



Calgary Board of Education

Innovative Learning Services

CBE One to One Teacher Laptop Project

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History

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2.1	12/03/07	Joan Kolleywyn	Amendment to Research component



Background

The One to One Teacher Laptop Project has been developed within the context of the Calgary Board of Education's "ends" as documented in the Three Year Education Plan (2006 – 2009) and the Alberta Education's Learning and Technology Policy Framework. This project is further predicated on current understandings of best practice and return on investment. The project involves representation from CBE, specifically participating schools and two service units: Innovative Learning Services and Information Technology Services, Apple Canada, Microsoft Canada, PC Corp and Alberta Education.

All teachers in the Calgary Board of Education have some access to computers. Both CBE and external research however, strongly identifies teacher access to personal computers as a key strategy to enhance teacher practice directed at individualizing and personalizing student instruction and assessment. Connections can also be drawn to enhance professional learning for all teachers when access to personal mobile computing devices is provided. There is a growing body of evidence that aligns mobile computing to a paradigm shift regarding relationships between students and teachers. A study by [Owston and Wideman](#) (2004) showed that "teachers seemed to see changes in three broad areas when using teacher laptops: enhanced communication, better and easier student tracking and record keeping and greater work flexibility." In the same study it was found that since teachers had the ability to access their tablet PCs, in their classroom as they needed to, the results showed more innovative uses of the technology to support student achievement.

Clearly, technology-enhanced environments, supported with professional learning opportunities for teachers and support staff, will assist staff in moving toward more engaging strategies for teaching and learning. Teachers will be involved in collaborative professional development activities to enhance their professional skills in creating and delivering curriculum to students using laptop computers. [Owston and Wideman](#) (2004) found that the most outstanding difficulty encountered in their study on teacher usage of Tablet PCs was "the lack of teacher support for technical, pedagogical, or planning and preparation purposes". This belief about professional development is supported by a similar project by [Valdez](#) (2004), which found that whether or not technology has a positive impact on students depends on the extent to which teachers are given time and access to pertinent computer training. [Valdez](#) (2004) concluded that "schools will continue to be at different stages of technology implementation as long as there are disparities in access to professional development and resources". It is clear that the importance of professional development cannot be overemphasized and will therefore be a driving force of the current project.

In previous research the CBE has embarked on a number of one to one laptop projects with students; however we have not yet fully investigated the area of one to one laptops with teachers. The intention of this project, operating in four phases, is to provide all CBE classroom teachers with laptops over the next four years and to measure impacts on student learning. Phase I began in November, 2006 with the engagement of the CBE's Innovative Learning Services and Information Technology Services, along with Apple Canada, Microsoft Canada, PC Corp and Alberta Education. In February of 2007, schools will be selected based on information found in their particular school development plan. In order to prepare teachers involved in Phase I, professional learning opportunities will be offered from March 2007 to June 2007.

Recent findings from a review of Alberta Initiative for School Improvement 2000-2003 technology projects support this research initiative. The review of AISI technology projects identified the following findings that relate to the planned implementation of this initiative:



- The use of lead teachers who have technological skills improved the implementation of technology within classrooms.
- Teachers respond positively to initiatives that taught them new skills that could be applied immediately
- The presence of physical technology resources encouraged exploration with the technologies.
- Projects that integrated technology into regular curricula were more successful than those that tried stand-alone technological training.

(Stakeholder Technology Branch, 2004)

Research Component

The research component of this project involves representation from CBE, identified schools, Innovative Learning Services and the University of Calgary. Both internal and external research strongly identifies teacher access to personal computers as a key strategy to enhance teacher practice directed at individualizing and personalizing student instruction and assessment. Connections can also be drawn to enhance professional learning for all teachers when access to personal mobile computing devices is provided. There is a growing body of evidence that aligns mobile computing to a paradigm shift regarding relationships between students and teachers.

Purpose

What are the teaching practices of a 21st century teacher?

This project seeks to determine the impact of teacher laptops and technology resources on the changing role of the teacher. What is the impact on teacher practice when one to one computing technology is introduced to teachers in a school?

The project will increase access to learning opportunities for teachers, students and others within the CBE with (i) increased access to technology and (ii) professional learning opportunities. It is believed these interventions will help teachers become better able to adapt their teaching strategies to the different learning styles of their students.

Teachers will have the ability to access interactive educational resources and develop new learning communities for students and colleagues to share information and acquire new knowledge. In addition, this project will investigate how assessment changes if teaching practice changes.

This project is designed to examine the potential for creating technology enhanced environments for teachers and students through the use of one to one teacher laptops.

Research Questions

How does the introduction of a one to one teacher laptops initiative impact and or enhance teaching and learning within project CBE schools?

What is the impact of one to one computing on teacher practice and organizational effectiveness?



Specifically:

- What does the teaching and learning environment look like when teachers have access to one to one technology?
- What strategies do teachers adopt to gain skills required to utilize laptops in their practice?

The following questions will guide the initial research:

- What changes in teaching and learning occur as a result of the one to one initiative?
- What is the potential change on teacher pedagogical practice brought about by the use of one to one technology? How does this ultimately impact student engagement and achievement?
- What forms of professional learning are required for successful implementation?
 - What are teachers' perceptions of professional learning regarding technologies adoption?
 - How might new technologies change professional learning?
 - What might those changes mean to professional learners?
 - What professional learning strategies must teachers adopt to embrace the challenges of 21st century teaching and learning?
- What resources are necessary to support teachers in making positive pedagogical changes? (e.g. Teaching resources, teaching and learning, infrastructure resources, professional development)
- What are the formal and informal strategies teachers employ to gain new technology skills (e.g. what are teacher's personal learning strategies, how are teachers using the 1-2-1 technology both in and out of the classroom)?
- What is the impact on teacher interaction when one to one laptops are introduced? (e.g. how do teachers collaborate using one to one technology?)
- What is the impact of the one to one teacher laptop initiative on the CBE organization?
 - What does organizational readiness look like?
 - What conditions need to be in place?
 - What are the roles of principals and administrative leadership at all levels of the organization?
 - How does this research inform the CBE 3-year plan?
 - What does system readiness look like between and among areas, schools, and teachers?
 - Is there a gap between a schools' philosophy and the lived experience of its members in terms of readiness?
- What is the role of technology support in terms of teacher adoption / use of one to one technologies.

Goals and Objectives

- To determine impact of technology on student learning



- To determine the impact and changes on teacher pedagogical practice.
- To identify the professional learning needed for successful implementation of teacher technology in an educational context.
- To determine the demands on technical support in terms of time and type of support.
- To determine teachers' perceptions of professional learning regarding use of various technologies and applications.
- To identify changes in professional learning strategies. How will new technologies change professional learning and what does it mean to be a professional learner?
- To identify personal learning strategies for teachers that may not be directly related to teaching.

Critical Success Factors

- Determination of current practice regarding teacher experiences with laptops in the classroom
- Whole school participation in documenting effects of laptops
- Leadership support throughout the district for new professional learning models, new working contexts and new approaches to student learning

Research results will support achievement using wireless computers and will determine how this technology is used to enhance teaching and learning in the classroom as well as the impact on teacher practice and organizational effectiveness.

Research Plan

Using both graduate students from the University of Calgary and members of the ILS team, a mixed methods approach (online surveys, case studies, focus interviews, and classroom observations) would be developed. Deliverables will consist of regular small reports to inform the iterative design of this research. These small reports will be compiled into annual reports and a final, project report. The lead researcher will retain the right to use research findings in publications and presentations in collaboration with other participants.

Step One:

- Apply for Ethics from University of Calgary and CBE
- Participate in Steering Committee Meetings
- Work with ILS team to develop online tool for teacher self-assessment of ICT readiness, knowledge, skills, and abilities

Step Two:

- Work with ILS team to prepare literature review



- Obtain access to school development plans
- Meet with hardware vendors to determine professional development (PD) / workshop plans
- Distribute consent forms to teachers and school administrators involved in project
- Administer online ICT teacher self-assessment tool. Establish a baseline of ICT skills among participants. This self-assessment will be administered at intervals during three years of the project.
- Work with ILS to develop individual participant BLOGs to be used as a tool for reflection (on PD, personal growth, classroom activities, etc.) and communication among participants / researchers

Step Three:

- Analyze literature, school development plans, PD goals, etc. to determine the *Stated Intentions* of one to one initiatives (goals, objectives, claims, purpose)
- Where relevant, draw on experience / findings from the University Elementary School one to one initiative and other student one-to-one projects within the CBE
- Use *Stated Intentions* as a framework for classroom observations – *Actual Practice*
- Document classroom observation periodically and map activities to changes in teacher ICT self-assessment and PD activities
- Analyze the *Gap* between the *Stated Intentions* and *Actual Practices* found in the schools
- Report on gap and link to issues of school organization and site administration

Step Four:

- Hold focus group interviews with teachers concerning issues arising from *Gap Analysis*
- Hold focus group interviews with administrators concerning issues arising from *Gap Analysis*
- Hold focus group interviews with PD providers concerning issues arising from *Gap Analysis*

Step Five:

- Continue the methodology above at regular intervals during the 3-years of the project

Communications Strategies:

Research will be shared in both face-to-face and virtual activities coordinated by Innovative Learning Services and the University of Calgary. All findings will be made available through <http://projects.cbe.ab.ca/sss/ilscommunity> in the research centre located there. There may also be opportunities to bring focus through CBE and U of C participation on STAC, TAG and JTC regarding this initiative and in conferences and councils nationally that have distributed and integrated technology as a focus.

Within the Calgary Board of Education

Information and discussion regarding this project during the implementation phases and at the conclusion of the project will be shared through internal communication networks such as the CBE staff intranet, Communities of Practice, and in Systems Communications. There will also be opportunities to present updates and analysis at the CBE Information Management and Technology Council, at Divisional Meetings and at Educational Technology Liaison meetings. All senior leaders of CBE will be provided a final report.



Beyond CBE, there will be School Based leaders, Directors, Specialists and Consultants attending workshops, conferences and meetings who will be willing and able to share information regarding this project and research findings.

Methodology

A steering committee consisting of representatives from Apple Canada, Microsoft Canada, PC Corp, Alberta Education, ILS and ITS will be created and will meet regularly. A sub committee consisting of school principals, ILS and ITS will also be formed. Identification of lead teachers from each school will be made as schools are selected. The expectation is that these teachers will assist in coordinating activities within their own school. The remaining three phases will incorporate and build on findings from Phase 1.

- Pre and Post Focus Group interviews with teachers, teacher leaders, and administration
 - generate and analyze anticipated and perceived successes and challenges of using teacher laptops;
 - gather perceptions of the impact of using laptops on student learning and on their role as teachers
 - gather baseline information from teachers on competency and ease of computer use.
- Pre/post teacher, teacher leader, and administration surveys
 - determine perceptions of teachers regarding their comfort and ability with laptops to enhance learning and teaching
 - determine teachers' familiarity with the use of computer applications in the classroom to enhance student learning and achievement
- Teachers, teacher leaders, and administrators documenting reflections and observations and impacts on professional practice regarding:
 - the use and integration of this technology into classroom practice
 - the use and integration of this technology into administrative practice
 - in relation to changes in teaching practice, determine changes in assessment strategies
- Determine the impact of professional learning opportunities provided for teachers to assist them in this project. Sustained support will be available to teachers and staffs involved in the project.
 - Ongoing support provided by Apple Canada / Microsoft Canada in the form of workshops
 - Ongoing support provided by ILS specialists in the form of workshops, one on one assistance, online community of practice and school visits for the duration of the project
 - Opportunities for teachers to collaborate in an online environment
 - Workshops developed through collaboration with teachers



Opportunities for investigating research strategies will be facilitated through ILS to assist teachers, teacher leaders and administration with documentation strategies in support of their action research initiatives.

Professional learning opportunities will be provided for teachers to assist them in this project. Sustained support will be available to teachers and staffs involved in the project.

- Ongoing support provided by Apple Canada / Microsoft Canada in the form of workshops
- Ongoing support provided by ILS specialist in the form of workshops, one on one assistance, online community of practice and school visits for the duration of the project
- Opportunities for teachers to collaborate in an online environment
- Workshops developed through collaboration with teachers

Method: based on collection of quantitative and qualitative data collected from teachers

- Classroom observations of pedagogy and technology use
- Surveys, interviews
- Pre and post data and observations

Roles and Responsibilities

Apple Canada will:

- help to facilitate the provision of content expertise, multimedia and media resources strategies
 - examine how they can work with teachers differently than they have in the past to extend educational opportunities
 - identify specific resources and provide access to facilitators within the organization
- work collaboratively with Innovative Learning services in order to appropriately and effectively design professional learning activities
- work collaboratively with ITS to trouble shoot hardware and software issues

Microsoft Canada will:

- help to facilitate the provision of content expertise, multimedia and media resources strategies
 - be partners in learning with this project
 - examine how they can work with teachers differently than they have in the past



to extend educational opportunities

- identify specific resources and provide access to facilitators within the organization
- work collaboratively with Innovative Learning services in order to appropriately and effectively design professional development activities
- work collaboratively with ITS to trouble shoot software issues

PC Corp will:

- help to facilitate technical and software support
- work collaboratively with ITS to trouble shoot hardware issues
- work collaboratively with ILS to provide professional learning opportunities, including those relating to best practice in the practical/technical use of laptops
- make recommendations on laptop models
- assist with deployment of laptops though planning, procurement, imaging with approved CBE image, warehousing and executing deployment.

Innovative Learning Services will:

- provide project management and coordination
- be the research lead
- provide office and administrative support for the initiative
- build a research component to measure outcomes and map new directions
- support professional learning needs within the learning communities

Information Technology Services will:

- provide installation and technical support for the initiative
- ensure reliable working environment
- plan and deploy supporting technical infrastructures
 - wireless strategy



- support the research initiative
- support delivery of the devices with PC Corp and Apple Canada

Alberta Education will:

- Work closely with ILS and ITS on this research initiative
- Provide updates and research information on related projects within the province
- Participate in research analysis

University of Calgary will:

- Co-lead the research with ILS designate
- Obtain ethical clearances from University of Calgary and CBE
- Participate in steering committee meetings
- Collaborate with ILS research team in data collection
- Collaborate with ILS research team in data analysis
- Collaborate with ILS research team in report preparation

Regular reporting to area directors and superintendents will occur.

Participation Criteria

Development Phase

- Collaboration and support between ILS, ITS, Apple Canada, Microsoft Canada and PC Corp

Phase 1

Selected schools will have submitted proposals based on the following requirements:

- Whole school initiative
- Interest in improving student success
- Measurable outcomes that are in line with School Development Plans
- Teachers and administrators interested and engaged in the pilot.



- Teachers and administrators in support of collecting and sharing data emerging from assessments.
- Schools in support of gathering, compiling and submitting data for analysis based on the research protocol
- Participating teachers interested in participating in professional learning opportunities
- Planning committee interested in participating in identified planning and review meetings.
- Wireless LAN implemented in school

During this phase participating teachers and administrators will:

- have access to timely and appropriate professional learning opportunities and software training to successfully use the technology
- have access to a variety of resources
- have access to internal technical support within each school to support this project (through ITS)

Phase 2, 3 and 4

Interested schools will submit proposals as above

- Implementation of laptops in remaining schools over three years
- Continued support from ILS, ITS, PC Corp, Microsoft Canada and Apple Canada



Activity Timeline

Activity	Date	Achieved
Preliminary meeting with ILS and ITS Steering committee	January 18, 2007	January 18, 2007
Steering Committee Meeting	February 6, 2007	February 6, 2007
Steering Committee Meeting	February 16, 2007	February 16, 2007
Short List of qualified schools	February, 2007	February
Identification of participating schools and teachers	February, 2007	February
Communication plan development with ITS and ILS	February, 2007	ongoing
Develop technical support model	February, 2007	ongoing
Develop deployment plan	February, 2007	ongoing
Order Technology	March	
Steering Committee Meeting	March 6, 2007	March 6, 2007
Communication to Principals	March 14, 2007	March 14, 2007
Initial Meeting with principals, area directors, steering committee	March 23, 2007	March 23, 2007
Steering Committee Meeting	March 23, 2007	March 23, 2007
Order technology	March, 2007	
Pre survey teachers	April, 2007	
Deploy laptops to schools	April, 2007	After spring break
Models for professional learning identified	March - June	
Phase II Launch	June	
Phase II Deployment	August/September 2007	
Phase III Deployment	August/September 2008	

Sign Off

CBE One to One Laptop Project



The following signatories approve this project to proceed as defined in this document.

Name/Position	Signature	Date
Cathy Faber Director Innovative Learning Services		
Cindy Seibel Director Information Technology Services		
Stéphane David Apple Canada		
Steve Knight Microsoft Canada		
Eldon Morrison PC Corp		
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Joan Kollwyn Innovative Learning Services		
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