APPLICATION PROCEDURE

Application Procedure

Any New Brunswick public school with grade seven and eight students may apply to be considered for participation in this research project. The project will be limited to a total of four classes per sector (Anglophone/ Francophone). It is expected, for example, that a rural school will have one class and an urban school will have three classes. The school should have the support of their district and school administration, and the teaching staff should be committed to improving student learning by integrating ICT into the provincial curricula in creative ways. Schools must meet the selection criteria, be compatible with the characteristics of a suitable research school and be able to comply with the project requirements. Although the application should be a collaborative effort among staff members, the school principal must support the school's participation. As the success of the research project will rely not only on the school's effort, but also key players at the district level, each school must have the approval of its district superintendent.

Schools choosing to apply for consideration must provide evidence that they are able to undertake the proposed innovative research project and meet the obligations/ requirements. The successful schools will have provided clear evidence that the involved staff and administration are willing to commit the time required to make this project a success. All the compulsory components of the application must be submitted for a school to be considered. Required items include: the completed application (Appendix A), a copy of the 2003/2004 School Technology Plan and a note of approval from the superintendent. The Technology Plan should contain a long-term vision statement, goals, strategies, PD and measures/indicators of success, as well as a preface, which explains how the vision and plan were developed in collaboration and by whom.

Applying schools should forward their completed application, including the required School Technology Plan, to their district superintendent. The district should review applications and, if in agreement, forward to the Department of Education with a note of approval by Friday, June 4, 2004. Districts are asked to prioritize their submissions. The recommendations of the selection committee will be reviewed in consultation with the appropriate school districts, and if required, a school visitation will be included. The successful schools will be notified by June 11, 2004, and all districts will be informed of the results of the selection process.

Evaluation and Selection Procedure

A Department of Education Selection Committee comprised of education stakeholders will review the applications and shortlist the recommended research schools. The committee will assure that there is a distribution among both language sectors and the geographical sectors of New Brunswick. All of the completed application packages submitted by districts to the Department will be evaluated by members of the selection committee.

Concluding Statement

The New Brunswick Department of Education has an enviable reputation for leadership, both nationally and internationally, for their successful implementation of ICT initiatives. Our province was the leader and national pilot site for the Canadian Community Access Program, which continues to provide greater access to technology and expands the role of the school as a community-learning centre. New Brunswick pioneered universal Internet access and now broadband access to all K-12 schools. Our technology mentor teacher program has become an exemplary model for providing site-based professional development for educators. New Brunswick's educational personnel have hosted many international study-tour delegations and have provided workshops for educators in Jordan, Slovakia, The Netherlands, France, Belgium, Morocco, and Louisiana.

The province is now uniquely positioned to continue its leadership role by being the first Department of Education in Canada to initiate and research a dedicated notebook computer access program. By conducting research on the expanding use of technologies in the classroom to support learning, by challenging and supporting students with a range of needs, and by promoting quality teaching, the New Brunswick Education community will better understand the potential of Information and Communication Technology to have an impact on student learning.

APPENDICES

Appendix A

The Application

The application for consideration for participation in the dedicated access research project consists of four compulsory sections. An application will be considered only if all sections are completed.

Section I - Applicant Information (complete in point form)

1) School

Name:
Street name and number:
City:
Postal Code:
Telephone number:
Fax number:
School web site URL:

2) Administration

Name of principal:
Principal's email address:
Name of middle level team leader:
Team leader's email address:

3) School District

School District:
Superintendent's email address:

4) School description

Is the school Rural or Urban?
Number of grade seven classes:
Number of students in the participating grade 7 classes:
Number of immersion students in the participating classes:
Grade levels taught in the school:

5) ICT Assets

Number of networked computers:
Other ICT equipment:
Percentage of instructional rooms (including the library, but excluding the labs) with networked computers:

Section II – School Improvement Plan (Technology Plan and Vision Statement)

In this section, schools are required to reflect on their capacity to successfully implement the research project based on their commitment to a Technology Plan that is integrated throughout their School Improvement Plan. Schools are required to include a copy of their 2003/2004 Technology Plan with their application.

Refer to Criterion 1 (page 13) and in 400 words or less, explain why your school should be selected and how you will implement the different strategies and programs to ensure the success of the project.

Section III - School Profile

This section should assist the selection committee in understanding the unique character of the school and its technology assets. The selection committee will use Criterion 2, 3, and 4 in assessing the school's ICT strengths and capacity. Note that the selection criteria include how the school uses the ICT they have to meet students' needs, not the schools' hardware, software or personnel itself.

Refer to Criterion 2 (page 13) and, in 400 words or less, address some or all of the following to demonstrate your school's capacity and leadership to support the project.

- List the specific ways the principal has initiated supported and/or facilitated ICT use in the school.
- Who are the ICT leaders in the school? List specific ways they have initiated and/or facilitated ICT use in the school.
- Explain how you will implement the different leadership strategies to ensure the success of the project.
- List and explain the kind of support that is available for teachers using ICT.

Refer to Criterion 3 (page 13) and, in 400 words or less, address the following professional development items to demonstrate your school staffs capacity and commitment to professional growth.

- List the professional development or learning opportunities (e.g. workshops, tutoring, institutes, courses) related to ICT that teachers/administrators have taken advantage of during the last two years.
- List and describe any professional development activities designed or delivered by staff members.
- Include the percentage, in total, of the school's teachers and administrators that have been involved in these professional development/learning opportunities.

- What professional development and learning opportunities do you anticipate implementing to ensure the success of the project?

Refer to Criterion 4 (page 14) and, in 400 words or less address your school's capacity and past experience that would support the collaborative nature and anticipate public interest in this project.

- List examples of collaboration, networking, or mentoring that your school staffs has participated in, either within your school or outside its walls; for each example, indicate the percentage of staff involved.
- Explain how you will involve and ensure participation of the different stakeholders in the project.
- List how your school currently shares information about its projects, promotes/showcases teachers' and students' successes.
- Discuss how your school plans to communicate, promote /showcase the project.

Section IV - School Experiences and Capabilities

This section provides evidence as to whether the school has the philosophy, experience and capability to make the changes and undertake the initiatives proposed in the research project. The questions are based on the suggested characteristics and indicators of an innovative school. The selection committee recognizes that not all schools have had experience in action research, but believes that they do need to have experience in the other areas. Indicated experience in action based research and reflection will strengthen an application.

Refer to Criterion 5 (page 14) and, in 400 words or less, address your school's capacity and past experience with innovative learning projects.

- List new programs or strategies to improve student learning that teachers have undertaken in the school within the previous two years. *(Specify the grade levels and subjects for each. Give the percentage of teachers involved in each innovation. These innovations do not have to be related to ICT.)*
- Give examples of how ICT has been used in the last two years and specify the curriculum units/subjects and their grade levels in which it was used. *(Indicate the percentage of teachers that have had some experience using ICT as a teaching tool in a curriculum unit during the last two years.)*
- Indicate whether the school has experience with GrassRoots Projects or any other major ICT project (please describe and specify any applicable URLs).
- If your school houses a Community Access Centre (CAP), briefly describe how the school and community work together on site management.

Appendix B

Bibliography

1. **Bain, A., & Huss, P. (2000)** *The Curriculum Authoring Tools: Technology Enabling School Reform*. The International Society for Technology in Education. *Learning and Leading with Technology*, 28 (4), 14-17.
2. **Bain, A., & Smith D. (2000)** *The School Design Model at Brewster Academy, Part II: Technology Enabling School Reform* Tustin CA: Technological Horizons in Education, 28(3), 90-97.
3. **Belanger, Yvonne (May 2000)** *Laptop Computers in the K-12 Classroom* ERIC Digest, Clearinghouse in Information Technology EDO-IR-2000-05. A reflection on factors effecting the growth of mobile learning and one-to-one laptop initiatives in K-12 education
4. **Black, Paul and Wiliam, Dylan(1998)** *Inside the Black Box*, Phi Delta Kappan; Oct98, Vol. 80 Issue 2, p139, 9p, 1bw.

This article discusses the importance of formative assessment in classroom work for students. The authors report on the value of interactive teaching and learning and inherent problems with assessment in contemporary classrooms, the importance of the role of pupils' self-esteem and self-assessment by pupils. Lastly, it looks at the evolution of effective teaching, including changing policies.

5. **Bushman, James. (2003)** *Connected classrooms: The Clovis High Laptop Program*, Leadership; Mar/Apr2003, Vol. 32 Issue 4, p24, 5p.

This article discusses the background and presents the case of a public high school in California, which demonstrates the value of using computer technologies in the classroom as an instructional tool. The examination of Laptop Program at Clovis High School includes reasons cited by the students for liking the class, teachers' anecdotal evidence of the impact on student learning and a statement that this program might not be for every learner.

6. **Carter, Kim (2001)** *Laptop Lessons: Exploring the Promise of one-to-one Computing*, Technology & Learning; May2001, Vol. 21 Issue 10, p38.

This article contains a short overview of the implementation of a laptop program in schools in the United States. It reports on the Average Metropolitan Achievement Test score of students participating in the program, the basic elements essential to the success of the program, and the implementation of the program. It also includes information about sample

laptop projects and financial options and resources for starting a one-to-one laptop program.

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Appendix C

Proposed Research Questions

The Department of Education will work with the post-secondary partners and will undertake a study to assess the impact of notebooks on teaching practices and student learning. The study will include a documentation of the implementation process, an examination of the expectations held by stakeholders and an assessment of the impact of the project on teaching and learning. It is anticipated that multiple approaches will be used in gathering data to gain greater confidence in the findings. The methodology could include surveys, interviews and site visits. During the research, information will be obtained from students, teachers, school and district administrators, and parents.

Criteria	Objective	Performance Indicators	Evaluation Methods
1. Students			
1.1 Educational Motivation			
1.1.1 Commitment, participation, effort, perseverance 1.1.2 Attitude, behaviour and discipline 1.1.3 Absenteeism	Students will demonstrate - work ethic, work quality - a desire to achieve Students will demonstrate: - a positive attitude towards school - a sense of responsibility Students will demonstrate - regular attendance at class/school	Student interest in their education and academic achievement Quality of student work Number of days present in class/school	a) survey administered to students to access their academic motivation b) focus groups with students c) surveys administered to teachers to access their perception of students academic motivation d) record of student performance and achievement (anecdotal records, report cards and provincial assessments) e) record of attendance
1.2 Academic. Learning			
1.2.1 English, Science, Mathematics, Social Studies, Geography, French, Art, Technology, Music, Health, Personal and Social Development.	Improve student achievement	Results obtained on exams/tests/evaluations: English, Science, Mathematics, Social Studies, Geography, French, Art, Technology, Music, Health, Personal and Social Development.	Summary of student achievement (report cards and provincial assessments)

1.3 Essential Learning Skills			
1.3.1 Communication 1.3.2 ICT 1.3.3 Personal and social development 1.3.4 Culture and heritage 1.3.5 Thinking and reasoning skills (problem solving) 1.3.6 Work Habits	Students will demonstrate - a spirit of collaboration - communication skills - general knowledge - critical thinking skills - work ethic and performance - ICT skills	- Positive learning environment - Cooperation among students - Quality of student work	a) Student survey on ICT competences, work habit, team work... b) Focus group with students c) Teacher survey to access their perception of students' mastery of essential learning skills d) Summary of student achievement (report cards and provincial assessments)

Criteria	Objective	Performance Indicators	Evaluation Methods
2. Teachers			
2.1 Perceptions			
2.1. Perception of teachers on the pedagogy of the integration of ICT in their class	Analyse teacher perceptions towards - the pedagogy of integrating ICT in their teaching - the effect of integrating ICT on student learning	Level of support and belief in - the integration of ICT in their teaching - the effect of integrating ICT on student learning	a) Perception surveys b) Interviews
2.2 Pedagogical Needs			
2.2.1 Professional development and support 2.2.2 Resources 2.2.3 Competencies	Respond to pedagogical needs by - offering PD on a variety of pedagogical approaches - offering materials and resources necessary to meet their needs (books)	- Number of PD days required - Level of satisfaction with PD offered - Level of comfort when putting in practice a variety of pedagogical approaches	a) Questionnaire to analyse needs b) Questionnaire to determine satisfaction and level of competency c) Facilitated interview

2.3 Technological Needs			
2.3.1 Professional Development and support 2.3.3 Resources 2.3.3 ICT competencies	Respond to technological needs by - offering PD on different programs, applications and technological tools - offering the materials and resources necessary to meet their needs (ICT tools, applications) - enriching teacher knowledge and applied use of software applications and technological tools (ICT)	- Number of PD days requested - Number of ICT tools available - Level of satisfaction with PD offered - Level of comfort with ICT competencies and use of technological tools	a) Survey to analyse needs b) Survey to determine teacher satisfaction with their ICT competency c) Interview
2.4 Pedagogical Practices with integrated ICT			
2.4.1 Guiding Principles 2.4.2 Differentiated Pedagogical Practices	Increase the use of integrated ICT in teaching practices	Level of comfort with ICT competencies while implementing a variety of pedagogical methods and teaching approaches	Competency Survey In class observation
2.5 Class management needs			
2.5.1. Professional development 2.5.2. Resources 2.5.3. Class management strategies	Answer specific class management needs with ICT - Offer PD - Offer necessary resources and material Improve learning environment by using a variety of class management strategies	- Level of satisfaction with PD offered - Teachers use of class management strategies that foster a positive learning environment	a) Perception survey b) In class observations

Criteria	Objective	Performance Indicators	Evaluation Methods
3. Administration			
3.1 Perceptions			
3.1.1 Perception of school administration toward the pedagogical use of ICT in school	Analyse the perception of the administration regarding <ul style="list-style-type: none"> - pedagogical use of ICT in their school - effects of pedagogical use of ICT on students 	Level of support and belief in <ul style="list-style-type: none"> - the integration of ICT in learning and teaching practices - the effects of the integration of ICT on students and teachers 	a) Perception survey b) Interviews
3.2 Pedagogical and technical needs			
3.2.1 Professional Development 3.2.2 Resources 3.2.3 ICT Competencies	Answer different pedagogical and technical needs by: <ul style="list-style-type: none"> - Offering PD opportunities related to the integration of different ICT tools to meet curricular needs; - Encouraging and supporting teacher use of ICT tools to enhance teaching and learning 	<ul style="list-style-type: none"> - Number of PD days - Level of satisfaction toward PD offered - Competence in the pedagogical use of ICT tools to meet curriculum learning outcomes 	a) Survey to analyse the different needs b) Survey to determine teacher satisfaction with administrative support c) Interviews
3.3 Leadership			
3.3.1 Positive learning environment 3.3.2 Initiatives/ Activities 3.3.3 Availability and access to resources 3.3.4 Mobilization of school committees	Assure innovative approaches to the development and organization of available resources (ICT, people...) and services offered to teachers in the school and classroom	<ul style="list-style-type: none"> - Number and types of academic and extracurricular resources and activities available in order to answer the different needs of the teachers, students and parents - Satisfaction levels of students, teachers and parents regarding proposed resources and activities in order to foster collaboration between partners 	a) List of resources and activities available b) Satisfaction survey regarding resources and activities provided to student, teachers and parents

3.4 DOE and School Districts			
3.4.1 Partnership between DOE and School District participants	Initiate, establish, and consolidate partnership related to the development of information, organisation and educational activities.	Quantity and type of initiatives, activities and strategies organised to facilitate the partnership between DOE and School Districts.	a) Interviews with principals b) List of initiatives, activities and strategies organised c) Informal meetings between DOE and School Districts
3.5. Community			
3.5.1 Involvement of the community	Ensure the dynamic outreach, understanding and shared ownership of the project in the community	Positive sense of ownership demonstrated by project partners (parents, teachers, students)	Survey project partners Interview

Criteria	Objective	Performance indicators	Evaluation Methods
4. Parents			
4.1 Perceptions			
4.1.1 Perception of parents regarding the pedagogical use of ICT	Analyse parents perceptions towards - pedagogical use of ICT in their school - impact of pedagogical use of ICT on students	Level of support and belief in - pedagogical use of ICT in their school; - impact of pedagogical use of ICT on students	a) Perception survey b) Focus group discussion with parents
4.3 Homework			
4.3.1 Participation of parents	- Increase commitment of parents towards their child's success	- Interest of parents to actively participate in their child's social and academic experience - attendance of parents at school meetings	a) Interest Survey b) Record of parents attendance at meetings