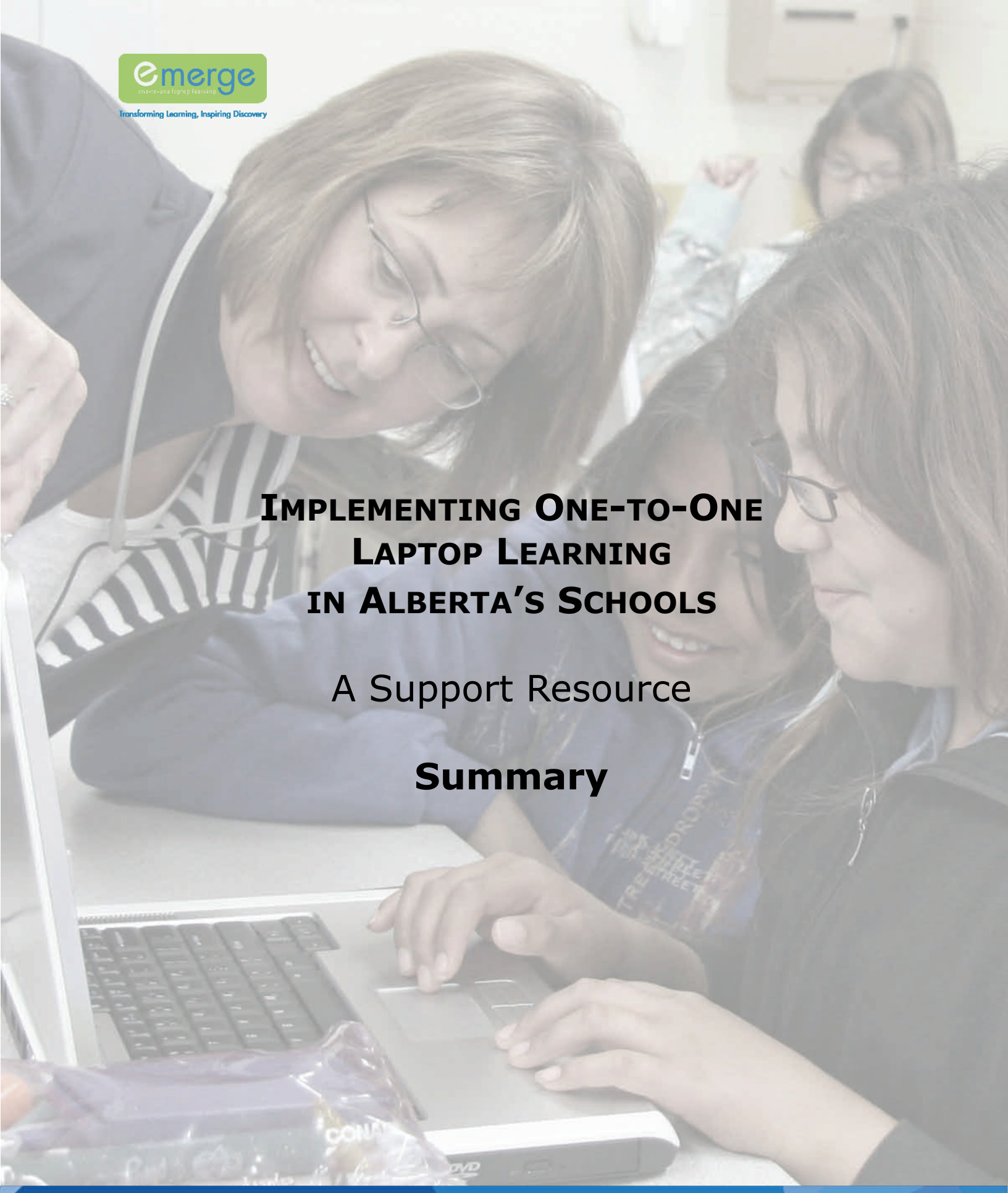

emerge
one-to-one laptop learning
Transforming Learning, Inspiring Discovery

Implementing One-to-One Laptop Learning in Alberta's Schools

A Support Resource

Summary

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Implementing One-to-One Laptop Learning in Alberta's Schools: A Support Resource Summary

This document is available on the Internet at: http://www.education.alberta.ca/admin/technology/emerge-one-to-one.aspx.

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ALBERTA EDUCATION CATALOGUING IN PUBLICATION DATA

Alberta. Alberta Education. Learning Supports Sector.
Implementing one-to-one laptop learning in Alberta's schools: a support resource: summary.

ISBN 978-0-7785-8604-3

1. Computer-assisted instruction. 2. Laptop computers. 3. Mobile computing – Education.
4. Educational technology – Alberta. I. Title.

LB1028.5 A333 2010 *371.334*

TABLE OF CONTENTS

PURPOSE

A Support Resource

This document is intended to help educators successfully implement one-to-one laptop learning in Alberta's schools. Help is offered in the form of promising practices and related strategies, tips and tools, and case studies. The information provided in this resource was compiled using the lessons learned by educators in Alberta who are currently implementing one-to-one laptop learning through the *Emerge One-to-One Laptop Learning Project* (2006-2010).[i]

This resource is intended to help educators successfully implement one-to-one laptop learning in Alberta's schools.

EMERGE PROJECT: BACKGROUND

Overall Aims and Objectives

Alberta Education initiated the *Emerge Project* in response to a growing trend toward one-to-one laptop learning. This research-based initiative involves over 2500 students and approximately 170 teachers in 49 schools across 20 school jurisdictions in Alberta. Each of the twenty projects aims to

- enhance teaching and learning for specific student populations and/or
- improve student learning in targeted areas.

The overall objectives of the *Emerge Project* are

- to investigate the potential educational benefits of one-to-one laptop learning;
- to identify technical merits and innovative practices in one-to-one laptop learning;
- to share expertise, experience and lessons learned related to one-to-one laptop learning; and
- to inform and support one-to-one laptop learning implementations within Alberta's learning system.

The Emerge Projects aim to

- ***enhance teaching and learning for specific student populations and/or***
- ***improve student learning in targeted areas.***

emerge
1:1 wireless learning
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The *Emerge Project* is scheduled to be completed in August 2010 with final research results published soon thereafter. An educational summit

will be held in August 2010 where participants from around the world will share research, lessons learned and best practices about one-to-one laptop learning.

One-to-One Laptop Learning Environments Described

One-to-one laptop learning environments differ somewhat from school to school but essentially these environments provide each teacher and student with anytime, anywhere access to a computing device as well as teaching and learning tools and resources. While at school, the computing devices are connected to a local area network and the Internet via a wireless connection. These environments facilitate personalized approaches to teaching and learning that are inquiry based, collaborative and focused on student needs and interests.

One-to-one mobile computing environments are often characterized as personalized, that is, teaching and learning is inquiry based, collaborative, and focused on student needs and interests.

Site-based Goals

Each *Emerge Project* site is striving to attain goals specific to their unique contexts. Many of the participants' goals have evolved over time, and may include some or all of the following:

- improve the attainment by students of 21st century skills;
- build a foundation based on the concept of digital citizenship;[ii]
- improve student learning in other areas including inquiry-based learning, reading and writing skills, digital literacy, inventive thinking, problem solving, and communication and presentation skills;
- improve student engagement and achievement in core subject areas through universal design for learning and by involving students in authentic learning using a variety of technologies;
- improve students' French language competencies and explore the benefits of connecting with the Francophone community and others through the use of laptop learning in school, at home and in the community;

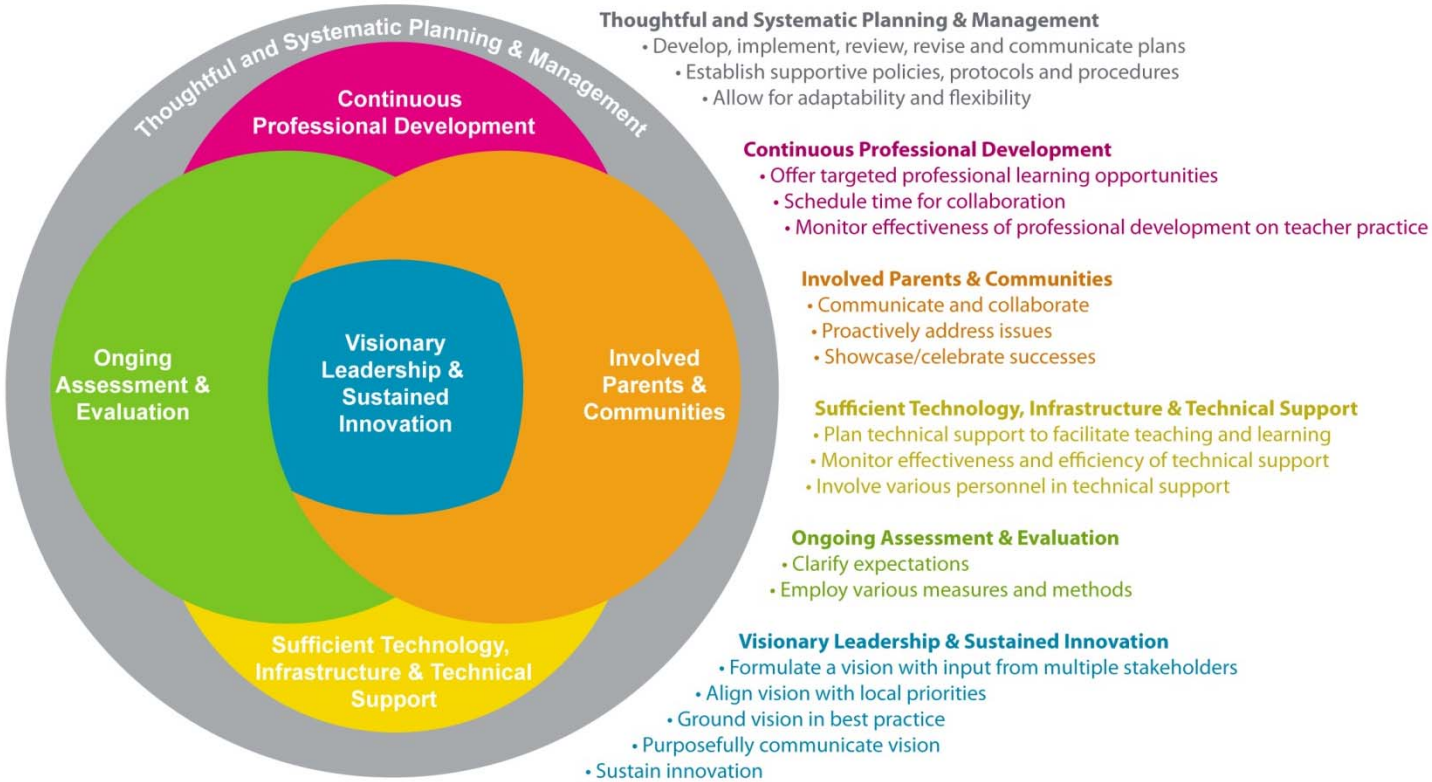
Emerge Project participants identified a variety of goals for one-to-one laptop learning; goals primarily related to student engagement, retention and achievement; teacher practice; school culture; and community involvement.

- engage students in self-directed learning through the use of differentiated instruction;
- re-engage at-risk students;
- meet the diverse needs of junior high students in multi-age classrooms in low-population rural communities;
- explore assessment for learning strategies;
- investigate the benefits of using assistive technologies to enhance teaching and learning among students with diverse learning needs with a focus on English as a second language, and First Nations, Métis and Inuit (FNMI) learners;
- foster a model of cooperation and collaboration within an environment that promotes sustainability;
- promote communication and the use of online collaboration tools.[iii]

EMERGE PROJECT: LESSONS LEARNED

Much has been learned by *Emerge Project* participants in their work to achieve their goals. In August 2009 *Emerge Project* participants, including district and school level administrators, project leads, technical personnel, educators, researchers and departmental staff, shared the lessons they had learned during the first two years of the project. Their compiled reflections were analyzed and can best be described in terms of six related areas of promising practice for the implementation of one-to-one laptop learning (see Diagram 1). Table A describes these promising practices in more detail. These promising practices and related strategies are not intended to prescribe a specific implementation approach. It is hoped, however, that those interested in implementing one-to-one laptop learning will consider using those approaches that are appropriate to the unique contexts within their jurisdiction and/or school. (For a thorough discussion of these promising practices see the complete resource. Appendix A lists resources that further support the implementation of laptop learning.)

Diagram 1: Promising Practices Overview



Visionary Leadership & Sustained Innovation

Emerge Project participants concur that to sustain innovative one-to-one laptop learning environments, it is important for leaders at every level within the jurisdiction, school, classroom, home and community to collaborate to

- formulate a vision with input from multiple stakeholders,
- align that vision with local priorities,
- ground that vision in best practice, and
- purposefully communicate that vision.

Participants' specific recommendations in each of these areas are provided below.

Promising Practices	Suggested Strategies
Formulate vision with input from multiple stakeholders	• *Use an inclusive process by involving all stakeholders who will be impacted by the one-to-one laptop learning program.* • *Allow sufficient time to develop the vision.* • *Develop a culture of collaboration.* • *Facilitate shared decision making.* • *Avoid teacher isolation and organizational silos.*
Align vision with local priorities	• *Ensure the vision is a jurisdictional priority.* • *Blend emergent ideas from several school-developed visions.* • *Align vision with accountability pillars, school and district priorities, 3-year education plans, classroom goals, community needs, the needs of 21st century learners and complementary projects.* • *Address concerns related to continuity of one-to-one access after students leave a specific grade or school where one-to-one laptop learning is being offered.* • *Address equity of access issues where feasible. Carefully consider the implications of access to wireless computing for some versus all within a school and/or jurisdiction.*
Ground vision in best practice	• *Review research, make site visits and talk to experts.* • *Explore proven instructional practices related to developing 21st century skills.* • *Determine level of readiness in terms of teacher confidence with technology and curricula.*

Promising Practices	*Suggested Strategies*
Purposefully communicate vision	• *Broadly and purposefully communicate the vision among all stakeholders. Ensure the vision is shared when new staff come on board, and when new students and parents become involved.* • *Provide clarity in terms of the vision and related expectations.*
Sustain innovation	Effectively manage organizational change and ensure that sufficient technical infrastructure and professional development supports are in place to realize the necessary transformation in teaching and learning. For example: • Allow use of and develop supporting policies around staff- and student-owned devices. • Consider use of alternate wireless devices with Internet capabilities. • Advocate for continued use of one-to-one laptop learning among all students within a school and/or jurisdiction. • Consider start-up and/or user fees for incoming students to offset costs of implementing one-to-one laptop learning including the costs associated with replacement batteries, damaged equipment and cords, etc. • Identify minimum infrastructure standards for one-to-one laptop learning and then pursue some combination of provincial licensing, grants, annual student technology user fees, open-source agreements, tax credits for families buying digital devices for educational use, and other cost reduction strategies to sustain the program. • Buy laptops instead of desktops when ever-greening school technologies. • Revise three-year technology/school plans to consider digital citizenship, wireless networks, personal-owned devices, and/or the building a portal or repository of digital resources as appropriate.

Thoughtful and Systematic Planning and Management

Emerge Project participants agree that planning is a necessary and complex effort, the importance of which cannot be underestimated. In many cases, schools spent much of their first year planning as they went. Few schools were able to adequately prepare their teachers in advance of the roll out of the equipment. Upon reflection, participants advise that more time could have been devoted upfront to plan and prepare. Specific recommendations are summarized below for the thoughtful and systematic planning and management of one-to-one laptop learning, including the need for those plans to be adaptable and flexible.

Promising Practices	*Suggested Strategies*
Develop, implement, review, revise and communicate plans	• Allow sufficient lead time for planning and preparation. Consider year one to be a developmental year. • Create a steering committee with representation from key stakeholder groups. • Articulate and seek affirmation on the vision and guiding principles. • Develop a charter and action plan. Clearly delineate expectations, required resources, risks and risk mitigation strategies, and timelines. • Broadly communicate your plans via electronic, print and face-to-face means. • Anticipate high demands for technical support personnel, especially during the first year, even if your wireless network is already operational and laptops are in use in your school. • Articulate ongoing regularized meeting schedules and required attendees. • Ensure smooth technical roll-out. Provide teachers with at least 4 months lead time with the technology. • Plan for sustainability from the outset.
Establish supportive policies, protocols and procedures	• Establish policies, protocols and procedures and seek cooperation of staff regarding their use. • Revise policies, protocols and procedures as needed.
Allow for adaptability and flexibility	• Build in planning review cycles and revise plans as necessary. • Ensure plans are flexible and can be adjusted as needed. Allow for the need for emergent meetings. • Allow for contingency costs in budgets. • Proactively address issues associated with technical, pedagogical or administrative staff turnover.

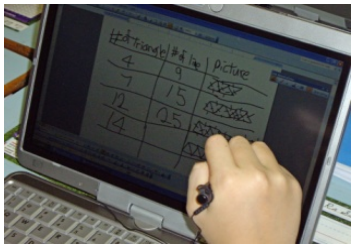
Continuous Professional Development

Emerge Project participants believe that professional development opportunities need to be targeted to educators' needs and contexts as their professional practice evolves. Another shared belief is that more time for collaboration among teachers is needed to more fully realize the potential for one-to-one laptop learning in the classroom. It is also believed that ongoing assessment and evaluation of the desired outcomes of professional development and educator collaboration opportunities is needed to more fully understand their impact on evolving teacher practice in one-to-one laptop learning environments. *Emerge Project* participants offer their specific suggestions in each of these three areas below.

Promising Practices	*Suggested Strategies*
Offer targeted professional learning opportunities	• Provide advanced preparation and training for teachers prior to implementing one-to-one laptop learning. • Target professional learning opportunities to each educator's needs and contexts. This may be accomplished by designing professional development programs that can be personalized by each educator. For example: – Offer professional development opportunities that help teachers design 21st century learning environments that enable students to effectively use technologies. – Employ a variety of technologies during professional development activities and ensure that technology supports and assistance are available onsite. – Provide a range of professional development experiences for novices and experts alike. – Allow for continuous entry by educators into an array of professional development opportunities. – Provide teachers with access to professional development coaches and/or educational technology integration specialists.
Schedule time for collaboration	• Provide teachers with regular and ongoing opportunities for collaboration to co-develop lessons and units, plan projects, and share successes, problems and solutions. The key is to ensure teachers are not isolated. • Coordinate timetables to allow for collaborative planning among teachers, schools and districts. • Increase opportunities for the development and growth of school-based communities of practice.
Monitor effectiveness of professional development on teacher practice	• Although *Emerge Project* participants did not offer specific suggestions about how best to monitor the effectiveness of professional development on teacher practice, several tools are being employed to monitor the evolution of teacher practice and the impacts on student learning (see the complete resource for more details).

Sufficient Technology, Infrastructure, and Technical Support

Emerge Project participants share a common belief that the facilitation of teaching and learning need to drive technology, infrastructure and technical support decisions. Participants also shared common experiences which are characterized by the following participants' quotes: "we didn't know what we didn't know" and "we underestimated our needs and the costs associated with technical support, especially during the first year of implementation." Their advice regarding technology, infrastructure and technical support planning is captured below.



Promising Practices	*Suggested Strategies*
Plan technical support to facilitate teaching and learning	• Focus technical supports on facilitating teaching and learning by using an inclusive process to determine technical support needs; involving teachers in the design of laptop images and in the identification of standard technologies for use in classrooms and during professional development sessions; discussing the pros and cons of web site filtering and other technical controls and approval processes; acquiring a variety supporting technologies; employing enterprise[1] wireless equipment and ensuring its operation before network use is required in classrooms; minimizing security issues (e.g., split networks, guest access); and involving technical support personnel in "communities of practice." • Accurately estimate the technical requirements and the amount of technical support required for the project, especially during the first year of implementation. Although technical requirements and support needs varied among jurisdictions and schools depending on their level of technical sophistication and confidence, several participants suggested their needs were underestimated. • Plan for sustainability.
Involve various personnel in technical support	• Provide necessary training for all technical staff. • Ensure local, onsite and jurisdictional technical personnel collaborate on a regular basis (i.e., avoid "silos"). • Nurture trusting relationships among teachers and technical support personnel. • Complement the efforts of just-in-time onsite technical support personnel by mentoring and training teachers and students; outsourcing additional technical support on as-needed basis; and using various means to communicate technical support information at a distance.
Monitor effectiveness and efficiency of technical support	• Use a variety of tools and processes to monitor the effectiveness and efficiency of technical support.

[1] *Equipment capable of handling the loads imposed on it by a large-scale network.*

Ongoing Assessment and Evaluation

Participants stress the importance of clarifying teacher and student expectations, and employing a wide variety of formal and informal measures and methods of assessment to accurately and fully evaluate the impacts of one-to-one laptop learning on student learning. Among these measures and methods, *Emerge Project* participants are increasingly recognizing the value of assessing student engagement and the attainment of 21st century skills using anecdotal and observational data. Participants offer the following advice.

Note: This section primarily refers to the ongoing assessment and evaluation of student learning. See previous sections for more information about assessment and evaluation of implementation plans, evolving teacher practice, and technology-related aspects of one-to-one laptop learning.

Promising Practices	*Suggested Strategies*
Clarify expectations	• Clearly delineate academic, pedagogical, and technical expectations for students and teachers.
Employ various measures and methods of assessment	• Employ a combination of formal and informal measures and methods to accurately and fully measure the impacts of one-to-one laptop learning on student learning. *Emerge Project* participants are using pre- and post-assessments, assessments developed either in-house, at the jurisdictional level or available commercially as well as standardized assessments. "Assessment FOR Learning" principles are guiding many participants' assessment decisions. • Ensure measurements are made over time as results may not show up during early stages of implementation due to "growing pains."

Involved Parents and Communities

Several *Emerge Project* participants suggest that parents and communities are excited about one-to-one laptop learning primarily due to school and jurisdictional staffs' efforts to regularly communicate and collaborate with them, to proactively address their issues (e.g., equity, acceptable use, and language barriers), and to showcase and celebrate successes along the way. Specific suggestions for involving parents and communities are provided below.

Promising Practices	*Suggested Strategies*
Communicate and collaborate	• Establish a collaborative environment by involving students, staff, parents and communities from the outset. • Clarify expectations for students and parents. • Use student-led and parent-teacher conferences, parent information sessions, parent open houses, town hall meetings, project kick-offs and parent council meetings to provide progress updates, to address concerns, to demonstrate how technologies are being used to support teaching and learning and to celebrate successes.
Proactively address issues	• Seek parental and community input and feedback on one-to-one laptop learning on a regular basis (e.g., satisfaction surveys). • Disseminate and discuss acceptable use agreements/policies at parent information sessions. Encourage parents to monitor laptop use at home and discuss concerns related to excessive use of laptops at home (e.g., gaming). • Consider how you will deal with equity issues should they arise (e.g., consider using laptop carts for use by students in non-project classrooms, consider using student-owned devices, consider funding for lower student-to-computer ratios, consider using parent council funds where available to purchase laptops, consider having students and/or classes share laptops, consider replacing desktops with laptops during technology ever-greening cycles). • Address language issues that might be prevalent in communities with large English-as-a-second-language populations. This might entail having translators available, distributing materials in multiple languages and/or extensively involving students in the dissemination of information to the home.
Showcase and celebrate successes	• Showcase successes and impacts on student learning (e.g., use videotaped interviews with students to raise awareness among the broader school community about how student learning is changing, prepare information sheets that explain how various Web applications are being used in the classroom). • Host biannual parent information meetings. • Provide opportunities for stakeholders to see students demonstrate what and how they are learning. • Contact local newspapers and radio stations to help get the message out to the school community.

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APPENDIX A: ONE-TO-ONE LAPTOP LEARNING RESOURCES

Articles, Books, Papers and Reports Used by Emerge Project Participants

1. Alberta Assessment Consortium (prepared by GWM Consulting Ltd.; "The Power of Assessment FOR Learning: Final Report;" (Jan 2003); http://www.aac.ab.ca/public/PowerofAssessment.doc; Retrieved Oct 2009
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3. Alberta’s One-to-One Wireless Learning Community of Practice; http://www.1to1alberta.ca/
4. Anytime Anywhere Learning Foundation: http://www.aalf.org/
5. Ed Coughlin (Senior Vice-President, Metiri Group, with expertise in Universal Design for Learning as well as the use of student engagement assessment tools); http://www.metiri.com/ed.html
6. Epearl (Electronic Portfolio Encouraging Active Reflective Learning); http://grover.concordia.ca/epearl/en/index.php
7. FAME (a program that logs technical requests); http://www.fameassets.com/
8. Faronics Deep Freeze; http://www.faronics.com/html/Deepfreeze.asp
9. Flip Cameras; http://www.theflip.com/
10. Gates-MacGinitie Reading Tests; http://www.sedl.org/cgi-bin/mysql/rad.cgi?searchid=177
11. iLife Tools; http://www.apple.com/ilife/
12. Jamf; http://www.jamfsoftware.com/
13. Metiri Group; www.metiri.com and http://www.metiri.com/alberta.html
14. Moodle; www.Moodle.org

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16. Survey Monkey; http://www.surveymonkey.com/
17. The Learning Bar (Survey Tools); http://www.thelearningbar.com/
18. Trend Micro ("PC-Cillin") Internet Security; http://store.trendmicro.com/store/tmamer/Content/pbPage.LandingTIS2010_enCA?gclid=CIOUhb7jpp0CFRPyDAodqTeS3A&channel=con_sem&WT_srch=1&WT_mc_id=CON14046300&ef_id=2233:3:s_d3306b0c987c81bf30bf7bfc24e7af4b_3250469824:SspbT0NIYXsAAAllgIcAAAKA:20091005204711
19. VCAlberta; http://www.vcalberta.ca
20. Voice Threads; http://voicethread.com/#home
21. Webroot Spysweeper; http://www.webroot.com/En_US/land-three-up-offer.html?rc=4929&s_kwcid=TC|9259|spysweeper||S|e|3713196950
22. Writer's Companion; http://www.writerscomp.net/, http://www.writerscomp.com/Downloads.htm

ENDNOTES

[i] *For more information about the Emerge One-to-One Laptop Learning Project, see http://education.alberta.ca/admin/technology/emerge-one-to-one.aspx.*

[ii] *Digital citizenship refers to the appropriate uses of technology.*

[iii] *These goals are similar to those reported in "1:1 Computing: A Guidebook to Help You Make the Right Decisions" (2005). The authors found the following goals common to one-to-one mobile computing programs:*

- *To improve equity of access to technology.*
- *To improve the quality of learning.*
- *To institute and support best practice in technology integration.*
- *To improve student learning of content.*
- *To institute formative assessments and differentiated instruction.*
- *To increase performance on standardized tests.*
- *To improve students' ability to become lifelong learners.*
- *To prepare students for the world of work.*
- *To improve the home-school connection.*