Extending the Landscape and Enlarging the Vision: Pedagogy, Technology, and Innovative Practices in a Digital World

**A Pilot Study of
Local Innovations in Ontario School Boards
Round 2**

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Final Report

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Executive Summary

In the 2013 (Round 2) pilot study, all English-language and French-language school boards and one Provincial School participated in projects on effective practices for teaching and learning in a digital world. The intent of this initiative is to build on the work and learning from the 2011-2012 pilot study, *A Shifting Landscape: Pedagogy, Technology, and the New Terrain of Innovation in a Digital World.* Given the diversity between and among the ninety (90) projects, the research team continued to use a landscape metaphor as a framework for the report and to present the results.

In Round 2, participating school boards implemented diverse projects that seem to reflect the importance of technology as a support to effective teaching and learning in the 21st Century. A brief description of each project is contained in Appendix A. Each project was required to submit both an interim report and a final report that described their focus and outcomes. Along with detailing the data received from each individual project, the research team presents information about the impact of the pilot among and between projects based on the parameters established for the study. The parameters fall into two categories: Category A projects have the theme areas: vision; digital citizenship and literacies; innovative teaching practice; student engagement, culture, and achievement; learning environments; and parent and community engagement. Category B projects focus on the broad headings: pedagogy; learning environments and technology; and leadership.

The prime innovation focus of projects for Round 2 under both Categories A and B is on improving, strengthening, extending, and sometimes transforming the instructional core, with students at the heart as important partners and active agents in the inquiry and continuous improvement process. Round 2 projects continue to provide impact evidence related to the role of technology in teaching and learning.

Building on the research focus of Round 1, a central interest in this further study is to gather additional information on teaching and learning impact evidence and to gain insights into the role of technology in changing teaching practice and strengthening student engagement, learning, and achievement. A particular interest is for pilots to identify projects suited to system scaling and sustainability.

The magnitude of the pilot study is exemplified by the data reported by all projects indicating the potential impact on students, teachers, and schools. The reported data identifies the involvement of over 100 000 students, over 4500 teachers, and over 1600 schools in the diverse range of activities implemented in the school boards throughout Ontario. It should be noted that several pilots focused on teacher professional learning, system organization and policies, and infrastructure, and as such, must be considered when gauging learner impact or interpreting the numbers provided in the project reports.

While the quantitative data provided information about the scope and involvement for the initiative, the project reports tended to capture details for a rich qualitative description related to teaching and learning in a digital world.

The research team used a collective case study method to report on the theme areas, challenges, and highlights between and among projects. The data analyzed in this final report is drawn from school board

responses to the project-reporting template that provided a common and consistent framework for the research team to document individual projects. We also utilized project leaders and other participants' responses to the interview questions posed by field researchers that formed the basis of conversations for site visits, as well as information from phone conversations.

In structuring the report for Round 2, the research team returned to the three items that Fullan (2012, 2013) notes as necessary to consider together as we move into a new improvement cycle in education for the 21st Century and which were used as major headings in the 2012 final report. They are pedagogy, technology, and change.

In general, there was a repeated and accepted acknowledgement that the education community is making inroads that effectively integrate technology, pedagogy, and learning. There was consistent and clear evidence across projects that pedagogy is the driving force for technological innovation. This represents a positive approach to student engagement, student achievement, professional learning, and board-wide systems thinking. Through these projects, school boards are investigating and implementing new organizational structures that embed coordinated approaches to using technology. Also, school boards are in the early stages of aligning departments and jurisdictional responsibilities to enable system-wide approaches to 21st Century teaching and learning.

Observations from field researchers noted that educators continue to embrace change and enlarge their vision of teaching and learning. The professional activities are shifting from a focus on teachers understanding how to use hardware and software for instruction to building teacher confidence and sense of efficacy in using digital technology as teaching and learning tools. There seems to be greater awareness that technology plays an increasingly critical role in intensifying student engagement and in amplifying student voice. A number of projects defined a positive learning environment as one that includes facilitative teaching, personalized learning, differentiated instruction, and where 21st Century skills are developed and valued.

In the final reports, school boards were asked to state their successes, challenges, and key findings, and to identify their next steps and planned directions based on their experiences and learning from the pilot. A summary of each project's report is contained in Chapter 3.

It is interesting to note that many of the challenges highlighted in this study are similar to the ones reported in the 2012 study. However, it appears that many of the questions reported under those challenges have transformed over the course of one year to a more informed vision of what it means to engage in 21st Century teaching and learning. The difference the research team notes from the 2012 study is that there is an increased sense of excitement and enthusiasm. As well, there is a more concrete direction emerging in terms of sustainability and scalability across the panorama that comprises the convergence of pedagogy and technology in a diverse provincial landscape.

Embracing a spirit of inquiry and collaboration through increased interaction among students and teachers, students and their peers, and among teachers and their colleagues was noted as a positive step toward 21st Century skill development in several school boards. School boards reflected on the importance of integrating professional development initiatives and curricular directions. There seems to be an understanding that

building capacity in digital teaching and learning among teachers and school board personnel will lead to the sustainability of educational initiatives. In this way, projects will increasingly become scalable across schools, school boards, and the province as a whole.

There appears to be a change in understanding of the importance of shifting projects from classrooms and schools to whole system learning – they also are indicative of the cultural shift more globally in terms of embracing system change, as the research team makes reference to throughout this study.

Overall, there is an indication that school boards are solidifying their vision and basing their thinking and next steps on an increasing body of research literature about digital teaching and learning and the central importance of 21st Century skills.

Looking forward, a more focused research investigation may be warranted to focus on the multiple aspects of pedagogy-driven use of technology that involves teacher and student roles in collaboration and in inquiry-based learning. Such a study would reaffirm the importance of technology in supporting assessment that guides deep learning.

In addition, system-based recognition for technology use including the importance of designing ongoing professional development at multiple levels; school board departments working together; and policy development that promotes sustainability and scalability seem to be important areas of focus for further investigations.

Prologue

Describing the Metaphor of the Landscape as a Framework for the Round 2 Pilot Study

In delineating the first pilot study, *Teaching and Learning in a Digital World: Pilots for System Learning Initiative* that was completed in 2012, the research team used the metaphor of the landscape to provide an overview of the projects both individually and as a whole. In *Round 2: 21ˢᵗ Century Pilots for System Learning and 21ˢᵗ Century Strategic Pilots*, we continue to use this metaphor as we portray this evolving landscape, which is comprised of 90 technology-enabled projects in all English-language and French-language school boards and one provincial school across the province.

Metaphors are often used in social science research (Clandinin & Connelly, 1995, 2000; Dexter & LaMagdeleine, 2002; Lawrence-Lightfoot & Davis, 1997; Richardson, 2005) as a way of conceptualizing research projects and organizing and analyzing data. They are also used as a framework to outline and title the research itself as we have done here.

Like the projects described in this study, landscapes are diverse and changeable. As in each of the 90 projects, divergent terrain calls for particular needs and action (Dewey, 1938). Specific circumstances emerge locally according to topography, population, and a desire for innovative practices and planning. Differing project goals can provide the impetus for change such that, given new conditions, multiple elements that comprise a landscape can flourish. As was the case in projects completed in 2012, in these Round 2 projects, which are also locally conceived, the seeds of innovation can provide the learning conditions to sustain students, teachers, and school boards in the technological future that is upon us.

In this final report, there are descriptions included that detail individual projects with such information as numbers of participants including students, teachers, and staff; school organizations and the technology being utilized, and any partners engaging with school personnel in individual projects. We provide evidence-based information and outcomes that have emerged from the projects that have enhanced teaching and learning. We also report on projects that examined implications for sustainability and scalability.

In addition to focusing on each project or case, we present information about the themes identified for study in these pilots and issues and challenges that emerged from the data among and between projects. We also detail highlights from the projects as a whole.

In the following chapters, we describe the purpose and background for the study and the study methodology. In our epilogue, we draw conclusions about the pilot study as a whole and identify possible directions that lie ahead on the terrain of teaching and learning in a digital world.

It is apparent that designing and extending new landscapes for technological use in teaching and learning during these projects has been fuelled by the energy and commitment of educators and school board personnel across Ontario as this final report on the Round 2 pilot projects demonstrates.

Chapter 1

Extending Project Vistas: Background and Purpose for Round 2 Pilot Projects

In this report, final data from *Round 2: 21ˢᵗ Century Pilots for System Learning and 21ˢᵗ Century Strategic Pilots* are delineated. Similar to the pilot study projects undertaken in 2012, these projects were designed to support school boards as they initiated and/or extended technology-enabled instruction and learning over the course of the 2012-2013 school year. Consistent with the government's ongoing direction to enquire into successful practices for digital learning in Ontario schools, now and in the future, this pilot project follows from both provincial and global investigations into how to equip schools for 21ˢᵗ Century teaching and learning.

For the 2012-2013 pilots, Category A projects focused on the following topics: vision; digital citizenship and literacies; innovative teaching practice; student engagement, culture, and achievement; learning environments; and parent and community engagement. These topics included those presented at the 2011 CODE CEO conference and focused on in the 2011-2012 pilot study.

Category A

For these projects, the purposes of the study included:

- Insight into school board **vision** for 21ˢᵗ Century learning outcomes for the knowledge society and economy; optimizing learning through collaboration, differentiated instruction, and personal learning; student choice and engagement; providing evidence-based information on strategies that enhance student engagement and accomplishment.
- Focus on **student engagement and achievement** in self-learning, student voice, choice, and engagement.
- Building **digital citizenship capacity** for collaboration, skilled communication, and critical thinking; problem solving and innovation, and awareness of healthy use of technology and issues of safety.
- Noting **learning environments** being implemented using technology for enhanced pedagogy.
- Issues surrounding **innovative teaching practice** such as knowledge sharing, teacher leadership, evidence-based communities of practice including partnership among, between, and across jurisdictions, and dedicated collaboration for ongoing improvement with the use of technology.
- Providing evidence of **parent and community engagement** for both in-and-out-of-school collaboration and engagement in digital learning and communication.

Category B

In Round 2, a new Category B provided topics for projects under the broad headings of pedagogy; learning environments/technology; and leadership. The topics under each heading supported pilots in identifying local innovation practices suited to system scaling and sustainability. All of these topics can serve local and provincial stakeholders in their quest for continued excellence in Ontario schools.

Category B projects included a focus on topics under the broad headings:

Pedagogy

- 21st Century supports for students with special needs
- 21st Century assessment practices
- 21st Century technology-enabled differentiated instruction and personalized learning
- 21st Century science and innovation focused on engagement in science through connections with the digital 21st Century economy

Learning Environments/Technology

- Cloud-based learning environments
- 21st Century school libraries: learning commons and e-readers
- 21st Century digital learning resources
- Bring your own device (BYOD) best practices and research guidelines

Leadership

- Leading for effective 21st Century teaching and learning

Background (Round 2): 21st Century Pilots for System Learning and 21st Century Strategic Pilots

The following information on Round 2 of the pilot projects is drawn from information provided by the Ministry of Education (2012) and the Council of Directors of Education (CODE), who, in September, 2012 indicated their intention to once again work in partnership to support school boards interested in participating in pilot projects on effective practices for teaching and learning in a digital world. All of these projects were to align with the purposes noted above.

School boards submitted their applications, which outlined their project proposals and/or their strategic pilot ideas, for consideration in October, 2012. Curriculum Services Canada (CSC) was selected by the Ministry of Education in February, 2013 to work with participating school boards in documenting their projects with evidence of impact on teaching and learning within a common research framework. The data that the school boards submitted contributed to the preparation of an interim report in May, 2013 and this final report in September, 2013.

Based on the results of the Round 1 pilot study, it was anticipated that participating school boards in Round 2 would continue to build capacity through creative and innovative projects that optimize student engagement and achievement for the 21st Century. A prime innovation focus for Round 2 is on improving, strengthening, extending, and transforming the instructional core for the benefit of students today and in the future. As well, Ministry of Education and CODE are particularly interested in the identification of effective local innovation practices suited to system scaling and sustainability.

Revisiting the Features Underlying the Landscape: Pedagogy before Technology

An important distinction made in a Ministry of Education letter in December, 2010 pertaining to the *Teaching and Learning in a Digital World: Pilots for System Learning Initiative* that was completed in 2012 is applicable to this present study, *Round 2: 21st Century Pilots for System Learning and 21st Century Strategic Pilots.* In that letter, reference is made to the importance of pedagogy as the driving force for technological innovation so that technology does not act as a distraction, impeding student engagement rather than enhancing it.

A book published through the Organization for Economic Co-operation and Development (OECD) entitled *Inspired by Technology, Driven by Pedagogy: A Systematic Approach to Technology-Based School Innovations* (2010) emphasizes that point among others, as do recent papers and articles in the educational literature. For example, Lin (2007) claims that when the pedagogical link is missing, one is left with no more than "technolust," a term he coined to describe the unnecessary and unfounded purchasing of technology (p. 416). In line with this Round 2 pilot study, Lin notes: "...an appropriate performance analysis, which emphasized the analysis performance gaps, the learning needs, goals, and identification of underlying [issues], should be conducted to justify which technologies are the best fit and can supplement [the] intervention"(p. 416).

In a recent article about assistive technology (AT), Graham & Richardson (2012) noted: "when it comes to AT and its current application within the current public education schooling experience, there would still appear to be a distinct emphasis on putting the technology well before the pedagogy. It is certainly the trend in workshops, in the training, and in the purchase of devices and software related to educational technology that we have noted for several years now, as educators and researchers within a large, teacher training facility" (p. 7). These researchers forward the work of Wenger, McDermott, and Snyder (2002) who describe 'communities of practice' as they posit a way of providing a solid basis of exchanging pedagogical experiences in a digital culture.

Garrison & Anderson (2011) state: "The challenge is not simply to advocate or promote the use of e-learning. The real challenge and benefit is to understand the nature and potential of e-learning and its implications for how teaching and learning is and should be, approached. E-learning is not 'infotainment' "(p. 58).

In terms of changes to pedagogy instituted by digital learning, McLoughlin & Lee (2010) write that in the Web 2.0 era, there is: "a need to reconsider our notions of pedagogy [so that] educators and students move toward a social and participatory pedagogy rather than one based on the acquisition of pre-packaged facts" (p. 4).

Fullan (2012) writes that in the present: "Pedagogy is becoming sharper and more penetrating; technology is becoming mightier and easier to use and integrate. One more ingredient is needed to complete the assault:

the growing clarity and power of design and change knowledge that will be essential for achieving reform on a large scale – whole system reform" (p. 54).

In a recent report from the UK, Fullan & Donnelly (2013) note among other points that: "a lot more has to be done in fleshing out the nature of effective pedagogy in its own right, as well as how it relates to the use of technology to accelerate and deepen learning" (p. 11).

Given the nature of changes in direction in pedagogical practices driven by the digital environment, it seems clear that these pilot projects are situated in an important time when clarity and compelling insights into our technological future are needed to continue system reform initiatives that can move teaching and learning forward into the 21st Century. In a recent interview about his book *Stratosphere* (2012), Fullan noted that we are at the beginning stages of an improvement cycle in education where pedagogy, technology, and change need to be addressed together to connect the "natural affinity" that students bring with them to their studies in schools from their 24/7 world of information for learning.

Chapter 2

Tools for Expanding New Horizons: Research Methodology and Methods

Study Methodology

For the purposes of this study as a whole, we continue to utilize a case study methodology as we did in the Round 1 research investigation in 2012. The Round 2 pilot projects have expanded from 47 sites in total – 35 English-language and 12 French-language last year - to 76 English-language projects and 14 French-language projects participating in the Round 2 pilot projects. In 2013, the invitation to participate was taken up by every school board in the province as well as 1 school from the Provincial Schools Branch with some school boards having 2 projects. Two projects did not report their final data in time to be included in this report.

In this final report, along with detailing the data received from each individual project, we present information about the impact of the pilot among and between projects based on the parameters established for the study. As noted in Chapter 1, the parameters fall into two categories: Category A projects are focused on: vision; digital citizenship and literacies; innovative teaching practice; student engagement, culture, and achievement; learning environments; and parent and community engagement. Category B projects are focused on the broad headings of: pedagogy; learning environments and technology; and leadership. Round 2 projects continue to provide impact evidence related to the role of technology in teaching and learning.

In terms of methodology more specifically, we are using a collective case study (Stake, 2005) because in understanding each particular project, we can also gain a better understanding of the larger collection of projects as a whole. We describe each project in detail in Chapter 3 in order to better understand the unique characteristics and indicators of success for each particular case.

In addition, our analysis presents a concise understanding of successful practice across and among projects that includes the topics for Category A and B projects noted above to highlight future initiatives that could influence policy and decision making at both the local and provincial levels.

Case study research is well established in various disciplines such as law and medicine as well as education (Flyvbjerg, 2011; Yin, 2009; Hartley, 2004; Sacks, 1990, 1995, 2010; Coles, 1993) as a means of gathering and explaining particularities about individual cases, and also about what may be common across cases. Case study research focuses on both the process of gathering data, and on the final report (Stenhouse, 1984). Case study lends itself to analyzing both qualitative and quantitative data such as we received from participating school boards in both Round 1 and Round 2 of this pilot study. As Yin (2009) notes: "… the case studies unique strength is its ability to deal with a variety of evidence – documents artifacts, interviews and observations" (p. 11). Ultimately, the depth and breadth of data is dependent on information received from individual sites.

This methodology allows us to provide a detailed picture of each site or case according to the comprehensive self-reporting guide supplied to project leaders and supported through our webinar sessions, online discussions, personal interactions by phone, and in visits to a cross section of school boards where field researchers met and interviewed individuals attached to 29 projects and visited classrooms to see technology

in use. Overall, in this final report, the data provides qualitative insights that align with the study purposes as well as data that are quantitative in nature.

Data Collection Methods

In order to be congruent with the purposes of the study, data was collected using the comprehensive self-reporting template and presented through webinar sessions for project leaders at each site at the beginning of Round 2 and in preparation for submission of the final school board report. The research investigators made themselves available by phone for any questions or difficulties that project leaders were experiencing throughout the project. We set up an electronic network so that school boards could communicate and share with one another and with the research team.

The data submitted included a description of each project, numbers of students involved, numbers of teachers and staff, grade levels, schools, goals and priorities, the role of technology, indicators of success, areas of impact, capacity building, leadership, and findings and next steps.

In addition, the data analyzed by the research team included information gleaned by field researchers from interviews and conversations involving project participants during site visits to school boards across Ontario. See Appendix C for the set of questions that field researchers were given as a basis for their conversations with school board personnel. The team gathered artifacts and observed classroom activities at a number of sites.

In the next chapter, we describe unique features noted by project leaders, teachers, and others supporting individual projects. We compile and summarize information under the areas of study noted in Chapter 1 in both Categories A and B.

Chapter 3

New Inroads of Innovative Practices: Describing Participants and Their Projects

School boards submitted final project reports using the reporting template distributed by Curriculum Services Canada in July, 2013. The following charts and graphs provide an overview of the 74 English-language and 14 French-language projects that submitted reports.

From the information submitted, it is evident that there is a wide variation in the approaches and areas of focus in the school board pilots. The following summary data provides an overview of the scope and nature of the submitted projects.

Appendix B contains more information supplied by each pilot site in the final school board submission.

1. Projects by School Organization

Of the eighty-eight (88) English-language and French-language projects, fifty-six (56) projects are targeted at a specific range of grades or the specific content or skills taught at identified grade levels. Thirty-two (32) projects have a stated system focus (JK-12).

	English (74 projects)	French (14 projects)
Only in Elementary Schools:	22	6
Only in Secondary Schools:	11	
In both Elementary/Secondary Schools:	41	8

Projects by School Organization (percentages across all English-language and French-language projects)
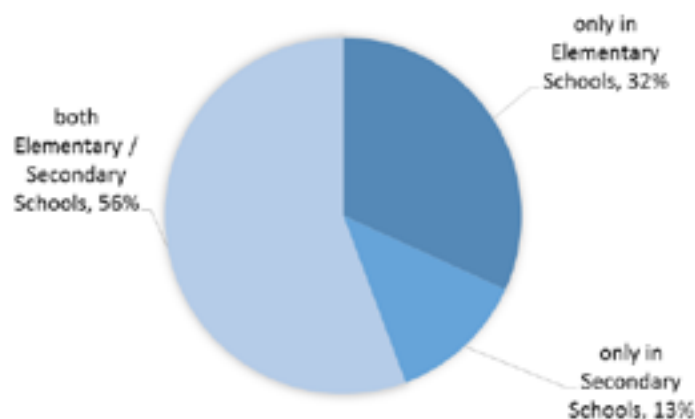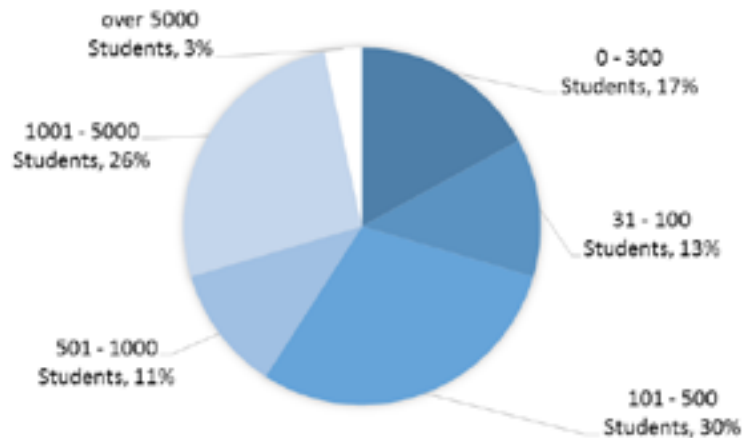
2. Projects by Level of Student Involvement

There were 12 projects in total that did not directly involve students in the initiatives. These were projects that focused solely on teacher training or leadership development.

Twenty (20) projects are specifically directed, in whole or in part, to supporting students with special needs.

	English (74 projects)	French (14 projects)
Projects with 0 – 30 students involved	14	1
Projects with 31 – 100 students involved.	7	4
Projects with 101 – 500 students involved	21	5
Projects with 501 – 1000 students involved	8	2
Projects with 1001 – 5000 students involved	21	2
Projects with over 5000 students involved.	3	

Projects: Student Involvement (percentages across all English-language and French-language projects)

3. Projects by Level of Teacher Involvement

Due to the nature of the projects (e.g., leadership focused), eight (8) projects identified no direct involvement by classroom teachers. The majority of the projects involved teachers from a sample of schools in the system, but four (4) projects involved one or more teachers from each and all schools in the system, and one project identified the involvement of all teachers in the school board.

	English (74 projects)	French (14 projects)
Projects with 0 – 9 teachers involved	22	5
Projects with 10 - 30 teachers involved.	24	5
Projects with 31 – 60 teachers involved	11	3
Projects with 61 or more teachers involved	17	1

Projects: Teacher Involvement (percentages across all English-language and French-language projects)
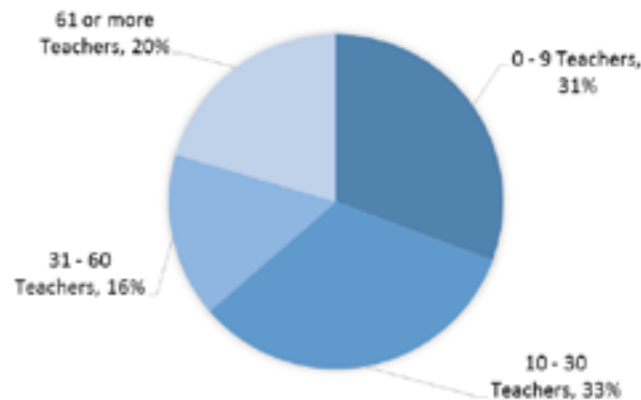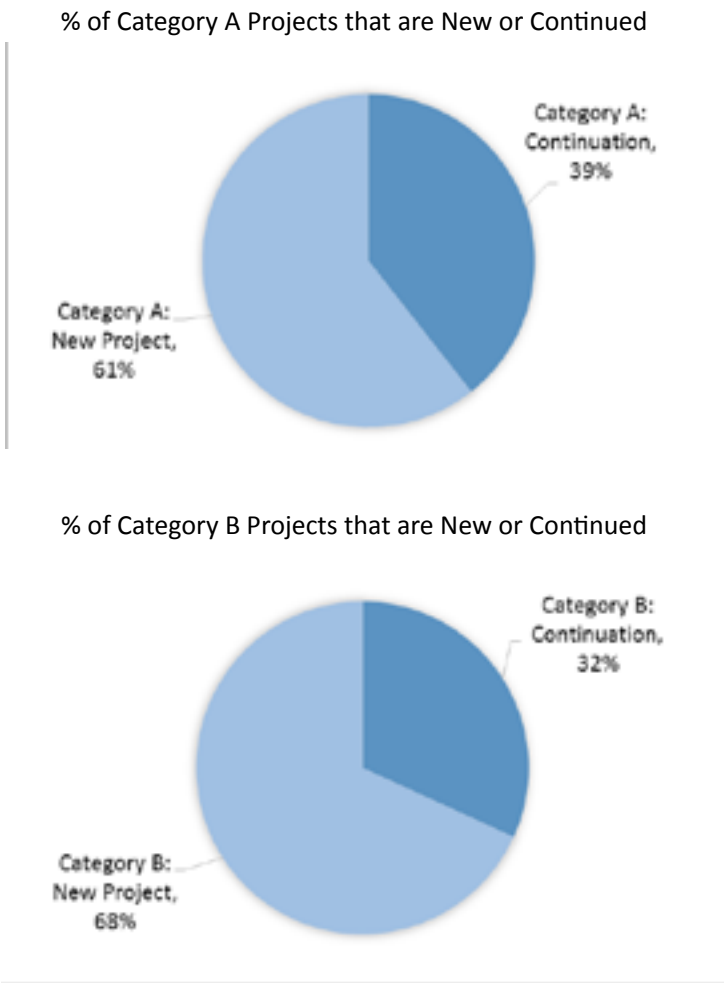

4. Continuation from Round 1 or New Project

	English (74 projects)	French (14 projects)
Projects that are Continued from Round 1 (2011-12)	25	7
Projects that are New initiatives	49	7

Projects: Continuation or New (percentages across all English-language and French-language projects)

Projects: Continuation or New by Category A and B (percentages across all English-language and French-language projects)**.**

There were 66 Category A projects in total and 22 Category B projects in total.

% of Category A Projects that are New or Continued

Category A: Continuation, 39%

Category A: New Project, 61%

% of Category B Projects that are New or Continued

Category B: Continuation, 32%

Category B: New Project, 68%

The following chart distinguishes between new and continued projects by Categories A and B as defined for the 2012-2013 study.

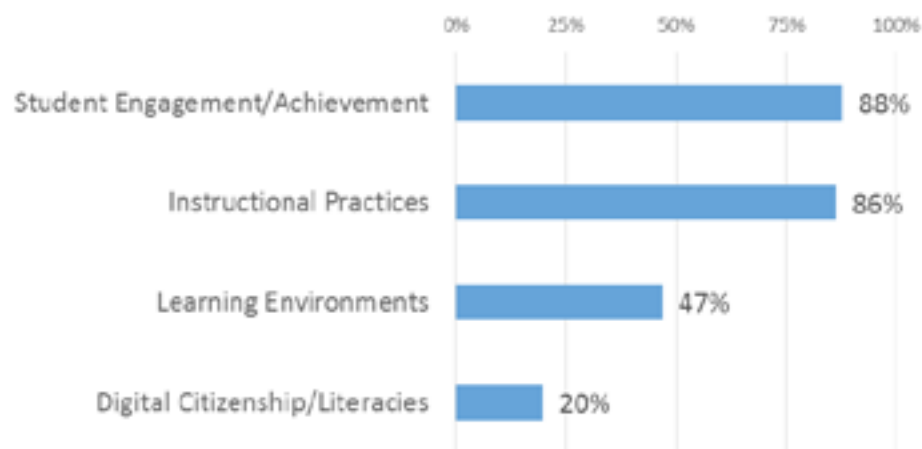| | English | | French | |
	Category A	Category B	Category A	Category B
Continued projects	19	6	7	1
New initiatives	36	13	4	2
Total	55	19	11	3

5. Areas of Impact

The following charts and graphs show the number of Category A projects and Category B projects that identified each of the specified areas of impact. Projects could decide to collect data related to one, some, or all of the identified areas of impact.

In total, there were 55 English-language Category A projects and 11 French-language Category A projects. There were 19 English-language Category B projects and 3 French-language Category B projects.
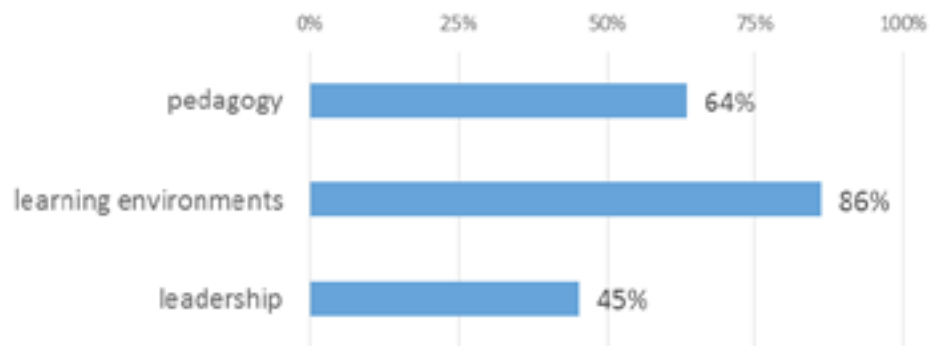
	English	French
Category A Projects: Areas of Impact:		
Student engagement/achievement	49	9
Innovative instructional practices	48	9
Learning environments	26	5
Digital citizenship/literacies	10	3

Percentage of Category A Projects which included Identified Areas of Impact (combined English-language and French-language projects)

	English	French
Category B Projects: Areas of Impact:		
Pedagogy	12	2
Learning environments	16	3
Leadership	9	1

Percentage of Category B Projects which included Identified Areas of Impact (combined English-language and French-language projects)

6. Areas of Investigation by Category (combined English-language and French-language projects)

There were multiple themes within and across all projects. Except for rare situations, projects had multiple aspects and differing combinations of activities related to the scope, use, training, and pedagogical basis of their technology-enabled project.

When comparing the list of Round 2 areas of investigation to Round 1 areas of investigation, there are similarities and differences. In both Round 1 and Round 2, areas of investigation such as use of mobile technology, blended learning, teacher training and use of technology, and addressing literacy/numeracy remain most frequently evident.

There are areas of investigation that emerged in Round 2 that were not evident as shared themes in Round 1. These areas of new or expanded attention and exploration include:

- Developing job-embedded professional development models (use of e-coaches or similar "at-the-elbow" forms of professional support)
- Offering specific training directed at school administrators and support staffs related to the pedagogically driven use of technology
- Examining digital commons or learning commons approaches and structures
- Exploring infrastructure and interface solutions that promote easier and unscheduled access to technologies that are increasingly wireless and/or mobile, but in an environment that is reliant on systems and structures that are wired, controlled, and local

The list of themes shown is not meant to be exhaustive. Themes run through the projects and are useful to identify trends and patterns, but are not used to separate or categorize individual projects.

	Category A	Category B	Total
Addressing Literacy.	14	5	19
Addressing Numeracy/Mathematics	17	3	20
Addressing Science.	5	0	5
Teacher Training / Using Technology	57	13	70
Use of Technology Coaches (e-coaches, job-embedded PD)	14	4	18
School Administrator Training / Using Technology.	6	8	14
Leadership Development Related to Technology	5	10	15
Collaborative Inquiry.	15	2	17
Assistive Use of Technology	16	2	18
Blended Learning.	25	7	32
Learning Commons (impacting libraries/teacher librarians)	2	4	6
Use of Digital Textbooks.	5	2	7
Digital Citizenship (ethical use of technology)	8	3	11
Parental Involvement/engagement.	11	5	16
Use of Whiteboards or Similar Technologies.	10	0	10
Use of Mobile Technology.	42	17	59
Sample Sub-Themes for Mobile Technology			
Use of Tablets (e.g., iPads).	32	6	38
Infrastructure / Wireless Networks.	20	13	33
Bring Your Own Device	22	2	24
Use of Netbooks	14	6	20
Cloud Technologies	6	10	16

Percentage of Projects with Identified Major Themes (combined English-language and French-language projects)
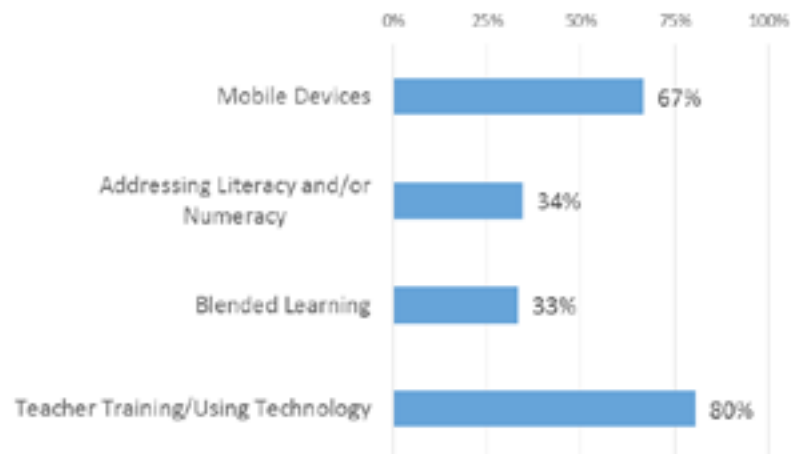
7. Identified Issues and Challenges (combined English-language and French-language projects)

In the final reports, school boards identified a number of issues that delayed or re-directed their activities over the course of the implementation. Some of the issues presented new opportunities while others disrupted the schedule or flow of the planned activities. Some of the issues were isolated or unique to local conditions, but others were identified multiple times. The following chart identifies some challenges that emerged across projects.

	Total (88 projects)
Poor networks/wireless connectivity	37
Short timelines to complete tasks	22
Funding constraints or uncertainty	20
Political actions provincially or locally	18
Time/cost for teacher training	15
Teacher resistance/uncertainty	11
Delayed or altered hardware/software	9

8. Identified Future Directions/Next Steps (combined English-language and French-language projects)

In the final reports, school boards identified the intended next steps for their project. With rare exceptions, the intention for the coming school year was to continue, expand, complete, or adapt the project based on their findings.

As a result of school boards' analysis of their data, the following future directions emerged as commonly expressed next steps by project leaders.

	Total
Continued or enhanced professional development to build capacity/collaboration/professional capital	50
Continued or expanded focus on pedagogy and development of 21st Century learning skills	30
Development, elaboration, or alignment of a system-wide plan related for the use of technology	22
Development of system-wide policies (e.g., acceptable use policy, BYOD policy)	19
Expanded or enhanced wireless networks or other wireless infrastructures	17
Develop specific resources to support instructional use of technology	13
Purchase or funding of additional hardware, software (including mobile apps)	10
Altered priorities (e.g., transition to classroom based use of technology)	10
Enhance partnerships (e.g., with parents, research partners, public libraries)	9

Frequently identified next steps are actions to support the alignment and coordination of technology-enabled teaching and learning. From this list, it is evident that next steps are directed at activities that continue to have pedagogy drive the use of technology, doing so with an aligned focus on the structural and organizational factors that can sustain and scale systemic actions.

Chapter 4

A New Panorama: Information that Emerged from Theme Areas in Round 2 Pilot Projects

The intent of this initiative is to build on the work and learning from the 2011-2012 pilot study, *A Shifting Landscape: Pedagogy, Technology, and the New Terrain of Innovation in a Digital World.* In this chapter, we present information under the theme areas that emerged from that study and that were noted in the invitation to participate in the *Round 2: 21st Century Pilots for System Learning and 21st Century Strategic Pilots* memo to Directors of Education co-sponsored by the Ministry and CODE in September, 2012. These theme areas, also noted in Chapter 1, are presented under the Category A projects, which focused on the topics of: vision; digital citizenship and literacies; innovative teaching practice; student engagement, culture, and achievement; learning environments; and parent and community engagement; and the Category B projects, which focused on the topics of: pedagogy; learning environments and technology; and leadership.

The data analyzed in this final report is drawn from school board responses to the project-reporting template that provided a common and consistent framework for the research team to document individual projects. We also utilize project leaders and other participants' responses to the interview questions posed by field researchers that formed the basis of conversations for site visits, as well as information from phone conversations.

Glesne (2006) notes: "Data analysis involves organizing what you have seen, heard, and read so that you can make sense of what you have learned. Working with the data, you describe, create explanations, pose hypotheses, develop theories, and link your story to other stories. To do so, you must categorize, synthesize, search for patterns, and interpret the data you have collected" (p. 147). Lawrence-Lightfoot (1997) describing Miles & Huberman's (1994) method of pattern coding, quote that identifying patterns "can reduce large amounts of data into a smaller number of units [and can] help the researcher elaborate a cognitive map, an evolving, more integrated schema for understanding local incidents and interactions ... For multi-case studies, it lays the groundwork for cross-case analysis by surfacing common threads and directional purposes" (p. 69).

Wolcott (1994) notes that description, analysis, and interpretation are three key elements necessary for making meaning of the data, and Glesne (2011) writes: "Data transformation ... is the prelude to sensitive outcomes that describe, make connections, and contribute to greater understanding, or at the least, more informed questioning" (p. 210). All these perspectives have been used to help make meaning from the data gathered by the research team in person, by phone, and through invitation to school boards taking part in this study.

The research team also utilized the metaphor of the landscape to support the analysis, interpretation, and description, and finally, to frame the research text. Lawrence-Lightfoot (1997) notes: "Metaphors can serve as overarching themes and rich undercurrents that resound throughout the [research] ... they act as symbols pointing to larger phenomena that emerge as significant [in the research]" (p. 55). In this chapter, we describe the features of the projects in each theme area reported by school boards. Through the research team's analysis, descriptions of the patterns that were visible across and among individual projects are delineated.

A Word about the New Panorama: Connections to the Global Landscape

Before addressing the information derived from the theme areas that emerged in this study, we describe connections to the emerging literature on 21st Century system learning in order to situate our results within both a provincial domain and a more global arena.

In the final report for the 2012 pilot study, we quoted Fullan from his book, *Stratosphere* (2012). He wrote: "Pedagogy is becoming sharper and more penetrating; technology is becoming mightier and easier to use and integrate. One more ingredient is needed to complete the assault: the growing clarity and power of design and change knowledge that will be essential for achieving reform on a large scale – whole-system reform" (p. 54).

Two recent reports from the UK illustrate this view and point to promising practices for connecting pedagogy, technology, and system change. One by Luckin, Bligh, Manches, Ainsworth, Crook & Noss entitled, *Decoding Learning: The Proof, Promise and Potential of Digital Education,* (2012) notes learning themes around eight dimensions: "learning from experts; from others; through making; through exploring; through enquiry; through practicing; through assessment; and in and across settings" (p. 9). In the conclusion of their report, they state their feeling that in the past "… many efforts to realize the potential of digital technology in education have made two key errors. Collectively, they have put **technology above teaching** and **excitement above evidence …** if we are to make progress we need to clarify the nature of the goal we want to satisfy through future innovation" (p. 63).

In the foreword to Fullan & Donnelly's report, *Alive in the Swamp: Assessing Digital Innovations in Education,* (2013) Sir Michael Barber notes: "The future will belong not to those who focus on the technology alone but to those who place it in this wider context and see it as one element of a wider system transformation" (p. 6). Fullan & Donnelly reiterate the four criteria recommended in *Stratosphere* for new learning systems: irresistibly engaging for students and teachers; elegantly easy to adapt and use; ubiquitous access to technology 24/7; and steeped in real life problem solving.

Adding to this recent work is a white paper by Fullan & Langworthy entitled, *Towards a New End: New Pedagogies for Deep Learning* (2013) in which the authors describe skills necessary for "deep learning" to meet goals that are enabled by new pedagogies and accelerated by technology. They are: character education, citizenship, communication, critical thinking and problem solving, collaboration and creativity, and imagination (p. 3).

It seems clear from the theme areas and the data disseminated in this chapter that topics, issues, and challenges similar to those in the studies named above are being addressed in school boards across Ontario in this pilot study. As one teacher in this study said about new thinking and a more global perspective about change: "As a result of being involved with the 21st Century fluencies workshops through the CODE project, I have a much better understanding that our students are growing up in an environment that is considerably different from the one I grew up in. Their near immersion in technology demands that teachers evolve to understand that a significant portion of current models of classroom education is outdated, and we will fail each classroom full of kids if we don't get with it. The 21st Century fluencies are not a new layer to add to what we typically do, but we need to replace what many of us tend to do."

Addressing the Overall Theme Areas in the Pilot Projects

The prime innovation focus of projects for Round 2 under both Categories A and B was on improving, strengthening, extending, and sometimes transforming the instructional core, with students at the heart as important partners as active agents in the inquiry and continuous improvement process. Building on the research focus of Round 1, a central interest in this further study was to gather additional information on teaching and learning impact evidence and to gaining insights into the role of technology in changing teaching practice and strengthening student engagement, learning, and achievement. A particular interest was for pilots to identify projects suited to system scaling and sustainability.

As we collated the data, we kept in mind the landscape metaphor and, as Glesne (2006) suggests, we considered the following questions in the process of our data analysis:

- What connections can be made among the narratives told in the field text?
- How does the information connect?
- What patterns can give shape to our data?

With these questions in mind, we returned to the three items that Fullan (2012, 2013) notes as necessary to consider together as we move into a new improvement cycle in education for the 21st Century and which we used as major headings in the 2012 final report. They are pedagogy, technology, and change.

In this study, the research team uses these same major headings under which we report on the theme areas described above for both Category A and B projects. At the same time, we use these headings to place the patterns we discovered and the descriptions provided from across the province into this final research text. Utilizing these three major headings also provides a concrete connection between the theme areas reported for Category A and B projects and the global context described in the literature on 21st Century teaching and learning.

In the next section, we delineate each of the theme areas reported for Category A using these three major headings: pedagogy, technology, and change.

Delineating Category A

It is interesting to note that while six theme areas were suggested for study under Category A, school boards particularly focused on the following four areas: digital citizenship and literacies; innovative teaching practice; student engagement and achievement; and learning environments. Some reported on vision indirectly, but that was not as a focus of their project. Parent and community engagement was not a topic adopted by any school board for a project focus, although there are multiple references noted in projects to the importance of being able to communicate directly with parents, using digital technology.

Pedagogy

Fullan & Langworthy (2013) write: "We know that the quality of teaching is the single most important in-school factor shaping learning outcomes. At the very core of [our] work is the aim to develop our understanding of how new pedagogical models enable new and deeper learning outcomes, how teachers can be most effectively supported in adopting these models, and how these models are enabled and accelerated

by technology. We see these new models as based in an equal two-way learning partnership between and among students and teachers" (p. 10). Based on the final school board reports in this project, it seems clear that many projects have been engaged in supporting teachers in their quest to integrate technology into their teaching practices in order to build a more holistic environment for student/teacher connections for enabling 21st Century learning.

Innovative Teaching Practices

While some school boards reported that the shift in teacher vision from 'sage on the stage' to facilitator is still a challenge, others describe school board personnel such as teachers, clinicians, educational assistants, and resource teachers coming together in workshops and professional development sessions to collaboratively build new skills for student success. In some projects, e-coaches were available on site to give consistent and continuous support to the teachers. One project reported that a collaborative, small group environment built confidence with digital tools in a safe and risk-free setting prior to initiating in a classroom setting. In another school board, time to collaborate with a guided starting place was emphasized by teachers who were enthusiastically engaged in using mobile technology for teaching and learning.

> "Collaboration, through co-planning and co-teaching, is the most powerful change agent for technology-enabled teaching and learning."

The shift towards inquiry as a basis for classroom teaching and learning was described in a number of projects. As expected in such a shift, it was noted by one school board that inquiry-based learning was not easy to undertake. Change involves moving from the long-standing teacher-as-expert model to an entirely different vision of teacher as inquirer. In one school board, teachers were reported to understand the importance of having students acquire 21st Century skills, but not necessarily how to teach these skills. In terms of inquiry-based teaching and learning, one participant said in the summary of a pilot's impact survey that: "[the] impact [was on] knowing more about student inquiry. We learned that not all tasks will be meaningful for all classrooms. We need to be more mindful when creating an inquiry unit and summative tasks, to make sure our task addresses the big ideas … [and] be more global-citizen focused."

It was reported by another school board that innovation in projects required teachers to introduce new classroom routines in the area of technology and to scaffold lesson instructions to account for the complexity of integrating technology. Some teachers reported difficulty in designing authentic tasks using technology to integrate with curriculum expectations. In yet another school board, the framework for their project was based on four inquiry questions around the use of assistive technology. This project reported excitement among both students and teachers across grade levels who came together to design lessons for 21st Century fluencies.

One project noted that the intention of their initiative was to blur the lines separating learning and technology use with students connecting learning and technology use both inside and outside the classroom. They instituted a Student Forum to bring student voice to the fore and to emphasize the place of students in this shift toward technology enriched teaching and learning.

Several school boards reported focusing on various papers or reports to support both engagement and instruction. One example of these is the "4C's" defined by the Partnership for 21st Century Skills: critical

thinking and problem solving, communication, collaboration, and creation, and as necessary skills for learning engagement now, and in the future. One school board notes five areas or cogs to be addressed for technology integration in curriculum, based on the work done by the International Society of Technology in Education (ISTE). The areas focused on are: digital citizenship; technology as a doorway to information; technology at the point of instruction; technology at the point of learning; and technology in professional practice. One school board reported utilizing the Ministry's learning management system (LMS) along with the cloud to build both physical and digital learning commons to encourage participation and sharing within the digital environment. These examples highlight the fact that school boards are in the midst of searching for frameworks and ways forward to support teachers as they move toward connecting pedagogy and technology in innovative teaching practices.

> "Technology is having the effect of 'de-privatizing' teacher practice."

Overall observations from the field researchers following their school board interviews for this pilot study indicate a number of changes in teaching practices. They note that:

- Technology seems to impact all aspects of teaching and learning.
- Teacher's role seems to be shifting to that of facilitator who supports and guides learning.
- Teachers who use technology increasingly see themselves as co-learners.
- Teachers seem to believe that they now have the tools and strategies to better reach and engage every student.
- Technology seems to promote more collaboration among teachers and among students.
- Technology seems to provide partnership with parents by giving them access to information so that they can support their children's learning.
- Technology is providing opportunities for cross-curricular learning in manageable and efficient ways.
- School cultures seem to be shifting to where teachers respect the differences in the ways students gain knowledge and skills in today's digital world.

A project leader commented: "Teacher blogs and social media encourage collaboration with program staff and colleagues. We see a move to 'an open learning stance' a growth mindset where we consider our biases ... my way is not the only way... there may be other options if we have different information and/or bring a different point of view."

Learning Environments

Fullan & Langworthy (2013) ask: "What does it really mean for students to become connected and flourishing learners in a knowledge-based, globalized, technology-driven world?" (p. 15). Such a question has direct impact on the learning environments reported in this study. Field researchers reported that there seems to be more attention to equitable, immediate access to computers rather than scheduled access in computer labs. In their observations, they noted that technology brings the wider community/world into classrooms, which is especially important in isolated geographic areas of the province. Further, access to technology is giving more equitable opportunities for Aboriginal students to overcome issues of isolation and access. They also found that some of the stigma for students with special needs was reduced as they give evidence of their learning by

using technology in a similar way to other students. One student stated: "I had the opportunity to be involved in many extracurricular activities this year. My teachers posted all lessons and homework on Google Drive. This approach gave me a chance to stay current on my learning while I was absent from school. Also, since the lessons are posted on line, it helped me to be more organized. Therefore, getting ready for summative assessment is easier."

One school board reported that over the course of their project, the focus changed from centering on the use of technology hardware and the transformative use of technology in teaching and learning to what students need for the 21st Century. Another noted a shift from simply using technology to fit in with more traditional lessons toward making technology part of the lesson itself.

> "A significant number of teachers involved in the project have demonstrated an "open stance" to teaching that enables them to adopt a new teaching role as a facilitator and connector, focused on guiding and supporting student learning, and less involved in directing student learning."

In one project, it was found that teachers who practised with their technology devices independently, and who networked with other teachers seemed to integrate it most effectively in the new environment. Another school board reported that students surveyed were moving to more collaboration in a blended learning environment, which was leading to richer evidence of achievement in the work students were producing. In a different project, an unintended outcome was found to be that blended learning could be student driven; they were considering the idea of providing students with access to digital tools independent of their teacher as a means of strengthening communication and collaboration.

One project, intent on increasing teacher efficacy described building an environment where students, educational assistants, and teachers learned digital technology at the same time and could therefore support each other's learning. In another school board report, there was a caution supplied about student learning with technology, noting that those who have grown up with digital technology are not necessarily digital learners.

One teacher describing a shift in classroom learning environment said: "Some of the best learning was when I presented students with a new program and let them figure it out. It was then that I saw some of my weaker students shine as they became leaders because they were one of the first to figure out how to do the task. They became the teachers circulating around to show their knowledge to others."

Another comment in regard to a shifting learning environment paints a detailed picture of the change in 21st Century teaching and learning. "Being able to use technology to meet individual student needs, capture attention, and help students develop a deeper understanding of concepts through the use of technology is motivating for our students. Watching students manipulate the technology, and work through struggles and problems makes them better thinkers and enables them to develop the confidence to be able to work all types of technology in a variety of different situations." These insights align with the forward thinking of Fullan & Langworthy (2013). They use a quote taken from the *Digital Media and Learning Research Hub* (2013): "Connected learning is realized when a young person pursues a personal interest or passion with the support of friends and caring adults, and is in turn able to link this learning and interest to academic achievement, career possibilities, or civic engagement" (p. 17).

Student Engagement and Achievement

Several decades ago, writing about students and educational change, Fullan (1991) noted two points that are still of seminal importance for this pilot study. He wrote: "The final possible outcome for students – *heightened interest and engagement* – is obviously central to any solution, and as such is important to examine closely" (p. 184). The second point: "The more complex the change, the more that student involvement is required" (p. 189). It was clear that the majority of projects focused on student engagement.

Because student engagement is so central to change strategies for 21st Century learning and because teachers, schools, and systems are in the midst of identifying ways to initiate new and meaningful connections between pedagogy, technology, and change, it may not be surprising that evidence was mixed in terms of successful practices. As Fullan & Langworthy (2013) write: "Among the small number of innovative schools…results have been encouraging though they remain at the level of case studies with little or no evidence across cases" (p. 16).

Projects reported a variety of data collection strategies such as surveys, anecdotal comments, and observations were used to gather and disseminate information from participants involved in the pilots. While some school boards reported positive outcomes, others reported data showing that they are in the early stages of deciphering issues of student engagement and achievement. For example, one school board reported that because more than half of intermediate students expressed disengagement from learning, they are in the process of exploring the way that blended learning – the intentional, pedagogically-driven integration of digital resources into classroom settings, particularly at the junior and intermediate levels – can enhance students' commitment to and enthusiasm for learning. In another school board, results showed that for students to engage with technology, the technology had to be used to do something that they could not have done without it. Another school board reported that they found technology plays an immense role in increasing student engagement and student voice, and is beginning to make a difference in teachers differentiating instruction with both digital and non-digital resources. As one teacher commented: "In order to have success with this technology in the classroom I needed to spend some personal time learning how to use this technology. It was eye-opening to see that my limited knowledge did not hold students back; rather they embraced the challenge of working with new technology, working as a team with others in the class to accomplish a goal. They became risk-takers attempting to figure things out and share their findings with others."

Several school boards reported mixed results, one noting that student engagement did increase, but not to the level they had hoped, and another saying that in spite of an increase, questions around the types of technology and the learning activities arose as some students were not receptive to the type of technology being used.

Other school boards reported that feedback from teachers spoke to the positive impact of blended learning models and environments on student engagement. A teacher noted: "They [students] are excited to be experts. Their product and conversation reflect their excitement." Field researchers also observed an overall sense of excitement and positive engagement in the school boards they visited, noting that technology seems to have an impact on the nature, duration, and effectiveness of the communication between teachers and students.

A participant in one project said: "the project is giving the students an opportunity to use technology they have grown up with to engage in their learning." Perhaps all the data reported points to the fact that, in these early stages of 21st Century learning in these projects, excitement about teaching and learning is a key

ingredient in building a sense of empowerment going forward to precise achievement results. As one teacher put it: "The concept of student engagement as I am referring to it within this project, moves beyond student interest or excitement with the iPad medium to a student's engagement in learning. As this project evolved, I uncovered increasingly better monitoring strategies that would help me determine what I hoped was evidence of engaged learners."

> "Being able to use technology to meet individual student's needs, capture attention and help students develop a deeper understanding of concepts through the use of technology is motivating ... . Watching students manipulate the technology, and work through struggles and problems makes them better thinkers and enables them to develop the confidence to be able to work all types of technology in a variety of different situations."

Technology

As Luckin, Bligh, Manches, Ainsworth, Crook & Noss (2012) note: "No technology has an impact on learning on its own; it all depends on how it is used" (p. 9). From the data reported in this study, it seems clear that school boards are in the midst of grappling with various aspects of technology and its overall use for 21st Century teaching and learning. While many positive changes were noted across projects in terms of technology use in learning environments and teaching practices, the bigger picture surrounding structural and instructional changes for school boards in terms of technological use appears to be in the early stages of being addressed.

Digital Citizenship

In an article entitled, "*Turning on the Lights*" Prensky (2008) writes: "Many 21st Century kids grow up literally *surrounded* by light, from the first flash of the camera at the moment of birth. They progress to seeing the world through the glow of the TV tube, the sheen of the silver screen, the interactive animations of the computer screen, the LCD on their cell phones, and the screens on their Game Boy Advance consoles, Nintendo DS Lites, and PlayStation Portable Systems. They teach one another to actively participate as often as possible in the world – locally and around the globe – through instant messaging, e-mails, and increasingly free telephone calls, as well as online connections, discussions, and creative social and communal activities ..." (p. 42). Given this socio-cultural setting, it is not surprising that school boards have a great deal to consider when it comes to supporting the new terrain of enhancing the lives of present and future citizens.

One school board reported that the need for further study of digital citizenship became a common topic of conversation during their blended learning pilot project. Another school board found that their capacity-building sessions led to an understanding that they needed to formulate a plan to ensure the development of stakeholders as digital citizens.

One outcome of another project was the realization that protocols should be developed for students and teachers, outlining the responsibilities, etiquette, and skills required for developing digital citizenship. In yet another project, they described a shift in emphasis, moving from a hardware/software focus to a focus on critical thinking, problem solving, creativity, information fluency, digital collaboration, and a demonstration of the fundamental tenets of being a digital citizen. They felt a way forward was to support teachers working together to connect curriculum to relevant life situations and develop lessons and units to cultivate the tenets of global digital citizenship.

"We want students to be involved in real-world problem solving so we have to connect them to the real world. Parents see students connected to real-world experience."

One school board reported that 250 students had completed their Digital Citizenship Boot Camp, while another noted that a large percentage of students were involved in Internet safety education, which they felt was a very positive indicator of teachers' focus on the safe and responsible use of technology. Yet another school board reported that ongoing teacher and principal training will be essential in regard to understanding the attributes of digital citizenship.

Overall observations from field researchers revealed that, in general, school boards appear to be examining policies and procedures that direct and promote the safe and effective use of technology by students and teachers. They are also investigating how to provide secure storage of students' work and information in the 'cloud' so students can share school board-owned devices and can experience a learning commons environment. Board officials also expressed concern that by moving to cloud technologies that the security of system data, e.g., financial and student information data, could be threatened.

Much as was reported in the 2012 pilot study, many aspects of digital citizenship remain in the early stages of considering issues surrounding safe and ethical use of technology in school culture. While the recent white papers referenced in this study suggest that we are moving into a time where it is imperative to build our collective capacity within and across educational systems for 21st Century skills to flourish and evidence of impact to be readily available, it is clear that local issues surrounding the use of technology are still being addressed, and are considered to be crucial in building a solid digital landscape. Along with what it means to become a 'digital citizen,' other considerations include the writing of acceptable use policies by school boards which include students using their own devices at school; challenges that come with wireless network use; equitable access to hardware; and security of personal devices. These topics are discussed in Chapter 5.

Change

In *Leadership and Sustainability* (2005), Fullan describes attributes of leadership at both the school level and the district level. At the school level, he notes the importance and difficulties of changing school cultures, while at the district level he refers to centering on moral purpose, re-organizing roles and structures, and capacity building including external partners and financial considerations. Many of these areas were touched on as changes in vision were described at the school and school board levels more specifically.

Vision

In terms of vision, school boards seem to be at different stages in their thinking and development of strategies for moving forward with technology use. School board visions are complicated by a variety of issues such as school board alignment, which involves deciphering a central focus for the place of technology in 21st Century teaching and learning; co-ordination of departments within the school board to assure that vision is holistic and the function of departments in this vein; instituting board-wide professional development; and long-term planning. While some school boards have been engaged with business partners for a number of years, and some have been partnering with other school boards in systems-wide projects, others are at the early stages of re-visioning teaching and learning for 21st Century competence.

In references to school vision, observations from field researchers noted a number of points indicating that school staffs continue to embrace change in their vision of teaching and learning. One field researcher found that a project was enlarging their vision by shifting from a focus on teachers' understanding of the use of hardware and software for instruction to building teacher confidence and sense of efficacy in using mobile devices as teaching and learning tools. Another reported that various departments within the school were providing support for projects for the first time. Another field researcher found staff members in one school were collaborating with other school boards in piloting inquiry-based, technology-enabled education. In one project, it was noted that the whole school community was very supportive of the project underway and described their appreciation of a donation from a business entrepreneur who was a former student at the school. Lastly, a field researcher described a move toward exploring what teachers need to transform their practice.

In terms of change in school vision, one school board noted that if teachers are going to engage in the highly complex process of changing their teaching culture they need to be given the time at the beginning of the process to truly understand why the change is necessary, and what that change looks like in their teaching and learning environment. Another found that a need for comprehensive teacher training was demonstrated in their project and felt that release time for teacher learning was going to be an essential element for progress going forward.

One school board reported that although their teaching population had a high degree of commitment to creating 21st Century learning environments, they were unable to identify specific success indicators or a clear vision about what that would look like in their teaching and learning environments. Another noted that it is essential to ensure that principals have the skills, comfort, and vision to lead the school-based learning transformation. Yet another found that the teacher librarian position held promise for leadership in a Learning Commons approach to using technology in schools. One superintendent stated: "Unless we're speaking the same language, unless we know what we mean by 21st Century learning, we're not going to move forward as a system. As a system, we're talking that language now."

In their book, *Professional Capital* (2012), Hargreaves & Fullan describe three kinds of capital that we see as pertaining to change and renewed vision in these projects. They are: human capital, social capital, and decisional capital. They write: "In sum, professional capital is a cornerstone concept that brings together and defines the critical elements of what it takes to create high quality and high performance in all professional practice …" (p. 102). Overall, school board projects seem to indicate that these three levels of capital are being explored in many of these projects.

Delineating Category B

As noted earlier in this study, the Category B projects were put forward as strategic pilots for system learning. They were established to consider three areas: pedagogy; learning environments/technology; and leadership as it relates to sustainability and scalability. As we did for Category A projects, we report on these three areas under the major headings of pedagogy, technology, and change. We include issues of scalability and sustainability as well as leadership under the major heading of change.

Pedagogy

21st Century Supports for Students with Special Needs

Several projects across the province focused on supporting students with special needs in various areas of their learning. One project reported that despite the user-friendly nature and accessibility of iPads, their functionally non-verbal students needed a high degree of support in the integration and management of such a device. They noted that placing the iPad in a class without the appropriate training would have resulted in little integration of the device to meet the project's goals. In another school board where a project was focused on inclusion and engagement for students with learning disabilities using iPad and iPod technologies, they reported that the main challenge was related to teacher capacity in understanding and using the devices. Not all teachers could connect good pedagogy with the use of the devices.

In another project also focused on students with learning disabilities, an Assistive Technology Coach role provided a unique professional development opportunity in the area of special education. The coaching model is a working side-by-side approach that allows for 'in the moment' support with technology, pedagogy, and strategies of universal design. It was noted that there was an increase in the varieties of software being used by students with special needs which seemed to indicate that the more experience and exposure students have to software the better they can identify which ones best support their learning style. In this way, assistive technology becomes a factor in student voice and choice.

> "Engagement with technology, as a learning tool and assistive device, is developing students' understanding that technology can support necessary life skills."

Another school board concentrating on assistive technologies found that building teacher capacity was critical for engaging in the highly complex process of changing their teaching culture and, that the issue of time to understand the change in pedagogy that they were embarking on was necessary for success.

21st Century Assessment Practices

Very little was reported in terms of concrete assessment practices in this study overall. While several school boards had the term "assessment" in their project titles, it seemed to be embedded in broader concepts such as blended learning, the use of specific technological tools, and teacher collaboration. However, one school board reported that teachers were very pleased that they could communicate with students within the project throughout the process and not just at the assessment stage. Another school board felt that assessment-based instruction had permeated the teaching population as 89% of teachers responded in a survey that they used assessment *for* learning weekly or more.

One school board found technology to be essential because it allowed for the quick assessment of individual needs and readiness levels of each student. Another noted that current standardized testing does not reflect the technology that students are using, and therefore, does not provide appropriate options and modes for assessment to match their technology-enabled options to demonstrate their learning. Yet another school board reported that the engagement of teachers and students in assessment *for* learning and assessment *as* learning is essential as a strong foundation in digital literacy that enables the use of appropriate tools determined in relation to the instruction or task.

In one project, a teacher commented: "The use of technology has changed my way of thinking about teaching and definitely broadened my perception of classroom practices. Evaluation and assessment using technology is something I currently struggle with."

Perhaps this comment is not surprising given the insights provided by recent research. According to the work completed by Luckin, Bligh, Manches, Ainsworth, Crook & Noss (2012): "… the market is saturated with drill and practice games (particularly for maths) to support *Learning through Practicing* despite being regarded as one of the less powerful learning themes. Meanwhile, there has been relatively little technology innovation aimed at supporting *Learning through Assessment* – which can be a powerful aid to teaching and learning" (p. 63).

Further, according to Fullan & Donnelly (2013): "Innovations that receive a red [poor outcome] often lack an assessment system altogether. If there is an assessment system in place, it may be unclear, lack robustness or be misleading" (p. 17). Looking to the future, they go on to say: "… the next generation of assessments will likely focus on activities which result in a product or performance. In this model, the assessment system should be able to identify features of student behavior and make observations on it, not in terms of binary correctness, but in the form of useful information on the ways in which the learner has engaged with the activity"(p. 17).

21st Century Technology-enabled Differentiated Instruction

While differentiated instruction was noted in a number of project titles, it seems to be embedded in multiple aspects of teaching and learning in projects. One school board noted that teachers and students commented on the use of technology saying that in pedagogical terms, the teachers were able to differentiate instruction and offer students more voice in determining their learning direction as well as more choice in how they demonstrated their learning. Another said that they now define a 21st Century learning environment as one that includes facilitative teaching, personalized learning, differentiated instruction, and where higher order thinking skills are developed and valued. More specifically, one project reported that teachers were compelled to apply differentiated instruction to the content of lessons and adapt it to the students by taking into consideration the student's profile, the data from the OSR file, and other data published by the school board. They noted that differentiated instruction is the means and technology is the tool. Overall, these descriptions appear to indicate that specific examples and outcomes attached to differentiated instruction as a stand-alone concept are not as readily available as might have been anticipated.

> "Teachers are becoming re-engaged in teaching and students sense their enthusiasm. Teacher enthusiasm is contagious. Teachers now understand the various ways that students can learn and technology is a tool for differentiating instruction."

21ˢᵗ Century Science and Innovation Focused on Engagement in Science through Connections with Digital 21ˢᵗ Century Economy

It is interesting to note that while this theme area was suggested under Category B projects, no projects focused on this area. There were five projects related to science in the Category A projects. In order to provide some insight in this area that was specifically delineated for the pilot study, we report some of the indicators of success mentioned in these projects.

One project noted that teachers found the digital textbook to be well aligned with Ontario curriculum expectations in science. They said that because teachers can decide which aspects of lessons to investigate and the classroom manager software can track which assignments students have or have not completed, differentiated learning becomes a real possibility. Another school board found positive responses from teachers engaged in a blended learning environment that included science, math, and language arts. Student attitude and an increase in the completion of assignments also were noted.

Another school board described a more positive attitude to science on the part of students and an interest in continuing to study science. One project indicated an increased capacity in the science department to engage in inquiry-based learning activities, and in integrating digital tools and resources along with an increased appreciation as to how inquiry-based and blended learning impacts student engagement.

Technology

In their white paper, Fullan & Donnelly (2013) write: "We believe that technology acts as the enabler in an innovation to make learning quicker, clearer, faster, and better" (p. 21). They note three categories that they feel are imperative to address in terms of technology: quality of user experience/model design; ease of adaptation; and comprehensiveness and integration.

Of the first category they say: "In the best innovations, digital tools are participatory, engaging, co-creative, and collaborative. Digital learning tools, if designed effectively, can powerfully promote deeper learning by expanding access and options and personalizing skill building" (p. 21). Of the second category, they write: "technology [should be] connected to high-speed Internet, allowing for real time adaptation of the programme to the learner [and] built in access to the resources of the global Internet, where appropriate" (p. 21). And of the third category, they note: "For technology to be effective in the classroom, it needs to be integrated into all relevant aspects of the learning environment and the learning day … A key indicator of integration is whether the technology department and the curriculum unit … are interrelated" (p. 22). Across a number of school boards in this study, the impact of these three areas on student and teacher learning and engagement was reported.

Cloud-based Learning Environments

One project noted that there were technical issues around different devices brought to school by students and their own operating system environments, which did not work well with the Google environment. They also reported that inconsistent bandwidth speed at both school and home was occasionally a hurdle for student completion of activities. A concern expressed by teachers was around issues of equitable access, as those who had computer access at home or devices they were able to bring to school, had greater opportunity to work on assignments, collaborate with one another, or take time to improve their work. In another project, there was an

increase in the number of users creating documents within the cloud, an increase in teachers and administrators trained and proficient in using the cloud, and an overwhelming enrollment in professional development sessions. It was noted that teachers were collaborating with staff and students, using cloud technology.

In one school board, several teachers had very positive comments. One said: "The use of Chromebooks and cloud technology levels the playing field for students of all abilities. There are immense gains for students with learning disabilities." Another teacher found: "Group work can be done at different times from any place there is the Internet. Students have taken advantage of it when sick and during snow days by accessing their work at home."

Another school board noted that infrastructure was still a barrier to "access for all," but the portability of Tools2Go across all devices allowed them to move closer to their goal of equitable access. They also reported an increase in collaboration and communication among both staff and students, and capacity building surrounding technology in the classroom. This project said that with the support of the IT Department, Google Apps was fully integrated with the school board's active directory system to ensure that all users have a very secure yet easy way to access digital content and web-based tools.

Yet another project described the strong relationship with other school board departments such as IT, Communications, and Purchasing Services as strengthening the awareness to the needs of teachers and students. They also said that the multiple departments' interest in the use of collaboration tools supported the business related practices of the overall organization.

These steps seem to reflect positively on the progress toward the three points noted by Fullan & Donnelly described above.

21st Century School Libraries: Learning Commons

In one school board, collaboration and building key relationships was noted to be a significant outcome of their project, which gave voice to teacher librarians and library technicians who identified their technological and specific professional learning needs. They reported that their understanding of inquiry learning and how the availability of technology supports students was increased through the Learning Commons. In yet another school board, the digital and physical Learning Commons were seen to enable teachers, students, and the parent community to be more engaged in supporting student success. As one project leader reported: "Our learning commons environment provides digital collaborative space where students create, publish, and share their work within school and beyond the walls of the school developing an enhanced student "voice" in the system and supporting student acquisition of 21st Century skills – communication, collaboration, opening up the doors of learning to the world."

21st Century Digital Learning Resources

In this area, one school board reported that in building capacity for school leaders, the flexibility of all involved or impacted has been integral to sustainability. They found that the relationship between teachers, administrators, coaches, consultants, the senior team, and the IT department was the main reason that they were able to carry out their work in this project. They want to continue to ensure that structures are in place that allow for communication between schools and IT, to ensure that infrastructure and processes are meeting

the needs of the system. Further, they learned that connectivity issues in schools and slow Internet not only impair students' perceptions of their learning, but impede teacher willingness to take risks and increase their reticence to engage for fear of network failure.

Another school board responded that their project was successful due to the willingness of staff and school board departments' personnel to work together in spite of significant challenges. They also noted a commitment to upgrading their network and ensuring ubiquitous wireless access in schools. In terms of digital textbooks, they were able to undertake a review process within the project and select a product that most participants agreed to proceed with in the coming year.

Bring Your Own Device (BYOD) Best Practices and Research Guidelines

It is clear that school boards are at various points in considering this issue. For example, one school board provided mandatory training for BYOD for all schools. This school board has invested significant resources into developing wireless networks in all schools so that wireless access and Google Docs together can provide the foundation for students and staff to bring their personal devices to classrooms. They reported that the success of Google Docs in their school board led to a request from senior administration to revisit their Acceptable Use Policy (AUP) with respect to BYOD. They further stated that the full support from their IT department allowed Google Docs to be fully integrated with the school board's active directory system, which ensures all users have a very secure and easy way to access digital content and web-based tools.

Another school board reported that they are considering a BYOD device environment within the next few years, while in a different school board the prohibitive cost of technology has led them to begin to invest in infrastructure for BYOD and cloud technology. In yet another project, it was noted that 'in-school champions' are a factor for the success of BYOD as teachers need to be willing to accept student expertise in this area. They also found that 'loaner devices' could help with issues of equity for students who did not have their own devices.

Issues of Internet safety education and having students understand the use or misuse of social media were noted as important factors in using personal devices in and out of school, as was the care and security of personal devices.

Change

Fullan & Donnelly (2013) writing about large scale reform note: "There needs to be policies and strategies that will simultaneously i) conceptualize and operationalize the new pedagogy; ii) assess the quality and usability of specific digital innovation; and iii) promote systemness. In other words, we consider what might be necessary in order for technology to go to scale and to produce systemic change" (p. 12).

Looking back over time, it is interesting to note in Fullan's work (1991, 1998, 2005) as well as in more recent work such as Hargreaves & Fullan (2012) and Fullan & Donnelly (2013), that calls for meaningful and lasting change involve personnel working at multiple levels within and across school systems. As well, Ministry personnel working at the provincial level, school board staff, and individual school leaders and teachers are all noted as having a role to play in successful transitions that support more meaningful student engagement and achievement in the classroom.

Although there was a large increase in participation in these projects in 2013, much as the research team noted in the 2012 pilot study, it appears from data gathered in interviews and reported from individual projects, that school boards are at different stages in their thinking and development of strategies for engaging in technology use in their "conceptualizing and operationalizing of the new pedagogy," as noted above. In spite of this circumstance, we believe that the fact that all school boards participated in these projects does indicate an increase in understanding that skills and attitudes for 21st Century teaching and learning are of critical importance.

In some regions where input from the technology sector is available and has been sought after, school board direction around the use of technology has been established for several years, while in others, issues of continuous availability of the Internet are still a major concern. In spite of this variability, we found that all school boards were working to "assess the quality and usability of specific digital innovation" in their projects.

In last year's final report, we noted that, "these projects have acted as a catalyst for giving school boards the impetus to inquire into changing how they perceive the marriage of technology with pedagogy." In this study, it seems clear that the "promotion of systemness" has been understood in new and more far reaching ways that reflect a positive move forward in board-wide, holistic thinking that points to sustainable technology-enabled practices.

21st Century Leadership for Effective Teaching and Learning

In this final section of Chapter 4, we combine information pertaining to sustainability and potential scalability as we address the notion of 21st Century leadership. In *Leadership & Sustainability: System Thinkers in Action* (2005), Fullan asks: "What kind of leadership is needed for sustainability?" (p. 29). We address this question as we report results and insights from projects under the following headings: school board alignment; coordination of departments; attending to effective professional development/job embedded training; and planning.

> "Leadership is … a matter of changing mindsets, of being responsive to new way of teaching/learning."

School Board Alignment

One participant noted: "Boards with strong direction from directors, senior administration, trustees, and a long-term learning plan for 21st Century skills seem to have a focus and a future orientation that provides direction for next steps through the Board strategic plan and School Improvement Plans. The focus is on improved student learning and enhanced instructional practice in which technology is one of a variety of effective teaching/learning tools." A number of school boards describing the importance of having a central focus echoed this perspective.

One project reported that support from senior administration and the Board Trustees was an instrumental factor in both the implementation and the sustainability of their project. In a similar vein, another school board noted that school board commitment to 21st Century learning both aligned and supported their work and resulted in a new administrative role in their school board. Another school board also reported that the support and direction of senior administration allowed them to expand their education technology team.

One school board said that aligning initiatives and explicitly referencing connections between initiatives greatly impacted their sustainability and scalability potential as did their clear focus on leading and learning for the 21st Century. In another school board, they felt that because their project had the support of senior staff and the Director of Education, that the potential to change teacher practice was very strong.

Coordination of Departments

A number of school boards reported that changing the operational structure in some areas was valuable such as establishing working relationships between IT and curriculum. One pilot noted that department alignment, an unexpected outcome of their project, improved overall communication. Another pilot described flexibility as an integral support to the sustainability of the project.

In one school board, the tri-level support from senior administration, the IT department and the program department positively impacted the sustainability of the project due to their commitment to the development of digital skills for teaching and learning. Through their project, another pilot recognized that all branches of the program team such as Literacy/Numeracy, Safe Schools, and IT need to be part of the process. Similarly, building lateral capacity and the structures necessary to support such capacity were described as a continued focus for the future.

> "There is a strong culture of collaboration between IT "techies" and instructional leaders who work together to select technology that has the best potential to enable engagement and learning on the part of students."

Effective Professional Development/Job Embedded Training

Projects reported on aspects of professional development across the school board, school, and teacher levels. One noted that sustainability was positively impacted by the support offered to teacher learning teams by instructional coaches. These 'lead-learners' were able to model a growth mindset for their colleagues and were personally available to ensure that teacher teams' work stayed focused and energized. Other projects also adopted the coaching model for ongoing professional development. One pilot said that they found tech coaches invaluable for both sustaining and scaling technology use in their project. Another project found that their move to eTech coaches was building capacity in teaching by working with teachers and administrators in their school to develop a plan of action to align existing technology and resources with collaborative inquiries, School Improvement Plans or professional learning cycles. This project also reported that because the eTech coaches were willing to take a leadership role in their initiative that the implementation of a 21st Century vision of teaching and learning was accelerated and a culture of collaboration and innovation was sustained.

> "ETech teacher/coaches meet regularly at a 'round table' meeting. This is where program offerings in schools can be discussed and gaps addressed. The tone of these meetings has changed from 'hoarding' technology to 'sharing' technology."

In yet another school board, it was found that the Assistive Technology coach role provided a unique professional development opportunity in the area of special education in that support with technology 'in the moment' was made available for teaching and learning opportunities.

Other in-school comments about professional development were noted as well. In one project, the data indicated that when scaling up professional development to include more teachers in a school, teacher

comfort level and confidence were increased. Others noted the importance of the principal and vice-principal in building capacity and supporting teachers and programs with technology use.

Professional development for administrators was noted as an interesting outcome in several projects. In one project, it was noted that a first 'administrators only' event was held to demonstrate the value of hands-on learning in technology and the kind of learning that could be provided for teachers. Another project reported that senior administrators were participating in professional learning to enable them to use Google Apps in Education to develop School Improvement Plans and role model technology-enabled teaching and learning with staff. In yet another project, significant momentum going forward was provided by informed support from administrators for Google Apps. One school board found that the most significant factor positively impacting the project was the support of principals and school board administrators.

> "Principals are not just saying 'give me the technology,' they're actually asking how they can best invest the technology funds that we have to help us achieve our pedagogical goals. "

Planning

There were indications of ongoing planning beyond project completion reported by a number of school boards. One school board passed a long-range plan that provides stable funding for the purchase of equipment and the provision of wireless Internet throughout their schools. Another linked their implementation plan with system priorities that go beyond training to develop a deeper focus on pedagogy related to inquiry-based learning and critical thinking initiatives.

In one school board, their introduction of netbooks is linked to their Educational Technology Plan and included in their Board Improvement Plan for Student Achievement. In another, they developed a process that allows them to reach out to the parental community and provide them with 'training' around Google Apps so they can support their children's learning.

Another school board created a technology Blueprint: 2013-2016, framed by guiding principles, which provides an overview of areas of focus to support information and communication technologies, supported by trustees, senior management, school administrators, and consultants.

It seems clear from the reporting in all these projects that there is repeated and accepted acknowledgment that we are at a new crossroads in terms of incorporating technology into pedagogical understanding in teaching and learning. The difference we note from the 2012 study is that there is an increased sense of excitement and enthusiasm. As well, there is a more concrete direction emerging in terms of sustainability and scalability across the panorama that comprises the convergence of pedagogy and technology in a diverse provincial landscape.

Chapter 5

Recurring Voices Across the Terrain: Challenges and Highlights

In this final chapter, we address challenges that were reported by school boards across the Round 2 pilot projects as a whole. We also address highlights from the study that stand out for us as a research team. Guiding this chapter is the notion of recurring voices across a landscape that has expanded from the 2012 pilot project to encompass all English-language and French-language school boards and one provincial school. While the terrain is comprised of diverse elements across projects, the challenging issues emerge quite consistently into features that indicate important considerations for the path ahead.

In keeping with the previous chapter, challenges described by school boards are reported under the headings of pedagogy, technology, and change.

Pedagogy

Teacher Training

As Fullan & Langworthy (2013) write: "We know that the quality of teaching is the single most important in-school factor shaping learning outcomes" (p. 10). It is not surprising then that teacher training was reported as a challenge across projects. It appears that school boards are trying multiple ways of providing necessary support for teachers as they move forward in implementing 21st Century skills in their classrooms.

One school board stated that, following professional development, 30% of teachers polled said they would need more training before being able to integrate technology on a regular basis in their classrooms. Another project reported different kinds of support were needed for teachers from full group inservice to small group and one-on-one support depending on their level of need.

One school board reported that comprehensive teacher training to support sustainable practice depended on release time for classroom teachers. Another pilot said that teachers commented that they cannot just be given a technology tool and be expected to make appropriate changes in pedagogy. They felt they needed collaborative time with a guided starting place to maximize the potential of devices in the classroom.

One project reported that while the vast majority of participants were competent with technology for traditional classroom teaching, that was not so for inquiry-based teaching, where they need professional training and support. In a similar vein, another project noted that while using an iPad can be intuitive at the personal level, to teach using an iPad can be daunting, even with strong training.

Some school boards tried embedded approaches to teacher training such as using technology coaches who supported teachers with both the pedagogy and the technology of their projects. Other pilots used the teaming of teachers working collaboratively for ongoing training, and one school board reported that tech-teams of students were the go-to group for support in using technology in the classroom and school.

> "Technology helps to break down the isolation of classroom teaching by supporting collaboration, communication, and connections as teachers co-plan, co-teach, and reflect on their practices together creating the "teacher trifecta."

21st Century Skills

Collaboration was described as an important area of focus going forward from these projects. One school board noted that both teachers and students identified effective collaboration as becoming easier with technology. A survey response in another school board indicated that students who were working collaboratively were moving toward 'less chatter, more collaboration' in a blended learning environment. Yet another school board found that technology was providing a role for student voice in their collaborative learning.

One school board said that continuing to build a culture in classrooms where students are seen as trustworthy and competent meant that teachers could create learning activities where students could move around, communicate, collaborate, think, and have a voice in the demonstration of their learning. Yet another school board felt that, in moving forward, a collaborative inquiry model should be deployed that would encourage both professional collaboration and inquiry as a platform for professional learning.

> "There is an attitude of 'let's figure this out together' as students take the lead in exploring the unique features of software to teachers. Students sometimes show teachers how to use an application to foster learning."

Technology

Fullan & Donnelly (2013) write that the ease of adaptation in technology addresses the ease and speed of updating, modifying, and customizing teaching innovations. Challenges focusing on these issues were noted across school boards in this pilot study.

Wireless Networks, Bandwidth, and Hardware

A number of school boards reported that their projects were affected by the quality and availability of their wireless networks. For example, one project noted that network speed and wireless access proved to be a challenge in some schools. Another pilot found that professional development sessions were frequently interrupted by technical issues such as the inability to connect to wireless local area networks or blocked sites.

One school board remarked that teachers who had bad experiences with slow Internet in their schools were reluctant to make online resources part of a lesson. Similarly, another school board reported that in a survey, 71% of teachers commented that infrastructure limited their use of digital tools. Other comments also referred to access and reliability of networks as obstacles to seamless and intuitive student use of technology during class time.

Reflecting on their project, a school board said that connectivity issues in schools and slow Internet not only impede students' perceptions of their learning experiences, but it impedes teacher willingness to take risks by basing lessons on technology and have them fail due to connectivity problems. Looking forward, one school board reported that they need to continue to focus on infrastructure so that it is sound enough to accommodate increasing demands caused by the expanded use of personal wireless devices.

In terms of bandwidth, one school board noted that access and bandwidth infrastructure needed to grow in response to the system's growing demand. They reported that 65% of teachers abandoned up to five lessons

in a two-month period due to unreliable access. Another found that bandwidth and access points needed to be re-assessed in some circumstances.

One school board reported that impediments to the sustainability of their project include bandwidth to support widespread use of wireless, the age of the technology in the system, and funding. Another described inconsistent bandwidth speed as a hurdle for students to complete activities.

One school board reported that their biggest challenge was providing the hardware required to support their project. In one project, a pilot found that based on teacher comments, the major challenge was getting access to a sufficient number of netbooks. They noted the limitations of shared hardware required a great deal of planning and support. Other projects also struggled with issues of hardware and working with applications and apps that ended in the midst of their work.

Access to computer labs was an issue in several different school boards. One school board noted that access to technology continued to be a major issue in classrooms and was reported by teachers as a barrier to success for student learning.

> "… now when we go into schools we talk about "how the technology can go to the student, rather than student going to the technology". We are looking at investments in wireless networks and mobile technologies."

Bring Your Own Device (BYOD), Equity, and Security of Devices

While some information around these issues was noted in Chapter 4, additional information described by school boards in regard to implementing 21st Century teaching and learning challenges are noted in this section.

One project reported that there were technical issues around different devices brought to school by students and the school board's operating system environment. Another project noted that BYOD increased to the point where nearly 20% of all Internet traffic within the school board was from guest devices. This situation necessitated some significant investments in network infrastructure.

In another school board, it was noted that the pilot provided insight into the challenges and opportunities that a BYOD program would pose. It allowed a testing of infrastructure and insights into teaching changes that occur with a BYOD program. Another project found that teachers needed to be willing to accept student expertise in a BYOD setting.

One school board reported that despite the good intentions for devices from home, students were much better served with controls placed on the iPads provided by the school board. In that way, students understood the boundaries and teachers found that programming was not influenced by factors external to their class.

In terms of equity, a number of projects reported that the discrepancy between students who have their own devices and those who do not was noticeable in terms of digital access. Providing 'loaner devices' was reported in several areas as a way to equalize digital access. One school board noted that those schools

impacted by socioeconomic factors will be provided with up to 25% more funding over the baseline amounts in the next year.

> "The project has helped set the path that we will follow next year; leveraging what we have to spend on technology, with technologies that we have in the system, and with the devices students bring to the classroom."

Also in regard to BYOD, the security of devices brought into the school was described as a challenge in a number of projects. One school board reported that permitting home devices into schools opens up a number of implications for educators such as liability (theft, damage, loss of content); security (student, staff, and school board); behaviour (appropriate use, disruption); and instructional (educational content vs. entertainment, home vs. school use, and boundaries).

Teacher comfort was mentioned in regard to having students use their own devices, as was the care of devices and the responsibility that goes into making them secure in school. A school board noted that in their elementary schools, students do not have lockers to place personal devices in when not in use.

Change

In "Change Forces" (1993), Fullan writes: "… the secret of growth and development is learning how to contend with the forces of change …" (p. vii). In this study, while challenges internal to school boards have emerged as part and parcel of the projects themselves, external issues that impeded growth and development were noted as having impacted their projects.

External Issues

School boards reported that the main external challenges that impacted their projects were time for implementation and labour issues. Several school boards noted that the late start of the project and the short time period in which to execute it posed significant challenges. One pilot indicated that teachers were already involved in many professional development opportunities so that making arrangements for dates to work on this project was problematic. Another school board indicated that, given the complexity of the change process, short timelines reduced the amount of learning realized by teachers, and student achievement results were not what they would be if the project had occurred over a longer time period.

One school board felt they did not have enough time to build significant capacity, while another said that the short time impeded the reporting of the results of their project. One pilot reported that some teachers who might have made a positive contribution were excluded due to the late start of the project and to timetable constraints.

In another school board, it was noted that by the end of February their master calendar for inservice was at its maximum, which made teacher training a big issue. In yet another school board, much of their work focused on capacity building, changing cultures, and redefining work. They found that as such, the short timelines and the political climate limited the information they had to report on with regard to their intended success indicators.

In terms of labour issues, one school board reported that the provincial job action presented a challenge where time to meet and work together to plan the initiative as a whole group was impacted. Another found that the labour situation made arrangements for teacher release time very difficult, which caused delays in

implementing their project. In yet another school board, union action and teacher hesitation impeded finding candidates at every school to volunteer for their project. One project noted that due to the labour situation, there was no support for summer work to disseminate learning with other educators.

Internal Challenges

In terms of challenges that are internal to school boards, which are delineated in Chapter 4, it seems important to reiterate that 21st Century leadership for effective teaching and learning is impacted by the issues noted there: school board alignment; coordination of departments; effective professional development; and overall school board planning.

In spite of these challenges, school boards did engage in projects that seem to have moved them forward in their understanding of digital learning and the role it can play in 21st Century teaching and learning.

> "We realized we had to do more to prepare students for the world into which they will be graduating. We came to an emerging understanding that we had to move to richer work around 21st Century skills in order to continue to raise student achievement. … The technology is essential because we want our graduates to practise 'deep thinking in action.' "

Highlights

It is interesting to note that many of the challenges highlighted in this study are similar or identical to the ones reported in the 2012 pilot study. However, it appears that many of the questions reported under those challenges have transformed over the course of one year to a more informed vision of what it means to engage in 21st Century teaching and learning. For example, school boards seem to know more about what is needed to support their infrastructure in regard to networks and hardware; about BYOD and selecting devices, equity and security; and about professional development and planning.

Blended learning and collaboration appear to be directions already in progress across the terrain of change in school boards. There seems to be an understanding that building capacity in digital teaching and learning among teachers and school board personnel will lead to the sustainability of educational initiatives. In this way, projects will increasingly become scalable across schools, school boards, and the province as a whole.

Several comments by school boards in regard to issues of scalability and sustainability of projects offer insight into increased understanding of possibilities for growth and direction on the terrain of system learning. One pilot noted that the project allowed them to anticipate the issues and challenges that set the stage for system scaling and sustainability. Another pilot reported that a key factor to the sustainability of the project was its implementation model. Rather than focusing on one school, the project was focused across the system and supported by providing one device for every three students. They found this way of approaching scalability to be financially manageable. Yet another school board said that their next step for sustainability and scalability was to expand their efforts beyond the schools to communicate with and engage their parent community.

These comments seem to indicate a change in understanding of the importance of shifting projects from classrooms and schools to whole system learning – they also are indicative of the cultural shift more globally in terms of embracing system change, as the research team has made reference to throughout this study.

"Direction comes from the top down, but innovation comes from the bottom-up. If you have direction that fosters innovation, then you have something that is sustainable."

Epilogue

A Higher Vantage Point on the Landscape of Digital Innovation

In concluding this study, it is interesting to reflect on how much has changed in the realm of 21st Century system learning over the past year in comparison to the initial pilot projects that took place in the 2011-2012 school year. At the provincial level, all the school boards across Ontario are now actively engaged to varying degrees in a shift toward connecting what Fullan (2012, 2013) has described as essential forces coming together to create the ground for 21st Century learning: pedagogy, technology, and change. Similarly, school boards and schools have demonstrated growth and development in understanding the nature of the changes required for successful student engagement and achievement and their own ongoing learning.

There is a sense in the construction of the pilot projects in this study that school boards and schools have moved beyond trying out various digital tools and programs in classrooms as a means of incorporating technology into their pedagogy, to a deeper understanding of what the shift toward 21st Century teaching and learning encompasses on a more holistic scale.

It is noteworthy too, that many aspects of these local projects and the vantage point we have reached at the conclusion of this study align with recent literature that substantiates necessary changes and directions forward for 21st Century system learning in a more global context. Combining the overall directions of change indicated in this study with that described in the literature more globally, may help point the way to a clearer vision for going forward in this digital learning landscape.

It appears to the research team that issues emerging from results of projects at various levels across school boards are congruent with recommendations for necessary future direction provided by Fullan & Langworthy (2013). They note the importance of adequately developing the following four elements to connect theory and practice for deep learning that lie ahead:
- Policies and system-level strategies that enable diffusion
- Accepted ways of measuring deep learning
- Adoption of new pedagogical models that foster deep learning
- Knowledge of how students adopt deep learning practices

Judging from the results of this pilot study, these four areas are in the beginning stages of investigation across the province using a variety of technologies as tools for advancement. It seems clear that, to varying degrees, school boards are engaged in:
- Writing new policies that incorporate issues that surround technology use
- Examining ways of measuring student engagement and achievement
- exploring new pedagogical programs and incorporating strategies that combine pedagogy and technology, and
- Inquiring into how students are learning given these new parameters

Increasing clarity in each of these areas appears to be of fundamental importance for moving ahead to realize more fully the vision of 21st Century teaching and learning.

Reflecting back on a change structure that Fullan (1993) addressed may be useful for considering ways of actualizing the four points noted above. He wrote: "I see four core capacities required as a generative foundation for building greater change capacity: personal vision building, inquiry, mastery, and collaboration. Each of these has its institutional counterpart: shared vision-building, organizational structures, norms and practices of inquiry; focus on organizational development and know-how, and collaborative work cultures … we need a dual approach working simultaneously on individual and institutional development" (p. 12). The strength that the research team notes here is the recognition that everyone – teachers, students, principals, consultants, school board administrators, and the parent community – has a role to play and input to offer for embracing change in a new pedagogical environment. Taking the pilots as a whole, there is evidence in the range of projects that these multiple voices are being heard across the landscape. All these voices need to be encouraged for the development of deep pedagogy, which requires new thinking and structures so that inquiry, creativity, collaboration, and shared vision-building can become the basis for teaching and learning in schools.

Fullan & Langworthy (2013) offer insights into the institutional aspects of change noted above. They write: "It may sound like a subtle distinction, but effective and sustainable change happens when there is a consensus among all stakeholders that the new goals are a moral imperative. When there is this kind of system-wide shared purpose, collective will becomes the core driver, and change becomes much easier than previously thought … This orientation toward system-wide diffusion of new pedagogies begins with cultural coherence and initial engagement, and then brings in tools and programs to support realignment" (p. 7). The projects as a whole provide evidence that school boards are engaged in moving along this continuum as they build capacity for technology-supported pedagogy.

The results of this study mirror two important aspects of pedagogical change that these authors stress and point to possible areas to address going forward. One is providing assessment evidence or measurable outcomes, and one is the important role that teachers play in pedagogy that promotes deep learning.

Since the need for accurate evidence of student learning and achievement is an essential ingredient for planning in an inquiry-based, technology-enhanced school environment, it is important to have tools that inform assessment practices and instructional decisions. Such tools become imperative for scalability and building professional capacity. Fullan & Langworthy note though that: "Very few initiatives have successfully operationalized deep learning skills for measurement purposes, and none … have 'broken through' to broad use across schools and systems …" (p. 9). In this study, while the majority of projects focused on student engagement, little was reported in the area of concrete or measurable achievement. This outcome aligns with what Fullan & Langworthy note more globally as, "The absence of a robust evidence base that shows *how* new pedagogical models [mobilize] … for deep learning" (p. 10). They share initial thinking about innovative assessment practices in the following points:

- Tools that support rapid feedback cycles on learning progress
- Tools that include a wider variety of participants in the assessment process such as peers, outside experts, etc.

- Tools for providing more complex assessment experiences such as online collaborative problem-solving
- Tools for assessing more complex learning products such as student work artifacts

The second area is "making explicit and specific what teaching for … connected and flourishing learning looks like …" (p. 11). A number of projects in this study reported utilizing various professional development strategies such as coaching, PD days, and collaborative teaming to support educators in digital teaching and learning. Teachers often reported that they needed more focused time to learn to adapt their lessons using technology. Fullan & Langworthy (2013) suggest considering a switch in thinking from 'teacher as facilitator' to 'teacher as activator' placing the teacher in a more central role. They suggest teachers become:

- The designer of powerful learning experiences
- A source of human, social and decisional capital in the learning experience
- Partners in learning with students, accelerated by technology

This notion may be useful to consider going forward in the area of professional development in terms of implementing sustainable teaching practices. It suggests a continuing move from thinking of teachers as delivering content knowledge, to having teachers focus on the particular needs of students by creating learning experiences, contexts, and tools that have relevance and meaning for the learner.

Looking forward, a more focused research investigation could be directed to the multiple aspects of pedagogy-driven use of technology that involves teacher and student roles in collaboration and in inquiry-based learning. Such a study would reaffirm the importance of technology in supporting assessment that guides deep learning.

In addition, system-based recognition for technology use including the importance of designing ongoing professional development at multiple levels; school board departments working together; and policy development that promotes sustainability and scalability seem to be important areas of focus for further investigations.

In conclusion, these same directions for moving across the landscape of digital learning are highlighted by Fullan & Donnelly (2013) who advocate focusing 21st Century teaching and learning changes thus: "lead with pedagogy, develop capacity with respect to system support, focus on scale and embeddedness, and be open to surprises" (p. 26).

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School Boards	Project
Algoma District School Board	**Netbooks … A Gateway to Improving Learning, Teaching and Technology Use in the Junior Division** All Junior Division students have access to the netbooks. The focus of the project will be to develop and implement professional learning opportunities to teachers of Junior Division classrooms in the use of Netbooks.
Algonquin and Lakeshore Catholic District School Board	**Learning Technology Grants** Support the creative use of diverse technologies using a project model with teachers and classrooms in elementary schools.
Bluewater District School Board	**iPads for Enhanced Learning Opportunities** This project explores how iPad tablets can be effectively utilized in K-12 classrooms to impact student learning, student achievement, and teacher instruction.
Brant Haldimand Norfolk Catholic District School Board	**21st Century Learner – Grade 4 to 8 Math Focus** This project will investigate the role of technology and collaborative inquiry to improve teacher practice, increase student engagement and improve the development of 21st Century learning skills in Grades 4 – 8 Mathematics. Teachers will receive a NetBook to support the implementation of the project along with a minimum of 2.5 days of professional development activities.
Bruce-Grey Catholic District School Board	**Embedding Technology into Pedagogy** This project will focus on embedding iPad technology into the classroom pedagogy. Five learning pods of teachers ranging from Kindergarten to Gr. 12 have been established. Each learning pod has identified their learning need(s) and learning goals related to instructional practice of embedding technology into their classroom pedagogy and has developed a plan to work in collaboration to reach their goals by the project end date.
Catholic District School Board of Eastern Ontario	**Multi-Media for the Multitudes - Integrating Technology into Science** Integrating technology into science is an opportunity for teachers to work collaboratively to shift their pedagogical approach to teaching scientific inquiry. Three schools, working in teacher teams of two or three in each school will be supported by a skilled coach to learn about available technologies and instructional approaches.
Conseil des écoles publiques de l'Est de l'Ontario	**School Engagement Project** The main goal is to support the School Success Team (i.e., Engagement – Learning – Assessment) on the development and validation of tools designed to measure implementation of ICT and effective pedagogical practices.
Conseil scolaire du district du Grand Nord de l'Ontario	**A Technology-based Pedagogical Environment for Personalized e-Learning** The primary goal of this project is to support teachers in their pedagogical practices, in order to improve student achievement, recruitment, and retention, while increasing student and parent satisfaction, through the use and integration of electronic resources and tools.

School Boards	Project
Conseil des écoles catholiques du Centre-Est	**Higher Order Thinking Skills in the Digital Age** This project is designed to build the capacity of teachers to implement innovative pedagogical practices for the development of the students' higher order thinking skills, which are essential for preparing them adequately to study, work, and live in the 21st Century.
Conseil scolaire catholique du Nouvel Ontario	**It's Not Just a Robot!** Through robotics and the integration of technology, students in the primary division will develop skills relating to their personal and social development and certain skills targeted in the JK and SK curriculum.
Conseil scolaire catholique Franco-Nord	**Using Web-based Pedagogical Tools Effectively to Support Learning** Giving teachers an opportunity to use web-based pedagogical tools effectively, as a means of promoting student learning and encouraging differentiated instruction.
Conseil scolaire de district catholique Centre-Sud	**Longitudinal Study: Blended Learning in Numeracy in the Intermediate Division** Pursuing implementation of blended learning in the intermediate division, in order to close the gaps in numeracy, i.e., in order to see all students succeed.
Conseil scolaire catholique de district des Grandes-Rivières	**Hybrid Learning in Grades 7 and 8** The project is aimed at coaching Grade 7 and 8 classroom teachers in adopting more inclusive practices oriented towards assistive technology.
Conseil scolaire de district catholique de l'Est Ontarien	**Transforming the Classroom with Innovative Instructional Practices** Drawing on the 5 core ideas presented in *What did you do in school today?,* Pedagogical Services is coaching targeted teaching staff, in co-operation with Student Services and IT Services, in a project to transform our classrooms through the use of innovative instructional practices.
Conseil scolaire de district catholique des Aurores boréales	**Working Together to Succeed at Writing** The goal of this project is to increase student collaboration, using information technology and placing students in authentic learning situations.
Conseil scolaire public au Nord-Est de l'Ontario	**Technology in Support of Learning** Research question: Does teaching that uses tools such as the LMS and Google Drive have an impact on student engagement and on the students' sense of autonomy and self-regulation?
Conseil scolaire Viamonde	**Using Technology to Enhance Reflective Practice** Providing teaching staff with opportunities for collaboration, co-planning, and sharing of practices and resources.
District School Board of Niagara	**Key Success Factors in Providing Effective Online Math Homework Help for Grade 11 and 12 Students** DSBN is focusing on building an online homework help service to assist grade 11 and 12 math students complete their homework and increase their conceptual understanding and confidence in the math competencies. Math students will have access to this online service from Sunday through Thursday evenings from 7:30 p.m. to 10:30 p.m. The online service

School Boards	Project
	is being delivered by DSBN teaching staff and the pedagogical methods used align with the board's beliefs around constructivism and coaching. All sessions are being recorded, edited, tagged, and archived and made available to teachers and students within the DSBN on the D2L platform. Students complete an online exit survey so data can be collected on numbers of students accessing the service, the most effective online strategies used, and the topics that students requested help with.
District School Board Ontario North East	**Improving Student Learning Through The Use Of Technology** With a focus on writing, reading and mathematics, the project will investigate the use of technology (iPads) as an instructional tool to increase student achievement.
Dufferin-Peel Catholic District School Board	**Targeting the Grade 7 and 8 Levels to Study the Impact of Blended Learning Environments in Science, Math and Language Arts** This project will expand the Ministry of Education's blended learning by providing training sessions on blended learning to selected grade 7 and 8 teachers from all elementary schools.
Durham Catholic District School Board	**I-Triple A: Improving Attitude and Achievement in the Applied I-Science Classroom** This project is focused on SNC2P, Grade 10 Applied Science, and will integrate online resources with lesson plans and assessment. The online resources include Gizmos, interactive learning activities from the Ontario Educational Resource Bank, Froguts Dissection Software, and the use of Desire2Learn for Blended Learning.
Durham Catholic District School Board	**iPadegogy** A classroom set of iPads for 1:1 instruction was given to intermediate teachers in 9 schools identified by the Board as needing additional support because of either declining student achievement or enrollment. In addition 2 class sets have been used this year in high schools funded by outside projects. This pilot will provide them with training opportunities and collaboration time that will allow them to expand the scope of their teaching with mobile technology. It will benefit their students by providing them with a chance to showcase their learning in a differentiated manner using technological tools.
Grand Erie District School Board	**Technology and Pedagogy Tipping Point: Achieving a Paradigm Shift that Transforms Teacher Practice** The focus of this project is twofold: One is to evaluate the Grand Erie District School Board's 5-year initiative to integrate technology into every classroom by measuring short term knowledge and skills outcomes, and intermediate term beliefs and behavior, specifically, transformed teacher practice outcomes. Secondly, it seeks to learn from teachers what supports they need and what barriers they face in shifting their practice to seeing and using technology through a pedagogical lens.
Greater Essex County District School Board	**The Impact of Tablet and Mobile Technology in the Elementary Classroom** Schools were invited to apply to be involved in the iPad pilot, with all applicants being accepted. The application asked the schools to identify the most urgent cognitive learning need in their students and outline how iPads could be used to address this need. For the second cohort of schools, various supports were put in place, including face-to-face sessions

School Boards	Project
	with a project lead and Apple Distinguished Educator, site visits, and additional release time. The final component of this project is to further look at how the board's BYOD policy and practice has evolved.
Halton Catholic District School Board	**Blended Learning in the Classroom** Using the Ministry of Education's blended learning resources this project will explore the conditions for success in blended learning environments across grades and the curriculum. Participating teachers are monitoring the levels of student engagement and achievement through the use of blended learning.
Halton District School Board	**Bring I.T.!** Students and staff use a wide variety of personal devices in their lives including phones, handheld devices, tablets and laptops. In 2012-13, a significant expansion and upgrade to the wireless network availability has led many schools to embrace the use of student and staff-owned technology within schools and classrooms, encouraging them to Bring I.T.!
Hastings and Prince Edward District School Board	**"Inquired and Wired!" Inquiring About Blended Learning K to 12** This pilot will apply a teacher inquiry approach to identifying student learning needs. Teachers will learn to leverage the provincial Learning Management System (LMS) and blended learning strategies to enrich the learning environment and develop 21st Century learning skills, and offer differentiated learning in secondary and elementary schools.
Huron-Perth Catholic District School Board	**Learning for Life: Developing a Personal Learning Network with Grade Eight Students** Instead of asking students to "power-down" at school, HPCDSB will "power-them-up" by creating a personal learning network using the provincial LMS, OSAPAC/Board software, web 2.0 tools and their own electronic device. All grade six, seven, and eight teachers will be trained on the integrated LMS (built-in tools; Google Apps, Learn360, OERB, Gizmos, etc.). After this training session, these teachers will be invited to co-teach and co-plan with each other with the focus on meeting one of the goals of the blended learning strategy.
Huron-Superior Catholic District School Board	**Teaching and Learning in the 21st Century – Pragmatic Implementation of a Learning Management System/Blended Learning** The focus of the project is to increase use of the Ministry of Education provided Learning Management System (LMS)/Blended Learning by educators, students and parents. The LMS has provided educators, students and parents with effective instructions that is differentiated, while meeting the needs of our students. The project will focus on the following themes: Learning Environments, Innovative Teaching Practices, and Parent and Community Engagement.
Kawartha Pine Ridge District School Board	**Blended Learning and Electronic Portfolios in the Grade 10 Careers and Cooperative Education Programs** The project will focus on the use of the Blended Learning n Grade 10 Careers classes and Grade 11/12 Cooperative Education programs. In addition, it will focus on the use of electronic portfolios as a tool for facilitating collaboration, reflection, and the demonstration of student achievement. Participants will be trained in the Provincial Learning Management System (LMS), Desire2Learn (D2L), with emphasis placed on its electronic portfolio tool, ePortfolio.

School Board	Project
Keewatin-Patricia District School Board	**Improving an Assessment Based Instruction Model with 21C Technology (Whole System Implementation)** The focus of this project is to further the learning about, and develop instructional precision using 21st Century technology to enhance the assessment based instruction model that is part of the Board Improvement Plan and School Improvement Plan.
Kenora Catholic District School Board	**The Innovative Technology Teacher (ITT): Putting Pedagogy First** This project investigates the impact of a part-time designated innovative technology teachers (ITTs) working with classroom teachers to promote effective pedagogy while working to integrate learning technologies. The ITTs are currently committed to assisting teachers in taking the next steps to effectively extend or enrich existing practice with technology tools. This is being done through whole class instruction, working with small groups of students, at-the-elbow training, and sharing resources/lesson ideas, or administering formal professional development. The ITTs also allocate daily time towards their own professional development (learning new tools, online networking), researching ideas, or producing instructional materials.
Lambton Kent District School Board	**Engaging Students Through Equitable Distribution of Technology** This project will use wireless technology (with mini iPads) within the school and home environment, as a tool to plan, develop, and deliver curriculum. It will involve teachers working as a team to plan a continuum of instruction, authentic learning experiences, and assessment. The project utilizes an iPad mobile lab.
Lakehead District School Board	**IT Champions – Communication, Collaboration, and Driving Innovative Teaching Practice** This project seeks to encourage innovative teaching practices by expanding growth through involvement in a professional learning community. It will support the creation of a new teacher role (IT Champion) at each school. Roles of the "IT Champion" would include: • Peer-to-peer collaboration with other IT Champions and school leaders. • Model the use of new technologies and their instructional benefits. • Meet with program and IT staff and other IT School Champions. • Mentor staff on the effective use of IT to support student success. • Assist staff in the move to 21st Century technologies and blended learning. • Explore and test instructional strategies that use technology.
Limestone District School Board	**Non-verbal Student Support - Increasing Literacy for Functionally Non-verbal Students** This project will develop effective practices and supports for non-verbal students while developing the capacity of speech and language clinicians and support staff. The students will learn to use the iPad to communicate in structured interactions with the ultimate goal of moving to less structured conversation. The secondary focus will be to improve each student`s literacy level (Early Emerging Literacy, Transitional Emerging Literacy, Early Conventional…).

School Boards	Project
London District Catholic School Board	**Collaborative Inquiry for 21st Century Fluencies: Teacher's Use of Instructional Strategies with Assistive Technologies** The focus of this collaborative inquiry project is to provide teachers and educational assistants in the Primary and Junior panels with the opportunity to investigate the successes and challenges of implementing assistive technologies. The goal of the project is to provide both classroom teachers and resource teachers with the opportunity to share professional practices through collaborative inquiry to support the effective use of assistive devices with students identifies as exceptional.
London District Catholic School Board	**e-Portfolios and Blended Learning: Collaborative Inquiry for 21st Century Fluencies and the Assessment/Evaluation of Student Learning** The focus of the present project is to identify successful practices for the assessment and evaluation of student learning using e-Portfolios. LDCSB is committed to implementing e-Portfolios in accordance with our focus on blended learning and e-Community and the Province of Ontario's Learning Management System. We have established important targets so that all students are engaged in blended learning opportunities.
Near North District School Board	**Blended Learning to Facilitate Diagnostic Assessment and Differentiated Instruction in Mathematics** During the past two years, NNDSB has hosted a vibrant blended learning pilot project. Teachers have worked diligently to adapt teaching methodology and instructional resources to support student success and maximize learning opportunities within the context of the blended learning classroom. Teacher participants have become dynamic content creators and pioneers of this new pedagogy. The Board IT department has adapted the purchase and deployment of new technology to accommodate new and emerging teaching practices.
Niagara Catholic District School Board	**Access, Engagement, and Student Learning Using Digital Textbooks** This pilot will examine if student success can be increased when a digital textbook is used in lieu of a standard traditional textbook due to increased access, adaptability of the textbook for the educator and the students, and the ability to focus attention using highlighting and bookmarks. This project will also attempt to verify whether student self-learning improves.
Nipissing – Parry Sound Catholic District School Board	**Learning For All: Making It Differentiated and Personal** Cross-panel school and classroom projects will explore effective instructional practices and the role that mobile technologies serve in providing personalized and differentiated learning to support the engagement and success of all students, particularly those with special needs.
Northeastern Catholic District School Board	**Gaining and Sustaining the Interest of At Risk Students Through the Use of Technology** This project focuses on students who have left the system prior to graduation. It will utilize technology to re-engage these youth with interesting and dynamic teaching strategies that tailor the instruction to meet the needs of the individual student. The inquiry will focus on how technology can support and drive innovative teaching practice offering personalized learning that enhances and improves student re-engagement with the ultimate goal of obtaining a high school diploma.

School Boards	Project
Northwest Catholic District School Board	**iPads in Education: Teaching and Learning in a Digital World** This project examines the possible impacts of tablet technology in the classrooms. We have expanded the pilot from the previous year and seconded a ½ iPad technology coach that was a classroom teacher in the previous pilot with the iPads for the remainder of the year.
Ottawa Catholic District School Board	**Inquiry learning and Teacher Collaboration – The Impact of Mobile Devices and Digital Resources on Teaching Practice, Student Engagement, and Student Achievement** Teachers will be invited to apply to participate in a collaborative inquiry learning project.
Ottawa-Carleton District School Board	**Use of Mobile Technology and Digital Resources to Support Science Inquiry in Grade 9 and 10 - Collaborative Research Inquiry** A focus on inquiry-based learning supported by BYOD/mobile technology. A team of 10 teachers at Bell High School, including science teachers and learning support teachers, with their grade 9-10 science students (~150 students) participating in a collaborative inquiry with three central staff aiming to increase student engagement and achievement.
Peel District School Board	**iRecord: Capturing Reading Records with the iPad** Peel has made a commitment to using PM Benchmarks from K-Grade 2 for leading indicator data. The creation and use of an iRecord App will facilitate the collection of data and offer seamless integration of assessment with student performance, ensuring that data is stored in a single location.
Peel District School Board	**iAssess: Using the iPad as an Effective Tool for Organizing and Collecting a Variety of Differentiated Assessment Evidence** This project will use the iPad to support assessment of, as and for learning through collection & triangulation of data. The project will create an iPad assessment app.
Peterborough, Victoria, Northumberland and Clarington Catholic District School Board	**ICT – Interpret, Create and Talk about Math** This project will allow teachers to incorporate handheld devices into math instructional strategies and facilitate the collaboration inherent in these strategies through the sharing of handheld mobile devices in each class.
Provincial Schools - Sagonaska Demonstration School	**iPod/iPad Project- How Educational Technology Can Be Utilized for Teaching and Learning Purposes, and Assessment of Student Performance** The project will build on the 2011-2012 focus and build capacity for personal technology use for students (specifically iPads and iPods) in the classroom to support learning. Teachers will be participating in a multi-day, multi-stage staff development initiative with the 21st Century Fluency Project. Our focus is the transformative use of technology. Moving from a hardware/software focus to a focus on critical thinking, problem solving, creativity, information fluency digital collaboration, and a demonstration of the fundamental tenets of being a digital citizen.

School Boards	Project
Rainbow District School Board	**Blending Engagement and Assessment: Benefitting Students by Bringing Technologically Innovative Practices to the Mathematics Classroom** The project emphasis is on student engagement (primarily at the Applied Level in Mathematics) as a result of classroom use of technology. The seven participating project teachers have participated in the board's Mathematics Learning Cycles professional development model and they represent three secondary schools. The Tech Coaches have been creating an interactive resource in the Blended Learning environment.
Rainy River District School Board	**Teaching and Learning in a Digital World** The project will investigate the role of digital resources (such as Premier Tools, Clicker 5) and applications on mobile digital devices that are integrated into classrooms through a job embedded model.
Renfrew County Catholic District School Board	**Tablet Technology and the Collaborative Classroom** This project will support grade 8 teachers in a meaningful collaboration about how to effectively utilize tablet technology in the classroom and build student conceptual understanding for becoming increasingly self-determined, critical thinkers. We set out to look at a way that we could foster and develop innovative teaching strategies that would result in deep, transformational and consequential changes in instructional practices, based on sound pedagogical foundations, which would affect student learning. The key emphasize was on collaboration.
Renfrew County District School Board	**iPossibilities: Supporting Inclusion, Engagement and Achievement for Students With Learning Disabilities** Connecting with the philosophies of Education for All and Learning for All we recognize that assistive technologies are "necessary for some, good for all" and are linking this understanding with new and emerging technologies, specifically iPod/iPads, and the use of these devices with our students with learning disabilities.
Simcoe County District School Board	**Minds on to Actions** We have a core of teachers across the county using innovative teaching practices embedding technology in classrooms. Using a similar approach to Minds on Media and incorporating a Professional Learning Cycle Model through regional forums, teachers will explore various technologies and the successes/challenges of implementation in classrooms. The goal will be to have a hub of expertise in every region to further support job-embedded learning.
St. Clair Catholic District School Board	**Assistive Technologies and their Impact on Students Working Towards the Provincial Standard** The project will focus on improving teacher capacity in grades 5 and 6 using evidence-based assistive technology practices to increase student achievement scores in the area of literacy (reading comprehension, inference, communication, and collaboration). Teachers will identify "marker students" who are currently performing below the provincial average and use assessment for learning tools to identify the learning challenges. Teachers will subsequently develop digitally based lessons to support those students, and will use the same instructional approach for the entire class population.

School Boards	Project
Sudbury Catholic District School Board	**Technology and Early Learning** The project focus is to embed technology in an early learning (Full Day Kindergarten) environment. Our focus is two-pronged: • For the educators, the goals are to use technology as a tool to document student learning and communicate the learning to all stakeholders. • For the students, the goals are to increase engagement in inquiry and play-based activities, increase participation in social situations, and increase verbal fluency.
Superior Greenstone District School Board	**Best Practices in Online Learning: Leveraging the LMS to Increase Student Engagement and Achievement** This project will build capacity for the effective daily use of the provincial Learning Management System (LMS) with teachers and administrators. Our pilot project is to utilize the Provincial LMS to provide support for split-grade classes (very common in our board), tiny class collaboration across the board, and students who have poor attendance.
Superior North Catholic District School Board	**Blended Learning: Building Capacity in Our Educators** This project will build teacher capacity for the effective use of the Ministry of Education Blended Learning approach.
Thames Valley District School Board	**Signature Learning Experiences for the 21st Century Learner** Our team of learning technologies coordinators wishes to take professional development in a new direction. This project focuses on providing teachers with professional learning and hands-on experiences that will embed the use of a variety of technology tools, within the context of curriculum expectations, differentiation (voice and choice), and authentic challenges, to provide "signature learning experiences" for students in the 21st Century classroom. Engaging students, while meeting curriculum expectations, is at the heart of the project.
Thunder Bay Catholic District School Board	**Educating for the Future - Preparing for the World** Through the use of Web 2.0 collaborative and knowledge-building tools, teachers will investigate exemplary mathematics resources to support their work and grow as professionals.
Toronto District School Board	**Developing a Model of e-Learning (blended) and Innovative Pedagogy: Teachers as Designers of Problem-based Learning with Technology** The scope of the project is three fold: • To develop a blended learning environment that consists of synchronous, asynchronous, and job-embedded learning as the architecture within which educators learn together as professional learning communities engaged in inquiry. • To gain pedagogical understanding of how technology changes teaching practice when educators use technology as tools to connect students' learning as part of challenging and compelling problem-based learning. • To understand how technology can be strategically used as a key lever in scaling improvement (in collaboration with *TakingItGlobal* as an external). Of note is the question whether there are differences between elementary and secondary practices when connecting technology to instructional strategies and pedagogy.

School Boards	Project
Toronto Catholic District School Board	**The NeXt Teacher Project** The intention of the program is to challenge teachers to reflect on and refine their classroom practice to more fully embrace the 21st Century skills needed by our students. This will positively impact student achievement and engagement as they see their classrooms as relevant learning environments that will serve them well in the future.
Trillium Lakelands District School Board	**Innovation and Inquiry Projects Using Technology** This project has been established to support innovation and inquiry in the use of technology in K-12 classrooms. Teachers will be invited to submit applications for financial support to further their innovative teaching practice and inquiry projects. We offered up $100,000 for teachers to apply for Innovation and Inquiry Projects using Technology. The maximum amount any teacher could be awarded was $10,000.
Upper Canada District School Board	**Sound Assessment in the Blended Learning Environment: A Collaborative Inquiry** This project is designed to couple collaborative inquiry with the blended learning model such that teachers can collaborate to improve assessment practices in the blended learning context. Particular focus would be on aligning assessment practices with the Growing Success document and on discovering innovative assessment practices for use in blended learning environments.
Waterloo Catholic District School Board	**Teacher Development Through the Use of Interactive Whiteboard Technology** The focus of this project is based within the innovative teaching practice, and this project will support working with teachers using release time to refine their teaching practice to integrate 21st Century fluencies and skills within their everyday teaching using both interactive projectors and software.
Waterloo Region District School Board	**Futures Forum Project** The Futures Forum Project combines the English, Careers, and Civics curriculum into an integrated course delivered by each participating teacher to a cohort that remains together for two time-tabled periods. The cross curricular approach allows for inquiry/project based learning using the technological tools available to permit students to collaborate and communicate beyond the walls of the classroom, create for authentic audiences, and critically reflect upon issues they choose to bring to their peers for discussion. The project examines the level of engagement, achievement, and sense of efficacy to determine if it can be sustained or improved to higher levels when choice and ownership are provided to the students within the Futures Forum Project.
Wellington Catholic District School Board	**Bridging the Gap for Students with Learning Disabilities** The project allows us to support the consistent and effective use of assistive technology throughout our District. We learned from our 2011 -2012 project that teacher understanding of both how to use the software and what specific learning needs could be addressed by technology, as well as the opportunity to experience the successes of students who effectively used technology was essential in creating momentum for it to be used more consistently.

School Boards	Project
York Catholic District School Board	**Destination Reading Early Literacy** We are providing Full Day Kindergarten SK Classes, and Grade 1 classes at all the interested schools participating, with access to an online reading program called "Destination Reading." Students will use the interactive technological program as an integrated part of their language arts program, especially as a group activity within a balanced literacy program, with a focus on guided-reading. The lessons in the program have a positive impact on student engagement by providing fun, interesting, and pedagogically sound digital drag and drop literacy activities focused on many principles of phonics, phonetics, and whole language combined, all of which will hope to improve student literacy achievement.

School Boards	Project
Avon Maitland District School Board	**Explain Everything: 1P Math from the Classroom to the Cloud** Students collaborate and use "Math Talk" for problem solving in the 1P math classroom. Students use the iPad application *Explain Everything* to visually and verbally communicate their solutions. The students' solutions are shared online in the solutions library.
Conseil scolaire catholique de district des Grandes Rivières	**Using Technology to Improve Oral Communication** This project supports the schools' improvement plans. In these plans, the literacy goal is an improvement in the students' oral communication skills.
Conseil scolaire de district catholique de l'Est Ontarien	**A Cloud-based Learning Environment (D2L / Google Apps)** Teachers at the Pavilions (6) and the secondary schools (7) use D2L and Google Apps to plan, share, and collaborate.
Conseil scolaire de district des écoles catholiques du Sud-Ouest	**A Model for Training and Support: Technopedagogical Capacity-Building in CSDÉCSO's Schools** Implementing a training model to develop teachers' ability to integrate technology into their pedagogical practices on a daily basis. Training will be delivered through professional learning communities focussed on the teachers' factual knowledge and procedural knowledge of the use of digital tools in the classroom.
District School Board of Niagara	**Scaling Grade 9 Math Research Beyond the Early Adopters** The focus of this project is to measure the impact on student achievement when evidence-based math teaching strategies and technology are combined. This project builds on the previous work of an evidence-based professional learning protocol applied to the integration of technology in grade 9 Applied and Academic Math. By increasing the scope of this professional learning model, this project will inform a scalable and sustainable professional learning district plan.
Durham District School Board	**DDSB Digital Campus: Enabling Cloud Resources and Learning Opportunities through Google Apps or Microsoft 365** The focus of this pilot is to document the operational and pedagogical steps necessary to enable a personalized cloud computing solution for elementary and secondary students and staff which will provide applications to promote peer collaboration, student voice, and multi-device access to shared learning resources and products.
Greater Essex County District School Board	**Building Capacity and Opportunity for Our Formal and Informal School Leaders** Brings to scale increased leadership capacity for formal and informal school leaders to promote the effective use of technology for teaching and learning.
Halton District School Board	**Enhancing Learning Through Cloud-Based Learning Environments** Bring to scale cloud computing to support collaboration, feedback, and knowledge management for students and staff. In 2011-2012, 33 pilot schools, 60 teachers, and approximately 2000 students were provided with a cloud-based educational environment. For 2012-13, all 55,000 students and 6,700 staff have been provided with Google Apps for Education Accounts.

Hamilton-Wentworth Catholic District School Board	**Bring Your Own Device (BYOD): Supporting the Development of the Learning Commons** WiFi hotspots have been introduced into all elementary and secondary school libraries. Teacher-Librarians at each school will be supported in creating a BYOD environment in the Learning Commons.
Hamilton-Wentworth District School Board	**Integrating a Blend of Board and Ministry Provisioned Tools: Creating Easy Access to a Broad Spectrum of Resources** There is an abundance of tools and resources that help to make learning more engaging, more collaborative, and more creative; availing opportunities for students to connect with other learners, global expertise, and authentic audiences, in previously impossible ways. D2L is a powerful tool to help facilitate these experiences, but these opportunities are greatly enhanced when Board and Ministry provisioned tools and resources are leveraged. Easy "anytime" access to the growing catalogue of tools, and multiple entry-points for all learners is the key to systemic adoption.
Keewatin Patricia District School Board	**Building a 21st Century Learning Environment** Brings to scale leadership and learning for all leaders and teachers.
Near North District School Board	**Near North 21: Building a Digital Age Learning Culture** Over the course of the last year, the Near North District School Board has endeavoured to 're' vision our educational technology strategic plan. The resulting *NearNorth21* or "NN21" initiative is an evolving project framework designed to initiate, sustain, and build a digital age learning culture. The NN21 Strategic Pilot will profile the Near North District School Board's efforts to grow and sustain a Digital Age Learning Culture. Specifically, the Strategic Pilot will study the impact/effectiveness of the eTech (Educational Technology) Teacher/Coach as a means to facilitate/lead meaningful and relevant 21st Century, job-embedded professional learning. Working in collaboration with Professor Graham, the Near North District School Board will employ the NN21 Strategic Pilot to develop *Profiles of Success* (acknowledging 'resilient' teachers, administrators, and schools).
Ottawa Catholic District School Board	**Library to Learning Commons - Evaluating the Impact of Changes in Learning Spaces and the Provision of Digital Resources on the Acquisition of 21st Century Learning Skills** Our project is best described through our inquiry intention: If we transform the traditional model of a school library to a focus on flexible space, mobile devices, and access to digital resources then we will see an increase in reading, and increase in access, and an increase in the acquisition of 21st Century learning skills. The detailed 'capturing' of the transformation of traditional libraries to learning commons in our project will create a roadmap for other Boards who are on the same journey. Changes to the physical space is one part of the transformation but the ability to observe the change in the thinking of the staff in identifying how their work has changed to date and changes eminent for the future is also important.
Simcoe Muskoka Catholic District School Board	**Learning in the Cloud** Brings to scale improved student writing and attitudes towards writing and learning when supported by a cloud-based environment. The project examines the use of cloud resources to improve learning through assessment for learning and descriptive feedback.

Thunder Bay Catholic District School Board	**Leading for the Future – Preparing for the World** Brings to scale leadership development that enables all leaders to initiate, sustain, and build capacity for new pedagogical practices. They will "generate ownership and establish conditions for continuous improvement". (Fullan). This project will provide administrations with the opportunity to develop an understanding of the Ontario Leadership framework in the context of technology integration, using the School Effectiveness Framework as a basis.
Toronto Catholic District School Board	**The NeXt Administrator** Brings to scale leadership programs tailored for all administrators to build 21st Century self-sustaining teaching and learning capacity. The TCDSB is looking to develop a model of Professional Learning tailored for administrators.
Upper Grand District School Board	**Quality Review of Digital Learning Resources** Committees have begun the process of examining different methods of providing digital content: • Distribution mechanisms for loaning digital content for ebooks and other electronic devices that support ebook content (ePub, PDF, etc). • Accessibility of existing print materials to develop comprehensive list to ensure that digital copies are available to students who require them. • Review of Digital content including textbooks for secondary. This committee is re-examining the concept of a textbook in the context of the 21st Century. It is currently developing a rubric to review a variety of digital resources and investigate the potential of Open Educational Resources. As part of this project a review of the current state of digital content for educational purposes will be developed with researchers at the University of Guelph.
Upper Grand District School Board	**Virtual Learning Environments – Blended Learning and the Cloud** Due to the popularity of Google Apps for Education through the support of round 1 funding, this project has developed multiple objectives. • Staff Development, including: after-school workshops for staff; in-class support for teachers; full and half-day workshops provided to key staff personnel • Blended Learning Integration - Google Apps with Desire2Learn Learning Management • SEA & Google, including: collaborative project with Special Education Dept.; support intermediate students and staff to use cloud computing and assistive technology software including, Word Q, TextHelp; using Universal Design for Learning (UDL) model • Research - collaboration with YRDSB, SMCDSB, York University and ABEL

Waterloo Region District School Board	**Scalability of Futures Forum Project – Development of a Digital Learning Strategy** The focus involves examining, identifying, articulating, and mobilizing the components contributing to the successful implementation of an inquiry based and technology enabled pilot project. In the project stakeholder involvement in each of the components will be analysed to understand the factors needed to strategically implement change across an organization to improve teaching and instruction. The project will provide models of, and evidence for, the role of technology in facilitating 21st Century teaching practice that offers personalized and differentiated learning to support student engagement and success. We are also examining how to advance local and provincial leadership required to initiate, sustain, and build capacity for new pedagogical practices.
Wellington Catholic District School Board	**Assistive Technology Coach** Brings to scale professional learning and coaching for teachers in the area of Special Education assistive technology. Based on the successes of Literacy and Mathematic Coaches across the province, the Assistive Technology Coach role provides a unique professional development opportunity in this area of special education. The coaching model is a "working side by side" approach that allows for "in the moment" support with technology, pedagogy, and strategies of universal design.
Windsor-Essex Catholic District School Board	**Critical Thinking Through Collaboration in a Digital Environment: Google Applications for Education in the WECDSB** Brings to scale collaboration in a cloud-based environment to improve learning and increased student achievement. Our focus for this project will be to provide equitable access to Tools2Go to both students and staff in the WECDSB to inspire increased collaboration, creation, and communication in a digital world. Further, the data we collect will reflect teacher and student use of Tools2Go as well as evidence of each of the four items stated previously.
York Region District School Board	**Cloud Based Learning Environments – Enhancing Learning through Cloud-Based Learning Environments, Teaching and Learning in a Virtual Walled Garden: Phase 2 – Power Tools for Learning in an Intentional Blended Learning Environment** Brings to scale cloud learning spaces for collaboration and knowledge building for teachers and students. The impact of cloud-based tools on the learning environment from the varying perspectives of teacher, student and parent/guardian will form the basis for this project. The inquiry will be framed on the basis of our board's inquiry model. • Explore new approaches for outreach, collaboration, and sharing. • Work with districts to develop better strategies for use of release time and for development of teacher knowledge, skills, and attitudes.

Algoma District School Board

Project Title	Netbooks ... A Gateway to Improving Learning, Teaching and Technology Use in the Junior Division
Brief Description	All Junior Division students have access to the netbooks. The focus of the project will be to develop and implement professional learning opportunities to teachers of Junior Division classrooms in the use of Netbooks.
Context	Number of schools: 32 (elementary) Number of teachers/classrooms: 45 Number of students: 1200 Grades/Program: all grades 3, 4, 5, 6 classrooms in board (not included in Round 1)
Phase of Change and Impetus	*Continuation* In Round 1 of the project, all schools with grade 4 students were provided with a cart of 10 to 25 netbooks based on the size of the student population. Round 2 of the project was expanded to all Junior Division classes (3/4 to 6). Teachers not involved in Round 1 are being provided professional learning opportunities on the use and integration of netbooks to support student learning and the development of technology skills.
Goals & Priorities	Our goal is to determine if focused professional development for Junior Division teachers on utilizing Netbooks as an instructional tool across all curriculum areas result in: • more frequent technology-based teaching and learning opportunities as demonstrated by increased teacher confidence and integration of technology in lessons, and • increased student engagement and production of digital products.
Role of Technology	The professional learning opportunities aligned to the use of technology are an essential element for the project to improve teacher capacity so technology is utilized in daily instruction and across various content/subject areas.
Areas of Impact	• Student engagement and achievement
Indicators of Success	1. More frequent technology-based teaching and learning opportunities as demonstrated by increased teacher confidence and integration of technology in lessons. 2. Increased student engagement and production of digital products.
Capacity Building in Teaching	Teachers were provided professional learning opportunities on the use and integration of netbooks to support student learning and the development of technology skills. Teachers were able to share effective practices with the integration of Netbooks to support student learning, development of technology skills, and the management of the technology within the classroom.
Leadership, Sustainability, Scalability	The tri-level support for this initiative positively impacted the sustainability of this project. Senior Administration, the I.T. Department and the Program Department recognize and are committed to the development of digital skills for teaching and learning in a digital age. The investment in a wireless infrastructure also positively impacted the success and sustainability of this project and set the base infrastructure to support students as they bring their own technology to school to support their learning.

Summary of Data Collection
- Data collected through student surveys (engagement, proficiency) and teacher surveys (frequency of use, confidence in using technology).
- Comprehensive summary of survey data findings included with report.

Highlights of Successes
- Teachers indicated their confidence and frequency in technology-based teaching and learning opportunities increased significantly throughout the year. Teachers also indicated they felt that students have benefited from the technology-based learning opportunities.
- The wireless infrastructure worked extremely well.
- Only a few technical issues needed to be addressed throughout the initiative.

Highlights of Challenges, and Unexpected Results
- One of the early challenges in Round 2 was scheduling the professional learning opportunities to accommodate the labour constraints during first term.
- The Netbooks were well used as assistive technology devices by students requiring the supports. The Netbooks also were viewed as great tools to support all students in writing and utilized by schools during EQAO for students with assistive technology accommodations.
- Based on teacher comments, the major challenge is getting access to a sufficient number of Netbooks for the intended purpose. There was an eagerness and willingness to use the technology, but the limitations of shared hardware still requires planning and support.

Highlights of Key Findings
- We observed a significant increase in the frequency of technology integration in daily teaching and student learning.
- Students indicated they regularly used technology to support their learning and stated that their digital skill development improved.
- Students also indicated that they were more engaged in learning and using the technology made learning fun and enjoyable.
- A large percentage of students were involved in Internet safety education. The Internet safety education represents a very positive indicator of teachers' focus on the safe and responsible use of technology.
- The integration of technology into daily teaching and learning is a culture shift and a change in teaching practice for some teachers. Over time and with support, teachers became more comfortable with the integration.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Will be continuing the integration of Netbook technology to support the entire Junior division.

The project had implications for Board planning.
- The introduction of the Netbooks is linked to our Educational Technology Plan and included in our Board Improvement Plan for Student Achievement.

Algonquin and Lakeshore Catholic District School Board

Project Title	Learning Technology Grants
Brief Description	Support the creative use of diverse technologies using a project model with teachers and classrooms in elementary schools.
Context	Number of schools: 6 (elementary) Number of teachers/classrooms: 6 Number of students: 150 Grades/Content areas: K-8, no other specifications
Phase of Change and Impetus	*New*
Goals & Priorities	Our pilot outcome will include the completion of all 6 projects within the defined individual proposals, a completed learning experience presentation and the submission of their written research findings. A secondary outcome will be the spread of the learnings as determined by our P/T advisory committee.
Role of Technology	*Not yet clear* "If we support the creative use of diverse technologies using a project model, we will see teacher commitment to technology learning and integration in their classroom resulting in student learning using technology as a tool, thereby impacting on student achievement".
Indicators of Success	

Bluewater District School Board

Project Title	iPads for Enhanced Learning Opportunities
Brief Description	This project explores how iPad tablets can be effectively utilized in K-12 classrooms to impact student learning, student achievement, and teacher instruction.
Context	Number of schools: 16 Number of teachers/classrooms: 31 Number of students (estimate): 660 Grades/Program: K-12
Phase of Change and Impetus	*New* Schools throughout Bluewater submitted proposals in response to the question: *How does the inclusion of iPad technology help support the School Improvement Plan Goals as they relate to Student Achievement*? Projects were chosen based on a focus of using the iPad tablet as a tool to support student learning. Prior to commencing the pilot, technology use was limited to labs of laptops with a ratio of one laptop for every seven students in elementary.
Goals & Priorities	• Improve student achievement by integrating the use of iPad technology into a variety of learning experiences, including inquiry learning. • Support the development of pedagogical practises while integrating tablet technology through professional development and shared learning. • Ensure more students have access to technology by narrowing the ratio to one device for every four students. • Examine the potential for reallocation of resources to support a bring-your-own-device environment.
Role of Technology	This pilot attempts to examine how tablet technology might be integrated differently (and more effectively) in the classroom and how these functionalities might be utilized to improve student learning.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies
Indicators of Success	Success indicators are established for each area of impact and an extensive list is included in the interim report.
Capacity Building in Teaching	Teachers involved with the pilot were brought together for an initial training session. A conference icon was set up through First Class as a collaboration space for teachers to share successes, challenges and solutions. All pilot teachers were later brought together for a day of PD and collaborative sharing.
Leadership, Sustainability, Scalability	In order for sustainability of this project to occur it will be important to: • provide teachers with on-going support and collaborative PD; • modify the Technology Plan to include a three year cycle for iPads; • reduce the device to student ratio from 1:7 to 1:4.

Summary of Data Collection
Research was conducted using a mixed methods approach including two written feedback responses, two school visits, teacher and student interviews, analysis of student work and regular classroom observations. Interviews were recorded with audio, video and photographs on the iPad. Results are identified in the report. Tabulated summaries were not included.

Highlights of Successes
- There was increased evidence of student engagement and motivation to engage in tasks at all grade levels. Students demonstrated increased independence, confidence and self-advocacy which translated into improved presentation skills, questioning and more critical thinking.
- Student voice was evident throughout the pilots (accountable talk during collaboration, choice in task and variety of ways to respond during video recording collaboration).
- Effective collaboration was identified by both teachers and students as being easier.
- Teachers used the iPad to document assessment and provide timely and specific feedback.
- The multi-functionality and flexibility of the device allowed for easier access. iPads also come with many standard features (i.e. voice-to-text) that are necessary for some students, but were often used by all students to check and edit work.
- Students were extending their learning beyond the classroom.
- Many teachers developed criteria for using the iPads with their students.
- Students already have an extensive knowledge using touch technologies. iPad use became a team effort, with students supporting one another and their teacher in the use of the device.

Highlights of Challenges and Unexpected Results
- The iPad was an equalizer for students with special needs, particularly students with an IEP.
- Students began to advocate for themselves in using the iPads to support their learning.
- Elementary students seem to use the iPad for a mix of consumption and creation, while secondary students used them mostly for consumption.
- The iPad is not intended to be a multi-user device, so there were challenges in saving work, sharing work and accessing work from home.
- Initially it was difficult to determine a process for ordering apps, but with the release of Volume Purchasing from Apple and the use of Apple Configurator, the IT department was able to load apps on several iPads at a time.
- The quality of the task and the level of integration seemed to influence how effectively the iPad was implemented by students. Teachers who practiced independently and who networked with other teachers seemed to integrate most effectively.
- Teachers requested an app or software that would allow them to control/monitor student devices.

Highlights of Key Findings
- Where iPads have been integrated with effective instructional practices including inquiry learning and collaboration, there has been a significant impact on student engagement, student motivation and the quality of work produced (SEF Indicator 4.4).
- There is repeated evidence of students who were previously unable to engage successfully accessing their learning using the iPad (SEF Indicator 4.7).
- Not only have teachers found the iPad to be a useful tool in the collection of assessment information, but it has also been a conduit for providing timely feedback. In classrooms where the iPad has been used in conjunction with posted learning goals and success criteria, student achievement has, in the words of a pilot project teacher, "skyrocketed" (SEF Indicator 1.1).

- In the Bluewater iPad Pilots, there has been marked evidence of iPad tablets being employed as tools to support effective teaching and learning.
- The intuitiveness, flexibility, convenience and multi-functionality of the iPad fills a niche in supporting learners not found with previous technologies.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- iPads to be considered as part of the compliment of devices through the Technology Master Plan.
- All students to be provided with student email accounts for safe storage and access from home.
- Professional development to be provided to support the integration technology in the classroom.

The project had implications for Board planning.
- Protocols should be developed for students and teachers, outlining the responsibilities, etiquette and skills required for developing digital citizenship.
- Students to be allowed the option of bringing their own device (BYOD) and accessing the school network in order to allow more students access to a technology.

Brant Haldimand Norfolk Catholic District School Board

Project Title	21st Century Learner – Grade 4 to 8 Math Focus
Brief Description	This project will investigate the role of technology and collaborative inquiry to improve teacher practice, increase student engagement and improve the development of 21st Century learning skills in Grades 4 – 8 Mathematics. Teachers will receive a NetBook to support the implementation of the project along with a minimum of 2.5 days of professional development activities.
Context	Number of schools: 30 (elementary) Number of teachers/classrooms: 154 Number of Students: 3750 Grades/Program: Grades 4 – 8 Mathematics
Phase of Change and Impetus	*Continuation* Round one focused on building capacity in our primary staff to support and enhance literacy instruction. This year we focused on grades 4 to 8 and math instruction. At the conclusion of round two, all teachers from grades 1 to 8 will have received NetBooks and the related in-service activities.
Goals & Priorities	Use technology to enhance the implementation of any part of the 3-part mathematics lesson, to enhance student engagement, improve student achievement, and promote the development of 21st Century learning skills. Provide staff with ubiquitous access to information/resources that support in achieving the district, school, classroom, and ALP goals.
Role of Technology	Technology is essential to the project as it is the platform to enhance current instructional practices, the means to provide new learning opportunities, and will become one of the key formats for staff to access learning and collaborate to create new learning. Technology is central to our knowledge mobilization strategy.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Name and explain each part of the three part lesson math lesson. 2. Use a variety of electronic resources such as ActivInspire, Geometer's Sketchpad, etc. to enhance the quality of lessons and engagement of learner. 3. Create effective 3 part math lessons, using technology and digital resources. 4. Model and promote the development of 21st Century learning skills in students.
Capacity Building in Teaching	Professional development sessions were designed at various levels (beginner, intermediate and advanced) to allow for teacher self-selection based on level of comfort and understanding.
Leadership, Sustainability, Scalability	• Closer ties with our Information and Technology Services Department have enabled us to build a culture where the technology initiatives align with and support the learning goals. • As a district, we are developing and aligning system technology initiatives to support collaboration, knowledge mobilization, and strategic goals. • The Information and Communication Technology Team is concerned about the further scalability and sustainability of the project from a cost perspective and are strategizing to provide an infrastructure that provides access for the greatest number of devices and activities imaginable.

Summary of Data Collection
Survey data was collected from teachers (pre and post activities) and students (perceptions of engagement and use of 21st Century skills). Survey results were tabulated to be included with the report.

Highlights of Successes
- Teacher comfort with technology increased.
- Teacher use of technology increased.
- Teacher knowledge of the components of the 3-part instructional format for math increased.
- Teachers reported that they felt this project connected well with and supported the Collaborative Inquiry Learning Math initiative that was taking place in many of our schools.
- Students reported an increase in engagement and enjoyment with the new types of math lessons.
- Students reported that they felt they learned better when their teacher taught using technology.

Highlights of Challenges and Unexpected Results
- The differing technology ability of the participants created challenges.
- Having the ability to install software and modify settings on the NetBook is beginning to create significant support challenges. Building lateral capacity (e.g. technology support capacity across the whole curriculum department as well as in our schools) along with structures to facilitate it (e.g. forums, FAQs, video supports, etc.) will continue to be a focus.
- The current move from teacher "sage on a stage" to facilitator is a big change for some.
- Teachers reported that they felt uncomfortable using a technology or piece of software that they weren't competent with. We enabled them to dialogue about this so we could help them see this was a common feeling and to share strategies.
- Sustaining the technology is seen as cost-prohibitive. We see BYOD and cloud technologies as part of the solution and are investing heavily in infrastructure to support that.
- There was unexpected improved communication and alignment between the IT Services Department and Curriculum Department.
- Capacity in mathematics, assessment practices, and effective technology practices was built on our Advisory team through this process.

Highlights of Key Findings
- Almost 80% of the responders felt that we met our overall project goal.
- 70% of the responders felt that the PD on the 3-part lesson changed their practice.
- 83% said having the NetBook increased how much time they spent on a computer at home.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Connect and imbed the use of the technology to support CIL and PLC activities.
- Continue to build a culture in our classrooms where students are seen as trustworthy and competent so that teachers create learning activities that have them moving around, communicating, collaborating, thinking, and having a voice in the expression of their learning.

The project had implications for Board planning.
- Plan and build infrastructure that can support the greatest variety of devices and activities and do so in a way that is invisible to the learning process.

Bruce-Grey Catholic District School Board

Project Title	Embedding Technology into Pedagogy
Brief Description	This project will focus on embedding iPad technology into the classroom pedagogy. Five learning pods of teachers ranging from Kindergarten to Gr. 12 have been established. Each learning pod has identified their learning need(s) and learning goals related to instructional practice of embedding technology into their classroom pedagogy and has developed a plan to work in collaboration to reach their goals by the project end date.
Context	Number of schools: 5 Number of teachers: 15 Number of students: 400 Grades/Program: N/A
Phase of Change and Impetus	*Continuation* Our round 1 project focus was increasing achievement of students with learning disabilities using iPads as assistive technology. Through that project, it was apparent that teacher capacity with using iPads in their daily instruction is a key factor to increase achievement of students with AT.
Goals & Priorities	Embedding iPad technology into the classroom pedagogy for the students who have assigned iPads and for other students using the principles of universal design.
Role of Technology	Our project focus is rooted in the use of technology as a tool to redefine learning tasks and provide students with opportunities for 21st Century learning.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Teachers articulate how the use of technology has changed their practice. 2. Teachers articulate growth using technology for learning based on the SAMR continuum. 3. Teachers articulate how technology has impacted student learning.
Capacity Building in Teaching	Through collaboration, the team decided on the instructional need and over the 3 months of the project, worked to support each other in their learning. Using reflective practice, each learning team prepared a 15-20min presentation sharing their learning.
Leadership, Sustainability, Scalability	Factors that impact sustainability are the learning team, the school culture and support. Through our project, learning teams where at least one person took a leadership role expressed greater satisfaction with reaching their learning outcome than those teams who relied on central support for direction.

Summary of Data Collection

System data was collected through shared experiences and collaboration in supporting the implementation process and through a culminating participant survey. Tabulated results were not part of the report.

Highlights of Successes

- More teachers have experienced how instructional practice makes a difference in students learning.
- More teachers expressed that using technology frees time to discuss learning needs with students.
- More teachers deepened their understanding of the essential importance of assistive technology.
- Teachers strengthen their knowledge of iPads for learning through their experience.

Highlights of Challenges and Unexpected Results
- BGCDSB received knowledge of funding mid-March of 2013 leaving only the last 3 months of the school year to participate in the project.
- For a few learning teams, their learning goal was adjusted to a more realistic, achievable goal and for others, priorities needed to be identified.

Highlights of Key Findings
When teachers focus on improving their instructional practice to increase student achievement, students demonstrate high levels of achievement.

Follow-up and Future Directions
Broader to sow more seeds and plant the beginnings of change in all classrooms with respect to using technology for learning but also with respect to the pedagogical strategies and learning strategies used in the classroom to prepare students for learning and working in the 21st Century.

Catholic District School Board of Eastern Ontario

Project Title	Multi-Media for the Multitudes - Integrating Technology into Science
Brief Description	Integrating technology into science is an opportunity for teachers to work collaboratively to shift their pedagogical approach to teaching scientific inquiry. Three schools, working in teacher teams of two or three in each school will be supported by a skilled coach to learn about available technologies and instructional approaches.
Context	Number of schools: 3 Number of teachers/classrooms: 8 Number of students: 180 Grades/Program: Grades 3 – 6 Science
Phase of Change and Impetus	*New* *Discovery Education Canada*'s new science tech book is an interactive program that incorporates interactive video, virtual labs, inquiry-based lesson plans and levelled reading passages into the Ontario science curriculum.
Goals & Priorities	The project is an opportunity for teachers to work collaboratively to shift their pedagogical approach to teaching scientific inquiry through integrating technology into their lessons. The goals include an increase in teacher capacity, and students' learning and engagement.
Role of Technology	We have incorporated an online interactive science *tech book* that will be used in 3 schools to replace the science textbook. In order to purposefully use this program, teachers have access to laptops and tablets so that students can access the science tech book in small group settings, as well as Smartboard/Elmo to support whole class instruction.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies
Indicators of Success	1. Increased capacity in staff knowledge of how to operate and incorporate specific technology into scientific inquiry to enrich lessons. This will be obtained through teacher surveys and other reflective tools such as journals. 2. Increase in student engagement through the use of various technologies. This evidence will be gathered through teacher observation and surveys. 3. Increase in student learning of scientific inquiry measured through ongoing classroom work, assignments, projects and summative assessments.
Capacity Building in Teaching	The teachers and principals received 3 professional development days with Discovery Education Canada to increase their capacity with the new tech book and the technology. The first session allowed teachers to collaborate with each other and Discovery to learn how to navigate through the tech book and its features. The second session was purposefully planned at a later date to allow teachers time to use the tech book, and learn what it could and could not do. The last session was more focused on maximizing student engagement and how to incorporate other forms of technology into the tech book.
Leadership, Sustainability, Scalability	The ability to upgrade the computer system proved to be an asset for this pilot. Without the system upgrade, teachers would not have met with success, and therefore abandoned the project.

Summary of Data Collection
Data identified but not included in report.
Evidence was collected through teacher testimonials and the impact that using the tech book had on student engagement, as well as the teacher's pedagogical approach to teaching scientific inquiry through integrating technology into lessons.

Highlights of Successes
Teachers thought that the tech book was well aligned with the Ontario Curriculum expectations in Science. Teachers can decide which aspects of each lesson they wish to investigate and the classroom manager can then track which assignments students have or have not completed, all of which allowed for differentiated instruction.

Highlights of Challenges and Unexpected Results
The speed at which interest and requests for this program from other schools, teachers, and board personnel was unexpected.
Some challenges arose from equipment and technology. We designated one IT technician to the 3 sites, and concerns from these schools were given precedence.

Sample of Comments from Participants
"At first I was not impressed with the discovery program. I found that my students needed a lot of scaffolding and I needed to create step by step instructions to guide their search. … My opinion has now changed. I feel like we are just scratching the surface and discovering the program. …My students who are reading below grade level were able to enjoy the texts because of the read option. I think we could do great things with this program given more time to learn and explore."

Highlights of Key Findings
The teacher feedback reveals that this tech book was seen as an asset in the classroom. As teachers became more familiar with the program, they began to uncover new tools in the program that made it even more of an asset. The ability for teachers to create their own content and manipulate the activities in order to differentiate for their students proved to be an invaluable tool.

Follow-up and Future Directions
Our next steps will be to continue using Discovery Education Canada, with the hope to somehow implement this program in all of our elementary schools.

Conseil des écoles publiques de l'Est de l'Ontario

Project Title	School Engagement Project
Brief Description	The main goal is to support the School Success Team (i.e., Engagement – Learning – Assessment) on the development and validation of tools designed to measure implementation of ICT and effective pedagogical practices.
Context	Number of schools: 4 Number of teachers: 16 Number of non-teaching staff: 20 Number of classrooms: 16 Number of students: 300 (estimate) Grades/Program: Intermediate Division (Grades 7 to 10)
Phase of Change and Impetus	*New*
Goals & Priorities	The two end goals for this project are: 1. To improve the level of engagement of at-risk students in Grades 7 to 10, vis-à-vis their learning by incorporating information and communications technologies (ICT) in schools targeted through this project. 2. To develop the students' work habits and skills.
The Role of Technology	ICT are among the "effective pedagogical practices" being studied. Specifically, we will study the use of ICT on various levels, i.e.: • Documentation of the various technological tools used in the classroom. • Factors that hinder, or facilitate, the implementation of ICT. • The perceived impact of ICT use in the classroom for students and teachers.
Areas of Impact	• Student participation and academic achievement • Innovative teaching practices
Indicators of Success	The success indicators consist of the validation of three tools: the teachers' self-assessment of their pedagogical practices (including ICT), the chart for assessing the students' work habits and skills, and the students' self-assessment of their work habits and skills. The data will come from the teachers' and educational consultants' feedback. The students' self-assessment of their work habits and skills will be validated by means of a self-administered survey.
Capacity Building in Teaching	The Skills and Work Habits Assessment Checklist (SWHAC) for teachers was developed in cooperation with a researcher, primary and secondary school educational consultants, a special assignment teacher and a group of teachers working for the CEPEO. Furthermore, the Teaching Practices Self-Assessment was developed in cooperation with a researcher and a special assignment teacher. Throughout the process, teachers from CEPEO schools were asked for their input on this tool. Lastly, the Skills and Work Habits Self-Assessment (SWHSA) for students was validated by way of an online survey filled out by students in June 2013. The survey focused mainly on the students' motivation and academic and intellectual engagement as well as on their perception of their own skills and work habits (SWH). It is worth noting that in the beginning, the information and communication technologies (ICTs) were designed as part of a series of practices that were different from those already recognized in scientific literature. This design derived from the Self-Determination Theory (SDT; Deci & Ryan, 1985), which allowed universal teaching

Project Title	School Engagement Project
	practices in support of three basic needs, feeling of independence, competence and belonging, to be brought together. To those three categories we added two new categories - practices for developing skills and work habits and practices based on the use of ICTs.
Leadership, Sustainability, Scalability	Throughout the 2012-2013 school year, several discussions took place between the researcher, the Project Authority and the special assignment teacher regarding the conceptualization of teaching practices. Afterwards, we reworked the model to incorporate the last two practice categories according to the SDT postulates, i.e. to group them according to their effect on the students' basic needs. That decision came as a result of recognition of the fact that using ICTs in class is not in itself a teaching approach, but rather a tool that can be used to meet students' needs, which in return should encourage their involvement. As suggested by experts in the field, the positive impact of ICTs on student engagement and learning depends on their use by teachers (Karsenti & Collin, 2013). The factors impacting this project's sustainability at CEPEO were: • The teachers' commitment to the success of all students • The school's culture • The principal's support • The support of the person in charge of the file serving as a central coordinator

Summary of Data Collection
- The SWH Assessment Checklist for teachers, which makes it possible to differentiate among SWHs and to measure them more precisely in students.
- The SWH Self-Assessment for students, which is harmonized with the new SWH Assessment Checklist created for teachers.
- Self-assessment of efficient teaching practices for teachers and the integration of ICTs as an efficient practice in class.

Highlights of Successes
First of all, we present the results of the psychometric analyses of the **SWH Self-Assessment** for students. These analyses focus on the tool's quality indicators, including:
1. **The measure structure**: The analyses suggest some weaknesses in the tool structure. In particular, a quality tool should allow for the various SWHs to be differentiated. The factorial analysis reveals that the statements representing "Sense of Initiative" and "Cooperation" converge on the same factor and that the same tendency can be observed with the statements on "Sense of Organization" and "Reliability". This result suggests a strong association among certain SWHs, but that is not surprising because concepts overlap among the various SWHs. Moreover, the statements designed to measure "Independence", "Self-Regulation" and "Use of Oral French" all converge on their respective factor.
2. **Internal consistency:** Another way to verify the quality of a measure is by assessing the internal consistency (degree of reliability) of the scales measuring each of the SWHs. In other words, the answers to the six statements should be consistent since the statements concern the same concept.

3. **Correlations among SWHs and student engagement:** Lastly, as anticipated, SWHs are significantly linked to the different dimensions of academic and intellectual engagement. In fact, academic engagement (participation and effort in class) and intellectual engagement (in particular the use of strategies to meet challenges) are very strongly related to SWHs, and even more so to three of them: Independence, Sense of Initiative and Self-Regulation.

Secondly, the structure of the **SWH Assessment Checklist** for teachers is identical to that of the SWH Self-Assessment for students, i.e. both tools measure the same SWH attributes. This harmonization between the **SWH Assessment Checklist** and the SWH Self-Assessment will allow us to measure SWHs more reliably and accurately since the assessment of SWHs will be based on two sources measuring the same attributes.

Lastly, implementation of the **Teaching Practices Self-Assessment** is well underway following several discussions with stakeholders. However, this measuring tool will need to be used in a pilot before it is implemented next fall.

Highlights of Challenges and Unexpected Results

Challenge: Lack of time – The creation of validated tools demanded the coordination of several players, namely the Project Authority, the researcher, the special assignment teacher, the principals of participating schools, educational consultants and the teachers participating in the project. The consultation process with the various members involved in the project took more time than expected. Moreover, the participative approach used in this project requires more time and flexibility, especially at the work plan level.
Solution: In order to overcome the challenges associated with time management, we adjusted the work plan accordingly. For instance, the survey for students was conducted in June 2013 instead of February 2013.

Challenge: Another challenge had to do with the new conceptualization of the teaching practices model in 2012-2013. This change led to major changes in the Teaching Practices Self-Assessment, which caused delays. In its present version, the tool has not yet been piloted by teachers.
Solution: We are planning on inviting a group of teachers to pilot the Teaching Practices Self-Assessment before the beginning of the next phase of the project scheduled for September 2013.

Challenge: Time management by teachers – As far as coaching is concerned, teachers find it challenging to take time off from their classrooms given the many demands placed on them.
Solution: A possible solution would be to continue to offer coaching in class, for instance, co-planning and co-teaching with teachers during school hours.

One of the unforeseen changes that occurred during this phase of the project was the need to develop a common understanding of SWHs. Since one objective of the next phase is to examine the impact of teaching practices on engagement and on SWHs, a tool had to be developed to be able to differentiate among constructs. The development of the SWH Assessment Checklist generated a great deal of discussion among stakeholders due to a lack of a definition or a common understanding of SWHs. Indeed, one of the great challenges for teachers is to assess students' SWHs without any clear assessment criteria. To remediate this problem, we first created definitions and sub-attributes to allow for a clearer differentiation among SWHs.

Sample of Comments from Participants

The ICTs open the class up to the world (comment from students of École secondaire Le Sommet). For example, when the teacher plans learning so that the students can look for answers or knowledge outside of books and class textbooks, they feel more engaged because when they search online, they develop their critical sense by ensuring that their answers come from multiple sources.

Highlights of Key Findings

In 2012-2013, our reflection on this project allowed us to draw the following conclusions:
1. In schools where the principal supports the project and where teachers are committed to the success of all students, the project comes alive and one can hear a common language among all stakeholders (students, teachers, principal).
2. The message is clear: the classroom must adapt to changes and ICTs support learning when the teacher manages the classroom and learning effectively.
3. Even though ICTs support learning, by themselves, they cannot compensate for students' lack of engagement. ICTs promote the development of SWHs when learning planning puts students at the center of the assessment process.

Follow-up and Future Directions

It is in this spirit that we will focus on integrating ICTs into the teaching process through the "Professional Learning Cycle" instead of using ICTs in the next phase of the project to ensure that teaching practices engage the students.

During the next phase of the study (school years 2013-2014), the three developed and validated tools will serve to examine the impact of the coaching provided to teachers based on the *Professional Learning Cycle: Planning, Acting, Observing and Reflecting* (see Figure 2) on teaching practices and teacher engagement, and in turn, on student engagement and SWHs. In October 2013, basic data will be collected from students and teachers before the intervention (i.e. the implementation of the "Professional Learning Cycle"). Data will be collected again in mid-December in order to assess the expected changes. If possible, data will also be collected from control classes that have not been exposed to the "Professional Learning Cycle".

Conseil scolaire du district du Grand Nord de l'Ontario

Project Title	A Technology-based Pedagogical Environment for Personalized e-Learning
Brief Description	The primary goal of this project is to support teachers in their pedagogical practices, in order to improve student achievement, recruitment, and retention, while increasing student and parent satisfaction, through the use and integration of electronic resources and tools.
Context	Number of schools: 6 Number of teachers/classrooms: 11 Number of non-teaching staff: 8 Number of students: 125 Grades/Program: Intermediate Division (Grades 7 and 8)
Phase of Change and Impetus	*Continuation*
Goals & Priorities	In 2012-2013, keeping the same goal in mind, the project will expand in two distinct, yet related, ways: • The pedagogical approach developed in this project will be incorporated into other Ministry of Education initiatives such as *Boys' Literacy, Provincial Literacy Strategy (Grades 7 to 10), Differentiated Instruction, E-Learning Ontario,* and so forth, in order to harmonize efforts and initiatives and make more effective use of the financial and human resources at the Board's disposal. • Three other schools will be added; these schools already have an infrastructure that is similar to the infrastructure in the first schools (i.e., carts of portables, interactive whiteboards, wireless connectivity, etc.).
The Role of Technology	Small portable computers, other technological tools, and Internet access are crucial to achieving the above goal. The integration of technological tools in this project acts as a catalyst for the achievement of these goals. For example, the mere presence of these tools requires the teacher to re-invent or, at the very least, re-visit his or her traditional pedagogical approach. This type of experience imposes changes in the direction being advocated by the project. Consequently, technology is essential to the project.
Areas of Impact	• Student participation and academic achievement • Innovative teaching practices
Indicators of Success	This project reflects four broad directions; these directions determine the impact of the project, in connection with the 6 themes for priority action and research. These directions also constitute the measurable results of the project: 1. Ongoing improvements in the achievement of each student (*Student Engagement, Culture, and Achievement*). 2. Student recruitment and retention (Student Engagement, Culture, and *Achievement*). 3. An increase in the satisfaction of students, parents, and the community (*Student Engagement; Parent and Community Engagement*). 4. The pursuit of research and innovation in teaching and learning and technical procedures (*Innovative Teaching Practices; Learning Environments*).
Capacity Building in Teaching	Several high school teachers with students in their classrooms have asked us for access the technology. Some teachers are looking for new tools. Several teachers have adopted the Prenskey principles, which mean that the focus is on the research process and teachers are there only to guide the students and to provide

	them with tools. We have received several requests from teachers who would like to have more specific training directly related to their needs. After such training, there are always follow-up meetings to ensure that the messages were properly conveyed. In teacher networks, projects are always shared. The teachers involved in the project share its rationale and encourage others to do the same. We created a "GNOpinion" box in order to obtain feedback from our members: students, parents, and staff. Following this consultation, we can create a more detailed technology-based educational plan.
Leadership, Sustainability, Scalability	• Financial commitment • The presence of an educational consultant in charge of follow-up and project development • Technical team • Project/initiative harmonization

Summary of Data Collection

Quantitative data - In the schools participating in this project, the following can be determined:

- The number and frequency of usage of integrated technological resources in the classroom.
- The number of subjects taught (some targeted by this project are: French, mathematics, science and technology, and arts) where technological tools are integrated.
- The number (increasing, decreasing or stagnant) of formal presentations given by the staff involved in the project.
- The number of training or professional development sessions in which the staff involved in the project participated.

Qualitative data – in the schools involved in this project, we can observe (or gather) and analyze:

- Testimonials from the staff involved regarding perceived changes in their teaching style or role as a teacher.
- Testimonials from the students involved in terms of perceived changes in the teachers' style or role.
- The" snowball" effect, i.e. spontaneous use of the learning model or of certain strategies pertaining to the project in other classrooms.

Highlights of Successes

- Several teachers ask for help and coaching.
- Teachers explore Marc Prenskey's principles.
- Students use a variety of resources.
- Students are more apt to use technology.

Highlights of Challenges and Unexpected Results

- We switched educational consultants in technology-based education during the school year. However, the teacher who was hired had been involved in the project from the very beginning.
- The staff's enthusiasm.
- The degree of openmindedness.

Highlights of Key Findings

- Student retention – many students remain in our system because of technological implications.

- The use of technology by staff.
- Requests for technological resources have increased.

Follow-up and Future Directions
- Continue with the project, if possible, in order to support teachers even more
- Make a variety of technological resources available and encourage teachers to use them
- Differentiated instruction
- Inclusive practices
- Use of various technological tools
- Leadership
- Professional development

Conseil des écoles catholiques du Centre-Est

Project Title	Higher Order Thinking Skills in the Digital Age
Brief Description	This project is designed to build the capacity of teachers to implement innovative pedagogical practices for the development of the students' higher order thinking skills, which are essential for preparing them adequately to study, work, and live in the 21st Century.
Context	Number of schools: 8 Number of teachers/classrooms: 14 Number of non-teaching staff: 8 Number of students: 495 Grades/Program: Elementary and Secondary Education
Phase of Change and Impetus	*New*
Goals & Priorities	This project has three parts: a) Implementation of the model for the development of higher order thinking skills through training: coaching model; b) Innovative projects pertaining to the "higher order thinking skills" component; c) Consolidation and pursuit of the implementation of pedagogical practices coming out of blended learning (D2L).
The Role of Technology	The integration of technology is of critical importance because it makes it possible to optimize and amplify the development of higher order thinking skills and, by extension, the development of 21st Century skills.
Areas of Impact	• Student participation and academic achievement • Innovative teaching practices
Indicators of Success	Data collection is used to measure the project's impact. We will be using the steps in the Teaching-Learning Critical Pathways (TLCP) because that is what our Board is using right now. Each participant will measure the students' higher order thinking skills before, during, and after teaching the skills in question: critical thinking and/or creative thinking. We have asked each participant to report on implementation through a logical model (*APPENDIX in final report*).
Capacity Building in Teaching	To build staff's capacity: **Coaching** As far as implementing the critical thinking development model created by "The Critical Thinking Consortium » (TC2), we are proposing a professional development model based on the deployment of coaches in the schools themselves. This approach is in line with research which indicates that integrating professional development into teachers' daily activities is more efficient. The "by" and "for" staff members allows them to move forward dynamically and authentically in their professional development. For the 2012-2013 school year, we are proposing to offer TC2 coach training to roughly 10 staff members.
Leadership, Sustainability, Scalability	*Primary level:* One of the factors that ensure the sustainability of such a project is the integration of its components into the school improvement plan created in cooperation with the teachers. Moreover, integration of the processes in the PLCs has been pertinent in some cases. Committed leadership and Learning Support Service (LSS) support have been key factors in this project's success.

	In several cases, the project's sustainability has been positive, because the tools are used in several classrooms and the classroom teachers learn how to use them. The project can continue even if a teacher is transferred to a different school. Integration of technology is part of the school vision. The fact that the school board chose Google as a platform makes it easily available for the students and for training other teachers. In addition, the reliable secure network as well as sufficient resources are also factors contributing to its sustainability. *Secondary level:* Increased support for teachers made it possible for them to be ready to meet the multiple challenges that such an initiative can create (WiFi, equipment control). Various in-person meetings between the project's participants and counselled teachers ensured good communication and efficient use of work time.

Summary of Data Collection
- Each participant shared their choice of measuring tool in the logic model at the beginning of their participation and reported on their progress using a logic model in Google docs, which was shared with the 21st Century team.
- The teachers selected formative or summative assessments, which they looked at closely.
- The teachers were surveyed regarding their professional practices during the face-to-face meetings.

Highlights of Successes
- Coaching: Most participants obtained their certificate.
- Innovation project: The measuring tools vary from project to project.
- Hybrid learning: More frequent use of the D2L platform (especially at the elementary level).

Elementary level:
During project implementation, the participants reflected on questioning (what is a good critical thinking question?) and assessment (HP3 – checklist) as they apply to critical thinking. The use of judgment criteria to answer such critical thinking questions proved useful for both students and teachers. Even "weaker" students were able to answer such questions. In addition, students were motivated because questioning piqued their curiosity and engaged them in real-life situations. These conditions increased the students' engagement. For instance, students went to work much more quickly and focused much better on the task. Moreover, in certain projects, the students were able to assess their peers and to give them constructive feedback so that they could improve on their answers.

Secondary level:
The multiple projects all had one specific feature and used various technologies. It remains that the efficient use of the technology depends mainly on the efficacy of the educational model chosen. As John Seely Brown so aptly explains it, technological tools are simply curiosity amplifiers. The teachers involved in the innovation projects quickly realized that once you have the technology in hand, you must question your teaching practices.

Highlights of Challenges and Unexpected Results
Elementary level:
Challenges occurred at two levels: with regards to technology integration and thinking skills teaching and learning.
a) First of all, as far as technology integration is concerned:
Participants had to overcome several technological challenges in terms of WiFi connectivity and access to certain resources. Teachers participating in the various projects were trying to master leading-edge technological tools and to work in previously unexplored environments. This created problems in terms of English-only working environments and platform inaccessibility in our schools for the time being.

b) Then, with regards to thinking skills teaching and learning:
The first educational challenges involved formulating good critical thinking questions that required students to use judgment criteria to answer them. In addition, certain teachers noted that students had less difficulty answering questions verbally and that when they were having trouble making inferences, they sometimes had difficulty finding information in texts to answer the questions.

Secondary level:
We faced several technological challenges with WiFi connectivity and equipment control. Teachers participating in the various projects were trying to master leading-edge technological tools. This created problems due to inventory shortages and late availability dates.

In addition, the questioning of teaching practices based on a teacher-centered model requires a certain degree of open-mindedness and courage to invite failure by the teachers involved in the innovation projects. These teachers questioned their practices extensively as they had doubts concerning their new role as teacher-choreographer.

Lastly, students had to be made aware that technology is more than a simple play tool. It is at that point that students can become really engaged.

Sample of Comments from Participants
Several principals have reported a profound engagement in teachers who have strived to improve the effectiveness of their teaching practices. They also reported being very proud of the projects launched in their respective schools and of the encouraging engagement of other staff members.

Highlights of Key Findings
It is obvious that when teachers focus on superior thinking skills and measure them, results improve. We have observed that in the majority of cases, technology promotes cooperation, whether it is in the form of engagement in a blog, a forum or an invitation to descriptive feedback. For instance, cooperation naturally leads to engagement and reflection through superior thinking skills (often through judgment criteria) leads to improved communication.

Follow-up and Future Directions
Following this year's project, the CECCE is looking to identify innovative schools within its Board in order to create a cultural change in terms of utilizing novel technologies for the development of critical thinking in school operations. The technologies and educational models studied this year will serve as tangible examples of possibilities to explore in innovative schools in 2013-2014.

Conseil scolaire catholique du Nouvel Ontario

Project Title	It's Not Just a Robot!
Brief Description	Through robotics and the integration of technology, students in the primary division will develop skills relating to their <u>personal and social development</u> and <u>certain skills</u> targeted in the JK and SK curriculum.
Context	Number of schools: 3 Number of teachers: 3 Number of classrooms: 3 Number of non-teaching staff: 1 Number of students: 54 Grades/Program: Primary Division (JK & SK)
Phase of Change and Impetus	*New*
Goals & Priorities	The use of manipulation materials and the technology recommended for the primary division will provide students with learning situations that foster the development of certain 21st Century skills, in particular, communication and co-operation with peers. The use of manipulation materials will also foster the development of fine motor skills.
The Role of Technology	The use of the interactive whiteboard in one of the classes participating in the project will enrich the group lessons on identifying the parts of a robot, building a robot, programming, and songs created for role-play, using Microsoft PowerPoint. This tool interests and motivates the students while making the lessons more interactive. The use of a mobile device encourages photo- and video-making. These could be considered as evidence of learning.
Areas of Impact	• Student participation and academic achievement • Innovative teaching practices • Learning environments • Digital citizenship/forms of literacy
Indicators of Success	1. Student achievement: an improvement in the skills of JK/SK students between the Stage 1 and Stage 2 JK/SK report cards; 2. Pedagogical practices: implementation of new teaching and learning strategies and strategies for integrating technology into the classroom; 3. Student engagement: motivation, interest, problem-solving skills, evidence of learning, oral communication skills.
Capacity Building in Teaching	• Training provided by an experienced trainer, Yannick Dupont, from Brault et Bouthillier, on the building and programming of robots in the LEGO WeDo kit. • Creation of a learning center in each classroom including a computer, 2 LEGO WeDo kits and building plans. • Installation of the WeDo software on a classroom computer and on the teachers' tablets by technicians from the Board's Computer Services. • Audacity software training on sound recording provided to the teachers involved by the technology integration educational consultant. • Planning day provided for teachers to better understand the technological material, to discuss and to plan the implementation of the project's next steps. • Video conferencing (Skype) with 2 educational consultants from the "Service national du RÉCIT à l'éducation préscolaire" in Montreal to discuss the project and to obtain suggestions from them.

	• Personalized coaching provided by the technology integration educational consultant and the early primary educational consultant. • Close collaboration with an experienced coach, Yannick Dupont, from Brault et Bouthillier.
Leadership, Sustainability, Scalability	• Teacher involvement in the project from the very beginning of its implementation. • Continuous support from the technology integration educational consultant, the early primary educational consultant, school principals and educators. • The availability of technological resources (computers in the classroom, robotic LEGO WeDo kits, interactive whiteboard or multimedia projector) from the very beginning of project implementation. • Regular meetings and information sharing.

Summary of Data Collection

Qualitative data

- Observations (engagement, language skills, oral communication)
- Questioning
- Videos, photos

Quantitative data

- Observation checklists
- Report cards
- Level of participation
- Appropriate observation checklists were adapted to measure certain expectations and contents of the Full-Day Early Learning - Kindergarten Program (*French, mathematics, science, religion and personal and social development)* on both term report cards.
- Through the in-class observation strategy, teachers have informed us of their students' engagement. It was obvious that students were more focused and remarkably motivated when they had the opportunity to work at the robotic learning centre.
- In observation sessions as well as individual interviews and multiple conversations with each student, teachers noted that robotics were an area of interest that increased the students' motivation that encouraged them to work as a team and, in some cases, to pursue their studies in that field.

Highlights of Successes

- For a Junior Kindergarten student group, it is recommended that the project not be launched until January to give the teacher time to establish a classroom routine and to gain the students' trust.
- Students were not obviously capable of reading the building plans independently at the beginning of the project, but that improved over time. It was necessary to modify these plans to make them easier to read.
- Letting students go to the learning centre of their choice, as recommended by the ELP, created a few challenges. However, we suggest that no more than four students be allowed to go to the robotics centre at the same time in order to foster cooperation and discussion among them.
- The autistic student who participated in the project did not show any interest in building the robot, but was interested in the finished product.

Highlights of Challenges and Unexpected Results
- Since our project participants had to learn various things, checklists were used later in the year than anticipated. It was therefore difficult to compare data between the two terms on the report card.
- Posters showing the parts to use for each building model were given to students in order to reduce the loss of parts from the LEGO WeDo kit.
- Some teachers felt less comfortable leaving the children alone at the robotics center when it was open. Teachers did not have an opportunity to walk around and observe the other children. Creating groups of 2 to 3 students per center gave them that liberty.
- Other challenges to overcome: do modeling in large groups, use the multimedia projector or the interactive whiteboard to present, explore, classify and learn the vocabulary related to the parts, before letting the students work freely at the robotic centre.

Highlights of Key Findings
- A higher participation and engagement rate in some students.
- Some students who showed less interest sometimes participated spontaneously.
- The level of interest was just as high among girls as among boys.

This project made it easier to integrate technology in the classroom while promoting the development of technological skills among participating teachers as well as the development of 21st Century skills among participating students *(communication, cooperation and creativity).*

Despite a lack of quantitative data due to the short implementation period and a steep learning curve for staff (project management and mastering specialized material), we are noticing:
- Changes in teaching practices, i.e. the implementation of new teaching, learning and technology integration strategies among early primary students.
- A growing engagement among students towards learning, which is noticeable in their motivation and their level of interest in classroom activities.
- Obvious improvement in the students' problem-solving and oral communication skills *(for instance, students used an increasingly more specific vocabulary and communicated more in French among themselves and with their teacher to express their opinions and feelings).*

Follow-up and Future Directions
The Board decided to continue the project with the same school teams for the 2013-2014 school year, and is even considering adding a few new Kindergarten classes. More rigourous planning of the project's next steps is expected in the fall. In the meantime, here are a few items that will be included:
- The support team and the teachers involved are considering improving the generic observation checklists created this year.
- The preferred strategies for next year will aim at putting greater emphasis on vocabulary from the very beginning of the implementation process with new students.
- Better organization and better storage of materials are planned for next year in order to avoid the loss of parts.
- Certain activities designed this year will be better adapted to early primary students.
- It is planned to collect data on student attendance rates, particularly for the beginning of the year, to see if robotics is making a difference.
- Sharing of findings and successful practices is planned throughout the year with other non-participating schools.

- The teachers involved will present the project at the annual ECOO - Educational Computing Organization of Ontario - conference scheduled for October 2013.
- The Board is planning to give all participants subscriptions to the Revue préscolaire (Quarterly magazine published by the Association d'éducation préscolaire du Québec).

The team involved agrees that the planning process should include priority measures focused more on the development of oral communication skills among Kindergarten students through the addition of new communication tools such as iPads purchased with the Board's operational budget (and not with the CODE 2 grant). The purchase of this new technology will support the implementation of new learning strategies among students, will foster cooperation among schools and will help with the collection of learning evidence.

Conseil scolaire catholique Franco-Nord

Project Title	Using Web-based Pedagogical Tools Effectively to Support Learning
Brief Description	Giving teachers an opportunity to use web-based pedagogical tools effectively, as a means of promoting student learning and encouraging differentiated instruction.
Context	Number of schools: 15 Number of teachers: 45 Number of classrooms: 45 Number of non-teaching staff: 15 Number of students: 900 Grades/Program: Junior, Intermediate, and Senior Divisions (Grades 5 to 12)
Phase of Change and Impetus	*Continuation*
Goals & Priorities	Teachers: developing pedagogical practices that are aligned with the vision of 21st Century learning. Students: developing autonomy, a sense of initiative, and skills relating to self-regulation.
The Role of Technology	Technology plays a major role; it is essential to implementation of differentiated pedagogy in the classroom. It also enables students to become engaged in their learning, by offering ways of learning that are compatible with their learning style. In partnership with CAVLFO, training sessions are being provided for teachers who are teaching Grades 5 to 12 on the use of the Learning Management System. Interactive whiteboard use is common because every classroom has one.
Areas of Impact	• Student participation and academic achievement • Innovative teaching practices • Learning environments
Indicators of Success	1. Improvement in the achievement of students in K to 12. 2. Improvement of results on the Grade 9 Applied Provincial Math Test. 3. Improvement of results on the Grade 9 Academic Provincial Math Test. 4. Improvement of results on the Grade 10 Ontario Secondary School Literacy Test. 5. Improvement in the GRADUATION RATE. 6. Improvement in the RATE OF CREDITS EARNED in Grades 9, 10, and 11. 7. Improvement in the RATE OF RETENTION of students in the French-language education system.
Capacity Building in Teaching	• Following a few training sessions and given the interest they aroused, an additional request for training was made in order to meet the teachers' needs. This interfered with the teachers' daily routine and made it necessary to find extra time and locations. • Changes in teaching practices.
Leadership, Sustainability, Scalability	*Positive factors:* • The addition of technology to support 21st Century learning. • Multiple meetings and training sessions in order to deepen teachers' knowledge and enhance their teaching strategies. • Handling of different technological tools at the teachers' disposal. • Development of lessons in order to integrate technology. • Technology-based educational support in relation to the implementation of differentiated instruction (DI) in the classroom. • Emphasis on teaching in the digital age as a tool for improving student performance.

	• Reorganization of the regular classroom to integrate various centres (DI). *Negative factors:* • Time required to purchase and set up the new technological equipment. • Computer Services – getting used to the new Apple platform and finding solutions to make its integration into the existing system possible. • Cooperating with reluctant teachers in order to integrate new teaching practices in the 21st Century digital age.

Summary of Data Collection
- A series of surveys related to the various technological training sessions that were conducted.
- The number of registrations – teachers and classes in the Learning Management System (LMS).
- Our student's achievement – Extraction of current data and data from end of term report cards.
- Discussions and sharing of information with the hybrid project implementation team.

Highlights of Successes
Following the training sessions, we noted an astonishing increase in the reservation of assistive technological equipment. Moreover, teachers noted an increase in participation and involvement in classroom projects.

Highlights of Challenges and Unexpected Results
- Even though the time required to purchase and set up the technological equipment posed a few challenges, training sessions nevertheless took place. However, teachers could not handle the equipment under study and commit to using it immediately.
- A greater demand for the equipment!
- Changing tasks in regular classes.

Highlights of Key Findings
The project certainly played a major role in the participation rate of students in class and collectively in their academic performance. By putting educational tools at the teachers' disposal, training sessions on technology-based education and continuous support, the project fostered student learning and differentiated instruction.

Follow-up and Future Directions
The next steps will need to further develop a training and coaching model that will encourage information sharing and networking on these practices at the Board level.

Conseil scolaire de district catholique Centre-Sud

Project Title	Longitudinal Study: Blended Learning in Numeracy in the Intermediate Division
Brief Description	Pursuing implementation of blended learning in the intermediate division, in order to close the gaps in numeracy, i.e., in order to see all students succeed.
Context	Number of schools: 1 Number of teachers: 1 Number of classrooms: 2 Number of non-teaching staff: 7 Number of students: 50 Grades/Program: Intermediate Division (Grades 7 and 8)
Phase of Change and Impetus	*Continuation*
Goals & Priorities	We are always looking for ways to improve our results on the Provincial Math Test. Our primary model for professional development is collaborative inquiry. Because of this, many of our professional development activities reflect this model. Having said that, we believe that there are situations that call for more training and coaching.
The Role of Technology	Integration of the Provincial D2L Platform for blending learning, using the modules that have been integrated. This requires portable computers for the students and wireless high-speed connectivity in the school. Use of interactive whiteboard and certain CFORP resources.
Your project's impact areas	• Student participation and academic achievement • Innovative teaching practices • Learning environments • Digital citizenship/forms of literacy
Indicators of Success	1. Results on the June 13 report card in Mathematics (to be defined). 2. Results on the Provincial Math Test in 2014 and 2015.
Capacity Building in Teaching	• A growing number of teachers received training and use the interactive whiteboard, the D2L platform and the electronic portfolio more often in order to develop 21st Century skills in their students. • Coaching and training by CAVLFO's regional trainer and CFORP's professional development services. • Training on the D2L platform and the interactive whiteboard. • Participation in various conferences (for example, Supporting Inclusion in 21st Century Classrooms for Special Education on May 3, 2013 in Niagara Falls).
Leadership, Sustainability, Scalability	School staff engagement and motivation, as well as the principal's support, make a great difference.

Summary of Data Collection
- Attendance sheet at training and coaching sessions.
- Profile of an effective CSDCCS school.

Highlights of Successes
- A working committee chaired by the assistant director of Programming Services and composed of Early Learning, Programming Services and Special Education representatives drew up and sent their recommendations to the OPC. The latter approved the targeted measures for this year.

Among other things, the integration of interactive tablets in ELP classes and of the hybrid learning platform (D2L) is being tested. The next step will be to formulate broad orientations as far as technology for 21st Century learning is concerned in order to support systemic planning up to 2016.

Highlights of Challenges and Unexpected Results
- The plan was very dynamic in that we made several adjustments following systemic discussions. Hence, it does not follow the original orientation 100%.
- Flexibility would be desirable for the purchase of equipment and is often requested by schools.
- The project was limited to one JK-Grade 8 elementary school. What we noticed is that the need for training and coaching was greater and had to be extended to several schools in our school board.

Sample of Comments from Participants
"These are good teaching practices that take 21st Century skills into account and apply to all disciplines that must lead the use of technology in the classroom and not technology that must lead teaching practices."

Highlights of Key Findings
- The use of technology must have as its foundation solid teaching practices based on in-depth knowledge of the way students learn.
- Technology must be used to develop the 6 C's:
    - Character building (personal management skills)
    - Civics (personal management skills)
    - Communication (basic skills)
    - Critical thinking and problem solving (basic skills)
    - Cooperation (teamwork skills)
    - Creativity and imagination (basic skills)
- The use of technology must foster an engaging approach where students must build up their own knowledge.
- Technology must be used to allow students to achieve learning outcomes and meet criteria faster and/or more effectively using personal social skills.
- The use of technology must make it possible for students to receive differentiated coaching in their learning.
- Students work on open projects, at their own speed.

Follow-up and Future Directions
The next steps will include piloting a technological vision for all of teaching staff in both schools: elementary and secondary.

Conseil scolaire catholique de district des Grandes-Rivières

Project Title	Hybrid Learning in Grades 7 and 8
Brief Description	The project is aimed at coaching Grade 7 and 8 classroom teachers in adopting more inclusive practices oriented towards assistive technology.
Context	Number of schools: 1 Number of teachers: 10 Number of classrooms: 8 Number of non-teaching staff members: 1 Number of students: 360 Grades/programs : Grades 7 and 8
Impetus	*New*
Goals & Priorities	Goal: Give staff tools to integrate inclusive practices oriented towards assistive technology in their planning and daily practices to promote the achievement of each student. Objectives: • Make staff aware of their beliefs and attitudes regarding each student's academic achievement. • Identify a challenge to academic achievement and then articulate a common vision and mission statement to address it. • Build staff's capacity to use the electronic resources and educational technologies at their disposal. • Allow teachers to work in cooperation with their colleagues in order to try out teaching practices that support the development of 21st Century skills in students. • Create a systemic vision of technology as a tool for learning.
The Role of Technology	This project focuses on assistive technologies, including software such as Médialexie, WordQ, Antidote and any other software recommended following a professional assessment. Technology is therefore essential because it gives students access to curriculum information.
Areas of Impact	• Learning environments
Indicators of Success	1. A common vision and mission statement. 2. The creation of an action plan for implementing the vision and mission. 3. Identification of effective teaching and learning practices to prioritize in class. 4. Technological resource utilization rates. 5. Student engagement and improved achievement.
Capacity Building in Teaching	During the first meeting, teachers responded to an electronic survey on their knowledge and teaching practices in relation to the universal design for learning, differentiation and technology use (interactive whiteboard, assistive technology, etc.). These data served as a springboard for discussions and project orientation. After each meeting, feedback forms are collected from teachers who share their comments on the meeting's impact. The consultant team coaching the school team meets with teachers after each meeting to determine the effectiveness of the meeting and whether the learning

Project Title	Hybrid Learning in Grades 7 and 8
	outcomes were reached.
Leadership, Sustainability, Scalability	The principal's active participation in provincial training with the consultant and in the preparation and delivery of training materials contributed to the project's success. Between training sessions, the principal took the initiative of following up with her school team in the PLC. Project management by the principal at the school level enhances its sustainability.

Summary of Data Collection
- A common vision and mission statement.
- The creation of an action plan for implementing the vision and mission.
- Identification of effective teaching and learning practices to prioritize in class.
- Technological resource utilization rates.
- Student engagement and improved achievement.

Highlights of Successes
The school team created a vision and a mission statement based on a common challenge. Activities are planned in September to share this vision with students and parents.

Highlights of Challenges and Unexpected Results
- Teachers' awareness of:
  - The challenges that learning-disabled students must face in class on a daily basis.
  - The teaching practices that have the greatest impact on student learning (according to John Hattie's research).
  - The challenges that need to be met in and outside their area of influence.
- Errors of perception due to staff's beliefs and attitudes regarding teaching and technology are addressed by consultants with supporting evidence in both phases of the project.

Highlights of Key Findings
In September, even though the school will have a new principal and two additional Grade 7 and 8 classes, the consultant team will continue to coach staff in the next phase of the project, i.e. the planning and implementation phase.

Follow-up and Future Directions
The consultant team, with the consultant's support, will continue to support the school team in implementing the project.
The school board's literacy and numeracy consultants will take the vision and mission statement created by the school during their coaching sessions in 2013-2014 into account. In the projected school hubs, training sessions will be included on differentiated instruction and technology-based education.

Conseil scolaire de district catholique de l'Est Ontarien

Project Title	Transforming the Classroom with Innovative Instructional Practices
Brief Description	Drawing on the 5 core ideas presented in *What did you do in school today?*, Pedagogical Services is coaching targeted teaching staff, in co-operation with Student Services and IT Services, in a project to transform our classrooms through the use of innovative instructional practices.
Context	Number of schools: 7 Number of teachers: 50 Number of classrooms: 56 Number of non-teaching staff: 30 Number of students: 1,288 Grades/Program: Intermediate and Senior Divisions (Grades 7 to 12)
Phase of Change and Impetus	*Continuation*
Goals & Priorities	We will get there gradually, moving the staff forward on the 5 core ideas in order to create classrooms for the digital age that have a strong impact on student engagement and learning. We identified three steps for getting there: 1. Create the vision; 2. Create the personal learning network; 3. Engage in a pedagogical planning cycle.
The Role of Technology	Mobile technology and portable computers are used in this project. This technology is essential; we want to move from being an institution that transmits knowledge to being an institution that teaches students to navigate knowledge. In this transition, technology will support the teachers, who also become learners in the digital age and realize the value of technology for their own personal learning.
Your project's impact areas	• Innovative teaching practices
Indicators of Success	1. Engagement (intellectual, attendance, personal satisfaction). 2. Learning (academic achievement, a sense of personal effectiveness).
Capacity Building in Teaching	• Teachers involved with various cooperation teams are invited to participate in this project. Depending on their point of entry, teachers are invited to participate in this project if their goal is to enhance their teaching practices by integrating the 6 Cs or digital tools. This approach makes it possible not only to coach participants, but also to target participants according to their needs. • The need to network is being felt more and more, which naturally opens the door to the professional learning network.
Leadership, Sustainability, Scalability	1. Teamwork, voluntary participation, training, ongoing support and choice of a point of entry are all factors that had a positive impact on the project's sustainability. 2. The need to update our infrastructure (reliable WiFi network) remains a major financial challenge. Codes of conduct and ethics must also be updated to reflect the connected learning environment where knowledge is surfed for, with both its advantages and challenges.

Summary of Data Collection
- Engagement (intellectual, attendance, personal satisfaction).
- Learning (academic achievement, feeling of personal effectiveness).
- Survey conducted at the beginning and end of the project.

Highlights of Successes
The project's implementation is ongoing. Mobile technology and laptops are used in this project. This technology is essential in as much as we want to move from an institution that conveys knowledge to an institution that encourages students to surf for knowledge. During this transition, technology supports teachers who become learners themselves in this digital age and who have a better vision and understanding of the integration of technology for students to learn. We are noticing a few key changes in the practices of teachers whose commonality is educational practices that put students more at the centre of their own learning. We are also noticing that some participating staff members are using Twitter, for instance, to take charge of their own professional learning. The project's successes are the following: updating of teaching practices, increased engagement by teachers and students, capacity building in the integration of technology for learning for both teachers and students and new opportunities to develop the 6 Cs.

Highlights of Challenges and Unexpected Results
Implementation is gradual. The first challenge is of a technical nature. It takes some time to integrate technology in order to accomplish things that could not be accomplished through teaching without technology. Following initial training in technology-based education, participating teachers receive support from an educational consultant. Access (reliable WiFi), access management and equity are all infrastructure components that pose major challenges. Another challenge would be for teachers to relearn their role in a context where everybody has access to information. Surfing for knowledge requires major changes in practice.

Highlights of Key Findings
Updating teaching practices increases student and teacher engagement. Ongoing support remains an important component for the future of the implementation in order to ensure the growth of a feeling of personal effectiveness in staff that aims at putting students at the heart of their own learning while collecting evidence of learning differently. It is too soon to determine the project's impact on academic achievement since changing practices is far from easy.

Follow-up and Future Directions
- Improved infrastructure
- Updating of the schools' code of ethics (code of conduct)
- Continuing education (technical and educational) for staff (networking), sharing of successful practices
- Tracking (measuring the project's impact)
- Gradual updating of practices in more classrooms while offering various points of entry to staff

Conseil scolaire de district catholique des Aurores boréales

Project Title	Working Together to Succeed at Writing
Brief Description	The goal of this project is to increase student collaboration, using information technology and placing students in authentic learning situations.
Context	Number of schools: 6 Number of teachers: 6 Number of classrooms: 6 Number of non-teaching staff: 3 Number of students: 43 Grades/Program: Grades 5 to 8
Phase of Change and Impetus	*Continuation*
Goals and Priorities	The teaching staff use co-planning to identify and have the students experience the literacy activities that can be found in the Grade 7 and Grade 8 learning units on the e-learning website www.e-learningontario.ca. The teachers use inter-school collaboration to enable the students to team up in problem-solving activities, using the iPod Touch, portable computers, Facetime, Skype, blogging, and Bitstrips.
The Role of Technology	Technology is essential to this project in two ways. First, the schools targeted in the project are several hours apart by road; many of the students are the only student in their grade. Technology breaks the isolation by enabling them to work and communicate with other students in their grade, regardless of the distance between them.
Areas of Impact	• Student participation and academic achievement
Indicators of Success	1. The students are more comfortable with using technology to communicate in writing. 2. The students use technology more often to communicate in writing. 3. The students like to use technology to communicate in writing. 4. There is an increase in the length of the students' written communication in the blog.
Capacity Building in Teaching	This project is the continuation of a constantly evolving project. Some students are alone at their level of study and never have the opportunity to interact with other francophone students their age. We tried to use technology to reduce this isolation by creating cooperative work situations and fostering the sharing of ideas and opinions among them. • A first meeting was held with the six teachers involved in the project. Orientations and objectives, roles and responsibilities as well as timelines were established. (Mid-Oct.) • In connection with the meeting, training was provided to the six teachers involved in the project on the use of the LMS and the blog. (Mid-Oct.) • A videoconference was held to allow all students to introduce themselves and to meet and speak face-to-face with the other students. (Nov.) • Students began their collaborative work and posting on the blog in November. • Personalized coaching was provided. (Jan. /Feb./March)
Leadership, Sustainability, Scalability	The more the participants are involved in the project (teachers deciding the types of activities, their frequency, for example, students choosing and posting topics for discussion), the more they want to play a more active role.

Summary of Data Collection
- Students feel more comfortable using technology to communicate in writing.
- Students use technology more often to communicate in writing.
- Students enjoy using technology to communicate in writing.
- Written communications from students in the blog are getting longer.
- A survey was sent to students at the beginning and end of the project in order to measure the project's impact on the first three indicators.
- We collected all the information exchanges between students on the blog for this year and last year to see if written communications were longer or shorter.

Highlights of Successes
Students played a much more active role in their use of technology, which is not only more motivating, but also made it possible for them to develop 21st Century skills required to surf Web 2.0.

Highlights of Challenges and Unexpected Results
The first survey was sent to teachers participating in this project so that they could send it to their students and guide them in the process. It was difficult to ensure that all students participated since the survey was anonymous. A few reminders were sent to teachers so they could encourage their students to participate, but the participation rate was not always 100%. To overcome this challenge, the invitation for the second survey was sent to each student. That way, responses were anonymous, but we could now see whether a student participated or not in order to follow up on an individual basis. Students wrote more because they played a more active role in the research and topics posted on the blog.

Highlights of Key Findings
Motivation is directly related to the students' perception of a to-do task's pertinence. If students are motivated because they find the subject interesting, they will put more effort into it.

Follow-up and Future Directions
We must continue to create learning situations that are real for our students. Teachers must become guides and facilitators in order to support students in their own learning. We must continue to change this paradigm in order to encourage students to take charge of their role in their own learning.

Conseil scolaire public au Nord-Est de l'Ontario

Project Title	Technology in Support of Learning
Brief Description	Research question: Does teaching that uses tools such as the LMS and Google Drive have an impact on student engagement and on the students' sense of autonomy and self-regulation?
Context	Number of schools: 4 Number of teachers: 8 Number of classrooms: 7 Number of non-teaching staff: 4 Number of students: 140 Grades/Program: Grades 5 to 12
Phase of Change and Impetus	*Continuation*
Goals and Priorities	Teachers use the LMS and tools such as Google Drive to support their activities in the classroom (e.g., the use of e-portfolios). The teachers use the LMS, Google Drive, and a variety of tools to create a learning environment that is almost 100% electronic.
The Role of Technology	The students access most of the programming in their courses using technology. The students have access to their portable computers or tools all day. We believe that this access and the integration of technology will have a positive effect on the students' motivation, autonomy, and self-regulation.
Your project's impact areas	• Student participation and academic achievement • Innovative teaching practices
Indicators of Success	1. A survey and focus groups at the end of the year will indicate that students are really engaged in their learning. 2. For elementary school students, a comparison of the report card results in June 2012 to those in June 2013 will demonstrate an improvement in their autonomy and self-regulation. 3. For secondary school students, a comparison of the report card marks in January 2013 and June 2013 will demonstrate higher marks in autonomy and self-regulation, for the courses targeted by the project.
Capacity Building in Teaching	The first step was to hire an educational consultant specializing in technology-based education as well as a technician working in that same field. Those two people work hand-in-hand with each teacher involved in the project in order to move the project forward in the classroom according to the class profile as well as the teacher's and students' needs. Monthly visits made it possible to follow up on progress made and to re-align efforts, as needed.
Leadership, Sustainability, Scalability	*Grants/budget* - There are considerable costs involved in providing the necessary tools to students and the proper infrastructure. Without the necessary budgets, it would be impossible to move forward with these projects. *Human resources* – It is essential to have people in place (from an educational and technological viewpoint) to support the project's implementation. *The infrastructure* – A powerful and stable wireless network is one of the most important components. There must be sufficient bandwidth for bring-your-own-tool (BYOT) projects.

Summary of Data Collection
- Increased student motivation as regards to their own learning.
- Increased sense of independence in students.
- Increased self-regulation in students.
- Survey sent at the end of the year (June) to students and teachers in participating classes.
- Regular visits paid to staff members to get feedback.
- Focus groups to obtain feedback from students.
- Analysis of report card.

Highlights of Successes
For elementary school students, a comparison of report card results from June 2012 and June 2013 will demonstrate an improvement in the students' sense of independence and self-regulation.

For secondary school students, a comparison of report card scores from January 2013 and June 2013 will demonstrate superior results in terms of the students' independence and self-regulation for the courses targeted by the project.

Highlights of Challenges and Unexpected Results
Projects depend largely on the availability of a stable and powerful wireless network. We had to invest large sums of money in each school in order to add access points to stabilize access to the network. The more the pilot projects are known, the more requests we get for additions in other classrooms and schools. This can become challenging in terms of budgeting.

We were fortunate to have a team (an educational consultant and a technology-based education technician) that was able to develop resources to support implementation in other classrooms/schools next year.

The "BYOD – Bring Your Own Device" approach at the secondary school level produced interesting results. We are contemplating the possibility of continuing in that vein with other secondary schools next year.
In order to meet the needs of some schools, the computer team found ways to make it possible to use tools that were not supported by the Board (i.e. iPads). This type of tools can now be used in administrative environments.

Sample of Comments from Participants

"This year, I had the opportunity to receive a big cart full of new Netbooks. When I found that out, I was very excited at the idea of being able to use such useful technological tools in class. The possibilities were obvious. However, with support throughout the year, I realized that what I had in mind at the time was only the tip of the iceberg as to what could be done in the classroom with these tools. The continuous sharing of resources helped me to explore, experiment and have fun with the various tools." (Teacher)

"I was fortunate to have one Netbook per student this year. Here is a brief overview of my class profile: one handicapped student, one student with a vision problem, six students with attention deficit, one autistic student and one gifted student. A universal class seemed impossible, but that is not the case: students are engaged, motivated and can work at their own pace or level. I make minor modifications, but for the most part, the students' work follows the Grade 5 curriculum. It's incredible. We have developed enrichment projects for one student, but with the Netbooks, all students are involved in such

projects (according to their interests and choices) when they finish their work. Discipline problems have become minimal. Students work steadily on their SWHs as they are working as a group and then present their projects." (Teacher)

"This year, I participated in various extracurricular activities, which meant I had to be absent from class several times. My teachers post their lessons every day on Google Drive. That makes it possible for me to stay up to date in my courses when I am away on a tournament. In addition, since the lessons are posted on line, my personal organization skills have improved. I find it easier to prepare for summative evaluations." (Student)

"I really like to use my Netbook in class. I write faster with it than on lined paper. I also enjoy editing things on my Netbook such as a PowerPoint, Linoit and Prezi presentations, and when we have completed all the tasks on the posted to-do list, Mr. Comeau lets us keep busy until all students have finished their work. The other part of technology I like to use in class is the SmartBoard. We use it in class most of the time. When Mr. Comeau teaches in front of the class, I can see better with the SmartBoard. I also enjoy using this type of equipment because I love multiple choice questions." (Student)

Highlights of Key Findings
- Our success indicators were:
     1. Increased student motivation towards their own learning
     2. Increased sense of independence in students
     3. Increased self-regulation in students
- In terms of student motivation, the surveys and the focus groups (students' comments) showed that the use of technology (in the context of pilot projects) had a motivating effect on students.
- As for an increased sense of independence and self-regulation in students, the surveys seemed to indicate that that was the case, but the results of the report card analyses will need to confirm it. This analysis will be completed by the end of July.

Follow-up and Future Directions
- So far, we have focused on our school board's North region for the pilot projects. That way, our educational consultant and our technology-based education technician did not waste time traveling long distances. For next year, we will add equivalent positions in our school board's South region in order to implement pilot projects in all of our schools. Therefore, we anticipate involving 15 to 20 groups of students in those projects for the 2013-2014 school year.
- In elementary schools, the approach will be similar. That will allow us to use our teachers involved in the 2012-2013 projects as mentors for the new participants.
- The "BYOD - Bring Your Own Device" approach at the secondary school level produced interesting results. We are contemplating the possibility of continuing in that vein with other secondary schools next year.

Summary of Data Collection
- Teachers develop and use technology-related teaching and assessment practices by fostering inclusion and differentiated instruction (teaching, learning and assessment).
- Students use 21st Century skills: digital skills, analytical, discerning and creative skills. They use those skills independently.
- In participating schools, data are collected following observations made related to targeted outcomes and to the planning of in-class activities and the assessment that follows.
- For their part, Educational Services collected the data needed to interpret the project's impact in interviews with teachers and principals from participating schools.

Summary of Highlights
- Engagement of teachers and dissemination of the practice among staff not involved in the project:
  - Access to courses from home
  - Student-teacher communication facilitated through email
  - Communication between students facilitated by discussion groups
  - Increased student motivation and participation
- Differentiated instruction via technology and various interactive activities.

Highlights of Challenges and Unexpected Results
- Challenges are mainly of a technical nature:
  - Downloading of documents (time-consuming step)
  - Access to course made difficult due to the navigation menu
  - Complex passwords impossible to change
- Moreover, the content of some courses given online is less motivating for students. Few interactive activities and limited interest shown for the activities available.
- No big surprise was noted in the process implementation and development.

Highlights of Key Findings
- Although conclusive, the project had different repercussions in various implementation schools.
- In two schools, it was more the teaching practices and the development of new skills that were noted. In particular, the sharing of winning strategies with all of the teachers involved in the project created a vivid interest and desire to continue and move forward with this model.
- In another school, it was the students' academic progress that was noteworthy. In the courses targeted by the project, no student failed and the students' independent learning skills increased. Teachers attribute that to better access to courses as well as to the possibility for students to contribute to the content.

Follow-up and Future Directions
- It would be imperative to present the structure and to provide appropriate training and coaching in other schools to advance these teaching practices and to ensure the evolution of this teaching and learning paradigm.
- We also believe that the courses available online must be more interactive and motivating for students.

- Together with the teachers who took part in this project this year, we are now developing modules that will be shared with all of the board's staff. This project, led by Educational Services, is being developed in collaboration with the OEC's consultant.

District School Board of Niagara

Project Title	**Key Success Factors in Providing Effective Online Math Homework Help for Grade 11 and 12 Students**
Brief Description	DSBN is focusing on building an online homework help service to assist grade 11 and 12 math students complete their homework and increase their conceptual understanding and confidence in the math competencies. Math students will have access to this online service from Sunday through Thursday evenings from 7:30 p.m. to 10:30 p.m. The online service is being delivered by DSBN teaching staff and the pedagogical methods used align with the board's beliefs around constructivism and coaching. All sessions are being recorded, edited, tagged, and archived and made available to teachers and students within the DSBN on the D2L platform. Students complete an online exit survey so data can be collected on numbers of students accessing the service, the most effective online strategies used, and the topics that students requested help with.
Context	Number of schools: 20 Number of teachers: 5 Teacher tutors were hand selected for the project. All participating teachers were confident and competent in their use of technology. Number of students: potential of over 3000 if all participate Grades/Program: Grade 11 and 12 mathematics
Phase of Change and Impetus	*New* The project builds on the success of the current grade 7–10 Homework Help-Ontario Initiative.
Goals & Priorities	DSBN's research project has four goals: • Provide online homework help to all students currently in grade 11 and 12. • Identify the teaching strategies that support online learning. • Correlate online homework help to student achievement and engagement. • Determine if student demand warrants offering this service in subsequent years.
Role of Technology	Given this is an online research project, technology provides the tools and infrastructure by which the service is delivered.
Indicators of Success	1. Number of students who use and re-use this service during the duration of the project. 2. Impact of this service on student confidence in the area of math. 3. Impact on student achievement with students who accessed the service. 4. Identify the most effective online teaching strategies.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Capacity Building in Teaching	The online teachers met three times in advance of the launch of the online service. The sessions identified the best mathematical practices that would be used with students within the online environment.
Leadership, Sustainability, Scalability	• Funding is critical for this research project to continue and to scale the project across all Ontario school systems. • An awareness campaign for teachers and students need to be ongoing. • Teachers need to be made more aware of the archived online lessons that could be used by them to extend their differentiated support for students.

Summary of Data Collection
Survey data was collected from teachers. A pre and post survey was collected from students. Tabulated results are detailed in the report to substantiate findings and next steps.

Highlights of Successes
- The single biggest indicator of the success of this research project was the large number of students who accessed the service.
- Due to the strong student demand, sometimes students had to wait to meet one on one with a tutor. During this time however students reported solving their problem by working collaboratively with each other.
- Teachers reported the most useful elements of the online support were as follows: One-on-One Teacher Support (81.8%), and Discussion Boards (27.3%)
- 100% of students indicated no problems using the online environment.
- 66% of students felt that they had enough time with their tutor to resolve the question.

Highlights of Challenges and Unexpected Results
- Adjustments needed to be made in the process of online delivery due to some technical issues related to Adobe Connect.
- Students were reaching out for help in other related subject areas (physics).
- Students helping students in chat pods and discussion groups.

Highlights of Key Findings
Results based on success indicators:
To measure the number of students who use and re-use this service during the duration of the project.
- The actual number of students who accessed the online service was 933. 60% were female and 40% were male. 40% of the users rated themselves as weak math students.

An increase in student confidence in math as a result of using the service.
An increase in student achievement in students who use the service.
- The data to respond to these questions was not available at the time this report was due.

Identification of most effective online teaching strategies.
- Teachers reported that the most effective strategy was the one on one tutoring, followed by the discussion board, and then online homework help.
- 60% of students reported that they were looking for support with a particular math question.
- 40% of students accessed the help to increase their course mark in math.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- An analysis of student achievement between students who access the service and those that did not will be done when student achievement data becomes available.

The project had implications for Board planning.
- DSBN intends to request further funding to expand this service to students.

District School Board Ontario North East

Project Title	Improving Student Learning Through The Use Of Technology
Brief Description	With a focus on writing, reading and mathematics, the project will investigate the use of technology (iPads) as an instructional tool to increase student achievement.
Context	Number of schools: 5 Number of teachers/classrooms: 10 Number of students: 140 Grades/Program: Several Autism classes (self-contained) identified students (LD) in regular classroom – using technology as medium in language and math curriculum areas; research for science & social studies (Gr. 3/4 class); use by Gr. 1 French Immersion students.
Phase of Change and Impetus	*New*
Goals & Priorities	Pilot project was implemented through School Improvement Plans and focused on inquiry to improve literacy and numeracy.
Role of Technology	Technology is the essential element as it is promoting individual achievement, independence and learning in language (Autistic students), reading, writing and mathematics.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies • Other – communication
Indicators of Success	Success indicators were identified, and varied by setting (e.g., autism students, LD students, and non-special need students).
Leadership, Sustainability, Scalability	This pilot motivated the desire for technology to be used as a tool for student achievement and not just for those with SEA equipment.

Summary of Data Collection
Data was identified and collected. Sources included BAS assessments GB+ assessments, PLAB assessments, report card marks and observational data.

Summary of findings included with report.

Highlights of Successes
Our grade 6 students were assessed using the Benchmark Assessment System (BAS) in September/October 2012 and only 5 out of 16 students were reading at a beginning Grade 6 level (W) or higher. The winter 2013 BAS assessments indicated that 10 out 16 students were reading within grade level or higher (Level W and up) and 8 out of 16 were reading at end-of-grade level.

Throughout the year, the teacher used the program called "Evernote" on the iPad to organize the students' recordings, running records and self-reflections. She was able to use the qualitative and quantitative data gathered using the iPads to plan and deliver guided reading lessons that were based on the students' reading profiles.

The iPad as a form of interactive technology has greatly benefitted students with autism on several levels (i.e., immediate visual feedback, ability to communicate using P.E.C.S., etc.). With the proper applications, the iPad can be used as a speech output device for students with autism. This can benefit non-verbal students, or very early emergent verbal, as it could give them a voice. The iPad can also be used to reinforce positive behaviors. It could also assist with fine motor skills, as many children with autism could find tapping or sliding on the iPad to be easier than typing, or even communicating verbally.

Highlights of Challenges and Unexpected Results
The LD students felt they no longer were 'in the spotlight' because they needed to use technology.

Sample of Comments from Participants
"All of our students who use Kurzweil are comprehending at a much higher level than their own independent reading would allow. For example, we have several boys in Grade 4 who on their own are reading at a beginning Grade 3 level (BAS level N,O, P) but with Kurzweil are comprehending at the end of Grade 4 (BAS level S). … We have many students in the upper grades who produce Level 1 work when they have to write assignments out by hand, but are able to produce Level 3 and 4 work when using their laptops or the iPads to record their ideas as an iMovie or presentation." (School principal)
"The iPad has proven to be a high interest learning tool. One student used to have frequent outbursts during academic blocks, but when working the iPad, the outbursts are less frequent. Another student would often try to stand up and wander during academic blocks, does this much less frequently when working on the iPad."

Highlights of Key Findings
There was a clear improvement in the marks obtained by the students from first term to second term in both grade 4 and 5.
The Spring 2013 BAS assessments indicate that 15 out of 16 students are reading within grade level or higher (Level W or higher) and 11 out of 16 students are reading at end of grade 6 level.

Follow-up and Future Directions
Our next steps are to continue the momentum. We will further examine betters means to purchase apps, to increase networking, and to provide more training of staff in iPad use. We must expand our work by continuing to share the evidences of success.

Dufferin-Peel Catholic District School Board

Project Title	Targeting the Grade 7 and 8 Levels to Study the Impact of Blended Learning Environments in Science, Math and Language Arts
Brief Description	This project will expand the Ministry of Education's blended learning by providing training sessions on blended learning to selected grade 7 and 8 teachers from all elementary schools.
Context	Number of schools: All 120 elementary schools in DPCDSB Number of classrooms: 240 (One grade 7 and one grade 8 teacher from each of our elementary schools) Number of students: 4000 Grades/Program: Grade 7 and 8 (English, Math, Science)
Phase of Change and Impetus	*New*
Goals & Priorities	The goal is to measure the impact of blended learning throughout our grade 7 and 8 teacher and student population using both qualitative and quantitative data.
Role of Technology	The technology involved with this project is the Desire2Learn learning management system. The D2L secure environment, advanced educational web 2.0 tools and Ministry of Education support make this the preferred platform for blended learning.
Areas of Impact	• Student engagement and achievement • Learning environments
Indicators of Success	1. Number of teachers trained 2. Number of sessions 3. Number of courses ordered 4. Retention of content 5. Increase in assessment scores 6. Student engagement (i.e. student attitudes, completion of assignments)
Capacity Building in Teaching	In order to build capacity, 205 grade 7 and 8 teachers were trained over 11 sessions. The training occurred in 2 waves. First, each elementary school was provided the opportunity to train one grade 7 and one grade 8 teacher. In the second wave, we invited a second grade 7 and grade 8 teacher as well as special education resource teachers (SERTs) and SATs. We had ongoing dialogue with these teachers through online surveys and open dialogue in order to support as well as understand the effect on the utilization of the tools within the LMS. This dialogue led to the creation of a mini-course which would reinforce the pedagogy and utilization of the virtual learning environment.
Leadership, Sustainability, Scalability	Due to the strong interest among our teachers, the system is: 1) Implementing SIS integration. SIS integration will positively impact the sustainability of our project due to the ease and efficiency for our teachers who would like to implement blended learning. 2) Expanding the blended learning initiative to include grades K-6 and introducing the new primary and junior course homepages. Our goal is to create capacity builders within our elementary schools to help us support all newcomers to the LMS.

Summary of Data Collection

Data was collected from teacher surveys (qualitative and quantitative) as well as through ongoing dialogue. As well, quantitative data was collected using LMS analytics.

Detailed results are included in the report.

Highlights of Successes

One of the successes of our project was the positive feedback received from our elementary teachers. Throughout May and June, we have seen a large increase in the number of courses ordered in preparation of the 2013-2014 school year. A total of 721 courses have been ordered over a span of 2.5 months.

Through feedback via teacher surveys, we noticed a significant improvement in student attitudes and completion of assignments when the LMS was introduced to the regular classroom. Over 58% of the teacher surveys indicated that there was an increase in completion of assignments. Over 61% of teacher surveys indicated an increase in student attitude.

Highlights of Challenges and Unexpected Results

- **Limited access to the technology**: Dufferin-Peel had its share of challenges throughout this initiative. In particular, we are yet to implement WiFi and BYOD across our Board. Teachers recognized this as a challenge since LMS access was limited to computer labs and at home usage.
- **Timing of the training**: The trainings began March 19, 2013 and continued until June 2013. 56% of teachers did not feel that they had adequate time for implementation.
- **Administrators unfamiliar with blended learning:** Many of the administrators were not familiar with e-learning/blended learning and the virtual learning environment. We observed an increase in interest and teacher registration after administrator workshops.

Highlights of Key Findings

Teachers were asked to provide feedback to indicate any changes regarding student participation and output since using the LMS. Although there were increases in all indicators, teachers observed the greatest positive impact in completion of assignments and student attitude.

From the months of February to June 2013, the cumulative number of courses ordered increased from 10 to 721.

Follow-up and Future Directions

To continue to increase student engagement, teachers must be well versed in the LMS tools as well as blended learning pedagogy. We focused on a cohort of teachers (Grade 7 and 8) to build this capacity and designed a mini-course based on their feedback. We will use this course as a follow-up for future trainings. Data will be collected from both teacher and student surveys to measure the level of student engagement.

Durham Catholic District School Board

Project Title	I-Triple A: Improving Attitude and Achievement in the Applied I-Science Classroom
Brief Description	This project is focused on SNC2P, Grade 10 Applied Science, and will integrate online resources with lesson plans and assessment. The online resources include Gizmos, interactive learning activities from the Ontario Educational Resource Bank, Froguts Dissection Software, and the use of Desire2Learn for Blended Learning.
Context	Number of schools: 7 Number of teachers/classrooms: 9 Number of students: 160 Grades/Program: Grade 10 Applied Science
Phase of Change and Impetus	*New*
Goals & Priorities	This project has been designed to improve student engagement and achievement in SNC2P, Grade 10 Applied Science. The project will provide intensive teacher training and sharing time with student voice gathered and used by teachers in planning integrated, multi-media Science lessons.
Role of Technology	Every aspect of this project has to do with <u>online resources</u>: educating teachers about what is available, training teachers in how to use those resources, and exposing students to online resources in daily Science lessons. The online technology in this project is the enticement to better learning and improved performance.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Student attitude 2. Student achievement 3. Student plans to study science in grade 11 4. Teacher attitude toward online resources
Capacity Building in Teaching	Detailed plan of teacher training submitted with report.
Leadership, Sustainability, Scalability	While the availability of computer labs in schools is still a challenge, most classrooms now have WIFI and, in DCDSB, many teachers now have IVP (fixed projectors with interactive software) which will make the delivery of online resources easier. BYOD (Bring Your Own Device) is a concept that will alleviate the lack of computer labs but it is still at the discussion phase.

Summary of Data Collection

Sources of data collection:

Student Attitude and Plans to Study Science in Grade 11: Students were surveyed near the beginning of the study (March 2013) and then again at the end (June 2013).

Student Achievement: SNC2P teachers (both those in the project and those not in the project) submitted mark information.

Teacher Attitude: Teachers who were participating in the project were given surveys to complete after each training session. Teachers who were not in the project but were brought in for a full day of training were given exit cards to complete.

Results of data collection included with report.

Highlights of Successes
- 58 teachers (impacting nearly 5,000 students) were trained in the use of online resources.
- Teachers from two different boards were able to meet to discuss strategies and challenges in implementing online technology.
- Resources for SNC2P were created and shared (school to school and board to board).
- Capacity building began by means of the full day workshops for teachers not involved in the project.

Highlights of Challenges and Unexpected Results
- The timing of the project was a challenge. Some teachers who might have made positive contributions were not included because they had finished teaching SNC2P for the year.
- Teachers from both boards had very little access to computer labs where they could have students conduct online activities.
- The Internet in schools from both boards was often slow. Teachers who had bad experiences with slow Internet were reluctant to make online resources part of a regular lesson plan.
- Toward the end of the semester, some of the project teachers were reluctant to leave their classes in order to do more training or to create resources.

Highlights of Key Findings
- The students in the SNC2P classes where teachers were in the project demonstrated an increase in a positive attitude toward Science (from 67% to 89%). These students demonstrated an overall greater positive attitude when compared with both the control groups and the 2D groups.
- Students in the 2P project group demonstrated a significant increase in plans to study Science (from 53% to 69%).
- There was measureable improvement in marks and a decrease in failure for students who benefitted from the project, when compared to the control group.

Follow-up and Future Directions
- More release time for teachers to create digital units in areas other than Biology for SNC2P.
- One full day of training for secondary Science teachers at DCDSB.
- One full day of training at each of the 40 elementary schools in DCDSB with an emphasis on the Science resources in the Grade 1 to 6 Carousels of Learning.
- Sharing of the resources created by the SNC2P teachers.

Durham Catholic District School Board

Project Title	iPadegogy
Brief Description	A classroom set of iPads for 1:1 instruction was given to intermediate teachers in 9 schools identified by the Board as needing additional support because of either declining student achievement or enrollment. In addition 2 class sets have been used this year in high schools funded by outside projects. This pilot will provide them with training opportunities and collaboration time that will allow them to expand the scope of their teaching with mobile technology. It will benefit their students by providing them with a chance to showcase their learning in a differentiated manner using technological tools.
Context	Number of schools: 11 elementary, 4 secondary Number of teachers: 108 Number of students: 1300 Grades/Program: Grades 7 – 10, emphasis on mathematics
Phase of Change and Impetus	*New* Chosen classes have had limited success with the technology integration because they have not had the opportunity for training in their use as a 1:1 tool. Additionally, teachers have not had the opportunity to collaborate with peers either at the school level or with other schools in order to develop and share best practices for teaching with these devices.
Goals & Priorities	The objective is to determine tools/apps that will allow students to creatively demonstrate their learning in all areas with special emphasis on the subjects of mathematics aligned with the Board Numeracy goal.
Role of Technology	The type of technology used by this project is a class set of iPads with a cart and a MacBook computer. This system provides mobility as well as allowing classroom teachers to charge and synchronize the iPads so that they are ready, accessible and secure within the classrooms.
Areas of Impact	• Innovative instructional practices • Learning environments
Indicators of Success	1. Teacher knowledge and confidence with using mobile technology. 2. The number and variety of applications and web tools to which the students are exposed for use to demonstrate their learning. 3. Student Intellectual engagement noted by teacher observation and online documentation. 4. Extended learning opportunities for teachers using the online visual bookmarking service.
Capacity Building in Teaching	Small groups of teachers were released for a full day to participate in a collaborative session where they had a chance to learn 8 digital tools/apps that would be beneficial in a 1:1 iPad environment. Other apps were evaluated and purchased that would allow these teachers to extend their learning. In addition a Scoop.it online bookmarking site was established to support all teachers by providing them with resources associated with a 1:1 iPad learning environment.
Leadership, Sustainability, Scalability	71% of our teachers commented that the infrastructure (wireless or availability of the equipment) limited their use of digital tools. In addition, 30% of those polled said more training needed before they could integrate technology regularly within their classrooms. Our Board is considering a Bring Your Own Device environment within the next few years; this could improve the sustainability of this project.

Summary of Data Collection
The data was collected using the teacher and student versions of the Socrative app. Several of the teachers have established Edmodo classes for teacher collaboration and sharing evidence of student learning. A tracking system on the Scoop.it site provides a daily summary of visits to the site and the total to date.

Highlights of Successes
Two-thirds of the teachers polled felt that they learn best when involved with an in-service or have technological tools shown to them by a colleague. The collaborative small group environment that was established by this pilot allowed teachers to learn from one another in a safe, risk-free environment and gave them the confidence with using the digital tools prior to trying them with their students.

Highlights of Challenges and Unexpected Results
The major challenge was the compressed timeframe in which to implement the pilot. Our Board did not receive confirmation of the funding until the end of February. By that time our Master calendar, which regulates the amount of supply teachers for in-service, was at its maximum on many days.

The enthusiasm for the 1:1 iPad environment was contagious. The Board has already planned to double the amount of iPad carts that will be used in our schools for the next year.

Highlights of Key Findings
- Teacher knowledge and confidence with using mobile technology for teaching as determined by a polling application. The enthusiasm shown by the teachers in all of the sessions was evident. Teachers have commented that they cannot just be given a technology tool and be expected to make the appropriate changes in pedagogy. They need the collaborative time with a guided starting place in order to maximize the potential of the devices in the classroom.
- Student Intellectual engagement as noted by teacher observation. We have collected picture and video artefacts showcasing student engagement from classrooms where the iPads have been used. The videos produced by the students have been used as an assessment of learning tool where the teacher and fellow students can give feedback to increase their understanding of math concepts.
- Extended learning opportunities for teachers using the online visual bookmarking service Scoop.it. Our teachers are accessing the Scoop.it site (www.scoop.it/t/educators-love-ipads) on a regular basis to support and extend their learning. We have had 2700 visits to the site with more every day.

Follow-up and Future Directions
More training will be necessary in the use of creativity and productivity applications in order to further increase teacher confidence. Time for teacher collaboration and lesson plan development has proven to be very successful in getting teachers to adopt these digital tools within the Board.

Grand Erie District School Board

Project Title	Technology and Pedagogy Tipping Point: Achieving a Paradigm Shift that Transforms Teacher Practice
Brief Description	The focus of this project is twofold: One is to evaluate the Grand Erie District School Board's 5-year initiative to integrate technology into every classroom by measuring short term knowledge and skills outcomes, and intermediate term beliefs and behavior, specifically, transformed teacher practice outcomes. Secondly, it seeks to learn from teachers what supports they need and what barriers they face in shifting their practice to seeing and using technology through a pedagogical lens.
Context	Number of schools: 75 Number of classrooms: 400 Number of students: 17 000 Grades/Program: population includes all Grade 5, 6, 7, and 8, Secondary Math, Secondary Canadian and World Studies, and Self-Contained Special Education teachers and students.
Phase of Change and Impetus	*New* Our Pilot Inquiry is "How do systems move beyond embedding technology in classrooms to transforming the teaching and learning environment for 21st Century learners?"
Goals & Priorities	The goal of this initiative is to improve student engagement and achievement by embedding technology into daily teaching and learning to ensure that education is a relevant, collaborative, and interactive experience that provides different ways for students to express/demonstrate learning. A comprehensive theory of action accompanied the report.
Role of Technology	At the end of 5 years all teachers will have a device; all classrooms will have a set of devices (5-8) with software specific to subject, division and/or designation, a wall mount projector and WiFi. Large scale professional development and classroom support is provided.
Areas of Impact	• Student engagement • Innovative instructional practices
Indicators of Success	Complete and detailed assessment methodology included. The following questions are driving research: 1. Teacher capability to participate in the Ed Tech Initiative (knowledge, skills & attitudes). 2. Teacher practice of embedding technology into daily teaching and learning (behaviour). 3. Teacher use of technology to enrich learning (behaviour). 4. How technology is making a difference in students' daily learning (student behaviour).
Capacity Building in Teaching	Actively involving teachers and soliciting feedback at all stages of the initiative. The data tools provided a structured framework for teachers, coaches and consultants to speak the same language and develop a common understanding about technology integration.
Leadership, Sustainability, Scalability	Positive • Use of the TUPS and TIM-O tools for evaluation of our Ed Tech Initiative. • TIM-O tool was well received by principals and teachers .

Project Title	Technology and Pedagogy Tipping Point: Achieving a Paradigm Shift that Transforms Teacher Practice
	Negative • Establishing a plan for rollout of TIM-O and TUPS tools. • The data collection methods established for an ongoing feedback are time consuming to implement and analyze. • Inconsistent WiFi access and technical issues with netbook and projectors continues to sidetrack teachers and students in the classroom.

Summary of Data Collection

A comprehensive *Evaluation Framework* was identified and included with the report. The framework identified indicators, evidence required, data sources, and data methods and tools.

Data was collected through:

- Student perception surveys
- Technology uses and perceptions survey (TUPS)
- Technology Integration Matrix Observation Tool (TIM-O)
- Analysis of in-service feedback
- Notes and artefacts from teacher observations

Detailed reporting of results of data collection are included with the report.

Highlights of Successes

- Student Forum –85% of elementary schools and 93% of secondary schools in Grand Erie participated in the event; collected some rich data from the students.
- Access to the TUPS and TIM-O tools –providing specific data needed by our team to focus the initiative and move it forward more effectively.
- Positive reception from teachers regarding the TIM-O tool –supports teachers move forward with their use of technology in the classroom.
- Our Email/Call/Visit Tracking revealed that we spend a majority of our interactions with teachers responding to technical concerns, rather than curriculum related use of technology. Through this, we discovered the need for more human resources in moving our Ed Tech Initiative forward.

Highlights of Challenges and Unexpected Results

- Internet Connectivity at Student Forum – Internet access was a major issue at the Student Forum which impacted parts of the day.
- Teacher Web Tools (Ning) – was not used widely enough for us to find any useful information so we eliminated this data source from our Evaluation Framework.
- The one main limitation to the success of our project was the short timeline for implementing all of the data collection and analysis we felt we needed in order to produce knowledge and feedback about our Ed Tech Initiative.
- Unexpected rich data we received from students about their vision for the future classroom – students expected self-directed learning.
- Surprised by the number of teachers and students who added to the Word Press website AFTER the Student Forum.
- Learned about student use/misuse of Twitter. This provided awareness for a need to model appropriate use of online social networking tools.

Highlights of Key Findings

- An extensive reporting of findings is included with the report.

- We learned that connectivity issues in schools and slow Internet not only impair students' perceptions of their learning experiences (evidence of this in wordless and student forum drawings) but is impedes teacher willingness to "risk" basing a lesson on technology and have it fail due to connectivity or bandwidth problems. It is quite possible that the Ed Tech Initiative is progressing more slowly than possible due to teacher reticence to engage for fear of technology failure.
- We see that time is a significant factor in transforming their practice for teachers new to technology. Teacher perceptions are that creating lesson plans that embed technology will take a significant amount of time and that many teachers felt overwhelmed or daunted by the thought of what they saw as starting from scratch. Lastly, teachers identified that, although the inservice was informative, once the return to their schools and fall back into the fast-paced work day, they won't have time to implement what they learned. This is the drawback of any inspiring professional development that is not embedded in the classroom.
- In summary, this project helped us collect evidence that we could use to understand the extent to which our Ed Tech Initiative is progressing. For example, itinerant teachers hired to support classroom teachers—in theory, but spending a significant amount of time troubleshooting technical issues and sorting out purchasing/administrative questions—in practice. It also exposed assumptions that, anecdotally, we all knew were false, but had never collected data to verify that fact and had never had conversations about the impact on our expected outcomes and how the program theory needed to adapt. For example, connectivity and bandwidth issues. The program logic assumes that everyone has adequate connectivity and bandwidth to participate fully in the Initiative. We all knew this was false. The evidence we collected gave us motivation to talk about it as a significant barrier to the Initiative outcomes and what this means for the success of the initiative and the logic of our program model.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.

- To mitigate the problem of Ed Tech staff having little time to support classroom teachers, we will recommend that there be alignment across programs and/or more dedicated staff to the Ed Tech Initiative. Grand Erie is committed to transforming teacher practice through the use of educational technology. We believe that by breaking down the silo within which this program has operated, it can become systemic in practice, not just in theory.
- Full implementation of the evaluation tools (TUPS and TIM-O) to provide feedback for shaping the future of the Ed Tech Initiative.
- Rework our evaluation framework so that it becomes a manageable and sustainable constant feedback loop to program staff.

The project had implications for Board planning.

- Communicate the findings from the Student Forum to teachers, administrators, and superintendents so that they can see how students view their learning environment.

Greater Essex County District School Board

Project Title	The Impact of Tablet and Mobile Technology in the Elementary Classroom
Brief Description	Schools were invited to apply to be involved in the iPad pilot, with all applicants being accepted. The application asked the schools to identify the most urgent cognitive learning need in their students and outline how iPads could be used to address this need. For the second cohort of schools, various supports were put in place, including face-to-face sessions with a project lead and Apple Distinguished Educator, site visits, and additional release time. The final component of this project is to further look at how the board's BYOD policy and practice has evolved.
Context	Number of schools: 42 Number of teachers/classrooms: 65 Number of students: 1500 Grades/Program: JK-8
Phase of Change and Impetus	*New* GECDSB started an iPad Pilot project in September of 2012. • What is the impact of skillful use of tablet and mobile technologies on students' most urgent cognitive learning needs as outlined in the SIPSA? • What is the impact of providing teachers with professional learning opportunities rooted in collaboration, inquiry, and classroom practice, on the teachers' ability to effectively integrate technology into teaching and learning? • How can the board BYOD policy be used to positively impact student outcomes?
Goals & Priorities	GEDSB is exploring the impact of different levels and types of support needed for success in the implementation and use of technology in the classroom. Schools are required to align their technology use with the learning needs of their students and their School Improvement.
Role of Technology	This project is specifically aimed at learning more about the potential impact of tablet computing devices (iPads in this case) on student learning, including comparing to our current technology allocations (laptops and desktops).
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Measure the impact on instructional practice job-embedded, collaborative learning models compared to the same technologies with no supports. 2. Measure the impact of the intentional teacher action when using technology on the students' progress towards their most urgent cognitive need.
Capacity Building in Teaching	The main source of support was the school Instructional Coach; believing that those focused on instruction would provide the type of support that led to more effective use than if the support was of a purely technical nature.
Leadership, Sustainability, Scalability	Factors impacting sustainability: • Open dialogue between our program staff and our IT Department. • Board assumes all network and bandwidth costs, allowing project funds to be spent on technology for students rather than infrastructure. • Ability to provide Professional Development and support to teachers.

Summary of Data Collection
Qualitative data was collected (e.g., a report submitted at the end, classroom and student observation, and focus group interviews). This project was organized into two groups of 20. The first group of schools acted almost as our 'control' group, with very little in terms of support, intervention or PD.

Highlights of Successes
- Due to several factors including this project and application, we moved from 12% of our SIPSA's having explicit reference to technology in 2011-2012, to 62% in this year.
- The reports were an excellent means for reflection for the participants, and helped to inform both the next steps of the system and the next steps needed on a school level.
- Many teachers commented that the students were able to do things and present learning with the iPad beyond anything they thought possible with laptop or pencil and paper.

Highlights of Challenges and Unexpected Results
- The iPad is designed for individual use, not as an enterprise solution or as a device to be shared between students/classes/grade levels.
- The political climate this year required adjustments.
- Another challenge was with the way that we funded apps and software supports.
- We did not expect previously tech-reluctant teachers to take to the iPads with such passion.
- We did not anticipate that the iPads would be subject to less damage than our laptops.

Sample of Comments from Participants
"Students able to articulate their understanding and make their learning visible."
"For my Special Education students, this was the missing link. They feel so confident when working on projects…they have the tools to get the job done."
"Students provided a work product that demonstrated a more accurate portrait of actual learning."

Highlights of Key Findings
- The data shows an increase in the scale for the second cohort, which we can attribute to the additional support they received, the learning shared from cohort 1, and the continued deep focus on pedagogy rather than technology.
- The iPad is a tool accessible and easy to use for a wider range of teachers, in terms of teacher skills and technical competence, than a laptop. It was consistently noted that previously technologically-reluctant teachers were engaging with the iPads, in ways where their strong pedagogical backgrounds allowed for higher leverage SAMR uses.
- There were clear indications from the teachers involved that the increased student engagement was sustained throughout the project (the novelty didn't wear off), transferred to periods where the iPads were not used, and was enhanced by the opportunity to connect beyond that classroom.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Starting in September, every school will have a minimum of 10 iPads, with some as many as 100.

The project had implications for Board planning.
- Comprehensive "Technology Review" in 2013-2014 by visiting a large random sampling of schools and looking specifically at what the technology in that school is being used for.
- Create a structure that allows for sharing and collaboration within a school and beyond.

Halton Catholic District School Board

Project Title	Blended Learning in the Classroom
Brief Description	Using the Ministry of Education's blended learning resources this project will explore the conditions for success in blended learning environments across grades and the curriculum. Participating teachers are monitoring the levels of student engagement and achievement through the use of blended learning.
Context	Number of schools: 42 Number of teachers: 43 Number of students: 800 Grades/Program: The participating teachers are self-identified and are from a variety of teaching assignments. Grades 4 – 12 including special education assignments and ESL assignments.
Phase of Change and Impetus	*New*
Goals & Priorities	With this project, teachers will make use of technology as a means for differentiated instruction, strengthening student engagement, and ultimately improving student achievement.
Role of Technology	Technology is essential to this pilot in that curriculum content is delivered to students through the online learning environment. The role of technology is also critical in the assessment and evaluation of student learning.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Students report higher levels of engagement in using blended learning approaches to complete lessons and use writing tools. 2. Teachers report higher levels of student engagement in using blended learning approaches to complete lessons and use writing tools. 3. Teachers report higher levels of student achievement in using blended learning approaches to complete lessons and use writing tools.
Capacity Building in Teaching	The project teachers were becoming champions in their schools. By the end of this project, the participating teachers have supported their colleagues in the use of D2L as seen in the approximately 200 teachers that were trained.
Leadership, Sustainability, Scalability	The difficulty in staff changes this year has affected the growth of blended learning. Support from superintendents has proven to be extremely helpful in the funding for more opportunities for blended learning training.

Summary of Data Collection

Teachers used 5 marker students. Student work in writing for these students was monitored throughout the school year. Student work in writing was identified from both blended and traditional approaches.

Highlights of Successes

The greatest success of this project is the increase in the number of teachers using blended learning in their classrooms. The effective use of the provincial learning management system is being implemented throughout the board and we are looking forward to growing the use of D2L in our schools and classrooms.

Highlights of Challenges and Unexpected Results

The key challenge was ensuring those teachers who self-identified at the beginning of the project continued with the project to its completion. We lost about 12 teachers from the beginning to the end due to a variety of other commitments and changes to their teaching assignments.

Working with teachers who had different levels of experience with blended learning proved difficult to gauge the success of the students.

Highlights of Key Findings

Judging by the increase in the number of teachers who have attended blended learning training, we can see that teachers are seeing the value of blended learning. Participating teachers in this project have identified writing as a key area of growth for their students.

Additional Statements Related to Areas of Impact

These teachers, new to blended learning, are critical to the growth and sustaining of teaching and learning in an online environment in the 21st Century.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Next steps include the creation of a handbook for teachers using blended learning and posting this handbook as well as tip sheets on our board intranet website.
- More training will continue and more students will be given opportunities to learn in an online environment.

Halton District School Board

Project Title	Bring I.T.!
Brief Description	Students and staff use a wide variety of personal devices in their lives including phones, handheld devices, tablets and laptops. In 2012-13, a significant expansion and upgrade to the wireless network availability has led many schools to embrace the use of student and staff-owned technology within schools and classrooms, encouraging them to Bring I.T.!
Context	Number of schools: 42 elementary & 13 secondary schools Number of teachers/classrooms: 119 Number of students: 3600 Grades/Program: JK-12 cross-curricular initiative, with a focus on grades 6-12.
Phase of Change and Impetus	*Continuation* Bring I.T. is a direct continuation of the 2011-12 Bring I.T. Project.
Goals & Priorities	"Within the next four years, 60% of our classrooms will be "Bring IT" classrooms": • An improvement to achievement and learning in all programs areas; • A broader range of opportunities for differentiation and student engagement; • Increased teacher comfort with incorporating student owned devices; • An increase to overall access to technology for all users as demand for board-provided technology is eased and augmented by personal devices; • More responsible and effective student use of personal technology; • School-developed (and board developed) effective policies around student owned devices.
Role of Technology	Student and teacher personal laptops, phones, tablets, handheld devices, eReaders, cameras, etc. are the hardware devices which are an integral focus of the project. The Halton wireless network is being expanded to "near complete" coverage (98% coverage) and has already been quadrupled in speed this fall and structured to accommodate a larger number of personal devices.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies
Indicators of Success	1. Frequency of use of various technologies (e.g., laptop, phone, tablet, etc.). 2. Perceptions on the use of technology at the school level (distraction? engaged? positive impact?). 3. Classroom uses for technology (e.g., for collaboration, creation, research, etc). 4. Perceptions on the use of personal technology at the class level.
Capacity Building in Teaching	Professional learning opportunities were provided to assist staff with leveraging the use of personal technology for student learning, engagement, collaboration, critical thinking, creativity, digital citizenship and other 21st Century skills. These workshops supported the use of personal technology and plan for implementation. The pilot was also supported by a move to almost-full wireless coverage in schools (including portable classrooms) and coincided with the implementation of Google Apps for Education (Halton Cloud).
Leadership, Sustainability, Scalability	• The use of the cloud will expand use of student owned devices within the

Project Title	Bring I.T.!
	classrooms (students able to use the same software on personal devices as on board owned computers). • The Halton DSB has passed a long range plan which provides stable funding for the purchase of equipment and the provision of wireless Internet throughout schools. Included in this plan are two additional School Programs staff to support the use of ICT. • The increase in wireless coverage in schools to 98% provides the opportunity for all teachers to implement the use of student-owned devices. • The addition of a student portal that allows access to printing and storage makes the functionality to student-owned devices similar to that of board-owned devices. • Our Acceptable Use Policy has been revised to make its application to personal devices more explicit.

Summary of Data Collection
- Surveys were conducted with staff and students regarding the use of personal technology within the school environment.
- Enrollment data of teachers involved in bring IT professional development.
- Qualitative data was collected about teachers' use of personal technology in the classroom which was shared with other teachers for professional development.

Results are identified in the report.

Highlights of Successes
- Increase in the number of students using their personal devices within the classroom.
- Increase in teachers' comfort levels with the use of student-owned devices within their classroom, part of this increase in comfort can be attributed to the implementation of Google Apps for Education.
- Increase in teachers' integration of personal devices into classroom learning.
- Capacity was built by integrating the use of cloud technology to support the use of personal devices.

Highlights of Challenges and Unexpected Results
- Some schools are impacted by socioeconomic factors that limit the number of students who have personal devices to bring to school. Next year, schools impacted by socioeconomic factors will be provided with up to 25% more funding over the baseline amounts.
- A difficult political year forced all training to occur in a compressed period.
- The unexpected enthusiasm of the teachers for cloud computing increased the number of teachers using students' own devices in their lesson increased faster than expected.
- As other school programs staff participated in the professional development sessions, they brought with them ideas for use of student-owned devices in their subject areas.

Highlights of Key Findings
- Goal: increase teacher comfort with the use of student owned devices in the classroom. Survey shows 80% of the students use their devices in the classroom at least once a week.
- Goal: increase student engagement / differentiation. Our survey demonstrated that 70% of teachers and students use technology 'often' or 'sometimes' to collaborate within the classroom. 80% of teachers use technology 'often' or 'sometimes' to support their lessons.

- Goal: effective and responsible use of personal devices by students. Teachers shared stories of their use of the personal devices in the classrooms and stated that students were generally on task and the use was contributing to learning.
- Goal: increase in the number of primary and junior teachers interested in incorporating students' personal devices in the classroom. As the cost of devices declines, more parents may allow their children to bring them to school at a younger age.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.

- The addition of two new School Programs staff will assist in implementing Bring I.T. in classrooms.
- Professional development related to Bring I.T. will be further integrated into literacy and numeracy initiatives to increase its effectiveness in the support of student learning.

The project had implications for Board planning.

- The board's HDSB Plan includes a goal that "within the next four years, 60% of the Board's classrooms will be "Bring IT" classrooms". The recently passed ICT Vision provides the funding and additional program support to make this happen. Among other things, Bring IT! classrooms will welcome student-owned technology, have a mounted data projector to increase the effectiveness of technology by both teachers and students and have a teacher who understands how to select and effectively use appropriate ICT resources.
- With the board-wide implementation of Google Apps for Education (Halton Cloud), we aim to increase teacher comfort with personal technology and establish an understanding about how the cloud supports and adds to the effectiveness of student-owned technology.

Hastings and Prince Edward District School Board

Project Title	"Inquired and Wired!" Inquiring About Blended Learning K to 12
Brief Description	This pilot will apply a teacher inquiry approach to identifying student learning needs. Teachers will learn to leverage the provincial Learning Management System (LMS) and blended learning strategies to enrich the learning environment and develop 21st Century learning skills, and offer differentiated learning in secondary and elementary schools.
Context	Number of schools: 12 schools (3 secondary, 9 elementary) Number of classrooms: 19 Number of students: 500 Grades/Program: Concentration on *Junior-Intermediate* classes; additionally working with students in Credit Recovery, Co-Op and Kindergarten.
Phase of Change and Impetus	*New* System-level data has indicated that more than half of intermediate students express disengagement from learning. They have articulated that school does not present relevant, challenging learning tasks. Understanding that definitions of "engagement" and "relevance" for our learners often stem from the nature of their participation in the digitally-rich world beyond the classroom, we are exploring the way that blended learning – the intentional, pedagogically-driven integration of digital resources into classroom settings, particularly Junior and Intermediate classrooms – can enhance students' commitment to and enthusiasm for learning.
Goals & Priorities	Our project aims to support the development of globally-minded citizens that are proficient not only in core literacy and numeracy skills, but also in accessing, activating, and assessing digital technologies. To this end, our work examines the relationship between the instructional core and blended learning platforms, namely the province's *Learning Management System (LMS)*.
Role of Technology	LMS tools are central to the work that teachers are doing together and with students.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environment
Indicators of Success	We will be examining: 1. Impact of pilot on understanding of instructional core. 2. Impact of blended learning on instructional practice. 3. Impact of blended learning-influenced instruction/assessment on student engagement. 4. Impact of blended learning-influenced instruction/assessment on student achievement.
Capacity Building in Teaching	To action their inquiries, participating teachers were provided with release time to co-plan classroom lessons and/or activities that integrated LMS tools with high-yield instructional practices. When possible, instructional coaches (Learning Partners and the Numeracy Coach) supported teachers in the work. Some teacher teams co-planned, others co-planned/co-taught, and others were able to co-plan/co-teach and engage in moderation of student work to better understand the impact of blended learning on student achievement.

Project Title	"Inquired and Wired!" Inquiring About Blended Learning K to 12
Leadership, Sustainability, Scalability	Sustainability was positively impacted by the support offered to teacher learning teams by HPEDSB's Learning Partners (instructional coaches). These "lead-learners" were able to model a growth mindset for their colleagues and were readily personally available to ensure that teacher teams' work stayed focused and energized. The sustainability of the project was negatively impacted by challenges related to reliable access to technology and to the Internet, in particular. Infrastructure to support a blended learning environment in a concrete, sustained manner is needed.

Summary of Data Collection
- Data collected through teacher observations, video evidence of student engagement, culminating learning fair, and an online survey tool.
- Extensive data collection evidence and tools were linked in the report.

Highlights of Successes
- We noted, particularly, success in terms of *student engagement*. Our pilot's teacher teams were composed largely of educators working in Intermediate grades. We found that students were more responsive to the blended-learning environment than to the more traditional classroom routines in grades 6 through 8, in Grade 10 Applied and/or Open classes, and in alternative learning settings.
- As one teacher participant noted in response to our pilot monitoring survey question about the extent of the impact of the 21st Century Pilot for System Learning on student engagement, "[the impact is] HUGE - student surveys depicted the growth mind set from teacher as expert to teacher as becoming a facilitator of the learning in the classroom. Students became the experts and LOVED working with others to bump up their work." Engagement led, in turn, to increased achievement and self-efficacy for the learners.

Highlights of Challenges and Unexpected Results
- Unanticipated changes in our process arose from various labour issues with which our teachers contended this year. Some teacher teams that had initially committed to the professional learning and job-embedded exploration of resources that was afforded by the pilot project ultimately did not feel comfortable using release time to co-learn with a colleague, coach, or Curriculum Coordinator as this type of work was not integral to classroom responsibilities.
- An unexpected opportunity that arose in our project stemmed from a teacher teams' concern about the grade-level appropriateness and organization of the content of LMS resources. Coordinators and coaches working with this team used these concerns to open up dialogue about differentiation and the use of technology to support pedagogy (rather than the stance of leading with technology).

Sample of Comments from Participants
- Students are moving toward "*less chatter, more collaboration*" (survey response) in the blended learning environment and this, in turn, is leading to richer evidence of achievement in the work that students produce.
- One participant summarized the pilot's impact on instructional practice in this way: "[the] impact [was on] knowing more about student inquiry. We learned that not all tasks will be meaningful for all classrooms. We need to be more mindful when creating an inquiry unit and summative tasks, to make sure our task addresses the big ideas and will have a more global-citizen focus" (survey results).

Highlights of Key Findings
- We concluded that the blended-learning model had a critical place in literacy instruction and that teachers were responsive to the relationship between key literate behaviours – reading, writing, communicating – and the digital landscape.
- We had postulated that blended-learning would impact teachers' approaches to curriculum. Responses to our pilot monitoring survey indicate that this is true. In fact, teachers emphasized that the LMS resources, particularly the content (the component of the LMS used most frequently by pilot participants), made "the curriculum more manageable" (survey response).
- Feedback from pilot participant teachers speaks to the positive impact of blended learning models and environments on students, especially student engagement. In the words of one pilot participant, "They [students] are excited to be experts. Their product and conversation reflect their excitement."
- Our pilot project sought to underline the relationship between LMS tools and high-yield instructional practices. Participants attested to the role of evidence-based targeted instructional and assessment practices in their applications of blended learning technologies. According to our pilot monitoring survey, particular areas of instructional practice that were enhanced by LMS resources included differentiated instruction, student inquiry, and the design of authentic, challenging, meaningful learning tasks.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.

Our future plans involve providing teachers with the support and access to collaborative learning opportunities that will afford them an opportunity, not only to understand how to use technological tools, but how to connect technology meaningfully with pedagogy.

Our teachers, on the pilot monitoring survey, named the following areas of priority moving forward:
- Continued opportunities to integrate LMS tools into instruction and assessment in all subject.
- Continued opportunities to learn with the colleagues/contacts made through the pilot.
- Continued opportunities to explore a greater range of LMS tools.

The project had implications for Board planning.

Given our findings, we will continue to work on the relationship between blended-learning tools and instruction in content areas such as History, Geography, and Social Studies with an emphasis on the way LMS resources enhance opportunities for rich tasks and inquiry-led learning.

Huron-Perth Catholic District School Board

Project Title	Learning for Life: Developing a Personal Learning Network with Grade Eight Students
Brief Description	Instead of asking students to "power-down" at school, HPCDSB will "power-them-up" by creating a personal learning network using the provincial LMS, OSAPAC/Board software, web 2.0 tools and their own electronic device. All grade six, seven, and eight teachers will be trained on the integrated LMS (built-in tools; Google Apps, Learn360, OERB, Gizmos, etc.). After this training session, these teachers will be invited to co-teach and co-plan with each other with the focus on meeting one of the goals of the blended learning strategy.
Context	Number of schools: 15 Number of classrooms: 40 Number of students: 1000 Grades/Program: Grade 6, 7, 8 classrooms
Phase of Change and Impetus	*New* Enabling anytime, anywhere learning through technology.
Goals & Priorities	The goal of this project is to improve communication between students and the teacher, promote greater collaboration between students, and differentiate learning and assessment for all. A priority is to allow students in rural areas who have long bus rides to and from school to be able to mobilize their learning while in transit – taking the first step to realizing that a learn anytime, anywhere world awaits them.
Role of Technology	The learning management system with built in external tools (Google Apps, Learn360, OERB, Gizmos, etc.) will create a learning network for students.
Areas of Impact	• Learning environments
Indicators of Success	Sustained use of the Provincial Learning Management System through blended learning in intermediate classrooms will provide measurable data in the form of: login data, assignment completion, blog engagement, and other digital tools usage.
Capacity Building in Teaching	All grade six, seven, and eight teachers will be trained on the integrated LMS (built-in tools; Google Apps, Learn360, OERB, Gizmos, etc.). After this training session, these teachers will be invited to co-teach and co-plan with each other with the focus on meeting one of the goals of the blended learning strategy. The results of this project will be shared at an innovation fair in June.
Leadership, Sustainability, Scalability	The lack of hardware impacted us negatively with our goal of sustainability. Our investment (from board funds) in WiFi infrastructure has been noticed as having a very large positive impact – allowing those schools with significant hardware to use the tools and pedagogical strategies without impediment. To ensure sustainability we spent significant time planning our training sessions for teachers to ensure a differentiated approach.

Summary of Data Collection

Data strategy combined both quantitative and qualitative approaches that informed our design, implementation, and evaluation our project.

• Login Data, Staff Survey
• D2L Usage Audit, Staff Focus Group, Student Focus Group

Specific tabulated data was not included with report.

Highlights of Successes

- The big success of the project has been clearing defining the blended learning strategy for our board. In the past, teachers used D2L for many reasons but the D2L usage audit indicated that the board's blended learning program lacked pedagogical substance. Blended learning was primarily used as a basic digital homework board and to deliver pre-fabricated content.
- The alignment of the 21st Century document, board technology policy, and BYOD initiative are major success as we are now positioned for sustained, system-wide blended learning implementation.

Highlights of Challenges and Unexpected Results

- The main unintended opportunity we discovered was that blended learning can be student driven. We found levels of student access and engagement was usually tied to the investment of the classroom teacher. We wondered what a model would look like where students could access a repertoire of tools available to them; regardless of the level of participation of their teacher.
- The biggest challenges we faced were those surrounding lack of hardware in schools for our interested teachers to use. We were able to provide technology for training purposes, but that new learning will not be set up for success as ongoing sustained implementation cannot be realized.

Highlights of Key Findings

- The key finding of this pilot project was that a clearly defined blended learning strategy was needed that would be grounded in learning theory, supported by board policy, aligned with staff training and technical skills, while also meeting the needs of today's digital students. Our strategy now is focused on using the provincial learning management system to increase communication between the teacher and students, promote greater collaboration among students, and differentiate assessment for all students.
- Upon studying the D2L usage statistics, however, most teachers are still using the system primarily as a communication tool. Ongoing support will be needed to help teachers move beyond basic communication to more advanced use where collaboration and differentiation will be realized.
- A significant finding that requires greater investigation is the level to which these tools can be student driven rather than teacher dependent. Aside from consistency from year to year, the benefits of providing students with access to digital tools, independent of their teacher, will hopefully strengthen both communication and collaboration skills.

Follow-up and Future Directions

By looking at the blended learning strategy from both a theoretical and organizational learning lens, the existing strategy lacked the appropriate structures to properly introduce the LMS through professional development to teachers.

Moving forward, a collaborative inquiry model should be deployed that would encourage both professional collaboration (working with other teachers) and inquiry (a search for deep understanding) as the platform for professional learning (Dack and Katz, 2013). Exemplars of student collaboration, learning, and assessment, (not student login data), must be incorporated into the evaluation of the blended learning strategy moving forward.

Huron-Superior Catholic District School Board

Project Title	Teaching and Learning in the 21st Century – Pragmatic Implementation of a Learning Management System/Blended Learning
Brief Description	The focus of the project is to increase use of the Ministry of Education provided Learning Management System (LMS)/Blended Learning by educators, students and parents. The LMS has provided educators, students and parents with effective instructions that is differentiated, while meeting the needs of our students. The project will focus on the following themes: Learning Environments, Innovative Teaching Practices, and Parent and Community Engagement.
Context	Number of schools: 12 Number of classrooms: 100 Number of students: 1000 Grades/Program:K-12,
Phase of Change and Impetus	*Continuation* Building on the successful implementation of year one of this project, expanded use of the Learning Management System within secondary programming will occur during year two. Expanded use of the Learning Management System will continue into elementary programming. The Learning Management System will be used to support teachers in district schools who are experiencing multiple split grades. The Learning Management System and resources provided will allow teachers to more effectively provide instruction to students in the different grades within their classrooms.
Goals & Priorities	Through a variety of tools (within the LMS), students and educators are able to communicate, share and collaborate in a safe online environment. The online tools and resources within the Learning Management System will mitigate some of the geographical barriers often experienced by our district schools.
Role of Technology	For our district schools in remote locations throughout northern Ontario, the Learning Management System provides teachers and students with equity of access, historically never provided.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Student Engagement 2. Level of student engagement provided by teacher observations 3. Usage of the LMS during school time and after school hours 4. Parent/Guardian Engagement 5. Level of communication provided by teacher observations 6. Instructional Practices 7. Interest and level of teacher engagement in the use of the LMS 8. Sustained use of the Learning Management System 9. Identifying new teaching practices among teachers
Capacity Building in Teaching	Training was provided according to teacher experience on the LMS, and therefore divided into three sessions; beginner users, intermediate users and advanced users. Furthermore, by providing the just-in-time/job embedded support, teachers were able to access the e-learning Contact when needed, as needed.

Project Title	Teaching and Learning in the 21st Century – Pragmatic Implementation of a Learning Management System/Blended Learning
Leadership, Sustainability, Scalability	Support from Senior Administration and the Board of Trustees has been an instrumental factor in the implementation and sustainability of this project. Both were extremely supportive and interested in the implementation of the Learning Management System in our day school and summer school programming.

Summary of Data Collection

For the measureable outcomes *Student Engagement* and *Instructional Practices*, specific data was collected from the Learning Management System (LMS) at specific dates throughout the school year. Number of unique users provided our board with a clear picture of whether more teachers were integrating the system into their face to face classrooms. This data, along with teacher comments and anecdotal notes gave us an indication of whether teacher *instructional practices* were changing. Partial results are summarized in the report.

Highlights of Successes

The most significant success of this project has been the change in culture regarding the use of online tools, including the Learning Management System. It is apparent that the emphasis on 'integrating technology into the classroom' has evolved into a more something more natural , where for some it has changed to 'technology in the classroom'.

Highlights of Challenges and Unexpected Results

The biggest challenge experienced while implementing the Learning Management System is the time to train teachers on the system. It is also felt that the use of the LMS has aligned education and technology with the expectations of today's students. By integrating an LMS into classroom instructions, students have access to their education in a variety of mediums, virtually anywhere in the world and at any time of the day.

Highlights of Key Findings

There has been an increase in the number of users for both teachers and students. Furthermore, the level of usage has also continued to increase, indicating that teachers and students enrolled on the system are using it on a regular basis. The average number of sessions per day and per week for students, when comparing semester one to semester two, has also increased.

By observation of comments and anecdotal notes, many teachers within our board have embraced the use of the LMS and several have commented on the benefits to their teaching practice.

The comments and anecdotal notes confirm that the Blended Learning Model is highly valued by parents/guardians, as teachers and students maintain their face-to-face environment while incorporating some online/digital learning.

Follow-up and Future Directions

- Expand usage of the LMS.
- Working with our Numeracy Facilitator teachers to create EQAO support materials.
- Working with our Assistive Technology teachers to create support material.
- Working with our school librarians to create materials to support students with literacy and writing.

Kawartha Pine Ridge District School Board

Project Title	**Blended Learning and Electronic Portfolios in the Grade 10 Careers and Cooperative Education Programs**
Brief Description	The project will focus on the use of the Blended Learning n Grade 10 Careers classes and Grade 11/12 Cooperative Education programs. In addition, it will focus on the use of electronic portfolios as a tool for facilitating collaboration, reflection, and the demonstration of student achievement. Participants will be trained in the Provincial Learning Management System (LMS), Desire2Learn (D2L), with emphasis placed on its electronic portfolio tool, ePortfolio.
Context	Number of schools: 15 Number of classrooms: 54 Number of students: 1500 Grades/Program: Grade 10 Careers courses, Grade 11/12 Cooperative Education programs.
Phase of Change and Impetus	*New* Blended Learning Research (i.e., students acquire skills for living and learning in the 21st Century; absent students are better able to keep up with their work; male students produce higher quality written work; students submit assignments with more regularity; students collaborate more with their peers; students become more independent learners; parents become more involved).
Goals & Priorities	Blended Learning will supplement instruction and assessment in identified classrooms.
Role of Technology	The Provincial LMS, D2L, populated with content written by e-learning Ontario (eLO, a branch of the Ontario Ministry of Education), will be the primary technology used in this pilot. This technology is essential as it allows Blended Learning to occur in the classroom. Each school involved in the pilot will receive the number of netbooks equivalent to the number of teacher participants participating in the pilot.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies
Indicators of Success	1. Articulate a comprehensive understanding of Blended Learning and electronic portfolios and their impact on student engagement and achievement. 2. Evidence of the successful and effective use of the tools contained within the D2L virtual classroom. 3. Evidence of the successful integration of Blended Learning, D2L, and ePortfolio into traditional classroom practices. 4. Evidence of increased student engagement and achievement as contained in "the teacher voice" and student marks.
Capacity Building in Teaching	Coop and Careers teachers were recruited from each school. Over two days, a group of 54 teachers were trained in D2L and ePortfolio. Teachers were supported via phone, Skype, email, and messaging.
Leadership, Sustainability, Scalability	Many of those involved in the pilot have already articulated interest in continuing with blended learning and the use of ePortfolio in their programs in the future. Those who have commented otherwise have cited insufficient training time, a lack of sufficient central support, and a lack of access to technology as the reason they are apprehensive in their decision to attempt implementation again in the future.

Summary of Data Collection
Data was collected through use of a teacher survey, teacher interview, and virtual classroom visits. Findings reported but specific results not identified or included.

Highlights of Successes
- 54 KPR teachers were trained in blended learning pedagogy, D2L, and ePortfolio, thereby increasing system capacity for the continued diffusion of blended learning throughout the system.
- A large number of KPR Coop and Careers students were exposed to blended learning and became experienced with D2L and ePortfolio.

Highlights of Challenges and Unexpected Results
- One of the unintended results of the pilot was the interest articulated by Coop teachers in using D2L as a tool for logging and tracking placement hours, writing and submitting weekly reflections, receiving feedback from employers, and acting as a portal into many of the other online resources.
- The major challenge of the pilot was access to technology by the students involved. Teachers struggled with booking sufficient computer lab time for students to complete their blended learning activities. Strategies such as Bring Your Own Device, use of netbook carts, and accessing the virtual classroom from home or public Internet locations helped to reduce this challenge.
- Another challenge of the pilot was sufficient teacher support.

Highlights of Key Findings
Teachers became experienced in blended learning, D2L, and ePortfolio and, generally, recognized the benefits afforded to student engagement and success. Students, for the most part, were engaged in their online learning environment, utilizing the tools of their virtual classroom, interacting with content and one another, whilst developing digital literacy skills.

Follow-up and Future Directions
Again in 2013-14, blended learning courses will be constructed populated, and students enrolled for all Careers and Coop sections in KPR. Additional promotion and training will be provided to encourage further interest and subscription amongst Careers and Coop teachers. Best practices and successes will be shared and a support person will be identified in each school to assist in implementation.

Keewatin-Patricia District School Board

Project Title	Improving an Assessment Based Instruction Model with 21C Technology (Whole System Implementation)
Brief Description	The focus of this project is to further the learning about, and develop instructional precision using 21st Century technology to enhance the assessment based instruction model that is part of the Board Improvement Plan and School Improvement Plan.
Context	Number of schools: 21 Number of teachers/classrooms: 375 Number of students: 4500 Grades/Program: All students in the Board
Phase of Change and Impetus	*Continuation* Our work has moved from implementation in pilot schools to whole system implementation. We have also focussed on the use and benefits of technology to support teachers within assessment based instruction.
Goals & Priorities	If we support teachers and students in the use of technology to enhance the integrated assessment based instruction model, then we will further engage students and teachers in this effective instructional strategy.
Role of Technology	The use of technology has enabled students and teachers to use a common platform to increase student learning. With Internet access in every school, educators have been able to provide access to information, web tools and a supported infrastructure for all students. With the use of a common sharing platform (Google K12), a sharing space has been created for students. Integrated technology has become a norm for student learning with the use of iPads and netbooks. Not only have we seen an increase in student engagement, but we are beginning to formulate a culture of learning for educators and administrators as well. There is an element of "just in time" learning, where students are inquirers alongside the teacher. Technology enables this to happen.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Some of the success indicators for this project include an increase of adoption of the technology use by staff and students, an increased desire for support, and teacher have embraced technology as a tool to support our board plan. 2. We are looking for additional measures around student engagement that are quantitative, such as attendance sampling, student voice comments and the like. We are working with Pearson Learning Solutions to design and implement a longitudinal student achievement study to measure the impact of our work. 3. The greatest indicator of successful implementation of integrated technology is that teachers and students are using technology effectively and regularly to support student learning within the context of the Board's strategic improvement plan.
Capacity Building in Teaching	Implementation of board-wide 1:1 technology was a tiered approach, beginning with 3 classrooms, evolving into three "pilot" (k-8) schools, and finally into every primary and secondary classroom. The process included support in the form of technology resource teachers, access to Internet through an infrastructure supported by the Information Systems technicians, and direction through school and board strategic improvement plans.

Project Title	Improving an Assessment Based Instruction Model with 21C Technology (Whole System Implementation)
Leadership, Sustainability, Scalability	• With ongoing access to devices, Internet and support, we anticipate the project is sustainable through board funding. • An ongoing commitment to support the learning is essential, through human resource support (technology curriculum teachers), modeling and developing a culture of learning, and board-wide implementation in policies and practice.

Summary of Data Collection

Data was collected (both qualitative and quantitative) through surveys of staff and students via Pearson Learning Services, ongoing assessment tools and anecdotal feedback from staff, students and parents. The completed *Results from Technology & Pedagogical Readiness Survey* are included with the report.

Highlights of Successes

The overall success of the project is a steady board-wide transition to 21C teaching and learning. The project focused the Board as a whole on the transition to this environment and the concept of practising in a 21C culture has now been embedded into the BSIP goal for student achievement for the Board.

Highlights of Challenges and Unexpected Results

Challenges include management of devices, ongoing maintenance and repairs of devices, communicating information regarding updates and responsible use, and the goal to provide ongoing support and professional development for educators.

Highlights of Key Findings

• Key findings include increased student engagement, adoption of new practices in instruction and learning, extension of key learning strategies, and an increase in communication and collaboration.
• In addition, we have found that there is an implementation curve as with other new leanings. Student adoption of technology-embedded practice is, in most cases, directly related to the adoption of technology-embedded instruction by the teacher.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

• Adopting the Google for Educators platform has been successful in creating a central learning platform for all staff and students. The next step is to begin to align other satellite web tools and programs to meet the needs of all learners, students, teachers, and principals.
• Teachers and administrators will actively participate in scaffolding instruction, professional development and evolving learning through professional learning communities, curriculum-embedded instruction, and tiered support.

The project had implications for Board planning.

• In KPDSB we included 21C learning in our Board Strategic Improvement Plan for 2013.
• In a culture of learning, we are invested at every level to adopting best practices and shifting our thinking with the student at the centre of our instruction.

Kenora Catholic District School Board

Project Title	The Innovative Technology Teacher (ITT): Putting Pedagogy First
Brief Description	This project investigates the impact of a part-time designated innovative technology teachers (ITTs) working with classroom teachers to promote effective pedagogy while working to integrate learning technologies. The ITTs are currently committed to assisting teachers in taking the next steps to effectively extend or enrich existing practice with technology tools. This is being done through whole class instruction, working with small groups of students, at-the-elbow training, and sharing resources/lesson ideas, or administering formal professional development. The ITTs also allocate daily time towards their own professional development (learning new tools, online networking), researching ideas, or producing instructional materials.
Context	Number of schools: 5 schools; 4 elementary and 1 secondary Number of teachers/classrooms: -- Number of students: -- Grades/Program: This project is not focused on a selected sample of schools or classrooms in the board, and are intended to target all teachers, administrators, and student, the board as a whole.
Phase of Change and Impetus	*New* Our rationale is that effective use of technology will lead to increased student engagement, mastery, purpose, and overall academic success.
Goals & Priorities	The broad goal of this project is to build instructional capacity in each school, particularly in regard to effective integration of technology in everyday teaching and learning. The objective of the project is to impact the entire board, with the goal of increasing the effective use of learning technologies while prioritizing pedagogy rather than new technology tools.
Role of Technology	Leveraging effective use of technology is at the core of our project. We are focusing efforts on increasing instructional capacity in using technology for both teaching and learning. We are aiming to transition our staff to always think of pedagogy first when using technology, but also want them to understand how to use varied technological tools to change and shape their instructional practice. Currently using varied forms of technologies; including but not limited to: laptops, desktops, tablets, LCD projects, SMART Boards, document cameras, and cloud services.
Areas of Impact	• Innovative instructional practices
Indicators of Success	1. Building instructional capacity at the school level. 2. Creating conditions necessary for increased differentiation, student engagement, student voice. 3. Professional development and growth of ITTs.
Capacity Building in Teaching	All ITTs took part in diverse and extensive personal development activities, including a book club, online groups/discussion forums, large scale PD (multi-day conference), small scale PD (single or half day), PLCS, etc.
Leadership, Sustainability, Scalability	Funding will continue to be a factor that definitely impacts the sustainability of our project in its current form. Acquiring additional funding for designated teaching positions with provisions for ongoing release will be difficult. We cannot say that perspectives and priorities are shared by everyone across our School Board. However, we have seen a significant shift in the way people believe technology should be used in the classroom.

Summary of Data Collection
In order to assess and showcase evidence of their impact all ITTs were responsible for tracking data qualitatively using tools such as journals, blogs, photo-logs, and/or learning logs. They were also asked to collect some quantitative information related to their activities for system staff.
Findings extensively reported but specific results not identified or included.

Highlights of Successes
- This project allowed us to provide daily instructional supports in all schools for teachers wanting to enhance their practice with the use of technology. This is the first time our Board has had the opportunity to support the 'instructional' side of teaching technology, we removed teachers from technical support roles and had them directly involved in transitioning to put pedagogy at the heart of teaching and learning with technology.
- We increased the scope and quantity of professional development opportunities in each school.

Highlights of Challenges and Unexpected Results
- The ITTs had many unexpected opportunities to sit on varying committees and get involved with many Board and/or Provincial initiatives.
- Our ITTs had daily release time allocated, but this was static (based on timetable) and limited throughout the year. This made it truly difficult to have 1 to 1 time to work directly with all staff.
- Within our Board, Information Technology has a legacy of being a separate entity that provides technology and fixes 'broken' technologies. The role of technology in instruction is also often perceived to be supplementary. Our vision for having technology flow seamlessly through pedagogy was not necessarily a general understanding of 'best practice.'
- ITTs did struggle with what they referred to as an "immense body of knowledge and skills to acquire". A few were feeling very bombarded or overloaded in the first few months.

Highlights of Key Findings
- Our ITTs were able to make a distinct difference in building competency and capacity in using technology to support, enrich, and extend pedagogy.
- Our results showed us that technology plays an immense role in increasing differentiation, student engagement, and voice. Technology is the primary method we utilize to harness student voice; it is becoming more prevalent in increasing engagement and also beginning to make a difference in teachers who are differentiating instruction with mixed tools/media.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Will be focusing new objectives on three areas; changing Board culture (broad scale), the ITT role itself, and developing an exit strategy.
- We need to formalize the role of the ITT and tailor job descriptions appropriately.

The project had implications for Board planning.
- We hope to begin transitioning our libraries to learning commons during the 2013-14.

Lambton Kent District School Board

Project Title	Engaging Students Through Equitable Distribution of Technology
Brief Description	This project will use wireless technology (with mini iPads) within the school and home environment, as a tool to plan, develop, and deliver curriculum. It will involve teachers working as a team to plan a continuum of instruction, authentic learning experiences, and assessment. The project utilizes an iPad mobile lab.
Context	Number of schools: 1 Number of teachers/classrooms: 4 Number of students: 100 Grades/Program: Grades JK – 8
Phase of Change and Impetus	*New*
Goals & Priorities	Classroom teachers create clear learning goals and success criteria with their students for using iPads in the classroom to ensure that the devices are used safely, effectively, and with respect.
Role of Technology	An in-school "iPad Team" that consists of the five classroom teachers who would be using the devices and the Junior/Intermediate Resource Teacher was organized. This team was created to combine pedagogical theory and classroom practice to ensure the most meaningful use possible of the iPad lab.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies • Student leadership/Student Voice
Indicators of Success	1. Students will use wireless technology to maximize the benefits of the technology in meeting the expectations for their specific curriculum. 2. The computer literacy skills of the students and teachers will improve. New technologies will be learned (Google Docs). 3. Cross-school professional learning communities established with other IPad project schools.
Leadership, Sustainability, Scalability	• Enhanced bandwidth. • School based funds being dedicated to the project in order to have more students involved. • The Board's multi-year strategic plan addresses and supports the project.

Summary of Data Collection
Data tools identified but results or findings included with report.

Highlights of Successes
- A school professional learning community was established in the school.
- The teachers are working together in a cross-curricular learning environment.
- The students are using the wireless technology at school.
- The computer literacy skills of both the students and teachers have improved.

Highlights of Challenges and Unexpected Results
- The labour climate delayed the training of the staff in the use of the tablets as a teaching tool. It also delayed the development of the study units since this could not happen until the teachers were trained.
- Change to a mobile lab project from a one-to-one project.
- Professional development provided by facilitators from Apple in support of this project.

Highlights of Key Findings
- The development of student leaders in support of staff and other students.
- Enhanced teach daily lessons.

Follow-up and Future Directions
- Writing teams to be put in place to develop curriculum modules for teaches to use in the classroom.
- Fall 2013 – Training of teachers and students continue.

Lakehead District School Board

Project Title	IT Champions – Communication, Collaboration, and Driving Innovative Teaching Practice
Brief Description	This project seeks to encourage innovative teaching practices by expanding growth through involvement in a professional learning community. It will support the creation of a new teacher role (IT Champion) at each school. Roles of the "IT Champion" would include: • Peer-to-peer collaboration with other IT Champions and school leaders. • Model the use of new technologies and their instructional benefits. • Meet with program and IT staff and other IT School Champions. • Mentor staff on the effective use of IT to support student success. • Assist staff in the move to 21st Century technologies and blended learning. • Explore and test instructional strategies that use technology.
Context	Number of schools: 30 Number of teachers/classrooms: 30 Number of students: 1400 Grades/Program: K-12 teachers have been chosen to be the "IT Champion" of their school.
Phase of Change	*New*
Goals & Priorities	Act as a professional learning community to explore and identify areas to support the attainment of goals through effective use of IT, innovative teaching practices, technology enabled differentiated instruction, personalized learning, and exploring emerging technologies.
Role of Technology	IT Champions will be trained in various types of technology and how to use it to support learning (SmartBoard, Assistive Technology, Web 2.0, BYOD, etc.).
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Teacher efficacy – confidence and understanding on both the technology and how it can be used to support instructional practices and effective learning. 2. Student engagement – an increase in student engagement, attendance and confidence through the use of technology enabling differentiated instruction, and more personalized learning.
Capacity Building in Teaching	• 5 full day training sessions for IT Champions. • IT Champions were encouraged to lead training staff at their schools. • Training opportunities were made available for IT Champions to attend provincial IT learning opportunities.
Leadership, Sustainability, Scalability	Significant investment in a new IT Plan and BYOD policy has positively supported the sustainability and need of our project.

Summary of Data Collection

All teaching staff was surveyed with regards to their use of IT in the classroom. Students in classrooms taught by IT Champions, were interviewed.

A detailed summary of finding is included in the report.

Highlights of Successes
- Significant increase in IT Champions who agree that "information technology has a positive effect on student engagement."
- Significant increase in IT Champions who agree that "I am confident in my ability to use Information Technology to support teaching and learning."
- 64% of IT Champions agreed that "Training as an IT Rep has helped other teachers in my school learn and use information technology in their classrooms to support teaching and learning."

Highlights of Challenges and Unexpected Results
- Attitudes towards student mobile devices and their place in the classroom is a barrier that can be overcome with training, and by engaging students to show us the benefits of technology.
- Technical challenges in rollout of IT are a challenge. For example, wireless access that is not dependable, repairs and upgrades that are delayed, etc.
- Union action and teacher hesitation to join a new "position" for the board was an initial impediment when finding candidates at every school to volunteer for this position.
- Several of our sites are located at a distance that makes it difficult to meet regularly. Teleconferencing, alternate times and monetary support for travel greatly helped supporting our isolated schools.

Sample of Comments from Participants
"We always try and differentiate our teaching and activities, but these are concrete ways to do it by using technology that students get excited about."
"I am noticing that I am asked more technical questions at school and being looked upon as a leader for IT at school. I am dealing with computer issues, being asked more about how to help with lessons. I solve issues that I can, and go for appropriate assistance when the problem goes beyond my expertise."
"The session on inquiry based learning through mobile devices has changed the way I teach, my kids are more excited and are taking ownership of their learning."

Highlights of Key Findings
- Teacher confidence using technology to support instructional practice can be improved with training, coordination, and support.
- Distributed leadership models with emphasis on collaboration, sharing, learning, and leadership at each school can greatly improve teacher efficacy in IT.
- Student engagement in class can be boosted through differentiated instruction and personalized learning through the use of information technology.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- We will continue to focus on implementing our IT Plan to use information technology to support instructional best practices in every classroom.
- The project will expand by supporting training led by IT Champions at the school level.

The project had implications for Board planning.
- With a new BYOD policy and wireless Internet rolling out to every school in our board, IT Champions will be a central support of next year's IT plan.

Limestone District School Board

Project Title	Non-verbal Student Support - Increasing Literacy for Functionally Non-verbal Students
Brief Description	This project will develop effective practices and supports for non-verbal students while developing the capacity of speech and language clinicians and support staff. The students will learn to use the iPad to communicate in structured interactions with the ultimate goal of moving to less structured conversation. The secondary focus will be to improve each student`s literacy level (Early Emerging Literacy, Transitional Emerging Literacy, Early Conventional…).
Context	Number of schools: 9 (7 Elementary, 2 Secondary) Number of classrooms: 9 Number of students: 15 Grades/Program: The target group centered on students who are functionally non-verbal and who are receiving program support through Limestone District's School to Community Services.
Phase of Change and Impetus	*New* Having access to an iPad to develop teacher capacity while investigating the use of the device as the student's voice, and develop instructional practice to meet our students' literacy goals, is essential to understanding the place that technology holds in the 21st Century pilot.
Goals & Priorities	The goal of the pilot project is to integrate iPad technology into the academic and social programming for students that are functionally non-verbal. The primary focus will be to develop student voice proficiency on the iPad.
Role of Technology	Traditional AAC involves a range of communication alternatives from light tech options like the Picture Exchange Communication System to high tech options like the speech generating devices. The light tech options don't offer the rewards of voice output. Many high tech voice output devices are too cost prohibitive and involve too many agencies and logistical challenges (often lengthy wait lists for access). The iPad hardware offers a cost effective option with a high degree of flexibility suitable for many non-verbal students.
Areas of Impact	• Innovative instructional practices
Indicators of Success	1. The project will measure improvements in the students' ability to use the iPad to communicate. 2. A secondary indicator of success will examine how the iPad integration allows the student to progress along the literacy continuum. 3. Teachers will record baseline data around communication and engagement, and use this information to gage changes in communication and engagement.
Capacity Building in Teaching	One of the most positive elements to come from the Pilot was the sense of a learning community. The workshops pulled the educators together where everyone shared in the student successes and challenges. The forums provided low/high tech skill development, idea sharing, and problem solving. The approach was one of collaboration between clinicians, resource teachers, class teachers, and educational assistants.
Leadership, Sustainability, Scalability	• One of the factors that prompted our District to consider investigating the integration of iPads, was the number of parents buying idevices as a solution for their son/daughter's AAC challenges. Permitting these home devices into the

Project Title	Non-verbal Student Support - Increasing Literacy for Functionally Non-verbal Students
	schools opens up a number of implications for the educators, namely: **Liability** – theft, damage, loss of content (documents, photos…); **Security** – students, staff and District; **Behavioural** - appropriate use, control, disruption; **Instructional** - educational content vs. entertainment, home use vs. school use, boundaries. • What we discovered through our anecdotal feedback was that once students recognized that the iPad assigned to them for the purposes of the Pilot was not their device, and that the device was to be used for Voice and/or literacy programming only, was a more effective integration and acceptance of the iPads as tools for learning. Despite the good intentions for devices from home, the students were much better served with controls placed on the District iPads. The students understood the boundaries and the teachers found that programming was not influenced by factors external to their class.

Summary of Data Collection

Data for the Developmental Spelling Task and the Communication Effectiveness Survey, and the Literacy Continuum Rubric was collected during the initial and later stages of our 21st Century Pilot.

A comprehensive report with detailed graphical summaries was included with the report.

Highlights of Successes

• Providing Students with a Voice

  The most obvious success was that this was the first time that many students had an audible voice for communication. Although other light tech AAC systems, for example PECS, have been implemented for many of these students in the past, this was the first time that many had access to a speech generating device. Although the ability to communicate varied between candidates, progress was evident in the data.

• Developing Literacy Programming for Students with Complex Needs

  As a community of learners, we have a better understanding of light tech and high tech approaches for accessing literacy goals. Teachers worked with a relatively small number of light tech approaches and/or iPad apps to manage consistent literacy skill development.

• Establishing A Protocol

  We have adopted a few tools and assessments that will provide our staff with a starting point when considering the possible integration of iPads for the purposes of AAC. This pathway will evolve as the clinicians and educators continue to examine the relative success, and correlate the success to the different learning profiles.

Highlights of Challenges and Unexpected Results

One of the negative factors was the limited time for implementation of the Pilot. A longer time frame from the Pilot approval notification through to the completion might have yielded better progress in the area of literacy skill development.

Highlights of Key Findings

• Although Apple boasts of the user friendly nature and universal accessibility of the iPad for students, we found that teachers require a high degree of support in the integration, and management of

such a device. Placing the iPad in a class without the appropriate training would have resulted in little integration of the device to meet the AAC or Literacy goals.

- The tracking of individual baseline data was critical when looking at progress of the device as an AAC tool. Similarly, the importance of understanding each student's literacy level before developing goals, related to the light tech and/or high tech options was critical.

- The integration of iPads as an AAC device should be limited to District equipment. Due to the complex nature of the students with non-verbal communication challenges, behavioural, logistical and ownership challenges may be minimized through the facilitation of District equipment.

- In consideration of the complex needs of our students, teachers must accept small incremental gains in student skill development. Setting achievable goals for students is important. For example, teaching a student to initiate conversation with an iPad may be a monumental achievement for a non-verbal student with ASD.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.

- Based on the work that was conducted over the spring term of 2013, we will follow the students and teachers through the 2013/2014 academic year. The goal would be to continue to work with the teachers to develop their literacy programming and idevice use.

The project had implications for Board planning.

- Formalize a District protocol tied to the facilitation of iPads as AAC device and literacy programming from the clinician down to the class support.

- Further work will be required to determine suitable assessment tools tied to District Literacy initiatives and programs will provide the educators with a logical and guided progression for literacy skill development.

London District Catholic School Board

Project Title	**Collaborative Inquiry for 21st Century Fluencies: Teacher's Use of Instructional Strategies with Assistive Technologies**
Brief Description	The focus of this collaborative inquiry project is to provide teachers and educational assistants in the Primary and Junior panels with the opportunity to investigate the successes and challenges of implementing assistive technologies. The goal of the project is to provide both classroom teachers and resource teachers with the opportunity to share professional practices through collaborative inquiry to support the effective use of assistive devices with students identifies as exceptional.
Context	Number of schools: 8 Number of classrooms: 30 Number of students: 60 Grades/Program:
Phase of Change and Impetus	*New* Our inquiry is rooted in the following research questions: • How can teachers help identified students to use assistive devices to communicate their understanding and apply the feedback in their learning? • What factors enhance or inhibit the use of assistive technologies in communication? • How does pedagogy inform the use of assistive devices?
Goals & Priorities	Provide both classroom teachers and resource teachers with the opportunity to share professional practices through collaborative inquiry to support effective use of assistive devices with students identified as exceptional. Project goal: highlight how pedagogy needs to come before the implementation of assistive devices.
Role of Technology	In order to support the successful implementation of the assistive technologies, the pedagogy that teachers use must be rooted in a grounded understanding of the purpose and scope of assistive devices. The present project is based on providing time for teachers to establish an inquiry focus and theory of action to support the successes and challenges of using assistive technologies with identified students.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Digital citizenship/literacies
Indicators of Success	Our experience indicates that teachers are often unsure about the manner in which assistive technologies can be effectively implemented for students with special needs. The use of collaborative inquiry will provide the process and metrics to discern the following measureable outcomes: 1. The degree to which instructional strategies can change. 2. The degree to which student engagement is enhanced through the appropriate use of assistive technologies. 3. The increase in student achievement in literacy and numeracy for students with special needs.
Capacity Building in Teaching	The project afforded opportunities for staff to come and experiment with various types of technology and collaborate together as colleagues.
Leadership, Sustainability, Scalability	• Thirst from our staff for the ability to come together as a professional learning community to support the successful implementation of 21st Century Learning Fluencies and assistive technologies.

Summary of Data Collection

In the fall of 2013 we will complete pre and post surveys of those teachers who are part of our Collaborative Inquiry to ascertain the degree to which instructional strategies have changed as a result of the interventions that take place during the fall of 2013.

Highlights of Successes

- The ability for educators to creatively engage in meaningful dialogue related to professional development around 21st Century Fluencies and Assistive Technologies.
- Discuss opportunities to ensure better communication of innovative practices throughout the district.
- The opportunity for staff to focus on Assistive Technology to allow for staff and students to focus on Critical Thinking Skills.

Highlights of Challenges and Unexpected Results

- Large scale training was difficult to implement because it was not put into the Program Department Calendar early enough to ensure a sufficient number of supply teachers were available.
- Pressure to get work done in a short period of time.

Highlights of Key Findings

- At this point we have found an opportunity to have Assistive Technology integrated into a platform that is accessible to all students.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- We are a district that has asked for an extension to complete our work in the fall of 2013.
- Train our team and their individual school teams on Assistive Technology packages such as Dragon Naturally Speaking, Kurzweil, Work Q, and Speak Q.

London District Catholic School Board

Project Title	**e-Portfolios and Blended Learning: Collaborative Inquiry for 21st Century Fluencies and the Assessment/Evaluation of Student Learning**
Brief Description	The focus of the present project is to identify successful practices for the assessment and evaluation of student learning using e-Portfolios. LDCSB is committed to implementing e-Portfolios in accordance with our focus on blended learning and e-Community and the Province of Ontario's Learning Management System. We have established important targets so that all students are engaged in blended learning opportunities.
Context	Number of schools: 6 Number of classrooms: 13 Number of students: 325 Grades/Program: The target groups for the e-Portfolio Pilot were selected to provide a cross-sectional representation of classrooms throughout the school system.
Phase of Change and Impetus	*New* What are the components needed to successfully create student e-Portfolios that foster metacognition and improve learning? The If-then statement that made up our Theory of Action was: **If** students engage in metacognition about their work and track these over time in an e-Portfolio, **then** students will improve their learning and achievement.
Goals & Priorities	The goal of the project therefore, is to use collaborative inquiry to make recommendations on the effective use of e-Portfolios, nurture student achievement, and provide practical advice to teachers on engaging students with descriptive feedback. Further, our goal is to host a collaborative inquiry project during which experienced educators will use e-Portfolios through e-Community.
Role of Technology	Technology is the root of our support for using e-Portfolios as a learning tool for students.
Areas of Impact	• Student engagement and achievement • Learning environments
Indicators of Success	The use of collaborative inquiry will provide the process and metrics to discern the following measureable outcomes: 1. The degree to which instructional strategies can change. 2. The degree to which students understand the assessment/evaluation of teachers and the manner in which they apply the teachers' descriptive feedback. 3. The degree to which student engagement is enhanced through the use of the LMS and e-Portfolios. 4. The increase in student achievement in literacy and numeracy.
Capacity Building in Teaching	Designed as a collaborative inquiry as a professional learning platform to advance the effective use of e-Portfolios through e-learning Ontario and the D2L, nurture student learning and achievement, and provide practical advice to teachers.
Leadership, Sustainability, Scalability	• Cumbersome log in process time for some students. • Outmoded condition of classroom computers. • Need to significantly upgrade the technology used in school libraries before e-Portfolios can be rolled out system-wide. • A simplified set of instructions for to access the e-Portfolio from home. • The D2L platform not user friendly for primary/junior division students.

Summary of Data Collection

Teacher participants in the e-Portfolio pilot were asked to respond to a series of questions related to their use whether the use resulted in enhanced student engagement, learning, and achievement. Teachers also commented on the successes/challenges during implementation.

Highlights of Successes

- Most students seemed to take to the e-Portfolio quickly and the D2L app on the iPad made it very portable for teachers to provide feedback to students on their e-Portfolio items.
- Parents appreciated being able to view their students' work at home.
- e-Portfolios served as a good starting point for teaching student how to reflect on their work.
- e-Portfolios have potential for fostering 21st Century fluencies including critical thinking, communication, and problem-solving.
- Students were able to see areas of improvement and made descriptive feedback easier.
- e-Portfolios can foster peer assessment.
- e-Portfolios can be shared during parent-teacher-student conferences.

Highlights of Challenges and Unexpected Results

- The loss of the Superintendent that originally championed the e-Portfolio project.
- Getting started with student email and setting up e-Portfolio account was time-consuming.
- The e-Portfolio platform was not visually or user friendly for primary grade students.
- Not all students have Internet at home to show their parents their work.
- How much storage space does each active user have in e-Portfolio?
- Can students post photos of themselves in their portfolios? What permissions do I require?
- Who will monitor the content and appropriateness of these photos?
- Can students post photos and information about others in their portfolios?
- What limits should be placed on comments students and others make about portfolio contents?
- With whom can students share their portfolios?
- What are the benefits and risks at each level of sharing?

Highlights of Key Findings

Student engagement with using e-Portfolios:

- Students enjoyed gathering the data and reflecting on it in a new format using technology – for example a Grade 8 student wrote "I liked that we were saving paper and it was easy to keep all of own reflections (*sic*) together in one place".

Student use of meta-cognition to plan next steps in learning based on teacher descriptive feedback:

- Some students were able to comment on works incorporating some metacognition proactive.
- One teacher said "I found that the more students 'thought about their thinking' the better they became at being proactive in changing their work …".

Changed teacher assessment/evaluation strategies:

- Some teachers reported e-Portfolio put a greater focus on self-reflection and self-regulation skills.

Follow-up and Future Directions

- Creating teacher and/or student guides for creating and using e-Portfolios and an FAQ could represent concrete products and outcomes for extended collaborative inquiry sessions.

Near North District School Board

Project Title	Blended Learning to Facilitate Diagnostic Assessment and Differentiated Instruction in Mathematics
Brief Description	During the past two years, NNDSB has hosted a vibrant blended learning pilot project. Teachers have worked diligently to adapt teaching methodology and instructional resources to support student success and maximize learning opportunities within the context of the blended learning classroom. Teacher participants have become dynamic content creators and pioneers of this new pedagogy. The Board IT department has adapted the purchase and deployment of new technology to accommodate new and emerging teaching practices.
Context	Number of schools: 6 secondary, 10 elementary Number of teachers: 40 Number of students: 760 Grades/Program: grade 9 math students—in particular those in the applied courses.
Phase of Change and Impetus	*Continuation* During the 2011-12 academic year, the NNDSB Teaching and Learning in a Digital World initiative developed a series of web-based diagnostic math activities designed to increase student engagement and improve student achievement, credit accumulation, and EQAO results. Project funding was used to hire two Blended Learning Math coaches to work with teachers and support the implementation of the LMS activities. During 2012-13, the pilot will expand the scope of differentiated activities.
Goals & Priorities	NNDSB Teaching and Learning in a Digital World initiative will • Support the expansion of blended learning to all grade 9 applied math classrooms. • Implement a series of diagnostic assessments and open-ended discussion activities delivered using the Provincial learning management system. • Initiate cross-panel collaboration to investigate and improve student achievement in mathematics.
Role of Technology	The role of technology in this pilot project is multi-faceted. **Technology for Schools:** September 2012: All NNDSB schools were invited to submit Technology for Schools proposals. **Technology for Teachers:** September 2012: 100 NNDSB teachers will receive 'teacher' devices to support teaching and learning. The teacher devices have initially been allocated to eTech Coach (mentor) and an additional teacher (mentee) in each school. **Renewal of Wireless Network Infrastructure:** Over the past two years, the Near North District School Board has invested in significant upgrades to our wireless network infrastructure. These investments will support the facilitation of BYOD, expansion of Blended Learning and e-learning.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	The project identifies specific outcomes for student engagement, achievement, and instructional practices: 1. Student will access the online resources while in class and beyond class.

Project Title	Blended Learning to Facilitate Diagnostic Assessment and Differentiated Instruction in Mathematics
	2. Students will complete diagnostic and formative activities.
	3. Teachers will use the student content viewing analysis to determine which formative activities student chose to complete - indicating learning preferences.
	4. Teachers access diagnostic assessments in a timely manner.
	5. Teachers will be aware of further
	6. Strate gies for differentiation of instruction.
	7. Parents will feel more confident helping their children prepare for math assessments.
	8. Students' achievement and attitudes in mathematics will improve.
Capacity Building in Teaching	• Facilitate teacher release to support cross-panel/school sharing and professional learning related to math instruction (Grades 7-12).
	• Facilitate teacher release to build capacity using new technology (LMS, SMART Board, iPad) to support student success in mathematics.
	• Access Technology Integration Coaches to support the use of technology in math instruction (Grades 9-12), build teacher capacity using blended learning, online diagnostic tools, and differentiated instruction.
Leadership, Sustainability, Scalability	• Students used a range of technologies, accessing the math resources from a variety of settings. An increasing number of students are accessing the online LMS resources from home. This suggests future BYOD and blended learning initiatives may not face the scale of issues of access.

Summary of Data Collection

Data was collected by multiple means, including; SharePlus App and SharePoint portal, report card data and EQAO (including survey data), and LMS diagnostic activities. The report includes a comprehensive and thorough summary of the tabulated data, and links to additional sources.

Highlights of Successes

The blended learning diagnostic Math assessments and online resources have:

• Facilitated assessment for learning;
• Enabled the collection of attitudinal student data;
• Used the "Progress" tool to mine specific student progress information;
• Enabled teachers to quickly and efficiently access real-time assessment data;
• Improved student attitudes, interest, achievement, and credit accumulation in math courses.

The majority of teachers strongly agreed, the Technology Integration Coach position - employed to facilitate co-planning and instructional support - is an effective means to implement the blended learning resources and develop teacher capacity. Teachers are comfortable accessing the coaching support and would like to continue to utilize the coaches next year.

Highlights of Challenges and Unexpected Results

• Teacher Preference – some teachers have preferred to implement the math resources as an extension of the classroom, accessed by students independently during MSIP/Focus or from home. In this case, teachers have employed models and theory that resembled the "Flip" classroom, enabling the activities from outside of the classrooms to shape the learning within the classroom.

• Access to Technology – The configuration or deployment of technology has had a significant impact on the various models of implementation. What became evident, was the diagnostics could be effectively implemented using a range of devices and configurations.

- Comparison of student and teacher responses: Almost 50% of students 'agreed' or 'strongly agreed' that access to the online math resources would improve their achievement in math. However, teachers' responses demonstrated a significantly lower opinion with regard to the effectiveness of the online tools.
- Ongoing challenges include:
    - Technology within in the school. Wireless not always working well.
    - Physical setup of classroom - not projector friendly.
    - Time constraints and unfamiliarity with technology.

Highlights of Key Findings
- The majority of students found the LMS Math resources easy to access and 56% "agreed" or "strongly agreed" they were "helpful". Another 29% responded "neutral".
- 66% of students "agreed" or "strongly agreed" that they felt 'more confident' completing similar/future math tasks after completing the online LMS math assessments and activities.
- 57% of students "agreed" or "strongly agreed", the online math resources are a "valuable learning tool".
- The students value the online math resources and are using personal technology to access them beyond the classroom.
- Regular access to reliable technology is critical to implementing/accessing the online math resources from school or within a classroom.
- Each school has developed a unique implementation model. Schools are at different stages of implementation.
- Laptops or desktop computers seem to have the greatest level of success - compatibility with resources, consistent access, ease of use, student satisfaction, etc. As tablet computers evolve, this may change.
- Teachers are more confident using the resources now than at the beginning of the semester.

Additional Statements Related to Areas of Impact
- Teachers have requested more opportunities to share and learn from one another. Continuing professional learning teams related to the blended learning math initiative will enable teachers to share across schools and across panels.
- Technology Integration coach is a critical factor in the ongoing success of this initiative. Teachers are more inclined to use the technology when they are able to access sustained support.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Continue the investments in technologies that align with related Collaborative Inquiries/PLC/School Improvement Planning. Blended Learning is most effective not when it is a focus unto itself, but when it is employed to facilitate innovate teaching practice and student-centred learning.

The project had implications for Board planning.
- To realize the full potential of blended learning, it is critical that NNDSB expand efforts to communicate with, and engage parents. Providing more information about student access to online math resources and supports will promote access and use from home.

Niagara Catholic District School Board

Project Title	Access, Engagement, and Student Learning Using Digital Textbooks
Brief Description	This pilot will examine if student success can be increased when a digital textbook is used in lieu of a standard traditional textbook due to increased access, adaptability of the textbook for the educator and the students, and the ability to focus attention using highlighting and bookmarks. This project will also attempt to verify whether student self-learning improves.
Context	Number of schools: Number of teachers: 235 Number of students: 5200 Grades/Program: Grade 7 and 8 Math and Science
Phase of Change and Impetus	*New*
Goals & Priorities	• Students will utilize digital text capabilities to conduct research more effectively. • Students will improve self-directed learning. • Students will access digital text additional content during and post school. • Students can access digital text material using a variety of hardware devices. • Students will see an improvement in their grade 9 EQAO Mathematics assessment score by having access to the enhanced Mathematics eText.
Role of Technology	We will attempt to discern amount of participation based upon access to technology in the classroom vs. technology available for teachers/students at their homes. All elementary schools were provided with two mobile computer labs with integrated wireless support. A minimum of 20 laptops are available for each school. Full school wireless is being implemented; however, not all schools will be full school wireless until September.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	**Indicators (selected sample)** Students felt (or did not feel) that the mode of learning utilizing the eText was: 1. Easier than the traditional text. 2. More effective than the traditional text. 3. Provided more choices than the traditional text. Teacher was (was not): 1. Utilizing the advanced features of the eText. 2. Comfortable in delivering their lesson using the eText. 3. Able to plan more effectively.
Capacity Building in Teaching	All recipients of the Pearson eText had several opportunities for in-servicing on the pedagogy of the technology and the effective delivery in the classroom. A manual was developed from the Niagara Catholic perspective included how to complete courses and have students enroll to the demonstration of key features of the Pearson eText product.
Leadership, Sustainability, Scalability	• Mobile Learning Labs deployment – happened later than anticipated and it set back the deployment of eTexts to our schools. • Wireless infrastructure deployment – still occurring and whose completion will be later than originally anticipated. This hampered students and teachers from

Project Title	Access, Engagement, and Student Learning Using Digital Textbooks
	utilizing their own technology (BYOD) to fill the gap of the delayed mobile learning labs.

Summary of Data Collection

An informal assessment was followed up with a formal assessment via a survey monkey. The questions were vetted with the assessment and evaluation department to ensure validity.

Complete findings and summary reports were included with the submission.

Highlights of Successes

Complete survey results are identified in the report.

Teachers gave strong positive responses to questions such as:

- 88% that they would like to use more eTexts.
- 88% they find eTexts useful.
- 96% using the whiteboard mode useful to illustrate text material and to keep students on target.

For students:

- 78% indicated that they used the eText after school.
- 70% believed that their self-directed learning was improved by using the eText platform.
- 86% indicated that the search feature helped find the information being sought quicker.

Highlights of Challenges and Unexpected Results

Access to technology was a significant barrier to utilization.

- Computer labs have hardware that significantly limit effective use.
- Teachers wanted better integration and single sign-on if possible to make the use of these technologies transparent and efficient.
- Cannot utilize eText on an ongoing basis if students don't have access consistently.
- Use of passwords was a source of frustration.

Sample of Comments from Participants

"The enhanced versions of the eText are worth the extra cost I feel. I can't believe how effective the interactive videos helped further demonstrate some key concepts in math that were a little tricky to understand."

"Overall I really enjoyed the eTexts. They would not be beneficial through unless computers were available more readily."

Highlights of Key Findings

The report highlights the findings for each success indicator identified. A sample is shown below.

- Students utilized the enhanced features in the math makes sense to further their learning – *confirmed.*
- Students used the eText at home in addition to the classroom – *confirmed.*
- Students tried accessing the eText on a variety of devices (those at their disposal) – *confirmed, but the success of their experience still needs to be evaluated*.

Students felt (or did not feel) that the mode of learning utilizing the eText was;

- Easier than the traditional text – *confirmed.*
- Provided more choices than the traditional text – *confirmed.*
- Preferred to the traditional text – *inconclusive.*

Teacher was (was not):

- Able to deliver an enhanced lesson by adding highlighting, bookmarking, and notes pre and post-delivery of a lesson – *confirmed.*
- Identified an increased level of student engagement vs. utilizing the traditional text – *inconclusive. Some evidence to support, but would require additional research.*
- Comfortable in delivering their lesson using the eText – *inconclusive. More training is needed to make the pedagogy of the delivery part of the daily practice.*
- Able to plan more effectively – *confirmed.*
- Teachers felt (did not feel) that the technology infrastructure necessary to support access to eText was a barrier to its use. *Did Feel – This was the biggest issue addressed by the teachers.*
- Students felt (did not feel) that the technology infrastructure necessary to access the eText was a barrier to its use – *Many more utilized the technology at home, more than expected, perhaps as a reaction to the lack of technology available during classroom instruction.*

Additional Statements Related to Areas of Impact
Schedule and deliver training (rather than simply demonstrations of product) to administration so they can support their colleagues in their schools as well as their students.

Follow-up and Future Directions
- Build upon the technology deployment by expanding hardware access.
- Deploy iPads to elementary schools and Microsoft Surface Tablets to secondary schools.
- Remove the outdated systems in the existing classrooms (most are over 10 years old) when they are deployed.
- Anticipate the impact of BYOD on the utilization and effectiveness of the Pearson eText product and support teachers and their students with their concerns.
- Transition from intermediate deployment to junior and secondary for the subsequent school year.

Nipissing – Parry Sound Catholic District School Board

Project Title	Learning For All: Making It Differentiated and Personal
Brief Description	Cross-panel school and classroom projects will explore effective instructional practices and the role that mobile technologies serve in providing personalized and differentiated learning to support the engagement and success of all students, particularly those with special needs.
Context	Number of schools: 5 (4 elementary; 1 secondary) Number of teachers/classrooms: 8 Number of students: 64 Grades/Program: Students with special needs (Learning Disability, Multiple Exceptionality, Behaviour) are of particular interest in this pilot project.
Phase of Change and Impetus	*New* In order to foster 21st Century leadership, teachers have been brought together as a learning community to build capacity for new pedagogical practices and to gain a deeper understanding of student learning through inquiry using mobile technologies (iPAD) as a teaching and learning tool (in partnership with Apple Canada).
Goals & Priorities	We are using the Professional Learning Cycle (PLC) to investigate our broad pilot inquiry question that is guiding our work: *How will the effective integration of a variety of technologies (i.e.: interactive whiteboard, iPads, iPods, SMART table, laptops) support the achievement and engagement of all students, particularly those with special learning needs?*
Role of Technology	*How can we integrate mobile technologies into our instruction to support the engagement and achievement of students with special education needs?* Technology is an essential element to the pilot as it is the key vehicle to create exciting learning experiences that are "irresistibly engaging for both students and teachers" and helps to make learning authentic and relevant for our students (Fullan, 2012).
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Increase in student achievement as evidenced by formative and summative assessments in a variety of content areas including literacy and mathematics. 2. Increase in student engagement, motivation, and confidence as demonstrated by teacher and student surveys. 3. Increase in teacher efficacy and confidence with the integration of mobile technologies into their instructional practices.
Capacity Building in Teaching	Teachers and support staffs have moved out of their own comfort zone instructionally with the integration of technology within an inquiry based teaching/learning approach. Our project began to take a large focus on the development of students as leaders in their learning as opposed to a vehicle to improve our instructional practice.
Leadership, Sustainability, Scalability	Key factors that impacted the sustainability of the project include: • Alignment to current board /school improvement plan instructional priorities. • A growth mindset of all participants was employed and essential to our work and the formulation of our next steps.

Summary of Data Collection
Data was collected through teacher and student surveys, student learning tasks, teacher and student interviews, and anecdotal conversations. Specific findings are identified in the report.

Highlights of Successes
Student Learning Successes:
- Increased student engagement and student independence;
- Student leadership within the classrooms was strengthened;
- Increased understanding of their own learning strengths;
- Quality of work improved (compared tasks completed at beginning and conclusion of project).

Overall, for teachers, there were measurable shifts in teacher confidence to incorporate an inquiry based stance/approach to their instruction using technology as a key enabler.

Highlights of Challenges and Unexpected Results
We found that the older students were, the more they were socially conscious of using technology tools that other students were not using and therefore left students feeling different. We mitigated this by promoting and modelling the use of the iPad accessibility features.

Sample of Comments from Participants
"Changing my whole practice as a teacher has been a big shift during this project; students are now facilitating lessons and are now leaders in their own learning."
"I am able to build my own program based on student needs. I now feel comfortable with the tools and software and how these can support my students' needs and my instruction."

Highlights of Key Findings
- Increased student engagement and confidence (88% of students feel their work is improved when using technology as a tool).
- Teachers' confidence increased in incorporating an inquiry based teaching and learning approach using technology as a key enabler. 75% of teacher participants feel they are partially or fully implementing the creation of rich and rigorous learning tasks supported by technology compared to 50% rating themselves at the beginning implementation phase.

Additional Statements Related to Areas of Impact
- When principals and teachers incorporate a growth mindset to enable students to be leaders in their learning, students then can realize their potential and their achievement improves. We have discovered that the professional learning cycle, collaborative inquiry, and the instructional approach of inquiry based learning to be an iterative process, therefore it is essential that we use prior learning to inform our next best steps.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Current schools to continue their inquiries to include at least two additional schools using the Professional Learning Cycle as a key framework.

The project had implications for Board planning.
- Develop a Bring Your Own Device (BYOD) framework to support schools and teachers to guide the responsible use of technology.

Northeastern Catholic District School Board

Project Title	Gaining and Sustaining the Interest of At Risk Students Through the Use of Technology
Brief Description	This project focuses on students who have left the system prior to graduation. It will utilize technology to re-engage these youth with interesting and dynamic teaching strategies that tailor the instruction to meet the needs of the individual student. The inquiry will focus on how technology can support and drive innovative teaching practice offering personalized learning that enhances and improves student re-engagement with the ultimate goal of obtaining a high school diploma.
Context	Number of schools: 1 Number of teachers/classrooms: 5 Number of students: 100 Grades/Program: Grades 9-12, all curriculum areas. The project is directly targeted at students at risk of leaving school before graduating or have left and did not graduate and need to be re-engaged.
Phase of Change and Impetus	*New* Last year the school lost over 60 students between September and January.
Goals & Priorities	Our goal was to keep students in school and reduce our number of early leavers to the system.
Role of Technology	The courses are delivered either fully on-line or in a Blended learning approach. This allows flexible delivery to accommodate individuals working, single parents, remote communities with no access to alternative programming, etc.
Areas of Impact	• Student engagement and achievement
Indicators of Success	1. Reduced number of early leavers to the system. 2. Increased credit accumulation.
Capacity Building in Teaching	Experienced e-learning teachers along with the NCDSB E.L.C. collaborated to design an initial program that ensured students could access the courses needed to meet their learning needs and academic pathway goals. Training was focused on ensuring students possessed the skills needed to successfully navigate through the LMS and was provided in a variety of formats (i.e. instruction manuals, training videos, practice sessions, face-to-face training). As the program grew, additional e-learning teachers were brought into the program and 'think tank' sessions ensured all program teachers could help direct program planning for ensured success.
Leadership, Sustainability, Scalability	• Sustainability has been impacted by the creation of an administrative position that is directly tied to the daily operations of ACCESS. • Our project is directly tied to student enrolment and as such, ensuring continued enrolment is a key factor to sustainability. • The opportunity to develop a community partnership.

Summary of Data Collection

Quantitative data includes enrolment and credit accumulation rates. Qualitative data has been collected from students through interviews, classroom observations, and email inquiries.
No specific results were identified in the report.

Highlights of Successes

- Launching the ACCESS program and having it expand from an initial 50 students to nearly three times that size in a short period of time has been the hallmark of success for the pilot. We now have enrolment that is comprised of previously disengaged youth and mature students.
- Credit accumulation and eventually, graduation rates, will be significant indicators of success of the ACCESS program. Our goal was to ensure graduation of at least 1 student this year and we have met that goal. Our data shows that students who were successful in earning one credit while enrolled in the program, typically continued within the program to earn multiple credits throughout their enrolment.
- A major success of the project involved the development of a strong partnership with the Apitisawin Employment Centre. Technology has been integral in this partnership to facilitate communication between students and teachers who have never met face-to-face due to geography.

Highlights of Challenges and Unexpected Results

- Perhaps the most significant unexpected opportunity that has arisen throughout the pilot project has been the growing number of adult learners who are interested in pursuing their OSSD through ACCESS.
- Meeting the needs of at-risk learners and disengaged learners represents a significant challenge since each student truly requires a unique approach. Motivation tends to be a significant barrier to student success and it can be difficult to truly reach out to students when communicating purely in an online environment. Additional staff members were hired to ensure students could access support within a classroom on a daily basis.

Highlights of Key Findings

- Offering an alternative learning option focussed on e-learning as the method of delivery met the needs of a significant number of learners who had disengaged from traditional schooling.
- At-risk students who could be motivated with face-to-face teacher contact were much more likely to succeed in their e-learning courses.
- Some learners may not possess the technological skill to succeed in an e-learning environment and an introductory course to develop these skills is a necessary component of the ACCESS program.

Follow-up and Future Directions

- Our next steps focus on further refining our model to ensure all learners in the ACCESS program can succeed in attaining their OSSD.
- Plans to expand ACCESS programming to include alternative learning classes that are delivered using a blended learning approach are also being considered.
- A firm foundation has been built through utilizing the LMS for e-learning options, and ACCESS staff are ready to build the program to include more personalized feedback and assessment opportunities for students through the use of Internet call services and online grading.

Northwest Catholic District School Board

Project Title	iPads in Education: Teaching and Learning in a Digital World
Brief Description	This project examines the possible impacts of tablet technology in the classrooms. We have expanded the pilot from the previous year and seconded a ½ iPad technology coach that was a classroom teacher in the previous pilot with the iPads for the remainder of the year.
Context	Number of schools: 5 Number of classrooms: 8 Number of students: 100 Grades/Program: The target group of this pilot project is grade 7 and 8 students.
Phase of Change and Impetus	*Continuation* In first pilot project for 2011-2012, started with two grade eight classrooms and a set of 30 iPads in one schools. After documenting the strategies and analyzing the results we made the decision to expand the project to another 4 schools.
Goals & Priorities	Prior experience with this technology has shown that grade 8 students recognized the ease and speed with which they could develop their assignments on a single device. Goal is to examine continued impacts beyond the initial pilot sites.
Role of Technology	iPad technology is a tool that students are able to use to communicate, collaborate, research, read, use for taking notes and explore digital content. It will allow the students to become high school and workplace ready. Technology allows the students to pull the necessary material they need independently. iPads allow them the ability to get information they need any time anywhere.
Areas of Impact	• Student engagement and achievement
Indicators of Success	Measureable outcomes that we are examining include: 1. Student attendance. 2. Student assignment completion rates. 3. Teacher perceptions of student on-task/off-task behavior. 4. Student responses to metacognitive-oriented questions throughout the year.
Capacity Building in Teaching	Training was given to participating teachers and a half time Technology Coach was hired to provide ongoing support.
Leadership, Sustainability, Scalability	The focus of the project is the use of tablet technology (iPads) to provide 21st Century Learning experiences for students in grade 8. For this project to be a success at the student level, **each student needs an iPad** (connected to the Internet) for the whole of the school year. Funding reductions for further iPad purchase and bandwidth could have a negative impact upon the development of the project. The hiring of a technology coach for the second half of the year had a significant impact in supporting teachers.

Summary of Data Collection

Data collected through surveys, journals and anecdotal evidence.

A very comprehensive and detailed analysis of data collected (compiled by Lakehead University) is included with the report.

Highlights of Challenges and Unexpected Results
- Distance and a longer than winter created issues that limited training.
- The iPad coach was added and sped up many aspects of implementation by providing context specific support. There was still a demand for even more support from many teachers.
- While using an iPad can be intuitive at the personal level, to teach using an iPad can be daunting, as many of the features can require multiple iterations for mastery to occur even with strong training.
- The teachers are aware of the barriers to successful implementation, e.g. learning the Apps, use of WebDav (the server) and printing. Teacher comments show their perception of student confidence as being much greater than their own confidence. This is consistent with current teacher views of the use of handheld devices and tablets in schools.

Sample of Comments from Participants
"When parents and students are both engaged there is a sense of achievement and expectation."
"The iPad project has affected the 21st Century learner by encouraging and supporting the need for critical thinking. Students are engaged by the ability to search and research to support their own learning and thinking. Students are able to ask their own questions and find individual ways to solve problems. The wide variety of apps allow individual strengths and interests to flourish."
"Students are more engaged when using technology. Students know more about technology than I do but that underscores their independence and encourages them to do the teaching and become the expert which fosters self-confidence."

Highlights of Key Findings
- All of the data collected confirm that there is strong support from students and teachers for the use of iPads in their classrooms.
- Teachers need focused and enduring support to a) learn how to use iPads, b) learn how to use iPads in the classroom, and c) change their teaching to make best use of the technology. We have evidence of some progress in parts a) and b), but will still need to work on part c).
- One iPad per student is the appropriate way to proceed.
- The technology coach had an immediate positive impact.

Additional Statements Related to Areas of Impact
- Both teachers and students have begun to realize that the full introduction of this technology brings in many unanticipated successes, and some tensions. The tensions were mitigated significantly by the technology coach, whose work was vital to the positive end results.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- It is a reasonable goal of this project to focus on both the Characteristics of the 21st Century Teacher and the 21 Characteristics of 21st Century Learners.

The project had implications for Board planning.
- Formal clarification of the how 21st Century Learning might look in the Northwest Catholic District School Board is set out in the document *Recognizing the Learning Styles of Students & Teachers in the Application of 21st Century Learning* which was published in August 2012.

Ottawa Catholic District School Board

Project Title	**Inquiry learning and Teacher Collaboration – The Impact of Mobile Devices and Digital Resources on Teaching Practice, Student Engagement, and Student Achievement**
Brief Description	Teachers will be invited to apply to participate in a collaborative inquiry learning project.
Context	Number of schools: 8 Number of teachers/classrooms: 16 Number of students: Grades/Program: Elementary – grades 3-4 math and literacy. Secondary –Grade 10 Careers course.
Phase of Change and Impetus	*New*
Goals & Priorities	The project has been undertaken with the intent of improving professional practice and student achievement through the use of digital teaching resources.
Role of Technology	Technology tools and online resources are key to this project. The specific hardware being used is the Samsung *Chromebook* over wireless Internet. The online resources being used: • Elementary – *Raz-Kids* (reading comprehension), *Dreambox Math*, Google Apps for Education. • Secondary- Desire 2 Learn, MOE Careers course (new in 2013) customized, My Blueprint, Google Apps for Education.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Pre and post surveys will be used to measure attitudinal factors on technology use, subject acceptance, and perceived ability to succeed. 2. In addition, the tools being used in elementary allow for direct measurement of achievement levels. Results will be compared to other classrooms to see if there is a significant difference in levels achieved. 3. In secondary, pass rates will be compared against other classes in the school from the past 2 years.
Capacity Building in Teaching	
Leadership, Sustainability, Scalability	• Concern about funding and cost of software.

Summary of Data Collection
- Data collection was focused on pre and post attitudinal surveys.
- Other data will be collected from Student success results of the Careers course through the final reporting in high school. That data is not yet available but will be processed over the summer.

Highlights of Successes
- Being able to differentiate for individual students.
- Small differentiated groups can be facilitated by teachers due to high level of engagement and independence of students observed when working on the software.
- Gain insight into strategies that students are using that might not be evident on paper and pencil tasks.

Highlights of Challenges and Unexpected Results
- Teachers' confidence in use of technology has increased not only with Chromebooks but with all technology.
- Communication between teachers, parents, and students has increased due to opportunities to provide feedback and comments to specific students.

Highlights of Key Findings
- Technology with the right content can definitely raise student engagement levels.
- Having 1-1 computers in high schools increased engagement across the board, not just the one class.
- Teacher practice can be transformed in a short period of time with the right technology tools.

Follow-up and Future Directions
- The intent to spread the Careers course and blended learning further in high schools and work towards a 1-1 computer model.
- More investments are being made in *Dreambox*, *Raz*-kids and *Chromebooks* as a result of the pilot.

Ottawa-Carleton District School Board

Project Title	Use of Mobile Technology and Digital Resources to Support Science Inquiry in Grade 9 and 10 - Collaborative Research Inquiry
Brief Description	A focus on inquiry-based learning supported by BYOD/mobile technology. A team of 10 teachers at Bell High School, including science teachers and learning support teachers, with their grade 9-10 science students (~150 students) participating in a collaborative inquiry with three central staff aiming to increase student engagement and achievement.
Context	Number of schools: 1 Number of teachers/classrooms: 7 Number of students: 150 Grades/Program: Science Grade 9/10, Applied & Academic
Phase of Change and Impetus	*New*
Goals & Priorities	Integrate the digital tools seamlessly into their science-based inquiry activities.
Role of Technology	This project makes use of both student-owned BYOD devices and board-provided mobile technology, including laptop computers, *Chromebooks*, and iPads. In addition, digital resources such as our Ministry-provided Desire2Learn learning management system and the Ontario Education Resource Bank will be used. This technology is essential to the inquiry as we are examining how the presence of these tools and resources may impact the ability of teachers and students to engage in authentic inquiry.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	Increased student engagement, especially amongst struggling students (as measured by student survey data, and Trillium mark entries).
Capacity Building in Teaching	Teachers participated in a round-table discussion and brainstorming session at the beginning of the project and a reflection session at the end of the project.
Leadership, Sustainability, Scalability	• Short time frame (1 coaching cycle) before project ended - not enough time to build significant capacity. • Due to the special nature of the year (labour situation) there was no teacher support for summer work to disseminate learning with other educators.

Summary of Data Collection

Data was collected through pre and post surveys and anecdotal comments from teachers. Due to contracted timelines (May/June 2013), the gathering of achievement data and the value of the pre- and post-project surveys were of some, but limited, use.

Highlights of Successes

- An increased capacity in the science department to engage in inquiry-based learning activities and integrating of digital tools and resources.
- An increased appreciation on the part of some of the teachers of inquiry-based learning, blended learning, and/or digital tool integration to Impact student engagement and to differentiate learning.

Highlights of Challenges and Unexpected Results

- Increased collaboration between teacher participants in developing inquiry activities in courses not targeted for this project.
- Teachers continuing to use the digital tools and resources in courses outside of the project focus.
- Due to labour action, the project start date was delayed to Semester II.
- The Coaching Cycle consists of co-planning and implementation of an activity followed by reflection based on classroom observation. Due to time constraints only one coaching cycle was achieved.

Sample of Comments from Participants

"The week after we observed my class, a student asked if we were going to do the 'computer stuff' again. When I told her that we weren't using the tools that day, she mentioned how she really loved working with them. She also expressed that she did not want to return to doing 'Science', I explained to her that those days WERE 'Science'. She replied by saying: 'Ya, but that was fun Science'."

Highlights of Key Findings

- Students in the Grade 10 Science (Applied) class felt that the activity was engaging.
- The students taking Grade 10 Science (Applied) responded favourably to a second opportunity to use the digital tools to investigate an inquiry question in the Climate Change unit.

Additional Statements Related to Areas of Impact

- Recognize that teachers as learners need time to develop capacity using the technology to plan effectively, just as students do to use the technology in the inquiry activities.

Follow-up and Future Directions

- If project work were to continue, a start early in the year/semester would be very important based on teacher feedback.

Peel District School Board

Project Title	iRecord: Capturing Reading Records with the iPad
Brief Description	Peel has made a commitment to using PM Benchmarks from K-Grade 2 for leading indicator data. The creation and use of an iRecord App will facilitate the collection of data and offer seamless integration of assessment with student performance, ensuring that data is stored in a single location.
Context	Number of schools: N/A Number of teachers/classrooms: 3 Number of students: N/A Grades/Program: Kindergarten to Grade 2
Phase of Change and Impetus	*New* We have spent a significant amount of time in the development of the app and continue testing at this point in time.
Goals & Priorities	Our goal is to integrate the data input with our online Student Success Program. The app is still in development stage. We have had some technical difficulties in creating this app as specified. We are in the testing stage and expect to be able to proceed in the very near future.
Role of Technology	This project involves the use of the iPad and a Peel created iPad app to collect on-the-spot data to inform teacher practices so that they can personalized reading programs for their students.
Areas of Impact	
Indicators of Success	1. Frequency of utilization. 2. Increased comfort level with running records. 3. Degree of usefulness as a tool to capture students' reading behaviours. 4. Extent of improvement in taking and analyzing running records.
Leadership, Sustainability, Scalability	• We have a supportive technology department who have worked with curriculum (teachers) to create the app.

Summary of Data Collection

No data was collected as the apps are still in beta development.

Highlights of Challenges and Unexpected Results

- We have been learning a lot about the memory and data storage requirements for apps which have slowed our app development progress – something that was unexpected in our original proposal.
- Finally, the labour unrest that we have experienced, has meant that we have been unable to leverage the apps with teachers.

Follow-up and Future Directions

- We will be continuing to work on this app and its implementation during the 2013/14 school year.

Peel District School Board

Project Title	iAssess: Using the iPad as an Effective Tool for Organizing and Collecting a Variety of Differentiated Assessment Evidence
Brief Description	This project will use the iPad to support assessment of, as and for learning through collection & triangulation of data. The project will create an iPad assessment app.
Context	Number of schools: N/A Number of teachers/classrooms: N/A Number of students: N/A Grades/Program:
Phase of Change and Impetus	*New* The app is still in development stage. We have had some technical and staffing difficulties in creating this app. We are in the process of reviewing staffing needs and may hire another person to assist with this project.
Goals & Priorities	The goal is to have the iAssess app used by 12 teachers in 3 schools (4 teachers per school). These teachers will provide input on the creation of the app and they will use the app within their classrooms (offering feedback and suggestions for improvement).
Role of Technology	This project involves the use of the iPad and a Peel created iPad app to collect on-the-spot data in the form of observations, conversations and products to inform teacher practices.We want to impact instructional practices to better incorporate student assessment data.
Indicators of Success	1. Frequency of utilization. 2. Increased comfort level with the collection and use of non-product evidence of student learning. 3. Degree of usefulness as a tool to capture evidence of student learning in a triangulated manner. 4. Extent of improvement (in time and approach) in adapting classroom practices based on real-time evidence.

Summary of Data Collection
No data was collected as the apps are still in beta development.

Highlights of challenges and unexpected results
- We have been learning a lot about the memory and data storage requirements for apps which have slowed our app development progress – something that was unexpected in our original proposal.
- Finally, the labour unrest that we have experienced, has meant that we have been unable to leverage the apps with teachers.

Follow-up and Future Directions
- We will be continuing to work on this app and its implementation during the 2013/14 school year.

Peterborough, Victoria, Northumberland and Clarington Catholic District School Board

Project Title	ICT – Interpret, Create and Talk about Math
Brief Description	This project will allow teachers to incorporate handheld devices into math instructional strategies and facilitate the collaboration inherent in these strategies through the sharing of handheld mobile devices in each class.
Context	Number of schools: 5 Number of teachers: 18 Number of students: 400 Grades/Program: Mathematics (elementary)
Phase of Change and Impetus	*Continuation* Our Round 1 project was to rely on collaboration technologies like Adobe Connect to build professional networks. This modality was not effective, but we did have a significant increase in software usage (Geometer's Sketchpad for example). In round 2 we have focused less on technology to replace/supplement face to face communication and instead are using technology to share resources (Dropbox) and share math ideas for consolidation (iPod video and photos).
Goals & Priorities	*Theory of action:* *If students are provided with a handheld learning tool which provides them with a differentiated way to interpret, represent, communicate with their peers and share the possible solutions and strategies, both in small groups and with whole class, then student engagement and self –efficacy and ability to problem solve will increase.*
Role of Technology	The hardware used for this project was iPod Touch. Six devices were allocated to each class participating in the project. The software being used is Dropbox and Reflector. The key component for the technology is that it has a camera for capturing learning artifacts and WiFi for immediate sharing with the class and/or the project team.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Teacher will use open math tasks in mathematics, know what they look like, and be able to describe the benefits of using such tasks with their students. 2. Increase positive student attitude towards mathematics. 3. Increase teacher confidence in use of technology.
Capacity Building in Teaching	Each school scheduled 4 co-teaching sessions where the students used iPods to communicate their solutions to math problems. The teacher team planned the consolidation portion of the lesson. Each session was followed up by a debrief and reflection time where the learning was examined.
Leadership, Sustainability, Scalability	• Collaboration between both the IT department and curriculum department was an ideal combination. • Growing Success: necessity for triangulated evidence of student achievement created much of the buy in for teachers for using photo and video features. • Teachers who were already comfortable working on collaborative inquiry teams and had a handle on teaching through problem solving saw this as a next step on their journey.

Summary of Data Collection
Data was collected from students and teachers using pre and post surveys. Teachers kept learning logs. Each teacher selected 3-4 marker students to complete an online survey after each math lesson that was a part of the inquiry.

Highlights of Successes
- Students whose voices were not often heard in math class were more often heard by the teacher and their classmates using the iPods and Reflector Software/LCD projector.
- Increased engagement as students were more eager to participate. Students were excited to work together to try out new apps and then take a snapshots or screenshots of their work or video recordings of their explanations. Increased engagement was noted through both the Action and Consolidation parts of the lesson.
- Increased risk taking in math among both students and teachers was noted.

Highlights of Challenges and Unexpected Results
- Students wanted to install their own apps on the iPods led to the developing class norms for the use of devices.
- For collaborative work it was hard to share one iPod screen for recording thinking an app. It was most effectively use as a recording device (photos and video) to gather data of student thinking.
- Teachers were able to collect triangulated evidence of student learning for both formative and summative assessment.
- Teachers became more confident with the technology and before long successfully sought out alternate ways download student videos (download to Dropbox and open in Windows Media Player).

Sample of Comments from Participants
"The use of hand held devices in the classroom has definitely increased student engagement in math. They were all eager to try new apps and approaches to solving math problems. One of the main benefits was in the ease of sharing and communicating their thinking with each other. The collaborative direction this took them in their work had a very positive impact on the majority of the students. They became more open to asking questions of each other and relying on each other for support."

Highlights of Key Findings
- The results of students pre vs. post attitudinal surveys showed an increase in student engagement and a slight increase in positive attitudes toward math.
- The teachers overwhelming noted that students were much more engaged in mathematics.
- Increase teacher confidence in their ability to teach math, particularly through problem solving.
- Increase teacher ability to use the problem solving model, based on the mathematical processes, effectively with their students.

Follow-up and Future Directions
- Year 2 CIL-M to have a technology focus for students to communicate their thinking; align with 21st Century Teaching and Learning schools.

Provincial Schools - Sagonaska Demonstration School

Project Title	iPod/iPad Project- How Educational Technology Can Be Utilized for Teaching and Learning Purposes, and Assessment of Student Performance
Brief Description	The project will build on the 2011-2012 focus and build capacity for personal technology use for students (specifically iPads and iPods) in the classroom to support learning. Teachers will be participating in a multi-day, multi-stage staff development initiative with the 21st Century Fluency Project. Our focus is the transformative use of technology. Moving from a hardware/software focus to a focus on critical thinking, problem solving, creativity, information fluency digital collaboration, and a demonstration of the fundamental tenets of being a digital citizen.
Context	Number of schools: 1 Number of teachers/classrooms: 9 Number of students: 40 Grades/Program: The target group of this project is teachers in grades 6-11 at Sagonaska. They are teaching students with severe learning disabilities in the area of reading. We are also inviting 6 teachers from neighbouring boards to participate in the project and then share their learning with their home board.
Phase of Change and Impetus	*Continuation* The project will continue to focus on the use of personal technology for teachers (specifically iPods/iPads) in the classroom to support student learning. Last year we provided ongoing support for the use of these devices in the school setting and to the schools with returning students from Sagonaska.
Goals & Priorities	Our goal is to develop a better understanding of how hardware and software can be infused into daily teaching, learning, and assessment practice to assist students and teachers in developing essential 21st Century skills.
Role of Technology	Our students have severe learning disabilities in the area of reading and the use of technology is essential for our students to access the curriculum and demonstrate their learning. All of our students make daily use of technology both in and outside the classroom. Teachers require access to similar personal technology to connect with students.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies • Other (teacher engagement)
Indicators of Success	1. Teachers will work together to connect curriculum to relevant real-world situations and develop lessons and units to cultivate the tenets of Global Digital Citizenship. 2. We will also be using the 21st Century Fluency Project survey (pre and post) measuring teachers' attitudes towards technology and use in the classroom.
Capacity Building in Teaching	Teachers will be participating in a multi-day, multi-stage staff development initiative with the 21st Century Fluency Project facilitated.
Leadership, Sustainability, Scalability	There is an interest in our project across Provincial Schools on how we are using and managing the devices, and in the 21st Century Fluencies. We have shared our project with principals, senior administration and the Information Technology department from the different Provincial Schools.

Summary of Data Collection
A pre-survey has been conducted and a post-survey will be completed in the fall of 2013.

Highlights of Successes
- Teachers are using personal technology more frequently and confidently.
- All teachers have chosen to participate.
- Students are using personal technology more frequently to demonstrate learning.
- Students are given more opportunities to choose how they will demonstrate their learning.
- We have a more clearly defined and focused vision for technology use in our school.

Highlights of Challenges and Unexpected Results
- Because of the fiscal year for Provincial Schools we were late getting the project started.
- Our infrastructure was also a challenge because our bandwidth was not strong enough to support the amount of devices we were connecting to the network.
- Our focus changed in the project over the course of the year. We began the project with a focus on "hardware" (e.g., how to use the iPad device). We have now advanced beyond to a "headware" and the "transformative" use of technology (e.g., using technology to access learning beyond the walls of the classroom and into the global community). Our focus now is on what students need for the 21st Century.

Sample of Comments from Participants
"As a result of being involved with the 21st Century Fluencies workshops through the CODE project, I have a much better understanding that our students are growing up in an environment that is considerably different from the one I grew up in. Their near immersion in technology demands that teachers evolve to understand that a significant portion of current model of classroom education is outdated, and we will fail each classroom full of kids if we don't get with it. The 21st Century fluencies are not a new layer to add to what we typically do, but need to replace what many of us tend to do."

Highlights of Key Findings
- Findings require the completion of the post-survey that will be conducted in the fall.

Follow-up and Future Directions
- Continue to implement the 21st Century Fluencies and work towards the use of "Transformational" use of technology in the classroom.
- Build into the School Improvement Plan the continued use of technology and the fluencies essential for 21st Century learning.

Rainbow District School Board

Project Title	Blending Engagement and Assessment: Benefitting Students by Bringing Technologically Innovative Practices to the Mathematics Classroom
Brief Description	The project emphasis is on student engagement (primarily at the Applied Level in Mathematics) as a result of classroom use of technology. The seven participating project teachers have participated in the board's Mathematics Learning Cycles professional development model and they represent three secondary schools. The Tech Coaches have been creating an interactive resource in the Blended Learning environment.
Context	Number of schools: 3 Number of teachers/classrooms: 10 Number of students: 190 Grades/Program: Grade 9 and 10 mathematics classes, primarily Applied Level.
Phase of Change and Impetus	*Continuation* This project is a continuation of last year's initiative in Near North DSB. While that project focused upon Grade 9 Applied Mathematics classes, ours will extend that work to include Grade 10 Applied Mathematics Classes.
Goals & Priorities	The central goal of the project is to engage students in Applied Level Mathematics courses through the use of hands-on activity-based technology, to support their learning.
Role of Technology	The project makes use of Learning Objects such as CLIPS, mathematics apps, OERB objects, etc. Tablet technology is portable, shareable, and cost-effective for accessing online resources. Rainbow DSB purchased 42 Samsung Galaxy Tab 2 (7") tablets in support of this initiative.
Areas of Impact	• Student engagement and achievement
Indicators of Success	1. Increase in student engagement. 2. Integration of tablets into teaching practice. 3. Increased teacher awareness technology tools.
Capacity Building in Teaching	Teachers are being supported by Technological "coaches" who are providing '*at-the-elbow*' support.
Leadership, Sustainability, Scalability	• With challenges in the purchase of applications in bulk, a ceiling could be placed on the integration off tablets into effective and engaging teaching practice moving forward. • Tech coaches are invaluable to sustain and scale technology, but long term is not a certainty.

Summary of Data Collection

Data was collected through LMS survey tools, multimedia documentation, and anecdotal evidence of technical facilitators and project meetings. Comprehensive and detailed tabulated results are included in the report.

Highlights of Successes

• Successful integration of tablet technology in at least 1 classroom in each school.
• Increased student engagement found through surveys and classroom observations.
• Tech coaches and teachers compiled a vast collection of online resources (identified, tested, and organized).

Highlights of Challenges and Unexpected Results
- Changing technology: Samsung tablets were chosen because they are able to run Adobe Flash. However, Adobe stopped supporting mobile Flash so Tech Coaches had to manually install an archived version of Flash.
- Smaller screen size was chosen to save money, but small screen size became a significant limitation.
- Google Drive and Dropbox are not supported in RDSB, so file sharing and storage became an unnecessary challenge.
- Tablet management software was seen as essential, but is an additional unexpected cost.
- The shift from solely online learning objects towards Android applications created an opportunity to create a more robust LMS resource.
- The role of the Tech Coach became more clearly defined and expanded beyond the initial limited role.
- IT Services became active participants in the examination of learning opportunities.

Sample of Comments from Participants
"The project is giving the students an opportunity to use technology they have grown up with, to engage them in their learning."
"I set a goal of making sure that the tablets were used each day in a way that engaged students and kept them on task."

Highlights of Key Findings
- Observational data and survey data supports that the project was successful in increasing student engagement.
- The degree of student self-efficacy significantly increased.
- Even though there was an increase in student engagement, the student response to the tablets was mixed. There is a need for further examination for the reasons that some students were not receptive to the use of tablet technologies (i.e., screen size? WiFi limitations? Hardware limitations? Weak learning activities?, etc.) , and for strategies that will increase acceptance by more students.
- Teachers seemed to be far more accepting of the technology challenges in integrating tablet devices than were many of their students.
- Much was learned about the technological and procedural challenges for tablet integration, and the critical role that Tech Coaches play in supporting teachers.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Additional funding has been requested.
- Continue the work with teachers who seek to improve technology skills.
- Explore an expanded scope of tablet integration I RDSB.

The project had implications for Board planning.
- Further cultivate collaborative involvement of program and IT services.
- Research logistics for BYOD.

Rainy River District School Board

Project Title	Teaching and Learning in a Digital World
Brief Description	The project will investigate the role of digital resources (such as Premier Tools, Clicker 5) and applications on mobile digital devices that are integrated into classrooms through a job embedded model.
Context	Number of schools: 12 Number of teachers/classrooms: 17 Number of students: 2240 Grades/Program: Grade 1-12 Classrooms
Phase of Change and Impetus	*Continuation* This is a continuation of 2011-2012 initiative, as our goals were also to increase student engagement through the use of technology and to increase teacher efficacy in the use of instructional technology in the classroom.
Goals & Priorities	Increase teacher efficacy in the use of instructional technology in the classroom and increase student engagement with respect to technology implementation and integration.
Role of Technology	The technology that may be appropriate today may not be as relevant tomorrow. Therefore, some of the programs that were going to be used for this project were reconsidered and changed as the technology changed. Instead of choosing specific programs for teachers to use, the Technology Coaches looked at the teacher's technology comfort levels and suggested the technologies that would be best suited for that teacher. (Examples: premier tools, IPad use, Google Drive, D2L, mobile apps, etc.)
Areas of Impact	• Student engagement and achievement
Indicators of Success	1. Increase technology related referrals through our School Support Services Referral System by 50%. 2. Present at least one Internet safety lesson to every K-8 class within the RRDSB by the end of the school year. 3. Present at least one "Job Embedded" Assistive Technology lesson to every K-8 class within the RRDSB by the end of the school year. 4. Increase electronic communication with parents by having at least 20 teachers create and use a blogging to communicate with parents.
Capacity Building in Teaching	One purpose of this Technology Project was to increase teacher efficacy. This goal were achieved primarily through a "Job Embedded Model" which allowed students, educational assistants, and teachers to learn digital technology at the same time and essentially support each other's learning. Teachers were also provided PD release time to increase efficacy in technology instruction. Implementation of technologies into the classroom environment was supported by 5 technology coaches and 5 School Support Services Coordinators.
Leadership, Sustainability, Scalability	Although the job embedded model was used for some training sessions, teachers really needed the time to learn and explore on their own. The amount of release time required may not be sustainable in the long-term.

Summary of Data Collection

Pre and post surveys for teachers and students. Technology Coaches were required to keep track of technology classroom visits in a computerized Logging Program.
Findings were reported but details were not included with the report.

Highlights of Successes

- Early success of this project was the enthusiasm of the teachers to incorporate what they were learning into their classrooms.

Sample of Comments from Participants

"The use of technology has changed my way of thinking about teaching and definitely broadened my perception of classroom. Evaluation and assessment using technology is something I currently struggle with."

Highlights of Key Findings

- Our findings indicate that teachers' Sense of Efficacy around increasing Student Engagement was not significant through this particular method of providing Professional Development. It could be their "Sense of Efficacy" is unchanged due to skills prior to training.
- Teachers' Sense of Efficacy around effective Instructional Methodology, however, showed a significant increase when comparing Pre- and Post-project survey results.
- Student results do not show a significant growth in student engagement. While a number of areas show slight increases (Behavioral Engagement) overall, the growth is negligible. Our reflection process indicated that we may have strayed from the original focus of the project to some extent.

Follow-up and Future Directions

- We also learned that the Professional Development model implemented was very successful with the teachers as it allowed choice in learning and break-out session opportunities. This type of Professional Development model is now expanding into other projects and initiatives in our board.

Renfrew County Catholic District School Board

Project Title	Tablet Technology and the Collaborative Classroom
Brief Description	This project will support grade 8 teachers in a meaningful collaboration about how to effectively utilize tablet technology in the classroom and build student conceptual understanding for becoming increasingly self-determined, critical thinkers. We set out to look at a way that we could foster and develop innovative teaching strategies that would result in deep, transformational and consequential changes in instructional practices, based on sound pedagogical foundations, which would affect student learning. The key emphasize was on collaboration.
Context	Number of schools: 1 Number of teachers/classrooms: 6 Number of students: 140 Grades/Program: Grade 8 classrooms
Phase of Change and Impetus	*New* Initial inquiry statement was : "If we collaborate as teachers and explore the use of tablet technology in the classroom, then we will increase student engagement and student conceptual understanding by helping students become increasingly self-determined, critical thinkers."
Goals & Priorities	We wanted to develop a sense of ownership for the pilot project by the teachers involved in the process, as we felt that this was essential for them to, as we termed it, become co-designers, of a technology implementation program that functions effectively at the classroom level. It has also become quite apparent that we would need to design a process to scale this technology integration to further schools.
Role of Technology	Each classroom was equipped with 5 iPad tablets and one Apple TV. Teachers continued to existing SmartBoards and classroom laptop computers. Interestingly enough, a key piece to the process has been the infrastructure needed to support the wireless needs of these tools. Several wireless routers were added to the wing of the school, and it was quickly recognized that these tools needed to be upgraded. As well, Internet connectivity to the school was enhanced to allow for smoother access. Identifying these issues and addressing them has taken several steps.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. iPad technology being used during the instructional period of the class. 2. Teaching staff develop their own PLC around the technology. 3. Change in instructional practices.
Capacity Building in Teaching	Each classroom teacher was given 6 iPads for the classroom with a general mandate to utilize the tools in math class. Teachers were pulled out of the classroom initially for one day of training. There was a deliberate hesitation to provide any more instruction on the integration of the technology. The idea was to observe the instructional practices that would evolve as a result of the tools being present.
Leadership, Sustainability, Scalability	• Technology enhancements board wide are a positive factor in the continued success of the program (enhancements to Internet connections and WiFi). • Supportive administration is key to the continued success. Administration from across the board are eager to explore integrating this technology.

Summary of Data Collection
Data was collected through observations, surveys (student and teacher), and interviews.
Findings included in report but no specific tabulated results included with the report.

Highlights of Successes
- One of the key successes of the pilot project was the use of iPads beyond the original scope of the pilot (math class), and how they were integrated into other subjects. This process seems to have largely been driven by the students.
- Teachers were being pushed by their students to transition the iPad tools into all subject matters and as a result they had to develop lesson plans that allowed for this process to happen.
- The pilot provided insight into the challenges and opportunities that a Bring Your Own Device (BYOD) program would pose. It allowed a testing of the infrastructure, as well as the teaching changes that occur with a BYOD program.

Highlights of Challenges and Unexpected Results
- Infrastructure: It was apparent that sustainable infrastructure is necessary for the successful integration of tablet/wireless technology.
- The teachers expressed some concern towards integrating the technology into the classroom. Adoption rates were slightly slower than was expected. It took several weeks before teachers began to understand the technology tools themselves and how they could be utilized in the classroom.
- Many students could not make a distinction between how to use the tools for learning vs. entertainment. Students viewed the iPad technology as an entertainment tool and expressed some frustration at how they could make these tools a learning aid.

Highlights of Key Findings
- Was the iPad technology being used during the instructional period of the class? The tools were not relegated to the role of reward or time filler, but instead they were being used by both teachers and students to create a better sense of discussion and collaboration in the actual lessons of the day. Students began to self-regulate and would share and work together using the tools, and teachers started to craft lessons that would allow for this. There was a shift from simply using the tools to "fit in" with more traditional lesson plans, towards making the technology part of the lesson itself.
- Would the teaching staff develop their own PLC around the technology? It became apparent that the teachers appreciated the iPad technology personally but would have difficulty in integrating it into the classroom. As a result of the close proximity of the teachers, these teachers did begin to develop their own personal learning community around the iPads. Translating that to a larger school setting would require a more focused instructional PD.
- Would there be a change in instructional practices? Once the challenges of infrastructure were addressed, and following several weeks of trial and error integration, the teachers, encouraged by the students, began to craft deeper, richer instructional lessons for the students to engage in.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Continued focus on infrastructure: As we explore the options of BYOD programs to our high schools we know that we will need to invest time and resources into making sure that the infrastructure is sound enough to hold the addition of several hundred wireless devices.

- Staff perceptions of technology in the classroom: Perceptions and less positive attitudes towards technology in the classroom are evident in many of our schools. We still need to analyze how this pilot has impacted those staff perceptions of allowing mobile tools into the class setting.

The project had implications for Board planning.

- The pilot project has allowed us to explore how technology has been able to integrate with instructional practices. All branches of our program team (Literacy/Numeracy, Safe Schools, IT department) need to be part of the process.

Renfrew County District School Board

Project Title	**iPossibilities: Supporting Inclusion, Engagement and Achievement for Students With Learning Disabilities**
Brief Description	Connecting with the philosophies of Education for All and Learning for All we recognize that assistive technologies are "necessary for some, good for all" and are linking this understanding with new and emerging technologies, specifically iPod/iPads, and the use of these devices with our students with learning disabilities.
Context	Number of schools: 6 Number of teachers/classrooms: 29 Number of students: Grades/Program: Students with Learning Disabilities in primary, junior, intermediate and secondary (English department, and resource) classrooms.
Phase of Change and Impetus	*New* We began a pilot teacher collaborative inquiry project surrounding the use of iDevices, and are hoping to build on the success of that project and extend it to reach more classrooms, teachers, and students. Historically, there have been high rates of abandonment in the use of assistive technology due to portability, lack of nimbleness, and peer influences. When the technology is abandoned then the students with LD may respond with negative learning behaviours.
Goals & Priorities	*Our Inquiry*: Through the collaboration of practitioners at different sites, to what extent and in what ways will the use of iDevices as Assistive Technology impact student learning (engagement/inclusion and achievement) for students with Learning Disabilities?
Role of Technology	iPods and iPads are the mobile devices being used in this project and are the essential element for the project as the inquiry question is not possible without them. Integrating mobile technologies seamlessly into the classroom environment and investigating the proposed inquiry question may further help us understand how mobile technology, specifically iDevices, as an emerging application can be considered to better support the educational experience of the student with learning disabilities.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Through the triangulation of evidence we anticipate seeing proof of increased engagement, work completion and participation in class activities. 2. The evidence of increased achievement (student outcomes) may be reflected through quantity of productive output, and quality of work.
Capacity Building in Teaching	This project utilized a collaborative inquiry approach, with teacher teams coming together with central Special Education dept staff and school administrators.
Leadership, Sustainability, Scalability	Access to technology continues to be a major impediment to sustainability in many classrooms and was identified by teachers as a barrier to success and equity for students.

Summary of Data Collection
Teachers collected work samples, videos, photos, surveys, and student interviews.
Findings are summarized and referenced in the report.

Highlights of Successes
- Teachers commented that as the students with a learning disability progressed they demonstrated increased pride in their work, developed their unique voice, and began to advocate for themselves and their learning style.
- Students became more confident as writers, demonstrated greater independence, and showed improvement in quality and quantity of written work.

Highlights of Challenges and Unexpected Results
- Parents who were skeptical of how an idevice could possibly benefit their son's/daughter's work (engagement, achievement, and inclusion) were excited with the results of the project.
- This project provided the ATRT with the opportunity to support teachers in building capacity.
- Use of the devices in the classroom provided other students who might otherwise not have requested help in the area of assistive technology, were also able to build their skill set.
- The main challenge raised was related to teacher capacity in understanding and using the devices. Not all teachers could connect good pedagogy to the use of the devices.

Sample of Comments from Participants
"Using technology allowed students to focus, explore, analyze and share with their peers. Assistive technology levelled the playing field for everyone. Students supported one another and they became active learners in charge of their own inquiry based learning."
"Because we now look at students work differently, we are learning to assess differently. This means a greater understanding of a student's true capabilities and learning."

Highlights of Key Findings
- The idevices were engaging for students with a learning disability. Students reported that they found the idevices supported accessing the curriculum and they felt successful with their tasks.
- The idevices pulled in learners who were often disengaged with some curriculum tasks.
- Student confidence and independence in writing improved with a further increase in students' attitude and overall production of written work.
- There was an increase in the length of texts students would write when students used iWordQ in comparison to when they did not.
- For students with writing disabilities, the use of apps like iWordQ significantly improved both the length and depth of creative writing pieces and the overall enjoyment of writing projects.

Follow-up and Future Directions
- We need to continue to build teacher capacity around the use of assistive technology for students with special needs.
- We envision continuing with the role of the Assistive Technology Resource teacher helping to support schools in implementing 21st Century Learning Skills into their SIPSA to support student achievement. This initial project only involved a few schools and through the learnings of this pilot we can expand to include other schools.

Simcoe County District School Board

Project Title	Minds on to Actions
Brief Description	We have a core of teachers across the county using innovative teaching practices embedding technology in classrooms. Using a similar approach to Minds on Media and incorporating a Professional Learning Cycle Model through regional forums, teachers will explore various technologies and the successes/challenges of implementation in classrooms. The goal will be to have a hub of expertise in every region to further support job-embedded learning.
Context	Number of schools: 87 elementary schools + 17 secondary schools Number of classrooms: 182 Number of students: 3800 Grades/Program: The target group this year are teachers who want to learn more about using digital tools for teaching and learning.
Phase of Change and Impetus	*Continuation* In our first year, "Minds on Media©" introduced teachers to a variety of technology tools to support teaching and learning. Based on the results, we have offered regional sessions for teacher to see teaching and learning in classrooms using technology with time to plan their own inquiry.
Goals & Priorities	To build capacity in schools using a culture of inquiry around the use of technology-enabled classrooms. Our goal is to support teachers: • Who are making substitutions from older technologies (e.g. overheads) to newer technologies. • Who have explored one or two technologies, to think more deeply about what it is they want their students to know and be able to do and how technologies support that change. • To learn the basics of new technologies and move to more student-centred teaching practices that invite collaboration, communication; critical thinking and reasoning; and become responsible digital and global citizens.
Role of Technology	Each teacher in our board has a teaching notebook and we are completely wireless. Having the foundation in place is key to inviting staff and students to become guests on our network using their own devices.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Digital citizenship and literacies
Indicators of Success	1. Each teacher team and/or individual learner will provide documented evidence of how they have used technology to support a student learning need. 2. Participation in the sessions (sign-up sheets) helps us to identify implementation gaps for our next year area gaps. 3. Participation in the initial Thoughtstream; and from a wrap-up. 4. The number of school-based PLCs started because of participation in our Minds on to Action.
Capacity Building in Teaching	As an extension of our Minds on Media, the focus is on teachers as leaders in their classrooms. We have a strong plan for moving forward for next year and keen interest from teachers to build capacity for technology enabled learning environments and 21st Century skills.

Project Title	Minds on to Actions
Leadership, Sustainability, Scalability	Our inquiry question was designed to have teacher and administration voices to help plan the sustainability of the project. Our board is well-positioned having every school wireless.

Summary of Data Collection

Used a *Thoughtstream* to gather input from each school about student learning needs; how technology would support the student learning need; teacher need; and ways to support the teacher need.
Evidence collected showed the stages of implementation and variety of technology tools and programs being used.
Findings and supporting documentation included in report.

Highlights of Successes

- Participation exceeded expectations as principals used school funding to support teachers.
- Having each session facilitated by a host teacher or by knowledgeable educators and administration, supported the learning.
- Teachers made connections among schools to share technology-enabled knowledge.
- "Mushroom" projects began as participants asked for release to provide specific expertise to inform our board work (e.g. expanding teacher training for blended learning from K to 12; investigation of how iPads can be successfully integrated).
- Recognition that even though this is billed as a "pilot project", in order to build capacity it must be part of a larger vision and is a process (not a project) of learning.

Highlights of Challenges and Unexpected Results

- With the political challenges presented during the school year, we altered the offerings to one ½ day facilitated session and a 2nd ½ of self-directed learning. The solution proved beneficial in the end.
- The hub meetings used technology exclusively to collaborate using *TodaysMeet* and Google docs. Each hub has their own Wikispace which will migrate to our new platform over the next year. The team will also act as initial users of our new platform to support implementation.

Highlights of Key Findings

- All teachers attending area hub meetings used their teaching notebooks (or a personal technology) as we modelled embedding technology as a means of collaborating and gathering ideas.
- Teachers reported that using technology significantly increased their ability to differentiate program for students of differing abilities and interests.
- Teachers reported that using technology also supported their understanding and gathering evidence of the learning skills.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Continue to offer school-based learning opportunities for teachers.
- Continue to parallel the teaching model we would like to see in classrooms with teaching learning opportunities (start where they are, using inquiry, and technology).

The project had implications for Board planning.

- Connect this work more closely with our central departmental work including Special Education, FNMI, Student Success, SSI, SEF, and program.

St. Clair Catholic District School Board

Project Title	Assistive Technologies and their Impact on Students Working Towards the Provincial Standard
Brief Description	The project will focus on improving teacher capacity in grades 5 and 6 using evidence-based assistive technology practices to increase student achievement scores in the area of literacy (reading comprehension, inference, communication, and collaboration). Teachers will identify "marker students" who are currently performing below the provincial average and use assessment for learning tools to identify the learning challenges. Teachers will subsequently develop digitally based lessons to support those students, and will use the same instructional approach for the entire class population.
Context	Number of schools: 2 elementary Number of classrooms: 6 Number of students: 200 Grades/Program: Grade 5 and 6 classes. The instructional focus is in the area of language arts and cross-curricular literacy with specific focus on reading comprehension and inference.
Phase of Change and Impetus	*New* Our research has been narrowed to gain insight on how best to identify a protocol that could be scaled across an entire school (and ultimately the entire board).
Goals & Priorities	The project is focused on developing teacher comfort and competency in achieving a pedagogical goal and identifying and understanding the technology that supports that goal (increased digital readiness).
Role of Technology	Teachers have been given direct access to laptops, iPads, iPods, SmartBoards, and Google Apps, Google Docs, Worksheet Wizard, Word Q, Audacity, Smart Ideas, and Dragon. Both schools now have Internet access and teachers are exploring which additional tools will support the objective outlined above.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Digital citizenship and literacies
Indicators of Success	1. Pilot teachers will achieve digital and pedagogical comfort. 2. Pilot teachers will be able to use date driven assessment to personalize technology-enabled learning for students performing below provincial average. 3. Pilot teachers will be able to support other teachers' use of the model and using marker students to support class instruction. 4. Students will demonstrate a positive attitude to learning using technology. 5. Students will demonstrate improved achievement in Literacy in OCA / EQAO.
Capacity Building in Teaching	Our research paid careful attention to change theory when structuring our professional learning model. We believe that if teachers are going to engage in the highly complex process of changing their teaching culture they need to be given the time at the beginning of the process to truly understand why the change is necessary, and what that change looks like in their teaching and learning environment.
Leadership, Sustainability, Scalability	• We were able to archive our learning so that teachers who are starting this process next year will have access to lessons and best practices to accelerate and support their change in practice.

Project Title	Assistive Technologies and their Impact on Students Working Towards the Provincial Standard
	• Given that our research was deliberately structured with a narrow focus, it allowed us to go further in our research. The first group of teachers will be able to apply their experiences, skills, and strategies beyond the area of reading and into other areas. This speaks to the natural sustainability of this work.

Summary of Data Collection
- Participating teachers and principals were given pre- and post- surveys to measure impact of research on digital and pedagogical comfort levels.
- Teachers used the OCA to gather data on a marker student.
- The Garfield reading assessment (pre- and post) and observational data were used to assess student's engagement in reading.

A detailed and comprehensive summary of tabulated findings was included in the report.

Highlights of Successes
- Teachers unanimously commented that student's self-confidence increased especially with the students on the IEPs since all students were using technology removed any stigma around needing instructional supports.
- Students started to select the software tool that was best for the task.
- One parent of a learning-challenged child noticed a significant difference in her child's engagement at school.
- Students were working more independently. This provided the teachers the opportunity to work one-on-one with individual students.
- All teachers reported that the impact of the technology exceeded their expectations, particularly with the learning-challenged students.
- Technology supports the structure and organizational skills required by the students to deepen their learning and skills development.

Highlights of Challenges and Unexpected Results
- At the beginning, teachers reported having to introduce new classroom routines in the area of technology and having to scaffold the lesson instructions to account for the complexity of integrating technology.
- Our guiding goal was to measure the impact of evidence-based technology strategies on student achievement and engagement in the area of literacy. As we started to define our goals we realized that our target was much too broad and decided to narrow the focus and scope. Given the short period of time in which to conduct our research we decided to focus all research around reading.
- Another challenge in our research was the short amount of time that was given to launch, execute, and assess the project. Given the process of change is so complex, short timelines reduce the amount of learning realized by the teachers, and the student achievement results are less reliable than they would be if they had occurred over a longer period of time.

Highlights of Key Findings
This evidence-based professional learning model did significantly improve teacher's comfort level with technology.
- Post-research 100 percent of teachers answered "strongly agree" to the question "I feel technology is a valuable tool to use with my students." This is up significantly from the pre-research answer in which 8 percent strongly agreed, while the remaining 92 percent were neutral.

- Post-research 100 percent of teachers answered "strongly agree" to the question "I believe technology is a valuable tool to enhance my teaching practise." This is up from 50 percent of teachers responding "strongly agree" to the question pre-research.
- 76 percent of teachers report responded "agree" to the question "I feel comfortable using new technology strategies with technology that I have not used before." This is up from 40 percent of teachers responding with "agree" pre-research.

Pilot teachers will be able to use date-driven assessment to personalize technology-enabled learning for a marker student performing below provincial average and to integrate those strategies into the learning environment as a whole.

- 86 percent of teachers answered "agree" or "strongly agree" to the question "The most important part of instruction is that it encourages sense making and thinking. Content is secondary." This is up from 45 percent of teachers who responded with "agree" or "strongly agree" pre-research.
- 95 percent of teachers answered "agree" or "strongly agree" to the question "I feel comfortable using assessment for learning data to inform my instructions decisions" post-research." This is up from 75 percent of teachers pre-research.

Pilot teachers will be able to support other teachers' use of the model for developing lesson plans and using marker students to support class instruction by archiving and sharing their learning.

- The steps and processes of this professional learning model have been captured and archived in Google docs and will be available for all teachers who would like to join this research. Given that an early majority in a change population is motivated by solutions and convenience (G.Moore, *Crossing the Chasm*) all lessons and assessments are also available.

Follow-up and Future Directions

We will be requesting additional budget to scale this work beyond the first cohort of teachers. We will also be requesting additional funding to conduct a longitudinal student achievement study to measure the impact this work has on students over a longer period of time.

Sudbury Catholic District School Board

Project Title	Technology and Early Learning
Brief Description	The project focus is to embed technology in an early learning (Full Day Kindergarten) environment. Our focus is two-pronged: • For the educators, the goals are to use technology as a tool to document student learning and communicate the learning to all stakeholders. • For the students, the goals are to increase engagement in inquiry and play-based activities, increase participation in social situations, and increase verbal fluency.
Context	Number of schools: 6 Number of classrooms: 19 Number of students: 200 Grades/Program: Full Day Kindergarten Program: teachers, ECEs, and students.
Phase of Change and Impetus	*Continuation* As more classrooms become FDK this year, there was a need to continue the project with the new teachers to build capacity and to collaborate with more experienced teachers already using the technology.
Goals & Priorities	Identified in the project description.
Role of Technology	In this project, technology is an essential element as teachers are using the iPads to record (audio and video) student thinking and inquiries. They are able to use the portable devices to enter observations and synchronize them into a shared MacBook electronic space. The technology is allowing the educators to communicate student learning and thinking in a variety of electronic ways. Many educators have created class webpages. Parents are receiving learning stories via email. For the students, the technology is embedded throughout the play based inquiry model and is utilized as an essential tool for capturing their thinking and their work.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. For the educators, understanding how the technology has supported their work in documentation of student thinking and learning as well as how it has helped to enhance the partnership. 2. For students, we are interested in student engagement as well as the development of oral fluency.
Capacity Building in Teaching	Teachers/ECEs participated in professional learning and training. Firstly on the FDK programming side and how the technology can support it. Technology training was always aligned to teaching and learning based on the new FDK program. An IT technician was attached directly to this project to ensure support.
Leadership, Sustainability, Scalability	• Unique training and support were provided to each participant which is on-going and sustainable through the board team approach to this FDK implementation. • Tech support was provided throughout which ensured the equipment was running well and repaired in a timely manner. • Financial support from the Board of Trustees in the budget process to continue this model of FDK implementation.

Summary of Data Collection
- For the educators, we were able to collect qualitative data before, during, and after the collaborative inquiry model utilized this year, through the use of feedback forms, exit cards, and surveys. Survey Monkey was used to create a pre and post collaborative inquiry survey. A full qualitative analysis will be conducted and results will be shared in the fall of 2013.
- For the students, we were able to utilize the student learning data gathered during the collaborative inquiry. This data was measuring the 'if..then' statement developed at the onset of the inquiry. Based on data to date, a tabulated summary was included with the report.

Highlights of Successes
- We believe that this project was instrumental in the effective implementation of Full Day Kindergarten. It was introduced along with our FDK schools and created a synergy between the teacher and ECE. These tools were essential and created, in the words of one ECE "superior observation tracking for student and program assessment".
- Educators gained skill and ability in the use of technology as it was embedded as part of their work. It was clearly linked with the new FDK program and implementation.
- Although a focus on oral language was the original intent, the use of the iPads helped support students in the inquiry model of FDK through the use of search engines, apps and creation tools. Teachers and ECEs have said that student engagement and 'student talk' was encouraged through the use of iPads.

Highlights of Challenges and Unexpected Results
- Increased parental engagement in the FDK program and understanding of their child's learning was noticed as a by-product of this project. Teachers/ECEs were able to communicate student learning through a variety of methods which the technology allowed.
- Extensive student learning data was gathered and readily available for report cards.
- This project also increased the communication and collaboration between the school and childcare.
- Students learned how to use technology effectively and how to care for it properly. There has not been one incident of student damaging a device in the three years of this project.

Highlights of Key Findings
We believe the goals of the project were met. The qualitative data gathered at the end of the collaborative inquiry will be analyzed and results will be provided in the fall.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- This project will continue for the 2013-2014 year and through 2014-2015 as we finish the FDK implementation.

The project had implications for Board planning.
- We have now used this model to support our 'student and teacher technology access' in grade 1 and grade 2 classes next year. Both the financial and human resources have been committed to ensure we continue with this project and expand it to our early years.

Superior Greenstone District School Board

Project Title	Best Practices in Online Learning: Leveraging the LMS to Increase Student Engagement and Achievement
Brief Description	This project will build capacity for the effective daily use of the provincial Learning Management System (LMS) with teachers and administrators. Our pilot project is to utilize the Provincial LMS to provide support for split-grade classes (very common in our board), tiny class collaboration across the board, and students who have poor attendance.
Context	Number of schools: Phase 1: 2 Secondary Schools Number of teachers/classrooms: 12 Number of students: 150 Grades/Program: Our focus area is on split grade classes and small-enrolment classes.
Phase of Change and Impetus	*New* We need to build teacher understanding of technology and how it can be leveraged to increase student engagement and improve student achievement.
Goals & Priorities	We will focus on building teacher capacity, particularly in the schools where blended learning has never existed and where there is no apparent desire to move forward with open and blended learning opportunities.
Role of Technology	Our entire project focuses on building teacher capacity in the use of technology to enhance pedagogy in the classroom.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Teacher engagement
Indicators of Success	1. Number of teachers completing LMS training. 2. Number of classes using LMS for blended learning. 3. Percentage of students involved in digital learning through the LMS. 4. Number of teachers applying to teach in the online environment. 5. Number of online courses offered through the LMS. 6. Number of teachers/students engaging in learning through the LMS.
Capacity Building	Ten members of SGDSB staff took part in ETMOOC, and greatly increased their knowledge and understanding of edtech. It was described as "coming out of a cave" because they had no idea of the extent of opportunities to enhance pedagogy that existed in the digital environment.
Leadership, Sustainability, Scalability	The collaboration among the innovative teachers became the 'chatter" in the school, as though a critical mass had been reached. This cultural shift is very obvious. We have put in place clear plans for sharing and growing in our expertise in leveraging technology tools so that we can sustain the excitement and collaboration into the coming years.

Summary of Data Collection

Data was collected using LMS analytics and requests for training/courses. Partial tabulated results included with report.

Highlights of Successes
- Administrators have enhanced capacity with digital tools and a stronger interest in opportunities for teachers to use digital tools to enhance pedagogy.
- Teachers have had the opportunity to learn, make their learning visible through blogging, to share with colleagues and present to administrators, and to collaborate on next steps.
- A formal hiring and monitoring process was established for e-learning courses, including a competition for positions and the formation of a PLC around best practices in e-learning instruction.

Highlights of Challenges and Unexpected Results
- OSSTF job action: The opportunities for learning were presented as personal opportunities outside of the professional environment so that teachers and EAs could participate without conflicting with the OSSTF mandate.
- Internet access is restricted at best. Frequently professional development is interrupted by technical issues such as inability to connect to WiFi, sites blocked, etc.
- We had an opportunity to have our first event an "administrator only" event to demonstrate the value of hands on learning in technology and to demonstrate the kind of learning we could provide to teachers. By engaging the administrators in a hugely successful day of hands on learning in small groups.
- We had not expected to work with administrators in building capacity for digital learning, but this became a key part of our work as the lack of interest and enthusiasm for more PD in the school on the part of administrators became apparent.
- We did not anticipate the opportunities that would arise for collaboration outside of our board.

Highlights of Key Findings
- We met our key goal of having 25% of our students using the LMS in some capacity in 2013, which represents a significant growth for our board.
- In the same way that we try to differentiate instruction to meet the needs of our students, we need to differentiate Professional Learning to meet the needs of our educators. By providing hands-on learning as well as opt in/opt out MOOC-style instruction, as well as ongoing support from colleagues and the eLC and DeLC, we can encourage more educators to be risk-takers and try to use technology in the classroom.
- We were able to redesign our model of providing e-learning courses to secondary students in a way that allows us to create an environment of sharing and learning.

Follow-up and Future Directions
- "Hands on Media" sessions in each region of the school board for 2013/2014.
- SGDSB participation in leading a Regional (northwestern Ontario) Hands on Media session at the NOEL conference in October 2013.
- SGDSB MOOC in 2013-2014 for SGDSB educators and all other interested educators, including our First Nation partner schools across the province.
- Enhanced use of blended learning to a) support students who are absent from school, b) improve instruction in split grade classes, and c) allow students from isolated areas to work with students in other schools (to increase student collaboration).

Superior North Catholic District School Board

Project Title	Blended Learning: Building Capacity in Our Educators
Brief Description	This project will build teacher capacity for the effective use of the Ministry of Education Blended Learning approach.
Context	Number of schools: 9 Number of teachers/classrooms: 22 Number of students: 180 Grades/Program: Students and Teachers in Grades 5-8 Native Language teachers and students.
Phase of Change and Impetus	*New*
Goals & Priorities	The goal of the project is to help teachers use technology in a more purposeful way.
Role of Technology	Blended learning is a combination of face-to-face and online instruction using the provincial Learning Management System (LMS). Since the LMS is an online learning environment, this project would not be possible if it were not for technology.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. There will be an increase in the number of blended learning teachers and students within the board. 2. The pilot participants will show a change in teaching practice to include a blended approach to learning. 3. There will be an increase in student engagement in the board's Brick by Brick project and Native Language courses.
Capacity Building in Teaching	A reason that blended learning was not progressing well in many classrooms was that teachers were using it simply because it was something new and exciting – it was not being used as a purposeful tool. Each teacher chose an individual inquiry (eg: If I use the Discussion tool, then the quality of classroom discussions will increase) and after the initial planning session, teachers were given time to act on their inquiry.
Leadership, Sustainability, Scalability	The most significant factor that impacted the project positively is the support from both principals and board administration.

Summary of Data Collection

Data was collected related to the stated success indicators.

• There will be an increase in the number of blended learning teachers and students within the board: The "Users" tool in the LMS allows tracking of the number of unique logins during a specific time period. This data showed an increased the number of blended learning teachers by three times what it was (from 9 teachers to 27 teachers) and it also increased the number of blended learning students by five times what it was (from 36 students to 186 students).

• The pilot participants will show a change in teaching practice to include a blended approach to learning.
To measure this success indicator, self-assessment and teacher feedback were used. Data demonstrated clear positive effects on teacher practice.

Highlights of Successes

One of the most exciting successes is that teachers are requesting to use the LMS to collaborate between schools. They saw how effective the board-wide Brick by Brick discussion forum is and they would like to do something similar for other purposes.

Highlights of Challenges and Unexpected Results

- The most significant challenge is the issues with technology in our board. Although our schools are well equipped with technology, the Internet in Northern Ontario can be quite slow. After discussions with our IT techs and the Director, the Internet bandwidth was increased.
- The other challenge in terms of technology is that our teachers do not have administrative rights on their teacher laptops or student computers. If the Adobe Flash Player requires an update, teachers are unable to do it themselves and the activity will not work. In an attempt to overcome this challenge, we now have one volunteer at each school that has access to the administrative login.
- After communicating with other e-learning contact teachers, it seems that there is interest in the Native Language blended learning courses that we are creating.
- The need for further study of digital citizenship became a common topic of conversation during the blended learning inquiry.
- The goal for this year was to create three Native Language blended learning courses to help increase student engagement. The success indicator for the 2012-2013 was originally the creation of the courses. This process was put on hold until the fall of 2013.

Highlights of Key Findings

- Implementing blended learning must occur in a focused manner and meets a specific student need.
- Blended learning training should be both ongoing and interactive. Many teachers stated that the reason that they weren't using the LMS prior to the pilot is that they forgot how to navigate through the system.
- If the technology is not easy to use or the infrastructure is not there to support the use of the technology, then teachers will abandon it.

Follow-up and Future Directions

- Introduce the LMS to the Primary and Kindergarten teachers in the school board.
- Continue working with the FSL teachers to support them in an inquiry process.

Thames Valley District School Board

Project Title	Signature Learning Experiences for the 21st Century Learner
Brief Description	Our team of learning technologies coordinators wishes to take professional development in a new direction. This project focuses on providing teachers with professional learning and hands-on experiences that will embed the use of a variety of technology tools, within the context of curriculum expectations, differentiation (voice and choice), and authentic challenges, to provide "signature learning experiences" for students in the 21st Century classroom. Engaging students, while meeting curriculum expectations, is at the heart of the project.
Context	Number of schools: 20 Number of teachers/classrooms: 40 Number of students: 1000 Grades/Program: Our project is targeted at multiple grade levels (Grade 1-12) and provides the potential for teachers to incorporate any subject areas.
Phase of Change and Impetus	*New* Pilot inquiry: "If teachers have a variety of authentic experiences with technology integration, as well as opportunities to receive collegial support, will it lead to teachers allowing greater choice in the use of learning technologies, thus increasing student engagement?"
Goals & Priorities	Our intended outcome is to determine a more effective board-wide model for delivering technology related PD.
Role of Technology	Various types of technology are being implemented in this project, including: netbooks, desktop computers, document cameras, iPads, and snowball microphones. Web 2.0 resources, iOS apps, Pixie, Frames, and Windows Movie Maker are some of the types of software which will be explored. The role of technology in our pilot project is ultimately to increase student engagement.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	*"Tell A Story" and "Show What You Know" Workshops:* 1. Teachers report increased knowledge of how to integrate technology into classroom learning. *Planning/ Teaching component:* 1. Teachers report value in having planning time and collegial support. *Student Project:* 1. Teachers observe increased student engagement in focus topic. 2. Teachers report that the use of technology had a positive impact on student learning.
Capacity Building in Teaching	The 40 teachers chosen for the project (20 schools, with 2 from each school) attended a series of focus sessions. Participants engaged in various activities including a professional reading activity about effective pedagogy and student-centered contexts for learning. Teachers dialogued with colleagues from other schools. Teacher partners were given time to dig deeper into the software and complete a sample project. They also had time to generate implementation ideas for their classrooms. There was ongoing support and opportunities to collaborate with their partner.

Project Title	Signature Learning Experiences for the 21st Century Learner
Leadership, Sustainability, Scalability	• The depth of learning for the teachers involved has led to sharing with other colleagues at their schools or at a board level. • Positive feedback has led to teachers outside of the project asking to be involved if the project were to continue into the future. • The Learning Technologies Coordinators incorporated the knowledge gained from the pilot project model in the delivery of future PD offerings. • Money for release time is the main barrier. Iterations of this project would require a level of funding which may be difficult to sustain.

Summary of Data Collection

Four surveys were created by project leaders and the TVDSB Research and Assessment team. Findings are tabulated and summarized in the report.

Highlights of Successes

• Approximately 81% of participants agreed or strongly agreed that the workshops increased their knowledge of how to integrate technology into classroom learning. In the post survey, 100% of respondents indicated that they felt more capable integrating technology in their classrooms.
• The planning time provided during the workshop to prepare for classroom integration, was valued by approximately 82% of the participants. As the project progressed, there was an increase in the number of participants who agreed or strongly agreed.
• The percentage of teachers who agreed or strongly agreed with the statement "my participation in the project has better helped me to understand how technology can be effectively used to increase student engagement" rose from 86.7% to 100% after the second workshop.
• After the second project, 100% of teachers agreed or strongly agreed that the projects students were completing increased their engagement in the focus topic and that technology in the classroom can have a positive impact on student learning.
• Teachers overwhelmingly agreed that in the future, they will allow individual and/or groups of students to select the most appropriate technology to complete assignments.

Highlights of Challenges and Unexpected Results

• Participants wanted to share knowledge of ideas from the project with staff members not involved in the project at a PD day midway through the project.
• Students asked to use the technology they were learning to use in the project to complete other assignments.
• Students began using technology at home and sharing back at school.
• Some of the elementary teachers showed interest in Elementary Carousels in D2L for blended learning.
• Network speed and wireless access proved to be challenging in some schools.
• Access to lab space and/or appropriate use of classroom space was a challenge when students were all working at once.
• Some teachers indicated that they had difficulty designing "authentic tasks" that were integrated with their curriculum expectations.
• Some teachers also indicated that they experienced a loss of subject/curriculum content due to the novelty of the technology. Time was needed for students to get beyond the 'play stage' to a point where the use of technology was secondary to the communication of knowledge and ideas.

Sample of Comments from Participants
"Students embrace technology, are highly engaged when using technology, and adapt to new technologies very quickly - then learn and teach each other and me!"
"Students drive the learning. Collaboration is powerful between teachers and student groupings. Using technology reduces off task behaviours."
"The importance of taking risks, of bouncing ideas off of peers, and knowing that we don't have to be experts in order to present something new in the area of technology."

Highlights of Key Findings
- When teachers have multiple opportunities to experiment and create projects using new technologies in a safe and supportive environment, they are more likely to see the value of the technology, as well as feel more capable of integrating technology in their own classrooms.
- When teachers have the opportunity to explore a range of different types of technologies available for education, and they experience the impact in engagement for themselves, they are more likely to allow students to select the most appropriate technology to complete assignments in the future.
- As the project progressed, the data suggests that participants gained confidence with the use of technology, as shown by fewer reported barriers.
- Participants indicated that the project brought greater awareness of the different types of technology available.
- Participants confirmed that learning takes place over time, and requires repeated opportunities to meet and share.

Follow-up and Future Directions
- Continue to offer workshops in a way that allows participants to 'dig deeper', through hands-on experiences and several opportunities to meet/collaborate.
- Encourage participants at future workshops to attend with a partner from their school to ensure there is school-based support available.
- Over the next year, continue to build on the relationships formed with participants from the current CODE project, via sharing ideas/materials through a First Class Conference site.

Thunder Bay Catholic District School Board

Project Title	Educating for the Future - Preparing for the World
Brief Description	Through the use of Web 2.0 collaborative and knowledge-building tools, teachers will investigate exemplary mathematics resources to support their work and grow as professionals.
Context	Number of schools: all schools in board Number of teachers/classrooms: Number of students: 1125 Grades/Program: Cross-panel Math Team consisting of Secondary Math Chairpersons and Math teachers, also elementary Math Resource Teachers and program staff.
Phase of Change and Impetus	*Continuation* A theory of action was developed: if teachers incorporated the use of technology, then student understanding of proportional reasoning concepts would improve.
Goals & Priorities	The project would see a fully integrated, collaborative community of learners focusing on the instructional core and supporting 21st Century learning outcomes.
Role of Technology	Types of technology: laptops, mobile devices, software (e.g. Geometers Sketchpad), apps, Web 2.0 (e.g. Linoit, Twitter, Voicethread), LMS (D2L), and resources (Edugains, National Library of Virtual Manipulatives). Technology is being used to provide a new pedagogical stance, where learning is negotiated between student, teacher, and digital resources.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	Project outcomes will include: increased student engagement; enhanced instructional practices including differentiation, increased student achievement, EQAO Mathematics Assessment – grade 9, increased attendance (grade 9 Mathematics).
Capacity Building in Teaching	Before each co-teaching session, the group met to plan rich problems and anticipate student responses. We developed a common language and understanding of 21st Century learning. Then we developed an understanding of the continuum of understanding of proportional reasoning skills.
Leadership, Sustainability, Scalability	The board strategic plans indicate a greater emphasis on learning with technology at the secondary level through a scheduled technology infusion and related professional capacity building. Alignment is very strong.

Summary of Data Collection

The team reviewed EQAO results from grade 6 & 9 from the past 3 years to determine trends. Analysis indicated a need to inquire into the student understanding and the processes used to teach proportional reasoning. Questions were administered in every classroom before co-teaching sessions. No specific tabulated data was included.

Highlights of Successes

- Problem construct could improve to ensure clarity, authenticity, and cross curricular approaches.
- Expectations could be put in place so that students would document their thinking, work collaboratively and reflect on their work to ensure the reasonableness of their answers.
- Problem solving approach provided many entry points for students with different needs.

Highlights of Challenges and Unexpected Results
- Student misconceptions around proportional reasoning persist from junior grades into secondary.
- The timelines associated with this project were a challenge.
- This mathematics project truly encompassed 21st Century learning. The cross panel team developed a new pedagogical stance – learning could be negotiated between student, teacher, and digital resources.
- Our research into technological resources led us to one program we are interested in exploring further.

Highlights of Key Findings
- Technology can be used in mathematics during the 'consolidation' part of the lesson to impact on student learning.
- Teachers collaborating across grade panels leads to greater understanding of the curriculum, developmental continuum of mathematical concepts, and to pedagogical shifts.
- When students are given a problem that is challenging/interesting, they demonstrate increased perseverance through the task.

Follow-up and Future Directions
- To continue to go deeper with curriculum focus areas of proportional reasoning and algebraic thinking.
- To allow for continued opportunities for cross-panel collaboration.

Toronto District School Board

Project Title	Developing a Model of e-Learning (blended) and Innovative Pedagogy: Teachers as Designers of Problem-based Learning with Technology
Brief Description	The scope of the project is three fold: • To develop a blended learning environment that consists of synchronous, asynchronous, and job-embedded learning as the architecture within which educators learn together as professional learning communities engaged in one of three areas of inquiry. • To gain pedagogical understanding of how technology changes teaching practice when educators use technology as tools to connect students' inside and outside school learning as part of challenging and compelling problem-based learning. • To understand how technology can be strategically used as a key lever in scaling improvement (in collaboration with *TakingItGlobal* as an external). Of note is the question whether there are differences between elementary and secondary practices when connecting technology to instructional strategies and pedagogy.
Context	Number of schools: 18 Number of teachers/classrooms: 60 Number of students: 1500 Grades/Program: both elementary and secondary schools
Phase of Change and Impetus	*New* What is unique about this project is while educators are engaged as a professional learning community in designing rich problem-based learning for students where technology is key to increasing student engagement, they are also at the same time learning to use technology as tools for learning, thinking, and working among themselves.
Goals & Priorities	Participating educators will choose one of three areas of inquiry that current thinking in education and pedagogy considers as essential for learning and teaching in a global context. • Global Education: The goal is to develop understanding of and competencies in technology-enabled global education. • Environmental Stewardship: This area of study will provide educators with ideas and concepts for bringing principles of environmental literacy into the classroom. • Student Voice: This area of study provides participants practical support to transform teacher and student learning partnerships both inside and outside of the classroom.
Role of Technology	Technology is essential because the purpose of this project is to: • Build professional capital of teachers in innovative pedagogy that supports learning in a digital age and how to globalize the curriculum. • Explore what are the key elements and effective practices in developing a model of blended learning for teachers, how to build the architecture of such a model for a large urban Board like TDSB, and what conditions are necessary to support this form of teachers learning that is practice-oriented and practitioner-driven.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies

Project Title	Developing a Model of e-Learning (blended) and Innovative Pedagogy: Teachers as Designers of Problem-based Learning with Technology
Indicators of Success	1. Mixed research methods, which include both qualitative and quantitative research, have been employed in assessing the effectiveness of this teacher professional learning. 2. Perception data from participating teachers will be collected twice (at the beginning and the end of the teacher professional learning) in various formats such as pre- and post- surveys and focus-group discussions. 3. The effectiveness of this teacher professional learning will be assessed by measuring teachers' changes in attitudes/beliefs, gains of new knowledge and skills, changes in teaching practice, changes in organizational supporting structure, and improved student academic achievement and school engagement.
Capacity Building in Teaching	The initiative is grounded in the belief that learning is the work. It is also built on the premise that teachers' learning is proxy to students' learning (Katz). As such what is unique and innovative about this project is while educators are engaged as a professional learning community in designing rich problem-based learning for students where technology is key to increasing student engagement, they are also at the same time learning to use technology as tools for learning, thinking, and working among themselves.
Leadership, Sustainability, Scalability	• Principals participated alongside the teacher learners – increased understanding on behalf of the principals to support teacher needs. • Teaching and learning staff participated alongside the teacher learners – each school had an identified teaching and learning staff contact. • Release time provided during the day to participate in blended learning. • Release time provided for teachers to collaborate at their schools to complete course work.

Summary of Data Collection

The study employed pre- and post- teacher questionnaires to evaluate the effectiveness of the professional learning in the areas of teacher knowledge/skills, teaching practice, attitudes/beliefs, as well as organizational supporting structures.

A comprehensive document, ***The Effectiveness of the Toronto District School Board's Teacher Professional Learning in the 2012-2013 Blended Professional Learning Community*** provides specifics of data collection and details the process and the findings.

Highlights of Challenges and Unexpected Results

• Initial concerns were brought forward from teachers regarding the delivery model and the amount of time spent online with the course director during learning sessions relative to face-to-face time. In response to these concerns the balance between online and face-to-face time was modified to provide for more of the latter.

• We braided the Family of Schools Innovations Fair with showcasing the work of designing and implementing a problem-based learning task with respect to the three foci. An unintended impact was this initiative added value as a lever of change to the Family of Schools' mobile computer strategy which was concurrently piloting an introduction of a significant number of laptops that were provided to the schools. A key impact of the 21st Century blended professional learning initiative was a significant growth in teachers and administrators capacity as explained in the TDSB Research Report.

- To change pedagogy, a well designed professional learning model has far greater impact than simply providing more time to learn.
- Teachers' commitment to learning can outweigh potential challenges as illustrated by this initiative which was effectively implemented during a time of labour actions.
- The organization unit of change is a key factor: It was intentional that the unit of change was a Family of Schools. The FOS structure was best for leveraging district change supported by district resources and people.

Highlights of Key Findings
- The study found that the vast majority of participants had "expert" or "competent" levels for generic knowledge and skills for generic classroom teaching but not for inquiry-based teaching and learning before the initiative. After the professional learning, the proportion of participants considered themselves as having "expert" or "competent" knowledge/skills for inquiry-based teaching and learning increased significantly.
- Teachers and administrators who did not participate in one particular focus area of inquiry also showed moderate gains in their knowledge/skills in the subject area which they did not participate, possibly due to the collaboration and sharing among participants and the presence of online learning environment.
- When comparing their perceptions before and after the professional learning, the most positive change occurred at teacher collaboration within the same school and with their colleagues from other schools.

Follow-up and Future Directions
- Learn how to sustain for another year.
- Shift and spread innovation and learning with another FOS(s).

Toronto Catholic District School Board

Project Title	The NeXt Teacher Project
Brief Description	The intention of the program is to challenge teachers to reflect on and refine their classroom practice to more fully embrace the 21st Century skills needed by our students. This will positively impact student achievement and engagement as they see their classrooms as relevant learning environments that will serve them well in the future.
Context	Number of schools: 118 Number of teachers/classrooms: all Number of students: all Grades/Program: all grades and programs
Phase of Change and Impetus	*New*
Goals & Priorities	The world in which our current students are growing up is highly reliant on appropriate skills in the use of technology. Digital Natives are not necessarily Digital Learners.
Role of Technology	Use of ICT for Learning is one of the competencies through which we explain the importance of the integration of technology into the classroom (in a meaningful way).
Areas of Impact	• Student engagement and achievement • Innovative instructional strategies • Digital citizenship
Indicators of Success	1. Change in teacher practices over the course of the activities.
Capacity Building in Teaching	We asked 8 teachers to submit a learning activity prior to training. After participation, teachers were asked to self-reflect on their learning activity. We have asked them to resubmit the same learning activity with modifications to show movement along the continuum. 100 more teachers will be asked to engage in a similar process.
Leadership, Sustainability, Scalability	• CODE funding enabled us to begin our work. Partnering with Student Success enabled us to enlarge the scope of our workshops to impact additional teachers. • We may not be able to fund such large scale roll outs next year given current financial reality. The response had been far greater than we imagined.

Summary of Data Collection

Data was collected from surveys and teacher reflections.

Highlights of Successes

We have been receiving very positive feedback that this is helping teachers to understand HOW to change their practice with regard to 21st Century learning. The feeling was that they understood why but had never been presented with a practical method for self-reflecting on their current work to move it further along the spectrum.

Highlights of Challenges and Unexpected Results
- Unexpected result: the 100 teachers to participate on April 24th will be chosen by a lottery in which all teachers were able to enter their name – we have had far more interest in the spots than we had anticipated.
- Unexpected opportunity: Partnered with Student Success to deliver these materials to Departments Heads from every Secondary School. In addition the conversation on the alignment of PD delivery models with central resource staff has led to a revised Student Success Learning Network model for next year. Finally, our focus on the NeXt Lesson and 21st Century Learning led to the development of our 5 year 21st Century Learning Plan.

Highlights of Key Findings
- Teachers understood **WHY** 21st Century learning, but did not know **HOW** to do this.
- Our workshop addresses ways in which teachers address the HOW without starting over, they can start with work they have already done and build on it using this model.
- There is more demand and interest in changing teacher practice to include 21st Century Learning Design.
- Teachers are looking for practical opportunities to engage in 21st Century Lesson Design and to collaborate with colleagues to expand this learning.

Additional Statements Related to Areas of Impact
Although teachers are surprised to learn that there are aspects to 21st Century learning that do not require technology, technology is an enabler that can bring the other 5 competencies to a whole different level. Teachers have expressed the concern that there is not enough access to technology in their schools and that the integration of technology is the area that causes the most concern. Many teachers feel they need far more support in learning to integrate technology in a more meaningful way. Most teachers expressed the concern that they would be more willing to try to integrate technology more often if: 1) they had more access to technology 2) they were able to receive more training so that they would feel more comfortable.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- We are currently working on developing electronic resources and professional learning workshops that deal specifically with each of the 6 competencies outlined in the NeXt Lesson. The hope is that in addition to the 21st Century Learning and AICT Team delivering these workshops, they will serve as resource for other curriculum departments in the board as they reshape their professional delivery models to better reflect the principles of 21st Century learning.

The project had implications for Board planning.
- This project was also instrumental in shaping our 5 year 21st Century Learning Plan. The plan was approved by the Trustees in May, and will serve as a guide for curriculum based PD.

Trillium Lakelands District School Board

Project Title	Innovation and Inquiry Projects Using Technology
Brief Description	This project has been established to support innovation and inquiry in the use of technology in K-12 classrooms. Teachers will be invited to submit applications for financial support to further their innovative teaching practice and inquiry projects. We offered up $100,000 for teachers to apply for Innovation and Inquiry Projects using Technology. The maximum amount any teacher could be awarded was $10,000.
Context	Number of schools: 19 Number of teachers/classrooms: 23 Number of students: 900 Grades/Program: K - 12 classrooms
Phase of Change and Impetus	*New* We have a successful "Earn a Laptop" Program and a successful "Inspired Learning" Program to build on. In our application process we asked the following questions: • Identify the target group of your pilot project. (e.g. specific grades, courses, group of students based on identified need, etc.) • What inquiry question will you be addressing through this project? • Describe the technology needed for this project. • Describe how the technology will be used in this project. • Proposed Budget • Indicators of Success: What will you be tracking to determine the success of your project? We also want to use a template similar to the 21st Century Pilots to gather the findings of the teachers in our district with respect to their projects. We awarded 23 projects to teachers in the district.
Goals & Priorities	Encourage both Innovation and Inquiry in our district.
Role of Technology	Each of the 23 projects specifically describes the applicable role of technology.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	Each of the 23 projects specifically describes the success indicators.
Capacity Building in Teaching	The project builds capacity by promoting and supporting initiative and innovation on the part of teachers. Teachers must supply evidence of meeting the criteria and requirements of the projects, but are encouraged to explore, shape, and utilize technology in ways that are instructionally sound and meet local needs.
Leadership, Sustainability, Scalability	No specific statements were identified in the report.

Summary of Data Collection

All projects submitted data relevant to their project. For a system overview, pre- and post- teacher survey results were collected and analyzed in the report.

Highlights of Successes

A list of some of the titles of the 23 inquiry projects:

- Applying Technology: Increasing Communication Skills and Engagement for Exceptional Students
- Early Reading Intervention Groups – iPads
- Moving from Compliance to Self-Regulation in the 21st Century
- Realtime Digital Science
- iPods in the Junior Classroom
- Innovation and Inquiry using Technology in FDK
- Kinect In The Classroom
- I H.E.L.P.
- Collaborative Multi-School Math Project
- How Can Technology be used Effectively to Consolidate Learning in Math?
- Student Teacher Language Conferencing with iPads

Included in the report is an analysis of student engagement, level of communication, level of collaboration, and level of critical thinking based on a comparison of teacher's perceptions before the projects began and at the end of the projects. The survey shows that the teachers believe that there was significant positive shift in all four areas of engagement, communication, collaboration, and critical thinking as a result of their teacher-led project involvement.

Highlights of Challenges and Unexpected Results

Each of the 23 projects individually reported their challenges, successes, and findings. Each individual projects submitted a very carefully detailed analysis of their project, which were included in the overall report.

Sample of Comments from Participants

The following are sample statements made by teachers who were involved in the inquiry projects.

"In terms of shifting instructional practice, the iPads helped position the learning to a more 'inquiry based model.' There was a significant amount of co-learning that occurred. As such, the development of task success criteria was completely fluid and evolving as students learned better tools (apps) and strategies to help them with their task."

"The concept of 'student engagement' as I am referring to it within this project, moves beyond student 'interest' or 'excitement' with the iPad medium to a student's 'engagement in learning.' As the project evolved, I uncovered increasingly better monitoring strategies that would help me determine what I hoped was evidence of 'engaged learners.'"

"When I began to notice that in certain units technology was not as applicable, I began to look for ways to incorporate the laptops. I found that, as good as they are sometimes; there is a time and a place for technology. Pushing it when it is not applicable can have negative results. For example, when teaching graphing, there are many good graphing programs to use. Even a basic familiarization with excel and word to create graphs was a valuable experience. When teaching 3D shapes, there is so much opportunity for hands on, I found myself pushing computers into an area of learning where hands-on learning in the classroom may have been more valuable."

"In a nutshell, the iPads changed the very nature of the classroom. The challenge is to recognize how it happened and then to articulate what we learned in a way that is replicable. (Spread and sustainability). The challenge, as an inquiry project was accepting that it simply isn't sufficient to be able to just say "Wow, I can see, hear and feel the difference in this classroom!" I needed to be able to link the iPad use to improved student achievement."

"The power of learning 'with' and 'on behalf of' instead of simply learning 'from' the teacher."

"In order to have success with this technology in the classroom I needed to spend some personal time learning how to use this technology. It was eye-opening to see that my limited knowledge did not hold students back, rather they embraced the challenge of working with new technology, working as a team with others in the class to accomplish a goal. They became risk-takers attempting to figure things out and share their findings with others. Some of the best learning was when I presented students with a new program and let them figure it out. It was then that I saw some of my weaker students shine as they became leaders because they were one of the first to figure out how to do a task. They became the teachers circulating around to show their knowledge to others."

"While I had spent time exploring all of the apps and learning how to use them, designing activities that tied into the app, I was amazed at how much I kept learning when the students would perform the activity. I felt like we were all teaching each other at certain points such that they would share how to take a screenshot or how to change perspective, axes labels, scales, etc. on apps while I would be sharing how to get started on the app."

"Having access to this technology and learning how to use it in the classroom was a challenge that we as a classroom community succeeded with. Being able to use technology to meet individual student's needs, capture attention and help students develop a deeper understanding of concepts through the use of technology is motivating for our students. Watching students manipulate the technology, and work through struggles and problems makes them better thinkers and enables them to develop the confidence to be able to work all types of technology in a variety of different situations."

"For many students in the Coaching Program, there is a general sense that they are 'different', 'the bad kids' and that they exist somehow outside of the school culture. … The iPads have helped my students learn to be proud of who they are, helped them feel proud that they are working to better themselves and through each daily are helping my students feel hopeful for the future and their return to their home classrooms."

"Students wanted to use the iPods to record their science learning on the property across the road from the school. In particular, students felt they could benefit from having their iPods with them to take notes, pictures and videos about our maple syrup production. Their theory was that we would eventually be using our iPods to create our culminating tasks and it would simplify the process if they already had the relevant information in their iPods so that they could refer to when necessary."

"We are constantly learning how to use the technology more efficiently and effectively, there are an unlimited number of ways both students and teachers can use this powerful tool to create and support a rich learning atmosphere."

Follow-up and Future Directions
- We intend to continue following this type of model of having teachers apply to run "Inquiry and Innovation Projects Using Technology" in their classrooms.
- One of the changes we intend to make for next year is that we intend to have projects grouped in "pods of inquiry". This way we can connect teachers with similar interests earlier in the projects and we believe that the level of professional collaboration, dialogue, and sharing will benefit all teachers and students involved in the projects.
- We also learned a great deal when projects were not successful. We intend to share this knowledge with the system as well so that the important knowledge gained from these experiences is also beneficial to the system.
- We also intend to reach out to universities in our geographic area to look for a research partner for the following year.

Upper Canada District School Board

Project Title	Sound Assessment in the Blended Learning Environment: A Collaborative Inquiry
Brief Description	This project is designed to couple collaborative inquiry with the blended learning model such that teachers can collaborate to improve assessment practices in the blended learning context. Particular focus would be on aligning assessment practices with the Growing Success document and on discovering innovative assessment practices for use in blended learning environments.
Context	Number of schools: 6 Number of teachers: 16 Number of students: 140 Grades/Program: The project targets 13 secondary teachers from a variety of subject areas as well as 3 elementary teachers in the lower primary grades (Grades 3 and 4).
Phase of Change and Impetus	*New* Identified concern that poorly executed uses of technology in the classroom stand in the way of effective pedagogy.
Goals & Priorities	The goal is to direct the use of technology in the classroom through the lens of sound assessment practice.
Role of Technology	The foundation of our blended learning units will be built upon the use of the LMS as a classroom hub and repository of course tools. Teachers will plan with the LMS in mind and will aim to make use of this technology where and when it meets their pedagogical needs.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments
Indicators of Success	1. Participants think critically of blended learning and technology. 2. Participants see the LMS as a tool to enable more student centered practices. 3. Participants plan to use the LMS in their classroom in the future. 4. Participants believe that they can use blended learning to improve their teaching.
Capacity Building in Teaching	Participants expressed a concern that they were not comfortable enough with the LMS or with the look and feel of blended learning, to plan effectively. It was agreed that the Pilot Study's would shift objectives to recognize their needs.
Leadership, Sustainability, Scalability	Board administrators and school based teachers were able to prototype blended learning in a controlled and supported environment. The resultant organizational learning will be carried forward as we look to promote blended learning in a more scalable fashion. The physical learning environments in our schools today and the bell-driven culture of learning are major barriers to the sustainability of pedagogically sound uses of technology.

Summary of Data Collection

Data was collected anecdotally and using surveys. Tabulated survey results were included with the report.

Highlights of Successes

The main success of the project was that participants were given time and resources to reflect critically on how blended learning can be integrated effectively into their own teaching practices.

- 100% of participants felt that blended learning has the potential to increase student engagement.
- 77% of participants said they would employ blended learning in their classroom in the coming year.
- The group averaged 3.5 on a scale of 5 (a movement of 71%) when asked to indicate the "shift" in thinking over the course of the study, in relation to the use of technology in the classroom.
- The group averaged 3.7 on a scale of 5 (a movement of 75%) when asked to indicate the degree to which the study helped them to think critically about pedagogy in a blended learning classroom.

Highlights of Challenges and Unexpected Results

- Given that participation in the study was voluntary, it was somewhat of a surprise that teachers largely held the attitude that technology was most easily used in support of <u>teacher </u>centered pedagogy. Teachers tended to see the LMS simply as a means of deploying drill or as a repository for class notes etc. The idea of technology as enabling differentiation of instruction and student choice was met with resistance, both theoretical and practical.
- Wireless connectivity, low bandwidth and absence of single sign-on were obstacles to seamless and intuitive movement between instructional styles. The time lost trouble shooting these factors discouraged natural integration of technology into everyday learning.
- Teachers debated whether students could learn when given choice, whether teachers could manage the execution of multiple pathways to a learning objective, and whether students could motivate themselves outside of a lecture format. It was clear that in the early part of the study teachers believed they were making a choice between either sides of a sharp dichotomy. To use an example; *"if you gave students choice they would never learn their multiplication tables"*, and on the other side teachers felt students today *"aren't going to listen to a teacher's lecture or do assigned readings"*. It seemed difficult for some participants to envision some middle ground between the two extremes, where choice didn't imply the absence of structure and the end of skills instruction.
- It was unexpected that teachers would struggle with the planning of blended learning units. In retrospect, it appears the participants needed the duration of the study to bring themselves to a level where they could envision where and how technology could be woven into their own teaching.

Highlights of Key Findings

- The relationship between blended learning and 21st Century learning (student centered learning) is not implicitly understood nor is a common understanding of it shared between educators.
- Given exposure to and training with the LMS, teachers become excited about using it.
- Once teachers gain some mastery over LMS, they believe they can increase student engagement.
- Teachers fear that the adoption of student centered learning (in the blended learning context) will lead to further erosion of fundamental skills in our student populations.

Follow-up and Future Directions

- Use our learning to promote/support blended learning as we go to scale in the UCDSB.
- Continue our efforts to make technology integration as ubiquitous and seamless as possible by looking addressing not only technical, but cultural barriers.

Waterloo Catholic District School Board

Project Title	Teacher Development Through the Use of Interactive Whiteboard Technology
Brief Description	The focus of this project is based within the innovative teaching practice, and this project will support working with teachers using release time to refine their teaching practice to integrate 21st Century fluencies and skills within their everyday teaching using both interactive projectors and software.
Context	Number of schools: 46 Number of teachers/classrooms: 170 Number of students: 4400 Grades/Program: The target group of the pilot project activities includes teachers ranging from kindergarten to grade 8.
Phase of Change and Impetus	*Continuation* Yes, this is a continuation of our project from round one of this initiative. As a board, we have invested heavily in interactive whiteboard technology, and part of that process is educating teachers on innovative practice with the technology.
Goals & Priorities	Grow effective use of whiteboard technology in the board.
Role of Technology	Interactive whiteboard technology and RM *Easiteach* software both play an integral role in this project.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. The measurable outcomes will be based upon teachers' collection of observational records and artifacts (video, sample work) that demonstrate students using 21st Century skills to learn and solve problems. 2. The other measurable outcome will be through teacher reflection and observation on the changes to their instructional practice and the impact it has on both student engagement and achievement.
Capacity Building in Teaching	Teachers were guided through a professional learning session. After discussing the pedagogy and best practice around interactive learning, participants were shown some actual examples of what these ideas look like and how they can be applied in classroom delivery. Teachers were then provided with time to apply their own creativity and skills to the development of an individual lesson/unit.
Leadership, Sustainability, Scalability	Sustainability is only possible with funding. In reading the feedback regarding the sessions, teachers identified the importance to continue on with learning sessions so that they can continue to grow and develop their understanding of 21st Century learning and how it applies in their classroom.

Summary of Data Collection

Data was collected through anecdotal evidence and survey responses. Complete tabulated survey results were included with the report.

Highlights of Successes

- 177 participants took part in the sessions, impacting approximately 4400 students within the board.
- The ShareNet site has more than doubled in size since its inception in the 2011-2012 school year.
- Teachers identified a positive impact with regards to student achievement, engagement, and success when using interactive styles of learning.

Highlights of Challenges and Unexpected Results
- One of the challenges was the amount of time required for a professional learning. As a result of the ½ day session feedback, we increased the length of the session to the full day format.
- The other challenge that continues to present itself is rooted in the differing abilities of teachers regarding their familiarity with technology and applying new pedagogy.

Sample of Comments from Participants
"It definitely has helped students make connections to what they are learning. Given the fact that most of my students are visual and kinesthetic learners, they have become much more engaged in lessons."
"They love it and participate more, they want to … answer questions on the interactive resources (e-learning Ontario) and they understand some math concepts more fully after seeing them visually."

Highlights of Key Findings
The evidence overwhelmingly supports that our project has both changed practice and promoted student achievement. The supporting points below are rooted in the evidence from our data collection.
- Teacher use of RM Easiteach increased greatly. In the initial survey, 44% of teachers identified never using RM Easiteach. After the session, that was reduced to 7.9%.
- 58% of teachers identified that having access to an interactive projector has been "Very Helpful", resulting in an average score of 4.27.
- When focusing on student achievement, approximately 70% of teachers have identified a significant impact on student achievement and engagement when delivering interactive lessons to students.
- Approximately 80% of teachers identified a great impact on student achievement after delivering the lesson/unit that they created during the session.

Follow-up and Future Directions
- Continue with our development of teacher capacity around interactive learning, 21st Century fluency development and how it relates to student engagement and achievement.

Waterloo Region District School Board

Project Title	Futures Forum Project
Brief Description	The Futures Forum Project combines the English, Careers, and Civics curriculum into an integrated course delivered by each participating teacher to a cohort that remains together for two time-tabled periods. The cross curricular approach allows for inquiry/project based learning using the technological tools available to permit students to collaborate and communicate beyond the walls of the classroom, create for authentic audiences, and critically reflect upon issues they choose to bring to their peers for discussion. The project examines the level of engagement, achievement, and sense of efficacy to determine if it can be sustained or improved to higher levels when choice and ownership are provided to the students within the Futures Forum Project.
Context	Number of schools: 15 Secondary Schools Number of teachers/classrooms: 24 Number of students: 530 Grades/Program: Grade 10 Applied and Academic English.
Phase of Change and Impetus	*Continuation* The current Futures Forum Project (FFP) is a continuation from Round 1; however, it has grown in scope and precision. The project is more precise with the vision of a student more clearly defined; we expect our FFP students to be collaborative communicators, creative/ critical thinkers, contributing citizens, and have positive character. The data collection tool continues to be refined to more accurately measure students' acquisition of these 21st Century skills as a result of their involvement in the project. Prior to initiating the FFP, student success rates in the grade 10 Civics, Careers, and English courses were low. In addition there was perceptual evidence from administrators that there was low teacher efficacy.
Goals & Priorities	Our goal is to improve student engagement, sense of efficacy, and achievement within the Futures Forum Project (FFP) which integrates grade 10 English, Careers, and Civics using an instructional approach that utilizes inquiry based, personalized (differentiated) instruction supported through the use of technology.
Role of Technology	To model and gradually release students to become independent learners, the Futures Forum Project provides students with the technology and opportunities to collaborate and communicate with the world outside of the traditional definition of the classroom using some common assessments to demonstrate for the students the unlimited capability of digital technology.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. The success indicators include achievement in Civics, Careers, and English (2DI/2PI) courses. This includes a comparison between students in the project to those not in the project. For the students in FFP, we are examining potential changes in their work habits and learning skills on the provincial report card. 2. The Ontario Comprehension Assessment (OCA) is administered at the start and near the end of the project to measure improvement in their reading comprehension skills. Teachers are also developing a common assessment focused on the writing strand. 3. Data is being collected on teacher attitudes, behaviours, and perceptions.

Project Title	Futures Forum Project
Capacity Building in Teaching	In some schools the FFP teachers felt isolated since they were doing something different from the other department members. To ensure the FFP teachers were supported in their work the board offered monthly professional learning sessions which served to invigorate the teachers in their pursuit of innovation.
Leadership, Sustainability, Scalability	• There is one significant factor that may have a negative impact on the scalability. Schools have stated that growing the FFP is challenging due to the integration of three courses (English, Careers, and Civics) under the instructional leadership of one teacher over two adjacent teaching blocks. The challenge is timetabling two back-to-back periods for one teacher in smaller secondary. We are examining non-adjacent timetabling for the two FFP periods of instruction and/or seeking other combinations of courses to be integrated. • A key factor to the sustainability of FFP has been its implementation model. It wasn't a project for one school, requiring a great deal of resources; instead it was implemented across the system and supported with one device for every three students. FFP has been financially manageable and scalable.

Summary of Data Collection

To determine the initiative impact data was triangulated through products, observations, and conversation with those directly impacted (e.g., students, teachers, administrators, and central staff):

- Quantitative data was collected centrally (pass rates, Learning Skills and Work Habits evaluations, attendance, and lates information).
- Data from the Ontario Comprehension Assessment (OCA), from Pearson, was compiled to measure improvement in student reading.
- An online survey was used to gather data from students with regards to engagement, efficacy, and acquisition of learning skills.

Highlights of Successes

- The most identifiable success of the FFP was increased student engagement. Students expressed an increased interest in school (i.e., "I like this better than grade 9 English" or "I never skip this class"). Teachers stated that the students' attendance was far better for FFP than it was for their other classes. Some students expressed trepidation about not having a class like FFP next year.
- The source of the engagement resulted from having student voice and choice (e.g., differentiated instruction, choice of inquiry). For example, students were provided with opportunities for collaborating using social media (i.e., online discussions with other students about a book they were reading), and writing for authentic audience (e.g., writing blogs and publishing online).
- Innovative teaching practices teachers developed. For example, some teachers used gaming to teach Civics, and other teachers used collaboration with other classes to teach research and presentation skills (i.e., Political Philosopher project – a co-project between two schools).
- A key success was improved collaboration. Collaboration between and among students, teachers, and central staff expanded and improved.

Highlights of Challenges and Unexpected Results

- One challenge was with the use of technology (i.e., not enough school provided devices, difficulty connecting to the wireless Internet, blocked sites). The Board and teachers worked together to overcome many hurdles. More wireless drops were added to some schools with connection problems. Students were permitted to bring their own devices to class (BYOD).

- An unexpected opportunity arose when the Board planned a system wide Digital Learning Symposium. The FFP teachers and students provided significant leadership in facilitating the session with over 500 participants. Students articulated to the entire room the alignment between the Board Improvement Plan for Student Achievement and the outcomes of the FFP.
- The work sanctions during the school year resulted in teachers missing three professional learning sessions during the year.

Highlights of Key Findings

The FFP has demonstrated that providing student voice and choice, integration of subjects, and the use of technology to facilitate innovative instructional practices foster conditions in which teachers alter their instructional practice and are able to focus on the skills of collaboration, communication, critical thinking, creativity, positive character development, and contributing citizenship, to engage students.

Follow-up and Future Directions

- Use the learning from FFP (innovative instructional practices, student choice and voice, focus on student inquiry, learning supported by technology) and expand it into other subjects.
- FFP has grown from 7 classes of grade 10 academic English sections to 25 classes of academic and applied English sections. We now hope to apply this to other subject areas.

Wellington Catholic District School Board

Project Title	Bridging the Gap for Students with Learning Disabilities
Brief Description	The project allows us to support the consistent and effective use of assistive technology throughout our District. We learned from our 2011 -2012 project that teacher understanding of both how to use the software and what specific learning needs could be addressed by technology, as well as the opportunity to experience the successes of students who effectively used technology was essential in creating momentum for it to be used more consistently.
Context	Number of schools: 5 Number of teachers: 24 Number of students: 425 Grades/Program: The target group of the project includes grades 6, 7 and 8 students with SEA equipment. It includes 2 students with Autism, 1 with a physical disability and 26 students identified with a learning disability.
Phase of Change and Impetus	*Continuation* This is continuation of last year's project. The project remains directed at the LD population at the elementary level, however; it involves new schools and now involves the role of the Assistive Technology Coach who leads the project within the target classrooms.
Goals & Priorities	The goal of this project is to increase the effective use of assistive technology across the District.
Role of Technology	The focus of the project is text to speech, speech to text, word prediction, and graphic organization software available to all students but specifically targeted to students with special education needs.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices • Learning environments • Digital citizenship/literacies • Teacher capacity building and engagement
Indicators of Success	Success Indicators include: 1. Frequency of use of SEA technology. 2. Student and teacher confidence level using the assistive software. 3. Student achievement in writing, reading, math, and science. 4. Teacher understanding of learning disabilities and how technology can be a tool of access.
Capacity Building in Teaching	Teachers received specific training on software and web-based tools, the opportunity to work with the Board Psychologist to develop the understanding of the profile of a student with learning disabilities, and the opportunity to work with the Assistive Technology Coach to plan group lessons using technology.
Leadership, Sustainability, Scalability	The factors that impacted negatively on the sustainability of the project is the ambiguity about the continuation of funding, the lack of bandwidth to support widespread use of wireless, and age of the technology in our system.

Summary of Data Collection

Data was collected using student and teacher surveys, report card data, classroom assessment data, and teacher observations.

Highlights of Successes
- Increased usage and, particularly, student initiated usage of assistive technology.
- Teachers developed a better understanding of the purpose of the SEA laptops, their accompanying software, and how they connect to a Learning Disabilities profile.
- Students have developed a better understanding of how their laptop can help them and how to advocate for themselves.
- Students have shown leadership demonstrating how to use the programs to their peers.
- Students have noticed they are finishing their school work more effectively and efficiently.

Highlights of Challenges and Unexpected Results
- The biggest challenge was the short time period in which to execute the project and the late start to the project. Teachers were already involved in many professional development opportunities making the arrangement of dates problematic.
- One unexpected opportunity was the cooperation between the AT Coach and the Math Coach. Because they were both working in the same class, the two coaches worked together with the classroom teacher to incorporate assistive technology into the math unit the class was studying.
- The opportunity that proved successful was to have the teachers involved in this year's project visit the classrooms of teachers involved in the project last year.

Highlights of Key Findings
- Frequency of computer usage increased – 35% using it daily, 19% using it more than once daily and 12% using their computers too often to tabulate. Pre-project, the data showed 42% using their computer daily, 17% using it more than once daily and only 8% using it more than able to tabulate.
- When comparing the data from March to June between the 4 major software, the data is showing their preferences for software are more balanced.
- In Mathematics – 60% of students' grades increased or remained the same.
- In Language Arts – 64% of students' grades increased or remained the same.
- Provision of teacher training and comfort with software and computers is a key element for student support in the classroom. Continued training is vital for sustainability of student usage of technology.
- Teachers must have a sound understanding of their student's Learning Disability in order to understand and efficiently support the use of technology in their classroom.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Continuation of the AT Coach pending funding (possibly using SEA funds).
- Continuing to build on our Model Classroom Visits.
- Investigation of student mentorships among or within schools.

The project had implications for Board planning.
- Involvement of Program Department in using AT with a universal design lens.

York Catholic District School Board

Project Title	Destination Reading Early Literacy
Brief Description	We are providing Full Day Kindergarten SK Classes, and Grade 1 classes at all the interested schools participating, with access to an online reading program called "Destination Reading." Students will use the interactive technological program as an integrated part of their language arts program, especially as a group activity within a balanced literacy program, with a focus on guided-reading. The lessons in the program have a positive impact on student engagement by providing fun, interesting, and pedagogically sound digital drag and drop literacy activities focused on many principles of phonics, phonetics, and whole language combined, all of which will hope to improve student literacy achievement.
Context	Number of schools: 88 elementary Number of teachers/classrooms: 178 Number of students: 4450 Grades/Program: Senior Kindergarten – Full Day Kindergarten Classes, and Grade 1.
Phase of Change and Impetus	*Continuation* Before any decision is made to purchase more student licenses for additional schools to participate in the project, we are attempting to assess the success of the project on student engagement and achievement with more qualitative and quantitative data. We are also endeavouring to improve teacher instructional methods by providing more professional learning on creating assignments and assessments within the interface of the Destination Reading program, so that it becomes, not only a viable means of differentiated instruction, but differentiated assessment as well.
Goals & Priorities	Improve literacy skills in early years by offering approaches that differentiate learning.
Role of Technology	Technology is an essential element of this project, as "Destination Reading" is an online web-based application, only able to run on computers. All lessons are centred on interactive, engaging, and pedagogically sound drag and drop activities that students can do independently at school and at home. Technology is key to the success of students completing activities independently.
Areas of Impact	• Student engagement and achievement • Innovative instructional practices
Indicators of Success	1. Observable increase in student engagement and remaining on task. 2. Translation of reading skills learned online to paper fiction and non-fiction books, during independent, or silent reading time. 3. Increased Primary Reading Assessment scores in the primary division (Tools used are running records and Developmental Reading Assessment – D.R.A.). 4. Increased independent student engagement in early literacy activities. 5. Improved grasp and understanding of conventions of print in early years. 6. Increased confidence using other technology in the classroom. 7. Improved instructional practice in the pedagogy of literacy, can also be viewed at home for consolidation of learning objectives.
Capacity Building in Teaching	All teachers involved in the "Destination Reading Project" were provided with release time to attend 2 half-day training sessions at different intervals throughout the project, as well as an additional half-day every year after as a refresher.

Project Title	Destination Reading Early Literacy
Leadership, Sustainability, Scalability	Recently granted Teacher-Librarian access to the program as on-site technical and pedagogical support, has helped teachers in the time-consuming, though beneficial process of organizing lessons in "Activity" mode, that could even be shared school-wide, or district-wide. Such assistance at the school level to create "Activities" directly precipitates the ability for teachers to access other instructionally advantageous aspects of the program.

Summary of Data Collection

To measure the impact of "Destination Reading" on student success, the school board will examine:

- E.Q.A.O. data before, during, and after the project, and compare to schools not in the project.
- Primary Reading Assessment scores from students in Grade 1 using "Destination Reading", and the scores from the same cohort of students in Grade 2 and 3; as well as compare with schools not part of the project.
- With IBM, teacher surveys on the effectiveness of the program to improve early literacy.

Results are reported but tabulated summaries are not included in the report.

Highlights of Successes

- Successes included simple and seamless implementation of "Explore" mode in "Destination Reading" where students and teachers could easily use and navigate the software freely and independently with very little instruction.
- The use of "Destination Reading" fortuitously increased both teacher and student use of Promethean interactive whiteboards, helping to build and nurture a sense of competency, familiarity, and confidence with the technology in an efficient and expedient matter, with little pre-planning or set-up.

Highlights of Challenges and Unexpected Results

- The reallocation of budget to provide more release-time for new and returning teachers for continued training and support; and purchasing additional hardware to increase the number of computers available to students in a classroom or school computer lab.
- Challenges essentially occurred in two-fold: the processing of unique teacher and student user authentication and login accounts; and having teachers create lessons in "Activity" mode that can be monitored and assessed, as opposed to just letting students freely use the program in "Explore" mode, which cannot be monitored.

Highlights of Key Findings

According to surveys and conversations with the teachers, the majority agree that the program provides early primary students with an invaluable opportunity to learn and practice early literacy skills independently at school or at home in an engaging, and fun manner, while simultaneously supporting the use of 21st Century computer skills.

Follow-up and Future Directions

- "Destination Reading" program will continue, but with modification.
- We are also considering expanding the project to include the use of iPads in classrooms, where students can access the Destination Reading Program using a flash-enabled application ("Puffin").

Avon Maitland District School Board

Project Title	Explain Everything: 1P Math from the Classroom to the Cloud
Brief Description	Students collaborate and use "Math Talk" for problem solving in the 1P math classroom. Students use the iPad application *Explain Everything* to visually and verbally communicate their solutions. The students' solutions are shared online in the solutions library.
Context	Number of schools: 9 (secondary) Number of teachers: 12 Number of students: 1200 Grades/Content: Grade 9 Math (MFM1P)
Phase of Change and Impetus	*New* AMDSB has recently revised our Strategic Directions and has identified five student outcomes: collaboration, problem solving, critical thinking, creativity, and communication. We see the work of this project aligning with this DSB direction, specifically in our focus on collaboration, communication, and problem solving.
Goals & Priorities	We aim to improve the students ability to self-assess solutions, to collaborate when solving problems in math, and to effectively communicate their thinking during the problem solving process and afterwards. The goal is to improve students' ability to assess solutions and to self-assess. An additional goal is to encourage collaborative problem solving (thinking) in math and effective communication of that thinking during the process and afterwards.
Role of Technology	Technology is an essential element of the project as it connects teachers and students in a meaningful way, in that it is intended to provide feedback overtime and outside the classroom. It is a useful way to keep a digital record of practice which is then available to staff and students. There is a research-based connection between engagement and students' confidence in math, which we believe will be enhanced through the use of technology.
Areas of Impact	• Learning environments/technology
Indicators of Success	1. Assessments, and specifically EQAO assessments, will be used to determine whether student achievement improves in the categories of thinking and communication (based on the Mathematics Achievement Chart). We are also interested in comparing the number of blanks on open response questions. 2. Baseline EQAO data has been collected and identified.
Capacity Building in Teaching	All 1P math teachers were provided with an iPad and an overview of the scope of the project. They co-constructed the following theory of action: "if we facilitate oral communication in the math classroom, through the use of technology, then students will be able to consolidate their own learning and communicate this learning with others". There evolved differentiated support to teachers due to level of need related to the use of technology (moved from full group in-service model to small group and one-on-one support).
Leadership, Sustainability, Scalability	• We intend to move this project learning into 2P and would like to continue support with 1P and potentially involve cross panel learning teams. • Teacher turnover in 1P presents challenges. • iPad carts and devices will remain in the mathematics departments within secondary schools with priority for use in 1P (looking to add more iPads).

Summary of Data Collection
Data collected and reported.
Data collection tool was a pre- and post- student survey that has students self-report on their engagement in solving math problems and self-assess their communication and thinking skills.

Highlights of Successes
- Student engagement increased.
- Use of technology in mathematics classrooms increased.
- Development of math-talk learning communities within the math classrooms.

Highlights of Challenges and Unexpected Results
- Timing of data collection (survey administered after EQAO, did not get full participation).
- Due to work action in the fall, limited work could be done on this project in first semester.
- A network of teachers developed in our district to address common issues.
- iPads and applications were permitted and used during EQAO assessment.
- Increased use of technology within the Mathematics Department.
- Teachers requested to teach 1P sections in the following year.

Highlights of Key Findings
- Student engagement increased by 4% but remains at a low level.
- Use of technology in classrooms increased by 13%.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Leaders will explore an alternative assessment tool for capturing and monitoring changes to student engagement (e.g., teacher reflection, student participation).
- Additional data will be collected from a teacher survey to gauge changes to pedagogy and student learning.

The project had implications for Board planning.
- The project has the support of Senior Staff and the Director. This project has the potential to change teacher practice in this system and influence teaching in applied math across the province.
- The pilot project has influenced the board's direction for technology purchases and system planning for the future.
- The Board is in the process of Investigating Bring Your Own Device policy. Concerns were expressed regarding bandwidth –what happens when all students are using technology?

Conseil scolaire catholique de district des Grandes Rivières

Project Title	Using Technology to Improve Oral Communication
Brief Description	This project supports the schools' improvement plans. In these plans, the literacy goal is an improvement in the students' oral communication skills.
Context	Number of schools: 5 Number of teachers: 14 Number of classrooms: 14 Number of non-teaching staff: 6 Number of students: 280 Grades/Program: JK, SK, and Grade 1
Phase of Change and Impetus	*New*
Goals & Priorities	Accompanied by literacy coaches, the teachers at three schools will meet in two oral communication hubs. During these meetings, the teachers and principals will collaborate, co-planning a Teaching-Learning Critical Pathway (TLCP). The goal of this TLCP will be an improvement in oral communication through an approach that takes its inspiration from the principles found in Carmel Crevola's approach.
The Role of Technology	The teachers will use a graphics tablet to self-assess their implementation of effective oral communication strategies. The students will use the tablet as a self-regulation tool during oral communication activities in the approach being implemented.
Areas of Impact	• Education • Learning Environments/Technology
Indicators of Success	1. Identification and implementation of effective oral communication teaching and learning practices. 2. Improvement in student achievement in oral communication, based on the criteria that are established. 3. Teacher confidence in effective use of the graphics tablet. 4. Reaching learning outcomes and meeting the criteria established by staff during the hub monitoring process.
Capacity Building in Teaching	Three school-hub in the Timmins area: • Initial half-day meeting at the beginning of the project to explain the what, the why, the how and the when of collaborative enquiry. This meeting served to set cooperation standards and to determine what evidence of learning to gather as well as what field of activity to prioritize in relation to expectations and contents. • Three two-day meetings beginning with reflective practice followed by a training capsule as well as the implementation of a lesson through co-planning, task division, co-teaching in class and reflective sharing processing. Each meeting ended with backward planning in which a PLC meeting was scheduled to monitor student progress and reflect on the teaching practices related to pre-determined criteria. • The use of technology made it possible to analyze evidence of learning with students and encouraged reflective practices during the meetings. • A final one-day meeting to review the project's success and determine the next steps. Two-school hub in the Temiskaming Shores area: • All project participants took part in two two-day training sessions with consultant

	Carmel Crevola who presented the basics, the tools and the strategies of her oral communication approach.
	• A videoconference meeting with the consultant during the project.
	• During implementation, five (5) PLC meetings were held to analyze student data.
Leadership, Sustainability, Scalability	• Coaching by the Board's educational team, compulsory participation of school principals and the monitoring process all contributed to making this project successful.
	• Alignment of the project with the strategic plan, the Board's improvement plan and the school's improvement plan also contributed to the project's success.

Summary of Data Collection
- Plan and monitoring checklist information
- Student profiles
- Videoclips of lessons presented to students
- Reflective practice on oral communication in PLCs, from videoclips, with regards to teaching practices and their impact on students.

Highlights of Successes
The project's greatest impact was the staff's culture change in terms of their teaching language and, in particular, the priority given to students in oral communication. Technology made this change possible.

Highlights of Challenges and Unexpected Results
The greatest challenge was to coach the staff in changing their teaching practices. Technology contributed to reflective practices, allowing teachers to self-assess based on evidence instead of perceptions. This served as a catalyst of change. The integration of technology helped in analyzing the positive impact of teaching practices on student achievement in oral communication.

The initial intent was to use technology to support activities in the learning centres. It was only afterwards that it was used as a feedback tool in teaching and learning situations.

Sample of Comments from Participants
Computer technicians had an opportunity to see digital tablets being used as well as their impact on student achievement. This changed their perception and their openness to using those tablets for teaching purposes.

Highlights of Key Findings
- The project made it possible to change teaching practices.
- Technology engages students in their learning. They obviously participate more actively when technology is used in teaching and learning activities.

Follow-up and Future Directions
This project will continue next year at the school and board levels. At the school level, teachers from other grades will be added and at the board level, the project will be launched in other schools.

Conseil scolaire de district catholique de l'Est Ontarien

Project Title	A Cloud-based Learning Environment (D2L / Google Apps)
Brief Description	Teachers at the Pavilions (6) and the secondary schools (7) use D2L and Google Apps to plan, share, and collaborate.
Context	Number of schools: 7 Number of teachers: 50 Number of classrooms: 56 Number of non-teaching staff: 30 Number of students: 1,288 Grades/Program: Intermediate and Senior Divisions (Grades 7 to 12)
Phase of Change and Impetus	*Continuation*
Goals & Priorities	The goal is to use these tools (the D2L platform and Google Apps) with the students.
The Role of Technology	This technology is essential; we want to move from being an institution that transmits knowledge to being an institution that teaches students to navigate knowledge. Furthermore, we can't talk about a cloud-based learning environment without the technology. In this transition, technology will support the teachers, who also become learners in the digital age and realize the value of technology for student learning and for their own personal learning.
Areas of Impact	• Learning environment/technology
Indicators of Success	1. Engagement (intellectual, attendance, personal satisfaction). 2. Learning (academic achievement, a sense of personal effectiveness).
Capacity Building in Teaching	• One-time training of participating teaching and non-teaching staff. • Ongoing technical support via an email group managed by a Computer Services technician. • Sharing of successful practices and challenges via an email group. • Ongoing teaching support via an educational consultant coaching each school.
Leadership, Sustainability, Scalability	• Teamwork, voluntary participation, training, ongoing support and the choice of a continually updated user-friendly platform are all factors that had a positive impact on the project's sustainability. • The need to update our infrastructure (reliable WiFi network) remains a major financial challenge. Codes of conduct or ethics must also be updated to reflect the cloud-based learning environment, with both its advantages and challenges.

Summary of Data Collection

Survey conducted at the beginning and end of the project.

Highlights of Successes

In turn, teaching staff members become learners in this digital age and see the value of a cloud-based learning environment for both students and themselves. Hence, teachers have a better vision and understanding of the integration of technology in general as well as the cloud-based learning environment for student learning. We are noticing a few key changes in the practices of teachers whose commonality is educational practices that put students more at the centre of their own learning. We are also noticing that participating staff members are using Twitter, for instance, to take charge of their own professional learning. The project's successes are the following: updating of teaching practices,

increased engagement by teachers and students, capacity building in the cloud-based learning environment for both teachers and students and new opportunities to develop the 6 Cs.

Highlights of Challenges and Unexpected Results

The project's implementation is gradual. The first challenge is of a technical nature. It takes some time to learn how to navigate in this environment. Following initial training, the email group was a key support component that greatly contributed to the successful implementation that is still taking place. Evidently, access management and equity also need to be taken into account.

The email group has initiated certain staff members to the instantaneity of replies and on–demand learning. An unintentional result would be the use of Twitter by teachers to network and to create a personal learning network

Highlights of Key Findings

The cloud-based learning environment increases student and staff engagement. Ongoing support remains an important factor for the future of the project's implementation in order to increase the feeling of personal effectiveness in students and staff. However, it is too soon to tell what impact this environment will have on academic achievement.

Follow-up and Future Directions

- Improved infrastructure (WiFi)
- Updating of the schools' code of ethics (code of conduct)
- Continuing education (technical and educational) for staff (networking), sharing of successful practices
- Tracking (measuring the project's impact)
- Gradual updating of practices in more classrooms

Conseil scolaire de district des écoles catholiques du Sud-Ouest

Project Title	A Model for Training and Support: Technopedagogical Capacity-Building in CSDÉCSO's Schools
Brief Description	Implementing a training model to develop teachers' ability to integrate technology into their pedagogical practices on a daily basis. Training will be delivered through professional learning communities focussed on the teachers' factual knowledge and procedural knowledge of the use of digital tools in the classroom.
Context	Number of schools: 14 Number of teachers: 70 Number of classrooms: 65 Number of non-teaching staff: 2 Number of students: 0 Grades/Program: Elementary and Secondary
Phase of Change and Impetus	*New*
Goals and Priorities	This approach, which involves training and support, will be system-wide. It will support the development of the teachers' pedagogical practices by giving them the confidence to use effective teaching strategies that involve digital tools. A group of 5 to 7 people will work within each school. They will model the use of technology and form a group, so that they can function autonomously and support each other, as necessary.
The Role of Technology	In this project, technology is a central component of training. *Regardless of what technology we are using,* the goal is to understand *how* to use it in a way that *supports* our pedagogy. The research has shown that, in good pedagogy, technology is used in a support mode, i.e., there is a focus on winning practices and strategies, regardless of what technology is being used. Although we will use a variety of technologies, including tablets, interactive whiteboards, and CSDÉCSO's LMS, the purpose of the project is to equip the teachers to integrate technology into their teaching practices effectively.
Areas of Impact	• Education • Learning environments/technology • Leadership
Indicators of Success	The impact of the pilot project will be measured by: 1. The students' increased engagement in their learning (presence of technology, evidence of learning, use of resources). 2. Increased use of technology in pedagogical practices (surveys, evidence of learning). 3. Increased use of the wireless network in the context of the BYOD – Bring Your Own Device initiative (technical system statistics). 4. Presence and increased use of technological devices in the classroom, both personal and corporate (survey of techno-pedagogical teams). 5. Increased presence of technology in evidence of student learning (media products, digital publications).
Capacity Building in Teaching	A key element of the project was available time support through the school board's portal. This training and cooperation space that hosts tutorials on video as well as a shared resources base serves as an ongoing support tool for training session participants.
Leadership, Sustainability, Scalability	• Anchoring the approach in research was a key component (proximal development zone principle, the 6 Cs of this digital age, Growing Success, Tony Bates, etc.). • Diagnostic survey – made it possible to customize the workshop for the participants.

	• Follow-ups after workshops with both participants and the principal (to identify acquired knowledge and make its use possible within the school). • Half-day format – this prevented overloading workshop participants with information and techniques. • Communication was very important – learning took place "before, during and after" the workshop, because the trainer was able to remain in constant contact with school teams. This created an expectation for participants and the principal for the 2nd workshop – ongoing engagement. • The intent of the project being to build technological capacity, we were able to convey important messages and, above all, model the components of Growing Success, 21st Century skills, etc.

Summary of Data Collection
- Increased student engagement towards learning (availability of technology, learning evidence, use of resources).
- Increased use of technology in teaching practice (surveys, learning evidence).
- Increased use of the wireless computer network, in the context of the Bring Your Own Device "BYOD" initiative (technical systemic statistics).
- Availability and increased use of technological devices in the classroom, both personal and corporative (technology-based education team survey).
- An increase in the availability of technology in student learning evidence (media products, digital publications).
- More open attitude towards the use of technology in class.
- The number of service requests for technology-based education.
- Growing interest and requests for technological resources (i.e. CFORP whiteboard resources).
- Use of a pre-workshop #1 survey to collect data to establish a group baseline regarding the use of technology in the classroom (mostly the interactive whiteboard in this project).
- The use of an exit slip (post-workshop #1) for data collection in order to determine the knowledge acquired during the workshop.
- Use of a pre-workshop #2 survey to collect data on the acquisition of concepts since the group's first training on the use of technology in the classroom (mostly the interactive whiteboard in this project).
- Reflective sharing processing following workshops #1 and #2.
- Global survey for school staff, including those who did not participate in the pilot project, in all participating schools, in order to determine the impact of the multiplying agent in their school.
- Collection of comments from participants' discussions and emails and principals involved in the project.

Highlights of Successes
- Increased use of IWBs in schools.
- Very positive results from reflective sharing processing and surveys (quantitative and qualitative data).
- Improved attitude towards the use of technology (IWBs) in the classroom.
- Increased interest and use of available resources for IWBs.
- Use of IWBs to teach activities in class during visits from the Superintendent of Education, parent nights, school events.

- Better use of technology (i.e. IWBs are no longer "projection screens" but are actually used for teaching.
- Increased independence in schools: peer training (staff meetings, conference dinners, etc.) and problem solving in the school, by staff, without the intervention of Computer Services or technology-based education personnel.
- There is a demand to use the same model for other types of training (i.e. for the board's web platform, use of mobile devices, sharing of lessons created + climate of cooperation and trust among participants = development of a consulting activity base).

Highlights of Challenges and Unexpected Results
- Limited human resources for the number of requests received; the number of schools wishing to participate in the project was greater than anticipated.
- A lack of substitute teachers in certain areas to replace teachers attending training sessions will require more targeted planning of future training sessions.
- Better planning for long-term data collection and analysis.
- More requests to participate in the project than anticipated in the initial planning.
- Adoption of the model by other school board teams (e.g. Special Education).
- Very positive reception of the technologies presented with this approach.

The board made a few changes to its structure in 2013-2014 in order to build the technological capacity of the CSDÉCSO staff. The "multiplying agents" approach will be a priority, whenever possible, with a few adaptations depending on the needs of the participating areas/teams.

Highlights of Key Findings
- The training approach supports the School Board's vision of technology very well and helps us greatly to implement the "technology shift" that the Board and the Ministry wish to make according to the priorities that we have set.
- The "multiplying agent" approach is the background that encompasses principles, strategies and essential components for successful systemic training.
- The training model has proven to be effective and fruitful.
- The training model is based not on a specific tool or technology, but rather on research and winning educational strategies.
- The training model can be adapted to different contexts in order to systematically deploy various technologies.
- We were able to train more people with the same human resources.
- We will be able to use this approach to deploy several other technologies for CSDÉCSO teachers and support staff.
- We were able to develop support resources for the use of IWBs, which are stored on the board's portal and accessible to all employees at all times.

Follow-up and Future Directions
- Focus more on indicators to measure the approach's impact more precisely and in more detail.
- Create data collection methods in order to be able to analyze data more in-depth and in a more useful manner to inform practices.
- Continue using this approach and adapt it to the Board's various contexts and clients.

District School Board of Niagara

Project Title	Scaling Grade 9 Math Research Beyond the Early Adopters
Brief Description	The focus of this project is to measure the impact on student achievement when evidence-based math teaching strategies and technology are combined. This project builds on the previous work of an evidence-based professional learning protocol applied to the integration of technology in grade 9 Applied and Academic Math. By increasing the scope of this professional learning model, this project will inform a scalable and sustainable professional learning district plan.
Context	Number of schools: 3 Number of teachers/classrooms: 8 Number of students: 150 Grades/Program: Mathematics, Grade 9 (MFM1P1) and Grade 11 (MBF3C1) Given our research is focused on scaling across the system, the teachers/students were selected to represent a cross section of the DSBN populations.
Phase of Change and Impetus	*Continuation* In 2011–12 DSBN's CODE Research project's goal was to determine if an evidence-based learning protocol was customized for DSBN's culture, context, and curriculum, would it impact student achievement as it had in other Ontario Boards. The 2011–2012 research demonstrated encouraging results with both teachers and students. Teachers reported an increased ability to purposefully integrate technology into the teaching of math and students that participated in the research outperformed their non-participating cohort. This project will _scale_ beyond the early innovators.
Goals & Priorities	Research tells us that the most powerful influence on a student's academic achievement is a skilled teacher. Research also tells us that technology is a highly effective tool for personalizing learning and creating learner engagement.
Role of Technology	Technology is essential to the teachers in this pilot project because it allows for the quick assessment of the individual needs and readiness levels of each student. Technology allows math concepts to be represented in a variety of ways, (personalization and relevance).
Areas of Impact	• Pedagogy • Learning environments/technology
Indicators of Success	The success indicators for teachers are as follows: 1. Increased comfort level using technology. 2. Use of technology to improve the conceptual understanding of math. 3. Increased teacher engagement. The success indicators for students are as follows: 1. Improvement in course marks compared to non-participating students. 2. Improvement in EQAO scores compared to non-participating math students. 3. Improvement in student confidence and mathematical engagement.
Capacity Building in Teaching	Teachers were trained and supported in an ongoing way over the 5 month duration of the research. The training took place both in large groups and "at the elbow" when needed.
Leadership, Sustainability, Scalability	• Every effort was made to follow the evidence based professional learning protocol as laid out in "The Collaborative Teacher Inquiry Project". The DSBN team was fully aware of that risk of focusing on supporting the project and those efforts cannot be scaled to larger cohorts due to the capacity of the board.

Project Title	Scaling Grade 9 Math Research Beyond the Early Adopters
	• This exposed the implementation dip experienced when trying to ensure all teachers and learners have WiFi access and basic technology skills.

Summary of Data Collection

Data was formally collected and analyzed. Tabulated results identified in the report to substantiate findings and next steps.

Highlights of Successes

- Teachers reported that the purposeful use of technology increased significantly during the extent of the research. The average technology usage time went from less than an hour a week to in excess of two hours per week in 90% of the participating classes.
- Use of technology to conduct virtual field trips increased from no teachers using this strategy to half of teachers using this strategy weekly or monthly to support math learning.
- 50% of teachers reported using drill and practise apps weekly or more as needed to support their individual learners.

Highlights of Challenges and Unexpected Results

- Some students did not want to use the technology. Paper and pencil activities were provided as an option when possible.
- There were unanticipated "start-up" WiFi issues. Bandwidth and access points needed to be re-assessed in some circumstances.
- Developing student technology and digital comfort took longer than anticipated.
- Teachers recognized that in order to engage the students with the technology, the technology had to be used to do something that they could not have done without it (i.e. – if students could just write with paper and pencil then most of them would prefer that but they liked using Fathom because it allowed them to create scatterplots quite quickly).

Highlights of Key Findings

- Increased comfort level for teachers using technology to help them inform their instructions choices.
    - 87 percent of teacher reported an increase in their use of assessment for learning.
- Teacher use of technology to improve the conceptual understanding of the curriculum topics.
    - 100 percent of teachers reported a qualitative improvement in most students' conceptual understanding of the curriculum. (Geometry realized the most qualitative improvement.)
    - 100 percent of teacher reported that technology did not help with the conceptual understanding of all concepts (most however) and that the use of technology in those cases further frustrated the students.
- All teachers reported it was important to use technology only when it helped with understanding. When students saw the relevance of the technology the engagement went up considerably.
- Responding to the use of technology to increase their engagement and ability to respond to their student's learning needs, pre-research, 100 percent of teachers agreed, post research 75 percent of teachers agreed. Characteristically, teachers went through an implementation dip (slowdown of productivity) that occurs when a disruptive innovation is entered into any learning environment.
- Improvement in student confidence and mathematical engagement.
    - 77 percent of student reported that technology made math easier to understand at the end of the research project compared to 45 percent at the start of the research projects.
    - There was a 12% increase in the student's preference to complete their homework online.

- However the percent of students that rated themselves as very strong or strong math student DROPPED during the course of the research. Interpretation: The use of technology demonstrated the richness of math and intimidated some students.

Additional Statements Related to Areas of Impact

The success factors in the area of *scaling* are:

- To determine if the student achievement and attitudinal growth realized in the first round of CODE research can be duplicated or increased.
    - Achievement data was not available for analysis before the due date of this report.
    - The increase in student engagement in math in the first round was realized again in this round indicating that this evidence based professional learning protocol is in fact scalable.
- To determine if the increase in teacher comfort and skill level with the purposeful use of technology can be duplicated or improved.
    - The data indicated that when the research was scaled up to include more than one teacher within a school, the teacher comfort level and confidence increase more that when working alone.
    - The teachers indicated that the most impactful element of the research was the ability to co-plan, co-teach and co-reflect with teachers who were working towards the same objectives.

Follow-up and Future Directions

- The next stage in the change management scaling research plan would be to move to a cohort that includes all teachers within a math department. If this process repeats the positive results, this process can then be successfully scaled to all schools within DSBN.

Durham District School Board

Project Title	DDSB Digital Campus: Enabling Cloud Resources and Learning Opportunities through Google Apps or Microsoft 365
Brief Description	The focus of this pilot is to document the operational and pedagogical steps necessary to enable a personalized cloud computing solution for elementary and secondary students and staff which will provide applications to promote peer collaboration, student voice, and multi-device access to shared learning resources and products.
Context	Number of schools: 3 Number of teachers: 15 Number of students: 300 Grades/Program: Grades 4 - 12
Phase of Change and Impetus	*New* By linking the student tasks and learning opportunities to Michael Fullan's Six C's, the project should provide students and staff with 24/7 anytime, anywhere access to a collaborative learning environment.
Goals & Priorities	The **operational goals** include working collaboratively with the Technology Information Services Department and Google and Microsoft Canada to build a single sign-on environment for student and teacher access which will interact with our DDSB information Portal and student School Connect environment. Other operational goals include the investigation of needed consent for student access, exploring procedure and policy implications for a scalable environment in which personal devices may be used by all students and staff anytime and anywhere in a safe, controlled, and resource rich environment. **Pedagogical goals** include the investigation of how the provision of an online cloud environment will impact Technology at the Point of Learning (student inquiry and learning apart from direct instruction on personal and DDSB devices).
Role of Technology	The project strives to utilize technologies specifically with students who access resources using mobile technology devices (both personal and district owned.) The pilot also targets leadership staff in the board with an eye to examining what documentation necessary to support a scaled rollout of cloud computing.
Areas of Impact	• Pedagogy • Learning environments/technology
Indicators of Success	1. Student engagement: increased collaboration and use of online tools and resources using personal and DDSB provided mobile devices. 2. Instructional practices: increased ability of staff to provide personalized and targeted learning resources to students on a variety of district and personally owned devices. 3. Increase the equity of access across location and time (anytime/anywhere learning) for students and staff. 4. Student outcomes: increased student and parent success in learning skills such as organization and self-regulation.
Capacity Building in Teaching	The DDSB be cloud project was implemented in two secondary schools and one elementary school in the 2012-2013 school year. Implementation differed in each school. In one school, the project was implemented through the library-head in conjunction with a department which was eager to bring technology to the fore in their teaching. In another, several departments chose to implement a variety of

Project Title	DDSB Digital Campus: Enabling Cloud Resources and Learning Opportunities through Google Apps or Microsoft 365
	projects using Google cloud. In the third, Junior teachers gathered together to plan for a social studies unit transferring an existing assignment to the Google environment.
Leadership, Sustainability, Scalability	• Access to computers within each of our pilot schools was a factor influencing sustainability. Though the use of student owned devices at the secondary level mitigated some of the issues which our schools faced with respect to spending enough time on computers to complete their project, there was a great issue finding enough computers to satisfy all student needs. • A need for comprehensive teacher training was demonstrated through this project. Any attempt at a larger scale and sustainable approach to using cloud in the classroom will definitely depend on release time for training. • The inability of the Google cloud software to provide restrictions for students' inappropriate use affects the sustainability of the project.

Summary of Data Collection
Data collected through student interviews, teacher interviews.
Results were reported but not included in the report.

Highlights of Successes
- All teachers in the project reported that the greatest success of the project was high engagement. Teachers further reported that student learning after this assignment showed a clear and improved understanding of the curricular expectations.
- Each school noted that student sharing and collaboration were the greatest benefits of using the Google cloud environment. Students who were absent for various reasons also reported working on the project with their student peers from off-site locations.
- The project provided a very successful method for students to access files that they had either made at school or at home and place them on their personal devices.

Highlights of Challenges and Unexpected Results
It was hoped that a second cloud application "Microsoft 365" could also be analyzed. Unfortunately, we were unable to find a technical solution to using this product across our district.

Political and labour issues were such this year that the project was scaled back.

Technical:
Our secondary school pilot teachers reported challenges in retraining students to adeptly use the online Google products as they were distinct from the more traditional Microsoft products such as Word, Excel and PowerPoint. Though teachers were pleased with the collaborative ability of the Google software which allowed students to collaborate on spreadsheets and word processed documents, there was frustration with the Google sites software application in that it would not allow for multiple users to work on one document.

The greatest technical challenge was the inability of the Google environment to restrict students from sharing any document with one another. Although this feature is certainly one which promotes great collaboration, but when inappropriately used, the sharing ability of Google was one which was a concern to school administrators in our pilot.

There were technical issues around different devices brought to school by students and their own operating system environments which did not work well with the Google Environment
There was inconsistent bandwidth speed at both school and home which was occasionally a hurdle for student completion of activities.

Pedagogical:
Teachers expressed a desire for greater control over the environment. The easy ability for a student to share and collaborate with their peers both at school or at home though positive also raised questions of academic integrity from our teachers. Teachers expressed some concern around issues of plagiarism which might be more easily completed with real-time online sharing.

At all pilot sites, teachers reported a general concern for equitable access. Though each school provided classroom and computer lab time for their computer work, all pilot schools reported that based on the extent of computer access students had at home or devices they were able to bring to school, there was a greater opportunity for students to work on their assignments, collaborate with one another, or take time to improve work.

Highlights of Key Findings
- Critical to the success of this project was what was reported by one school as the "Google Blip." The Google Blip describes the significant increase in student engagement through the use of technology and the teacher's belief in a consequent improvement in student understanding. Students' use of the chat tool, collaborative use of network resources, and the ability of the product to extend a student's ability to work outside the instructional day were perhaps the greatest benefit of using this tool.
- Teachers reported that they were very pleased that they could communicate with students within the project throughout the process not just at the end of the process during the assessment phase. Commenting by teachers was documented in "electronic stickies" on the students' work or through comment boxes directly in the students' work.
- A final critical finding for this project involved the desire of teachers to be able to adequately monitor and control student efforts while working online. Though we were unable to restrict student access at the level the teachers demanded, the pilot provided a benchmark for what types of permissions and restrictions will be required to scale and make sustainable cloud computing at the system level.

Follow-up and Future Directions
The importance of granular control on permissions and restrictions is a necessary next step in terms of research and exploration for our school board. Widespread testing of one or more cloud learning opportunities will be necessary before we are able to scale the product to all of our schools and students.

Greater Essex County District School Board

Project Title	Building Capacity and Opportunity for Our Formal and Informal School Leaders
Brief Description	Brings to scale increased leadership capacity for formal and informal school leaders to promote the effective use of technology for teaching and learning.
Context	Number of schools: -- Number of teachers/classrooms: ---
Phase of Change and Impetus	*New*
Goals & Priorities	This project is focused on 6 strands of inquiry: • How does increasing the capacity of formal / informal school leaders to promote the effective use of technology impact the ways technology is used in a school? • How do we use students as partners in learning to increase the effective use of technology in our schools? • How do we align the use of technology in our schools with existing school improvement and professional learning models? • How do we develop effective networks of school leaders to build understanding of the role technology can play in student learning? • How do we support school leaders in documenting and sharing their work to the benefit of themselves and others? • What are the conditions that need to exist and what work do we need our leaders to engage to build the systemic capacity?
Role of Technology	We are considering the use of various technologies (including laptops, iPads, recording devices etc.). We are examining the role of technology as a whole, not a single item or device.
Indicators of Success	1. How increased knowledge and understanding of the school administrator and lead-teacher can impact the ways that technology is employed in the school to improve student outcomes and change teacher practices. 2. How partnering with students in the design of the learning environment impacts the use of technology and the level of student engagement and ownership. 3. The impact of using our students as leaders of learning and supports in a school (pertaining to technology) on teacher efficacy and instructional practice. 4. The impact of networking school leaders as peers supports on the capacity and confidence of school leaders in leading the integration of technology. 5. The impact of school leaders documenting learning in their buildings on the school leaders' role as an instructional leader.
Areas of Impact	• Leadership
Capacity Building in Teaching	Much of this work is focused around ongoing capacity building, changing cultures, and redefining our work. As such, the short timelines and political climate limited what can be reported on the intended success indicators.
Leadership, Sustainability, Scalability	• The type of work we want to do in this project is deep, reflective, thoughtful, and intentional. • The flexibility of those involved or impacted by this work in our system has been an integral support to the sustainability. The relationship between Teachers, administrators, coaches, consultants, our senior team, and our IT department is a key reason why we are able to carry out some of this work.

Project Title	Building Capacity and Opportunity for Our Formal and Informal School Leaders
	• Finally, the political climate this year has been a challenging one. The plan of our networked learning based on student need had to be adapted, and we were unable to provide the level of support that we had planned.

Summary of Data Collection
The report identifies the differing data collection strategies for each of the success indicators. Measuring cultural change effectively will require further investigation beyond the time limits of this project.

Highlights of Successes
This project was enormously successful and led to some significant learning and changes in culture. Each of the teachers and students involved in the project were engaged in a conversation about the work. The themes were clear:
• 100% of teachers reported feeling more confident with technology than prior to the project.
• 100% of teachers are now more comfortable allowing students to lead part of the learning.
• 100% of students involved felt more confident as a result of this project.
• 100% of students involved felt more engaged in learning.

Every school has indicated that this work and relationship between students, teachers, and technology will continue next year. Two of the schools have now established "Tech Teams" of students who are the go-to group for support in using technology. The next level of work in this project was beautifully stated by one of the students – "*they (the teachers) are still avoiding a little. We need to do more to show them why they should be using technology, not just how*".

Highlights of Challenges and Unexpected Results
One of the unintended outcomes of this process has been a review and reflection around the place for technology in our schools and the teacher leadership that comes with this. As we reflected on this in light of our vision for developing the Learning Commons, it became apparent that we had a significant opportunity in leveraging the position of Teacher Librarian as the CIESC in our buildings, and we have adopted this as a long term goal.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
• Monitor assessment data linked to SAMR/changes in teacher practice, and identify specifically what that practice is and why it is making a difference.
• Work with principals and teachers on the ways that technology can support pedagogical documentation and how this documentation can be used to inform adult learning.
• Opportunities for principals to meet specifically to focus on leadership in technology.

The project had implications for Board planning.
• Continue to monitor the ways in which technology is being used related to the instructional core (a comprehensive "Technology Review" will be taking place in 2013-14).
• Continue to ensure that structures are in place that allow for communication and development between schools and IT, to ensure that infrastructure and processes are meeting the needs of the system.

Halton District School Board

Project Title	Enhancing Learning Through Cloud-Based Learning Environments
Brief Description	Bring to scale cloud computing to support collaboration, feedback, and knowledge management for students and staff. In 2011-2012, 33 pilot schools, 60 teachers, and approximately 2000 students were provided with a cloud-based educational environment. For 2012-13, all 55,000 students and 6,700 staff have been provided with Google Apps for Education Accounts.
Context	Number of schools: 73 elementary & 11 secondary schools Number of teachers/classrooms: 260 Number of students: 6500 Grades/Program:
Phase of Change and Impetus	*New* Not a continuation of round 1, however this initiative was originated in 2011-2012 and had been growing since that time.
Goals & Priorities	*Selected Goals:* • Increasing use of a growing array of user-owned and alternative devices (e.g., tablets, smartphones, etc.) which cannot run standard applications yet have robust browsers. • Reducing software compatibility issues and support. • Wider access to student and staff content (e.g., anywhere the Internet is available) for greater engagement of students.
Role of Technology	This pilot is directly and heavily focussed on a wide variety of web-based applications. Cloud computing technology is not just an essential element of the pilot project, it essentially is the pilot project.
Areas of Impact	• Pedagogy • Learning environments/technology
Indicators of Success	*Selected Indicators:* (more in report) 1. Increased student achievement through stable, 24/7, flexible, anywhere access (for parents / students) to classroom resources, assignments, rubrics, calendars, and the students' own work in multiple locations with multiple devices. 2. Enhanced student feedback, additional revision cycles, and higher-quality student work due to wider access to student/staff content for collaborative work.
Capacity Building in Teaching	In round 1, 33 pilot schools, 60 teachers, and approximately 2000 students were provided with a cloud-based educational environment. These were the 'innovators/pioneers'. In round 2, professional learning for not only the 'innovators/pioneers' but the early majority of users was conducted around leveraging the cloud for student learning, engagement, assessment, collaboration, critical thinking, creativity, digital citizenship, and other 21st Century skills.
Leadership, Sustainability, Scalability	• Since Google Docs is a widely-used system there is help online for troubleshooting or learning new features. • The increased use of web-based software reduces time updating images. • The increased use of student owned devices within our classrooms is a natural fit with using the cloud. • The Halton DSB has passed a long range plan which provides stable funding for the purchase of equipment and the provision of wireless Internet throughout schools. Included in this plan are two additional School Programs staff.

Summary of Data Collection
- Surveys were conducted with staff and students re: use of cloud technology.
- Data was collected on the number of users during various time periods throughout the school year.
- The number and types of documents created were collected throughout the school year.
- Enrollment data of teachers involved in cloud technology professional development.
- Qualitative data was collected about teachers use of cloud technology.

Highlights of Successes
- Increase in the number of users creating documents within the cloud.
- Increase in the number of teachers and administrators trained and proficient in using the cloud.
- Overwhelming enrollment in professional development sessions.
- Requests from administrators to train entire teaching staff within individual schools.
- Increase in staff's comfort levels with use of cloud technology in their classroom.
- Increase in teacher's cloud technology collaboration with other staff and students.

Highlights of Challenges and Unexpected Results
- The number of teachers interested in training was beyond what school program staff could provide.
- A difficult political year forced all training to occur in a compressed period.

Highlights of Key Findings
- Goal: adoption of cloud based technology and tools. Results from system usage show an increase in the number of cloud users and documents being created within the cloud.
- Goal: enhance student feedback. Teachers shared stories of their use of the cloud within their classrooms for collaboration with students.
- Goal: increase student voice through surveys and cloud tools. There was an increase in the use of Google forms by teachers to collect information and feedback from their students.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- The data from this year's staff and student survey will be used as a baseline to help us understand the increased capacity within our system for the use of cloud technology.
- Next year we will be able to have an increased focus on the use of the cloud to improve student learning.
- The two new School Programs staff will assist in implementing of the Halton Cloud in classrooms.
- Professional development related to the cloud will be further integrated into literacy and numeracy initiatives, and the implementation of the revised Social Studies/History and Geography curriculum.

The project had implications for Board planning.
- With the board-wide implementation of Google Apps for Education (Halton Cloud), we will continue to work toward increased teacher comfort with personal technology and establishing how the cloud supports the effectiveness of student-owned technology.

Hamilton-Wentworth Catholic District School Board

Project Title	Bring Your Own Device (BYOD): Supporting the Development of the Learning Commons
Brief Description	WiFi hotspots have been introduced into all elementary and secondary school libraries. Teacher-Librarians at each school will be supported in creating a BYOD environment in the Learning Commons.
Context	Number of schools: 10 Elementary Schools Number of teachers: 26 teachers Number of students: -- Grades/Program: Focus is on Teacher-Librarians co-planning/co-teaching with classroom teachers to facilitate the transformation of the library to a Learning Commons and exploration of a Bring Your Own Device (BYOD) environment.
Phase of Change and Impetus	*Continuation* Round 1 focused on the use of a tablet (specifically Apple's iPad) as an instructional tool. Given the success of that project it was determined that the iPad is indeed a viable teaching and learning tool.
Goals & Priorities	Positively impact student learning through the implementation of the BYOD environment.
Role of Technology	WiFi access points; Multiple technologies (tablets, desktop computers, laptop computers, hand held devices), LCD projectors; Cloud computing; Network management for guest devices.
Areas of Impact	• Learning environments/technology
Indicators of Success	1. Increased comfort with BYOD: students, parents, teachers, administrators. 2. Increased use of technology for instruction. 3. Increased use of provincial LMS as a secure virtual classroom. 4. Increased collaboration between Teacher-Librarian and classroom teacher. 5. Increase in number of students completing a Digital Citizenship Bootcamp.
Capacity Building in Teaching	Training seen as essential element for the success of the initiative. Release time provided for classroom teachers to work with Teacher-Librarians supported by central support staff to plan project.
Leadership, Sustainability, Scalability	• Strong support from the Board of Trustees. • Budget support to continue expansion of the project. • Senior Management support for expansion of BYOD. • Teachers actively seeking to be involved in the pilot or future pilots. Clear indication of a grassroots desire to integrate a BYOD environment.

Summary of Data Collection
- Pre-/post- interviews with students, teachers, parents, administrators.
- Current LMS usage in pilot schools.
- Observation at pilot sites.

Detailed summary of findings are provided in an attached report.

Highlights of Successes
- 10 pilot schools introduced BYOD to the Learning Commons.
- Acceptable Use Policies collaboratively developed by teachers and students.
- Over 250 students completed the Digital Citizenship Bootcamp.

- All 10 pilot schools/classrooms had a digital classroom established in the LMS.
- All digital classrooms had the Teacher-Librarian as a co-teacher in the digital space.
- Teacher-Librarians co-taught with classroom teachers in all 10 pilot schools.

Highlights of Challenges and Unexpected Results
- Safety and security of personal devices in the elementary school. Most elementary schools do not have lockers so this was identified as a serious concern by all project schools.
- Teacher comfort level. All participating teachers were keenly involved in the project. Some colleagues within the school were concerned about security of devices, on-board recording equipment etc. Ongoing teacher/principal training will be essential.
- Interest in digital classrooms housed inside the LMS has expanded much more quickly than anticipated. Demand for digital classrooms is exceeding the capacity of central staff.
- BYOD has increased to the point that nearly 20% of all Internet traffic within the Board is from guest devices. This has necessitated some significant investments in network infrastructure.

Sample of Comments from Participants
Teacher: "Technology is becoming a bigger part of education every day. As teachers, we need these sessions to keep us up to date so that we can provide our students with opportunities to use technology."
Student: "Technology allows teachers to be engaging and interactive with students."

Highlights of Key Findings
- Given the appropriate infrastructure resources BYOD is a sustainable and scalable initiative.
- Boards must provide "loaner" devices for use by all students to address equity of access issues.
- In-school "champions" are important for the success of BYOD.
- School administrators need more in-depth understanding of the nature of the initiative in order for them to respond to teacher and parent questions.
- Students must be trained in the acceptable use of personal devices in the classroom (acceptable use policy included with report).
- Care and security of personal devices is an unresolved issue.
- Teacher professional development is important but teachers need to be willing to accept student expertise in the area of BYOD.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Expansion of the project will continue to all elementary schools and all secondary schools in the fall.
- Use of the LMS & Microsoft 365 will be the focus of professional development in the fall.
- Development of online Digital Citizenship Bootcamp will be completed in the early fall.
- Training for all Teacher-Librarians scheduled for September, 2013.
- Training for all Principals scheduled for September, 2013.

The project had implications for Board planning.
- Board created a Technology Blueprint: 2013-2016 framed by guiding principles, providing an overview of areas of focus to support information and communication technologies, and is supported by trustees, senior management, school administrators, and consultants.

Hamilton-Wentworth District School Board

Project Title	Integrating a Blend of Board and Ministry Provisioned Tools: Creating Easy Access to a Broad Spectrum of Resources
Brief Description	There is an abundance of tools and resources that help to make learning more engaging, more collaborative, and more creative; availing opportunities for students to connect with other learners, global expertise, and authentic audiences, in previously impossible ways. D2L is a powerful tool to help facilitate these experiences, but these opportunities are greatly enhanced when Board and Ministry provisioned tools and resources are leveraged. Easy "anytime" access to the growing catalogue of tools, and multiple entry-points for all learners is the key to systemic adoption.
Context	Number of schools: 118 Number of classrooms: not applicable Number of students: not applicable Grades/Program: JK-12 initiative
Phase of Change and Impetus	*New* We see the power of other platforms and tools, but also recognize if we cannot centralize the entry-point to this growing list, we will confuse and frustrate the early user, and potentially miss opportunities to build capacity with naysayers.
Goals & Priorities	We know that users are frustrated by the numerous places that they need to visit in order to access the many tools provided to our learners. We are building a place to centralize these spaces, with the goal of adding Single Sign On infrastructure.
Role of Technology	The creation of a single entry-point to more equitably provision access to the various technology tools and resources available to enhance teaching and learning in our board.
Areas of Impact	• Pedagogy • Learning environments/technology • leadership
Indicators of Success	Indicators were identified for each of the three yearly phases of the project.
Leadership, Sustainability, Scalability	We believe that once the project is fully implemented, one possible negative factor would be eLO moving in a different direction. We are putting trust in eLO to continue to maintain and improve the functionality of the Ministry provisioned tools. This project has brought the need for a developer on staff to the forefront, especially considering the work we now see as being imperative to the success of D2L. It is important that eLO and OSAPAC be in sync with one another, provisioning tools that fit within the Blended Learning LMS. This should be a factor in the adoption and licensing of new software going forward, especially as boards embrace mobile devices, and BYOD frameworks that are not compatible with the current licensing infrastructure that was built for a Computer Lab culture quickly becoming obsolete.

Summary of Data Collection

Because this first year was spent building the framework, we have not yet gathered baseline data on implementation of the tool. We will be using the TUPS tool from the TIM in September to gain a better understanding of how educators use technology in their teaching, their level of experience with technology, and their comfort with and attitudes toward technology.

Highlights of Successes

It is too early to gauge the success of this project. The initial integration points have been very promising.

We continue to see adoption of both platforms separately, with upwards of 17 000 users combined on the two systems. A number of users straddle both, and have voiced excitement about the integration of the two sites in order to streamline use. Invariably, teachers start out thinking they want D2L because it is a digital approximation of their closed door classroom. Once they begin to integrate digital tools into their practice, they see the advantages of using the Commons to reach a wider audience of learners.

Highlights of Challenges and Unexpected Results

- The work with Desire2Learn has been slow. Desire2Learn is a closed system. The ability to customize the look and feel of the site is limited, and their environment is designed primarily with adult learners in mind.
- A number of vendors we spoke to have not yet demonstrated strong interest in helping to make the integration happen.
- There are significant staff demands required to keep the initiative moving forward.

Highlights of Key Findings

At this point, still in the midst of building the infrastructure, we cannot yet comment on the success or impact of the project. We will be able to present on this data after a year of implementation of the platform. We will be making presentations on the process, and the results of the project, in the hopes of engaging other boards in utilizing the infrastructure we have built.

Additional Statements Related to Areas of Impact

If we are hoping for a walled garden of resources, we will need to not only build the wall ourselves, but ensure that we can tend to the garden on a continuous basis going forward to ensure success. This is a shift we are struggling to achieve in our board: how to support emerging technology, while traditional needs still prevail.

Follow-up and Future Directions

- Continue working with vendors to finish as many facets of the project as possible for a September launch.
- The Launch in Phase Two (2013-2014): Analytics on the centralized site will tell us if the tools are seeing a greater rate of adoption.
- Changes in Practice in Phase Three: Through assessment tools like the TIM we will measure the culture shift and adoption rate of technology and tools in the classroom.

Keewatin Patricia District School Board

Project Title	Building a 21st Century Learning Environment
Brief Description	Brings to scale leadership and learning for all leaders and teachers.
Context	Number of schools: 21 Number of teachers: 375 Number of students: 4500 Grades/Program: All schools in the Board
Phase of Change and Impetus	*Continuation* This project is a continuation from the 2011/2012 CODE Research project. The focus of the 2013 research is to identify a process by which to build an evidence-based system plan that will scale the initial success beyond the innovator group, to the entire system. This plan will include four elements: • Communication Plan • Technology Readiness Plan • Pedagogical Plan • Longitudinal Student Achievement Study
Goals & Priorities	Our goal is to use evidence-based change models to facilitate the development of the leadership required at all levels within the organization (distributed leadership) to create a 21st Century learning organization.
Role of Technology	Our system goal is to create a 21st Century learning environment. Technology is essential in creating this environment. We define a 21st Century learning environment as one that includes facilitative teaching, personalized learning, differentiated instruction, and where higher order thinking skills are developed and valued. All Kindergarten to Grade 2 classes have access to iPad centres in their classrooms as well as computer labs. Grade 3 classes are equipped with iPads and netbooks. All Grade 4 through 12 students are issued a netbook. All teachers have a netbook.
Areas of Impact	• Pedagogy • Learning environments/technology • Leadership
Indicators of Success	Measureable outcomes for students, teachers, principals, and the system are identified.
Capacity Building in Teaching	A building block of the work was a System-wide educator survey to identify teacher readiness in the areas of change attitudes, technology skills/access, digital readiness and understanding, and pedagogical beliefs about 21st Century learning and competencies.
Leadership, Sustainability, Scalability	The leadership team in Keewatin Patricia identified that the processes for change used to support previous initiatives would not be sufficient to support the whole system reform/transformation. Partnering with an outside company that has deep understanding around change models allowed our senior team to look at our current reality objectively when building, structuring, and executing our system plan.

Summary of Data Collection

The completed *Results from Technology & Pedagogical Readiness Survey* and detailed Summary Report of Staff Research survey are included with the report.

Highlights of Successes

- The teaching population has an overall belief that technology makes them more effective teachers, as well as helps students learn. Seventy-four percent of teachers agreed or strongly agreed with these statements on the system-wide online teacher survey.
- Keewatin Patricia's focus on "Assessment Based Instruction" has permeated the teaching population as 89% of teachers responded that they use assessment for learning weekly or more.
- The one-to-one technology deployment occurred on schedule and with no major obstacles.
- The technology support team is respected for understanding of and alignment to the 21st Century technology-enabled vision.

Highlights of Challenges and Unexpected Results

- Although the one-to-one deployment of the technology took place without any challenges, the access and bandwidth infrastructure needs to grow in response to the systems growing requirements. Sixty-five percent of teachers reported abandoning up to five lessons in a two month period due to unreliable access.
- Seventy-six percent of principals reported concern about their personal skill level in technology readiness.
- Research indicated that although the teaching population had a high degree of commitment to creating 21st Century learning environments, they were unable to identify specific success indicators or a clear vision about what that would look like in their teaching and learning environments.
- The research indicated current communication plan was not supporting all stakeholders (teachers and Aboriginal community members) in the most effective way possible. The ongoing system communication plan was adjusted accordingly.
- The strategy of moving cohorts of teachers (instead of all teachers in a system at the same time) has allowed the board to identify two priority areas for focus.

Highlights of Key Findings

The activities to date have largely been in the area of detailed system-wide research to collect that information and data required to develop a customized, evidence-based system reform plan. Our schedule is to have the plan approved by senior administration by August 2013 and begin the roll out of the plan in the fall.

The staff survey and the *Results from Technology & Pedagogical Readiness Survey* provide firm evidence to examine success indicators and a solid foundation for the continued work at the board.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Identify an "early adopter" teaching cohort that will volunteer for an intense professional learning protocol whose goal will be to improve student achievement, competency acquisition, and engagement.
- Ensure principals have the skills, comfort, and vision to lead the school-based learning transformation.
- Identify needs and supports required by the curriculum support teachers who will be on the front line in developing and executing a cohort-based professional learning community.

The project had implications for Board planning.

- The work to date has set a directed course for future system planning.

Near North District School Board

Project Title	Near North 21: Building a Digital Age Learning Culture
Brief Description	Over the course of the last year, the Near North District School Board has endeavoured to 're' vision our educational technology strategic plan. The resulting *NearNorth21* or "NN21" initiative is an evolving project framework designed to initiate, sustain, and build a digital age learning culture. The NN21 Strategic Pilot will profile the Near North District School Board's efforts to grow and sustain a Digital Age Learning Culture. Specifically, the Strategic Pilot will study the impact/effectiveness of the eTech (Educational Technology) Teacher/Coach as a means to facilitate/lead meaningful and relevant 21st Century, job-embedded professional learning. Working in collaboration with Professor Graham, the Near North District School Board will employ the NN21 Strategic Pilot to develop *Profiles of Success* (acknowledging 'resilient' teachers, administrators, and schools).
Context	Number of schools: 41 Number of teachers: 82 Number of students: 1640 Grades/Program:
Phase of Change and Impetus	*New* Building leadership capacity to support technology-enabled learning.
Goals & Priorities	The Near North District School Board will: • Create opportunities for students to develop the skills and knowledge required to learn effectively and live productively in a global and digital world. • Work with teachers to create technology-enriched learning environments that engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community. • Support administrators in their efforts to lead schools of digital age, model effective use of technology, and facilitate 21st Century teaching and learning.
Role of Technology	The role of technology in this pilot project is multi-faceted. Technology for Schools: • September 2012: All NNDSB schools invited to submit Technology for Schools proposals. Technology for Teachers: • September 2012: 100 NNDSB teachers received 'teacher' devices to support teaching and learning. The teacher devices have initially been allocated to eTech Coach (mentor) and an additional teacher (mentee) in each school. Renewal of Wireless Network Infrastructure: • Over the past two years, the Near North District School Board has invested in significant upgrades to our wireless network infrastructure. These investments will support the facilitation of BYOD, expansion of Blended Learning and e-learning.
Areas of Impact	• Pedagogy • Learning environments/technology • Leadership
Indicators of Success	1. Positive teacher attitudes. 2. Increased teacher confidence and capacity. 3. Improved ETAP responses.

Project Title	Near North 21: Building a Digital Age Learning Culture
Capacity Building in Teaching	NNDSB eTech Coaches are building capacity in teaching by working with teachers and administrators in their school to develop a plan of action to align existing technology and resources with collaborative inquiries, School Improvements Plans, or professional learning cycles.
Leadership, Sustainability, Scalability	• The willingness of eTech Coaches to take a leadership role in the NN:21 initiative will accelerate the implementation of the 21st Century vision and help to sustain a culture of collaboration and innovation. • Continued investments in infrastructure and technology will enable the NN:21 vision to be accessed by all NNDSB schools and stakeholders.

Summary of Data Collection

Extensive and comprehensive data was collected by multiple means. The report includes a comprehensive and thorough summary of the tabulated data, and links to additional sources.

Highlights of Successes

- The eTech Coach: The most evident success of the NNDSB 21st Century Pilot for System Learning has been the increased capacity and confidence demonstrated by the eTech coaches.
- Professional Learning Framework: Working collaboratively with the eTech Coaches, NNDSB has been able to develop a learning framework that supports coaching and peer facilitated learning.
- Sustained Professional Learning Opportunities: The workshops mirrored the professional learning framework, moving from "entry level" skill development to more meaningful, eTech lead sessions, exploring innovative 21st Century pedagogies.

Highlights of Challenges and Unexpected Results

- Differentiating Professional Learning: The project implementation had to consider how to effectively differentiate capacity building sessions and provide opportunities for teachers to work collaboratively and learn from each other.
- Communicating a Clearly Defined Vision for Educational Technology/Coach: Moving forward, the NN:21 initiative will need to communicate a clearly defined role and vision for the eTech coach. In some instances, schools were confused about how to effectively integrate the eTech position.
- eTech coaches have indicated they have a willingness to host professional learning within the context of their classroom. Co-planning, co-teaching, and demonstration classrooms will enable teachers to access capacity building opportunities within the authentic context of the classroom.

Sample of Comments from Participants

"Fellow staff members need to remember e-tech coach is not an I.T. 'guru' and can only co-learn together, not 'pop-the-hood' and fix broken machines. This is a professional togetherness not a computer mechanic!"
"Taking time to support the teacher at their level and to be there in the class and outside of the class has made a big impact on how technology has been implemented in our school. I would like to be able to work more closely with the staff in my school."

Highlights of Key Findings

- Although significant dollars have been allocated to purchasing technology for students use, this data may reflect an increase in the demand for student devices. As teacher capacity grows, the demand for technology may outstrip supply. This may place a greater emphasis on BYOD.

- Teacher attitudes acknowledge an increase in the support they are able to access at the school level. This data may be influenced by the eTech Coach.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.

- Provide professional development opportunities that focus on redesigning and transforming learning, where the focus is not on the technology but on content and pedagogy.
- Plan for future research that aims at discovering how technology integration is linked to students learning outcomes across the curriculum.
- Technology infusion is most successful at improving academic achievement when educators are trained in how to use instructional strategies across the curriculum.

The project had implications for Board planning.

- Thoughtful planning, implementation of action steps, and reflection on sustainability at all levels will help the Near North District School Board School continue to improve academic achievement, and to prepare students for lifelong learning in the 21st Century.

Ottawa Catholic District School Board

Project Title	Library to Learning Commons - Evaluating the Impact of Changes in Learning Spaces and the Provision of Digital Resources on the Acquisition of 21st Century Learning Skills
Brief Description	Our project is best described through our inquiry intention: If we transform the traditional model of a school library to a focus on flexible space, mobile devices, and access to digital resources then we will see an increase in reading, and increase in access, and an increase in the acquisition of 21st Century learning skills. The detailed 'capturing' of the transformation of traditional libraries to learning commons in our project will create a roadmap for other Boards who are on the same journey. Changes to the physical space is one part of the transformation but the ability to observe the change in the thinking of the staff in identifying how their work has changed to date and changes eminent for the future is also important.
Context	Number of schools: 8 Number of teachers/classrooms: Number of students: Grades/Program: reviewing the impact of changing from traditional libraries to learning commons in our 81 schools by highlighting the transition specifically in 3 high schools, 3 elementary schools and 2 intermediate schools.
Phase of Change and Impetus	*New* School culture for teaching and learning in the 21st Century is an evolution and the learning commons should be a key hub of the school to model and facilitate the collaboration among students, staff, and the community.
Goals & Priorities	Building capacity is the focus and outlining the most effective and efficient strategies to achieve this through the transformation will provide the guidance to documenting the process and measuring the outcomes.
Role of Technology	• Installation of a Smart Board in every Learning Commons. • Netbook carts, iPad carts, and iPod carts provide easy access for student use throughout the day and for home use with a sign out privileges. • A 'Bring Your Own Device' policy allows students to use a wide variety of technology as a tool for their learning. • Devices remain in the learning commons and available to students and staff. • Various on line resources, eBooks and Desire 2 Learn content, are accessible in the learning commons and the library technician.
Areas of Impact	• Pedagogy • Learning environment/technology • Leadership
Indicators of Success	1. Change in thinking over time for the job description of the learning commons staff. 2. Literature review of available and successful strategies being used elsewhere. 3. The creation of resources outlining the process for the conversion. 4. Media collection of videos/photos/animations highlighting the transformation.
Capacity Building in Teaching	The 'vision' of what a Learning Commons can mean for a school community vs. the stage of implementation of the process is ongoing work at all levels from the Learning commons to the school to the board and provincially.

Project Title	Library to Learning Commons - Evaluating the Impact of Changes in Learning Spaces and the Provision of Digital Resources on the Acquisition of 21st Century Learning Skills
Leadership, Sustainability, Scalability	Being able to extend the current funding would allow us to continue the implementation with release time, yet the site we create will hopefully assist provincial adoption of the concepts and practices we're working to refine.

Summary of Data Collection

January – June data was collected through a Core Leadership Group and meetings, surveys, and input sessions with all teacher librarians/technicians across the 81 schools. The data was used to establish the technology advancements since the beginning of the project, the re-writing of the job description based on teacher and technician descriptors, budget re-alignment, etc.

Highlights of Successes

- Collaboration and the building of key relationships has been the most significant and impressive outcome (giving voice and choice to our teacher librarians and library technicians in their job descriptions, identifying their technological needs, specific identified professional learning needs).
- Understanding of inquiry learning and how the availability of technology and support for students and staff through the Learning Commons.
- Learning from our first experiences in 8 schools has saved a great deal of time, energy, and expense as we get more efficient and savvy at the transformation process.

Highlights of Challenges and Unexpected Results

- We were able to decrease the time needed to make the conversion to Learning Commons in all 81 schools from 5 years to 3 years because of our early data and feedback. This made the pilot project able to focus on system wide transition and 'going to scale'.
- The timeline cannot be met to have all of the work completed by July 5th and ready to post. In an effort to bring things together well and by those best equipped to produce the necessary materials we need to use the months of July and August for our writing teams and video production, etc.
- Having teacher librarians and library technicians grasp the rapidly changing work they are required to do presented significant challenges. This is compounded by the rapid addition of a variety of technological advances was overwhelming to some staff. The whole concept of 'being a learner' and learning along with the rest of the staff and with the students helped as well.

Highlights of Key Findings

- A close examination of the use of technology and the use of eReaders, etc. brought with it a realization that things are changing quickly and investment in technology must be done carefully as large investments can be quickly outdated.
- Bring Your Own Device and extensive investment in the wireless network provide big advantages to students and staff.
- We now have evidence that a focus on flexible space, mobile devices, and access to digital resources leads to an increase in reading, and increase the acquisition of 21st Century learning skills.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Adjustments to SIPsa templates and our BIPsa to include Learning Commons based on the School Effectiveness Framework (SEF) document.

The project had implications for Board planning.

- Building the partnership with Ottawa Public Library will require a more concentrated effort next year with a well laid plan in place.

Simcoe Muskoka Catholic District School Board

Project Title	Learning in the Cloud
Brief Description	Brings to scale improved student writing and improved attitudes towards writing and learning supported by a cloud-based environment. The project examines the use of cloud resources to improve learning through assessment for learning and descriptive feedback.
Context	Number of schools: 5 Number of classrooms: 12 Number of students: 300 Grades/Program: • Intermediate Elementary - Language • Grade 9 & 10 English
Phase of Change and Impetus	*Continuation* Round one of the project focused geographically on schools in the northern region of our board. This year the project has expanded to secondary and elementary schools to the central-west in our board.
Goals & Priorities	Essential question: Does cloud technology, and the ability to collaborate in real time, improve student writing and engagement?
Role of Technology	Technology focus**:** • "Does using technology, specifically Google Docs, improve students' ability to self-assess, reflect on their learning and set goals?" • "Does using technology, specifically Google Docs, and having 10 Chromebooks in the classroom all day - every day transform the way we teach to allow for self-directed and self-paced learning?"
Areas of Impact	• Pedagogy • Learning environments/effective use of technology
Indicators of Success	1. The use of Electronic Portfolios will improve students' ability to reflect on their learning and set goals. 2. The use of Google Docs will improve students' ability to work collaboratively to support individual learning and contribute to the learning of others.
Capacity Building in Teaching	Each teacher was given 4 days of release to work with a consultant and colleagues to focus on the goals of the project and the collection of evidence. Release time allowed teachers to participate in the external research with our partner boards.
Leadership, Sustainability, Scalability	Currently our ICT Department does not support the use of cloud technology or the purchase of *Chromebooks*. Although Senior Programme Administrators are very supportive of the project and the use of cloud technology, the business side of the organization is not yet convinced.

Summary of Data Collection

Data collection included:

• Two case studies to gather observations of students' ability to reflect on learning and set goals.

• Student post survey to measure their interest in learning as a result of the use of technology.

Findings and analyzed tabulated data were included with report.

Highlights of Successes
- Learning shifted from teacher directed to student directed.
- Having devices available to teachers in their classroom 24/7 allowed them to move to a problem-based approach. Group work became more fluid as each student took on a role that aligned with their skills and the collaboration extended beyond the school hours. The use of cloud technology to support student writing allowed teachers and students, the ability to provide timely and descriptive feedback.

Highlights of Challenges and Unexpected Results
- Some teachers reported classrooms became much "noisier" with the focus on collaboration. However, there was perceived improvement in student learning and engagement.
- The biggest challenge was providing the hardware required to support the project. The Chromebooks were delayed until Mid-May. The school had limited access to wireless and no access to the portable classroom where a couple of the project classrooms were located.

Sample of Comments from Participants
"The use of ChromeBooks (and cloud technology) levels the playing field for students of all abilities. There are immense gains for students with learning disabilities. One student has moved 7 PM levels in grade 7 this year so far. Others have made significant moves".
"Group work can be done at different times from any place there is the Internet. Students have taken advantage of it, when sick and during snow days by accessing their work at home."
*"Good teaching practices" of allowing extra time and providing different tools for learning are now simply parts of student "good learning practices". They can manage their own time (decide when they work on tasks as they have access within the classroom all day long, and at any time they choose from home nights and weekends). … Students and teacher are constantly sharing the role of student/teacher. I am not viewed as the all-knowing teacher, but one who can **guide** students in their learning and they can equally guide me when they discover aspects that I have yet to explore. "*

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Continue to build capacity using "Learning in the Cloud" Technology and Chrome devices, to provide professional development opportunities, and to share examples of best practice.

The project had implications for Board planning.
- This will also support a move to the use of a wide variety of mobile devices in our classrooms at the acceptance of BYOD (Bring Your Own Device) as learning tools.

Thunder Bay Catholic District School Board

Project Title	Leading for the Future – Preparing for the World
Brief Description	Brings to scale leadership development that enables all leaders to initiate, sustain, and build capacity for new pedagogical practices. They will "generate ownership and establish conditions for continuous improvement". (Fullan). This project will provide administrations with the opportunity to develop an understanding of the Ontario Leadership framework in the context of technology integration, using the School Effectiveness Framework as a basis.
Context	Number of schools: 5 Number of teachers/classrooms: 45 Number of students: NA Grades/Program: Instructional leaders and program staff
Phase of Change and Impetus	*New* Instructional leaders working together to develop leadership skills for 21st Century learning.
Goals & Priorities	The goal of this project is to support school leaders in the implementation of technology to support school improvement and student achievement.
Role of Technology	Types of technology: laptops, mobile devices, web 2.0 tools (e.g. Linoit, Twitter, Zite), resources (School Effectiveness Framework, Ontario Leadership Framework). Principals are learning to incorporate technology in to their roles in an authentic and effective way. They are also learning to evaluate where technology is being used effectively in the classroom. Program staff are modeling innovative, effective uses of technology, department heads and teacher librarians are supporting the use of technology in their roles.
Areas of Impact	• Leadership
Indicators of Success	1. Instructional leaders develop a shared vision of effective uses of technology. 2. Through collaborative inquiry, project participants develop an understanding of how technology helps meet school improvement plan goals.
Capacity Building	Through collaborative inquiry, leaders were afforded the opportunity to develop a shared schema, a common vocabulary, and an understanding of what 21st Century learning looks like in the classroom and across the board.
Leadership, Sustainability, Scalability	• Aligning initiatives and explicitly referencing connections between initiatives. • 21st Century learning isn't another initiative, but supports school improvement. • Leading and learning for the 21st Century is a clear focus within the board.

Summary of Data Collection

Baseline data was collected through surveys and interviews. A video narrative was developed around 21st Century learning by our leaders. Participants used Web 2.0 technologies to share ideas throughout the collaborative inquiry.

Highlights of Successes

- Initially 5 schools were selected, but this was expanded, by invitation to all principals in the system.
- Alignment with other board initiatives focused on student achievement and well-being.
- Project has helped us develop a shared understanding of our vision of 21st Century learning.
- The project supports Ministry priorities including: high student achievement; closing gaps; public confidence.

Highlights of Challenges and Unexpected Results
- Timelines for this project were a challenge.
- Technological challenges (bandwidth, filtering).
- Timing and initiative fatigue.
- Capacity-building sessions led us to understand that we need to formulate a plan to ensure the development of stakeholders as digital citizens.

Highlights of Key Findings
- We had to come to a shared understanding of what 21st Century leading and learning would entail before starting work on the 'look-fors'.
- Work in technology cannot stand alone – use of technology is most successful when tied explicitly to strong pedagogy.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- Refine our 'look-fors' on whether technology is supporting 21st Century learning.

The project had implications for Board planning.
- Investigate the role of digital citizenship and what that it would look like as a framework for the board.

Toronto Catholic District School Board

Project Title	The NeXt Administrator
Brief Description	Brings to scale leadership programs tailored for all administrators to build 21st Century self-sustaining teaching and learning capacity. The TCDSB is looking to develop a model of Professional Learning tailored for administrators.
Context	Number of schools: all Number of teachers/classrooms: NA Grades/Program: All school leaders and academic system leaders in the TCDSB.
Phase of Change and Impetus	*New* As we developed the plan and looked at possible delivery models, we realized that simply developing online resources that one could consume passively was not enough. With this in mind we developed a much more interactive and reflective program that would allow all leaders to explore ways to impact the learning in their schools.
Goals & Priorities	The focus will be on cultivating a self-sustainable model of professional learning that will grow as more participate and engage in it.
Role of Technology	We continue to encourage all our leaders to be paperless and thus have made all our materials available in an electronic form. Administrators were asked to bring technology to any professional development activity that we gave in the hopes of seeing the value of this much more environmentally responsible practice.
Areas of Impact	• Learning environments/technology • Leadership • Providing tools to enable leaders to assist teachers
Indicators of Success	1. Increased interest in 21st Century learning strategies. 2. Increased demand and use of online collaboration tools. 3. Choices of school funds being made based on 21st Century learning design. 4. Choices of school PD being made based on 21st Century learning design.
Capacity Building in Teaching	School principals became facilitators of the NeXt lesson in-service, delivering sessions to senior staff and vice principals.
Leadership, Sustainability, Scalability	• Board's commitment to 21st Century learning (e.g., establishment of 21st Century Learning and Academic Information and Communication Superintendency). • Increasing awareness of school and program leaders.

Summary of Data Collection

Data was collected using exit surveys and anecdotal feedback.

Highlights of Successes

- 21C is a standing item at monthly VP meetings.
- Introduction of eCommunity (D2L) as a collaborative tool within school communities.
- Empowering leaders with the knowledge of how to change teacher practice to the implementation of 21st Century Design.

Highlights of Challenges and Unexpected Results
- Short timelines.
- Additional demands on system leaders' time.
- Lack of funding for technology.
- ITL research provided a framework that we could build on the initial work of Project NeXt.

Highlights of Key Findings
None reported.

Follow-up and Future Directions
None reported.

Upper Grand District School Board

Project Title	Quality Review of Digital Learning Resources
Brief Description	Committees have begun the process of examining different methods of providing digital content: • Distribution mechanisms for loaning digital content for ebooks and other electronic devices that support ebook content (ePub, PDF, etc). • Accessibility of existing print materials to develop comprehensive list to ensure that digital copies are available to students who require them. • Review of Digital content including textbooks for secondary. This committee is re-examining the concept of a textbook in the context of the 21st Century. It is currently developing a rubric to review a variety of digital resources and investigate the potential of Open Educational Resources. As part of this project a review of the current state of digital content for educational purposes will be developed with researchers at the University of Guelph.
Context	Number of schools: 11 Number of teachers/classrooms: 25 Number of students: Grades/Program: review of digital content for all grades and subject areas.
Phase of Change and Impetus	*New* This project will outline some of the critical implications related to the implementation of digital textbooks in K-12 including Bring Your Own Device policies, Wireless requirements, Network security, Equity, Sustainability, and Budget implications.
Goals & Priorities	The board will leverage the Active Directory security system providing 24 hour a day 7 day a week access to appropriate, engaging, educationally relevant content in a highly secure digital environment.
Role of Technology	This project is designed to examine how digital content, e.g. ebooks, electronic versions of existing texts, and new digital (born digital) resources such as online textbooks, can be made accessible to all students both within the confines of the brick and mortar school and beyond.
Areas of Impact	• Learning environments/technology
Indicators of Success	1. Development of rubrics for assessing digital content. 2. Selection and purchase of digital content and/or mechanisms for evaluation. 3. Measuring student and staff uptake of selected process. 4. Report of current state of digital content.
Capacity Building in Teaching	Engaging stakeholders (teachers, Department Heads, school administrators) from the beginning provided a sense of ownership and respect.
Leadership, Sustainability, Scalability	• The success of this project is due to the willingness of school staff and various Board departments' personnel to work together despite significant challenges. • IT Department's commitment to upgrading the network and ensuring ubiquitous wireless access in our schools. • The cooperation and support of Purchasing helped ensure that the best value for our staff and students was realized through the negotiating process.

Summary of Data Collection

Data was collected from usage of UG2GO, and feedback from committee members and participating schools. The draft document *A Literature Review of Digital Resources for Student Learning* (June 2013) by Agnieszka Wozniak, University of Guelph, Research Shop Intern, accompanied and provided strong foundational background information to the project.

Highlights of Successes

- Like many Ontario school boards, Department Heads of each secondary school manage their own textbook budgets. Such autonomy allows for decision-making that is responsive to local needs. However, this model represents significant impediments to change and cost savings. This model often results in different schools purchasing different resources for the same course. Department---level purchasing policies make it challenging to introduce digital textbooks. Reasons for resistance include familiarity with existing purchased resources, resistance to the introduction of technology, concerns about the capacity of the network infrastructure, etc.
- In April 2013 eight of the eleven English Heads from secondary schools opted to review the digital content offerings from a variety of publishers. Before the presentations began the Heads were presented with a proposition. If they could agree on one of the digital options, the Board would purchase the product on their behalf. This promise changed the equation. They now had a chance to buy what they liked, provided they could agree. In return, each department would have to agree to pay an annual fee to help cover the costs.
- The review process resulted in a unanimous agreement to select Oxford Next. This product was rated "excellent" with respect to the quality of both its digital format and content. As part of the negotiations, Oxford agreed to provide a 25% discount on their print materials. As of the end of June, only one school has decided not to participate.

Highlights of Challenges and Unexpected Results

- One of the largest unexpected challenges was the immature state of digital content. First, there is simply so much free content that most teachers report feeling overwhelmed. Second, much of the content is of doubtful provenance and/or laced with American content. Third, there is no robust solution for aggregating free content. These challenges left teachers bewildered and reluctant to use free digital content. Commercial digital content solution would be a better alternative.
- The committee was also challenged by the offerings from publishers. The committee was frustrated by the lack of any clear leader in the digital content field. There are no clear solutions at this time. And a host of challenges that needed resolved.
- The committee struggled with identifying the purpose of textbooks and the implications for digital content in the 21st Century. Some members questioned the value of a print textbook in today's classrooms. Others suggested that teachers should be able to curate their own textbooks by aggregating free content from the Internet. Examples of digital textbook initiatives in the US were considered and rejected by many on the committee. The lack of consensus of members on the committee was a significant and unexpected challenge.
- Other major anticipated challenges for this project were the cost and sustainability of the product. The committee members and Department Heads rightly expressed concerns that any purchase must be sustainable for more than three years if there is to be broad adoption. Fortunately, Oxford University Press was open to considering an alternative model.
- This project provided multiple opportunities to dovetail with existing initiatives. The work of this project has helped the Board to develop an inventory of the textbooks used in all schools. This work forms the first stage in the aggregation of digital versions of each resource to ensure accessibility for

all. Finally, this project supported the investigation of a digital library system that would permit the loaning of digital content to all students.

Highlights of Key Findings
- First, collaboration between Board departments is absolutely critical to the success of the project (e.g., Program, IT, and Purchasing Departments). By building and demonstrating trust and cooperation, we were able to support schools to risk working with us to try a new solution.
- This project revealed that amongst educators there is significant disagreement about how to engage with digital content. There are a variety of philosophies about how students learn best using technology. Further, there is no "magic bullet" to point to where the challenge of using digital content has been resolved conclusively.
- The commercial marketplace for digital content is still emerging. Larger publishers are not positioning digital content as a cost-savings solution for school districts. Developers of commercial digital content recognize the confusion amongst educators and are understandably reluctant to invest resources without assurances that teachers will use these products.
- Finally, we found that the Board's UG2GO digital platform is an excellent delivery system that already meets the needs of many students and teachers. The combination of secure access and availability at any time anywhere with any device means that all users can access very high quality digital content. Oxford University Press's Next is an excellent addition to a great service.

Additional Statements Related to Areas of Impact
- Feedback from the Committee highlighted significant concerns about access to computers to ensure students will be able to use a resource like Oxford Next in their classroom. This concern was addressed in part through the Board's adoption of a Bring Your Own Device (BYOD) policy. To support the introduction of BYOD in the Upper Grand DSB, a significant PD initiative will begin in the fall of 2013.
- Feedback from the Committee also highlighted concerns about Internet connectivity. The IT Department has developed plans and dedicated significant resources to ensure that each secondary school has a minimum of 1 GB bandwidth and new hardware (switches and access points).

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- The IT Department is working with OUP's technical staff through the summer to ensure that their product is compliant with our Active Directory system.
- Training for each secondary school English Department is being scheduled for the fall 2013
- Training materials and resources for the Bring Your Own Device training scheduled to begin in September are being finalized over the summer.
- Chromebooks take-home loaner devices will be distributed to schools during the BYOD training in the fall.

The project had implications for Board planning.
- In the longer term, the board is investigating ways to significantly reduce its ecological footprint through the use of digital content and the BYOD policy. As well, the board will explore reducing both its photocopying and printing budgets. Using software (*Papercut*) the board hopes to reduce these costs by 25%. Access to digital content should reduce the need to print. One proposal under consideration is to repurpose some of the savings to provide PD opportunities to teachers.

Upper Grand District School Board

Project Title	Virtual Learning Environments – Blended Learning and the Cloud

Brief Description	Due to the popularity of Google Apps for Education through the support of round 1 funding, this project has developed multiple objectives.
	• Staff Development, including:
	  - After-school workshops for staff
	  - In-class support for teachers
	  - Full and half-day workshops provided to key staff personnel
	• Blended Learning Integration:
	  - Integrate Google Apps with Desire2Learn Learning Management
	• SEA & Google, including:
	  - Collaborative project with Special Education Dept.;
	  - Support intermediate students and staff to use cloud computing and assistive technology software including, Word Q, TextHelp
	  - Using Universal Design for Learning (UDL) model
	• Research:
	  - Collaboration with YRDSB, SMCDSB, York University and ABEL

Context	Number of schools: 8 Number of teachers/classrooms: 25 Number of students: Grades/Program: Elementary, intermediate students, Secondary, all grades, all subject areas, SEA students, students requiring technology to support their learning.
Phase of Change and Impetus	*Continuation* In the previous year only a small number of schools participated in the Google Apps for Education project. The success of last year's project led to the board-wide implementation of Google Apps. All staff and students now have a Google Apps for Education account.
Goals & Priorities	A key finding of the previous round was the requirement for the building of teacher capacity.
Role of Technology	Technology is an essential element of this project because it provides a common digital platform accessible to all students and staff at any time regardless of the device they are using or their location or time of day. This technology supports universal access to powerful tools for collaboration and innovation. This project involves the following types of technologies: • Wide Area Networks – cloud computing requires stable and significant access to the Internet. • Wireless technology – cloud computing allows students to use their personal devices to access the cloud. • Active Directory Databases – ensuring student safety when accessing the cloud requires that school boards provide a secure method for authentication. • Portable technology – students and staff may access the cloud environment from any Internet-ready computer, smart phone, or tablet. • The Upper Grand is exploring a new technology, Chromebooks, developed by Google. With no software on the device all work is done on the cloud.
Areas of Impact	• Learning environments

Project Title	Virtual Learning Environments – Blended Learning and the Cloud
Indicators of Success	1. Increase over time of usage as measured by user log in. 2. Attendance at workshops, technical retreats, and Google Summit. 3. Core Google Support Team achieve Google Certified Instructor certification. 4. Transition from WordPerfect to Google Docs as primary word processing tool. 5. Integration of Single Sign On (SSO) for D2L and Google. 6. Registration for Bring Your Own Device (BYOD) workshops. 7. Rewriting of Acceptable Use Policy (AUP) to incorporate BYOD. 8. Purchase of Chromebooks by schools.
Capacity Building in Teaching	A team of elementary and secondary teachers was recruited to assist in the development of workshops resources. All members participated in the Google Certified Instructor training program to help build their skill levels and to provide them with official Google certification. This group was engaged in further development and scheduling of staff training for the fall of 2013.
Leadership, Sustainability, Scalability	• The continued engagement of the IT Department in this project has been critical to ensuring the sustainability of Google Apps. The support of the IT Department is an important indication to all users of the importance of, and commitment to, the sustainability of the service. • The new Single Sign-On services (SSO) will provide access to a highly secure and easy-to-navigate resource. • The Board is planning to move from its corporate email system, FirstClass, to Google Apps Gmail service over the course of the upcoming school year. • The mandatory BYOD training for schools this year will expose most staff, students, and parents to Google.

Summary of Data Collection

Data was collected of user log in's to UGCloud to demonstrate increase in usage, attendance at workshops demonstrates staff engagement and commitment, and registration of schools for BYOD training demonstrates school administrators recognition of importance to integrate technology in all classrooms.

Highlights of Successes

- Increase in the usage of Google Apps for Education. By May of 2014 over 3000 users logged onto Google Apps every day. This steady growth in usage, particularly on weekends, demonstrates the growing interest in this service. The weekend usage data supports the importance of providing access to users outside of the regular school day.
- Developing support for Google Apps IT Department. Significant time and effort has been expended to develop the trust and expertise of the IT Department with respect to Google Apps. Multiple training opportunities were provided to IT staff. Regular and frequent meetings between IT staff, teachers and Program staff have fostered a high level of trust that has proved important as challenges are resolved together.
- Development of a single sign-on process integrating Google Apps and Desire2Learn with the board's existing UG2GO digital platform. With the support of the IT Department, Google Apps is now fully integrated with the Board's Active Directory system to ensure that all users have a very secure yet easy way to access digital content and web-based tools.

Highlights of Challenges and Unexpected Results
- The political climate impacted training and support for the introduction of Google Apps.
- Instead of focusing on training all teachers, energy was focused on developing the capacity of a few teachers to work as trainers in the future. All members of the team have now passed their exams and are currently completing their two mandatory videos for submission this summer.
- With cooperation of our local ETFO, the board helped to organize the Google Apps Summit in April.
- Google Apps is the new default word processing program. The success of Google Apps in the board provided an opportunity to remove WordPerfect Office Suite from school computers.
- Adoption of Chromebooks by schools. Schools were offered the option of desktop computers, laptops, iPads, or Google Chromebooks. To our surprise, schools choose to purchase more Chromebooks than any other device.
- Mandatory BYOD training for all schools. The Upper Grand DSB has invested significant resources into developing a ubiquitous wireless network throughout all schools. WiFi and Google together provide the foundation to allow students and staff to bring in their personal devices to classrooms. The success of Google in our board led to a request from senior administration to revisit their Acceptable Use Policy (AUP) with respect to Bring Your Own Device. Further, all schools are required to participate in BYOD training with their staff next year to ensure that all classrooms will welcome personal technology.
- Access to loaner computers for students. In the past few years the Upper Grand DSB has allowed students with SEA equipment to take their computers home with both parental and principal permission. This year the policy has been expanded to allow all students the possibility of borrowing a computer. To support this change in policy, the IT Department has purchased 5 Chromebooks for each elementary school and 10 for each secondary school.

Highlights of Key Findings
- Support from senior administrators for Google Apps has provided significant momentum for the initiative.
- Google Apps has provides the board with the opportunity to reallocate financial resources. Reduction in support fees for existing email systems or alternative word processing systems means that funds can be redirected to support other programs.
- Supporting a team of instructors is key for professional development. The Google Certified Instructor program provides a legitimate and recognized accreditation for the trainers.
- Providing a simple but secure method for teachers and students to access digital resources increases the probability of it being used.

Follow-up and Future Directions
The findings provided direction for future related work related to the initiative.
- A schedule of training opportunities is being developed over the summer for fall 2013 roll-out.
- BYOD training for all schools will begin in early September, 2013.

The project had implications for Board planning.
- Presentation of the UG2GO and SSO access will be made to senior administrators, Trustees, and principals in September 2013.
- The Acceptable Use Policy will be reviewed and re-written in the fall of 2013.

Waterloo Region District School Board

Project Title	Scalability of Futures Forum Project – Development of a Digital Learning Strategy
Brief Description	The focus involves examining, identifying, articulating, and mobilizing the components contributing to the successful implementation of an inquiry based and technology enabled pilot project. In the project stakeholder involvement in each of the components will be analysed to understand the factors needed to strategically implement change across an organization to improve teaching and instruction. The project will provide models of, and evidence for, the role of technology in facilitating 21st Century teaching practice that offers personalized and differentiated learning to support student engagement and success. We are also examining how to advance local and provincial leadership required to initiate, sustain, and build capacity for new pedagogical practices.
Context	Number of schools: 16 Number of teachers/classrooms: 50 Number of students: 125 Grades/Program: Grade 9 Applied and Academic English students. Grade 10 Applied and Academic students; the participating classes integrate three courses (English, Careers, and Civics) over two timetabled periods.
Phase of Change and Impetus	*New*
Goals & Priorities	Develop and implement a digital strategic plan for promoting inquiry based, technology enabled learning and instruction, which has the potential to positively impact all staff and students across the system, Junior Kindergarten to 12.
Role of Technology	It is essential that digital skills be develop at the same time that face-to-face skills are developed within a classroom to prepare students for learning beyond the classroom. Essential to the pilot is access to the Internet and mobile technology; each school is provided with WiFi. WiFi permits students to bring their own devices and use board equipment to become mobile learners. The school-wide WiFi network allows students to move in and out of flexible working groups in different locations, depending upon the needs and requirements of the task.
Areas of Impact	• Pedagogy • Leadership
Indicators of Success	Success indicators of pedagogical development include: 1. Improved achievement related to pass rates. 2. Increased achievement of reading comprehension reflected in Ontario Comprehension Assessment (OCA) results. 3. Increased acquisition of contemporary learning skills (i.e., collaboration, communication, creativity, and critical thinking). 4. Increased engagement and student sense of efficacy. Success indicators of leadership development: 1. Administrators and central staff attitudes of the leadership role. 2. Increased engagement and teacher sense of efficacy. 3. High level of system capacity to scale project.
Capacity Building in Teaching	• To support the implementation an Implementation Team was created to

Project Title	Scalability of Futures Forum Project – Development of a Digital Learning Strategy
	oversee all aspects of the project. The team consisted of three stakeholders; representation from Information Technology Services, representation from Learning Services (curriculum and instruction), and representation from administration whose role was to liaison between the teachers, and the Board's Steering Team. • Each participating teacher was provided with a mobile device to support their work, classroom wireless connection, and a class set of mobile devices for the projects that were to be shared with other classes when not being used.
Leadership, Sustainability, Scalability	• To build leadership capacity, and to act as an in-school advocate, a vice-principal was designated as the administrative support for the teachers and program. • An on-going analysis of this year's and last year's 21st Century pilot project's findings coupled with a literature research of models for scalability (e.g., Fullan, Rogers and Moore, Deming) was used to develop a framework for scaling educational innovation in the form of the WRDSB Digital Learning Strategy and reflected in the Board Improvement Plan for Student Achievement. • The move by ITS to using mobile, wireless devices on charging carts has positively impacted to growth of our initiatives. Teachers, free from the demand of booking computer lab time, can have technology in the classroom at all times, as a resource to call upon when needed. This positive impact has contributed to the growth of all of our digital learning initiatives.

Summary of Data Collection

To determine the impact of the project upon pedagogy and leadership, data was collected from several sources, using formal collection processes, observations, and conversations. For example:
- Data was collected centrally (pass rates, attendance, and late-to-class information).
- Centrally, the data from the Ontario Comprehension Assessment (OCA), from Pearson, was compiled to measure improvement in student reading comprehension.
- An online survey was used to gather data from students.

Highlights of Successes

As a result of the learning in the project (e.g., conditions for success, barriers to success), the Digital Learning Strategy was developed. It has provided for next steps in the scalability of the key elements of the projects (FFP, G9EDLP). The strategy support the elements of the Board Improvement Plan for Student Achievement such as student voice and choice, vision of a student (e.g., collaborative, communicator, creative thinker, critical thinker), and vision of the educator (e.g., promotes student voice and choice, differentiates instruction, reflective practitioner).

Highlights of Challenges and Unexpected Results
- The greatest challenge faced was the loss of time to meet and work together to plan the initiative as a whole group. This was caused by the provincial job action.
- A second challenge was getting the technology in place and wireless access to support the G9EDLP initiative and expanded involvement of FFP teachers.
- Schools experienced a high degree of student engagement when using the technology provided. As a result some decided to collaborate for more than the required two units of study. Other teachers had the students continue to use some of the technology tools for the rest of the semester.

- Another unexpected opportunity developed to assist with scaling the initiatives. The two projects attracted innovative teachers (the early adopters) and we used opportunities this year to showcase their work as we scale our projects across the system.

Highlights of Key Findings
- Innovative teachings occurred as a result of technology enabled learning environment and student voice and choice.
- High levels of engagement for teachers and students resulted from the collaborative environment.
- Technology enabled students to develop the contemporary learning skills.
- Collaboration (between students and between teachers) is an essential element to learning.
- Technology enabled students to develop the contemporary learning skills in the areas of collaboration, communication, creativity, critical thinking, positive character development, and contributing citizenship.
- Student achievement increased in English courses.
- Classrooms did use technology to enable learning.

Follow-up and Future Directions
- Level one implementation is the same model as was used this past year (two units) is a purposeful approach to developing teachers' confidence with technology, developing their collaboration skills, and demonstrating for them the engagement successes of using technology with students.
- Level two implementation expands the commitment teachers must make to using technology in the classroom – this level is for teachers in their second year of the initiative or for teachers that are comfortable with technology.

Wellington Catholic District School Board

Project Title	Assistive Technology Coach
Brief Description	Brings to scale professional learning and coaching for teachers in the area of Special Education assistive technology. Based on the successes of Literacy and Mathematic Coaches across the province, the Assistive Technology Coach role provides a unique professional development opportunity in this area of special education. The coaching model is a "working side by side" approach that allows for "in the moment" support with technology, pedagogy, and strategies of universal design.
Context	Number of schools: 5 Number of teachers/classrooms: 24 Number of students: 425 Grades/Program: The target groups of the pilot project are students with SEA equipment throughout the system and the teachers supporting them.
Phase of Change and Impetus	*New* The coach becomes a classroom partner and a member of the school team who provides a gradual release model of profession development.
Goals & Priorities	Increase the frequency of effective use of assistive technology in the mainstream classroom.
Role of Technology	The AT Coach's goal in any classroom is to increase the effective use of assistive technology (word prediction, text to speech, speech to text) software. In reaching this goal it will be necessary to support both teachers and students in their use of the technology.
Areas of Impact	• Pedagogy • Learning environments/technology • Leadership
Indicators of Success	Success indicators will include; 1. Increased confidence of teachers in using the technology (survey, anecdotal data). 2. Increased use of the technology with all students (survey, observation, anecdotal). 3. Increased willingness of students to use the technology (student survey, observation). 4. Improved achievement in the areas of reading, writing, and mathematics (report card data, classroom assessment, EQAO assessment).
Capacity Building in Teaching	Depending on the need of the teacher and students, the ATC worked with teachers in developing and delivering lessons and assessing student skills across the curriculum while promoting the use of technology universally in the classroom, and directly with LD students who have SEA laptops.
Leadership, Sustainability, Scalability	• Partnership with Trillium was invaluable as we were privileged to hear directly from their students. • Students were accepting of the role of the ATC in the classroom. • Continued funding for the role of the ATC is a challenge in these fiscal times. • Maintenance of equipment. • Rapid change in technology design. • Cost of continued training for students and teachers as technology changes.

Summary of Data Collection
Data was collected via electronic survey from teachers and students involved in the project.
Assessment information was taken from report card.

Highlights of Successes
- Evidence of increased usage and student initiated usage of assistive technology.
- Teachers developed a better understanding of the purpose of the SEA laptops, their accompanying software, and how they connect to a Learning Disabilities profile.
- Teachers and students developed a better understanding that assistive technology is useful for all students.
- Students have developed a better understanding of how their laptop can help them.
- Students are more familiar with the assistive software available for them and have been refreshed on how to utilize it.
- Students have shown leadership in the classrooms demonstrating how to use the programs to their peers.
- Students have noticed increased efficiency with using their computers; thus, finishing their school work more effectively and efficiently.

Highlights of Challenges and Unexpected Results
- The project started at the very end of February, 2013 so it was an extremely short period of time.
- Bandwidth in Wellington Catholic can be problematic when several wireless devices are being used simultaneously. The board has initiated a plan to increase bandwidth for the following school year.
- There was more universal usage of the Assistive Technology outside of the students with LD in the classroom. There was more exploration with web-based programs than originally planned.

Highlights of Key Findings
- Frequency of computer usage increased – 35% using it daily, 19% using it more than once daily and 12% using their computers too often to tabulate. Pre-project, the data showed 42% using their computer daily, 17% using it more than once daily, and only 8% using it more than able to tabulate.
- When comparing the data from March to June between the 4 major software, the data is showing their preferences for software are more balanced.
- In Mathematics – 60% of students' grades increased or remained the same.
- In Language Arts – 64% of students' grades increased or remained the same.
- Provision of teacher training and comfort with software and computers is a key element for student support in the classroom. Continue training is vital for sustainability of student usage of technology.
- Teachers must have a sound understanding of their student's Learning Disability in order to understand and efficiently support the use of technology in their classroom.

Follow-up and Future Directions
- There is a strong need for teachers to receive on-going training as the presence of students with LD in classrooms is not consistent from year to year.

Windsor-Essex Catholic District School Board

Project Title	Critical Thinking Through Collaboration in a Digital Environment: Google Applications for Education in the WECDSB
Brief Description	Brings to scale collaboration in a cloud-based environment to improve learning and increased student achievement. Our focus for this project will be to provide equitable access to Tools2Go to both students and staff in the WECDSB to inspire increased collaboration, creation, and communication in a digital world. Further, the data we collect will reflect teacher and student use of Tools2Go as well as evidence of each of the four items stated previously.
Context	Number of schools: 9 secondary schools, 38 elementary Number of teachers: 94 Number of students: 3000 Grades/Program: grades 4-12
Phase of Change and Impetus	*New* The motivation for this project is to increase the digital capacity of the staff and students of the WECDSB by implementing Tools2Go.
Goals & Priorities	Simply put, the long term goal of this project is to improve student learning. The technology in this pilot project provides equal access to cloud software for all students and allows a seamless continuum beyond graduation.
Role of Technology	Our project is based on accessing cloud computing tools, specifically, Google Applications for Education. This, in turn, will support the Ministry of Education's e-Learning goal with integration with the Provincial LMS and the use of Ministry of Education Provided Digital Software.
Areas of Impact	• Pedagogy • Learning environments/technology • Leadership
Indicators of Success	Our measures of success will be reflected in our comparison of pre- and post- data. Success indicators include, but are not limited to: 1. Increased use of cloud-based computing tools both at school and outside of school hours. 2. Increased Collaboration, Creation, Curation, Communication.
Capacity Building in Teaching	Teachers who are comfortable with and have had success with various types of software and technology are providing training and support to their colleagues. It is somewhat of a 'ripple effect' as these teachers develop their programs using technology their colleagues then have access to it.
Leadership, Sustainability, Scalability	• Sustainability of this project is due to Tools2Go that provides a much needed solution to software issues, portability, and collaboration in our Board. • Infrastructure is still a barrier to "access for all", but the portability of Tools2Go across all devices has allowed us to move closer to the goal of equitable access. • Cross panel collaboration has been key for the growth of Tools2Go. • With the support and direction of senior administration, our Educational Technology Team has expanded its presence in the Board dramatically.

Summary of Data Collection

Data was collected through pre- and post- surveys of teachers and students, along with anecdotal evidence. Tabulated and analyzed results are included with the report and available online.

Highlights of Successes

Successes of this project include but are not limited to:

- Increased collaboration and communication among staff and students both with and without technology.
- Increased use of Tools2Go as a tool for creation, curation, collaboration, and communication.
- Capacity building surrounding technology in the classroom with both our Early Adopters and New Adopters.
- The digital and physical learning commons are enabling teachers, students, and the parent community to be more engaged in supporting student success.

Highlights of Challenges and Unexpected Results

- One of the major challenges we encountered was the tight timeline of this project. We adjusted our expectations and maintained a self-imposed mandate of long-term sustainability rather than attempting to reach as many as possible.
- The integration of this project with LMS presented an opportunity that we were able to capitalize on with the teachers that were involved. Many teachers had already been using either the LMS or Google Apps, or both, so we had a captive audience that wanted to learn more.
- The Early Adopters were very creative in their approach to using release time to bring large groups together and inspire meaningful cross-panel collaboration. These sessions were held in schools and quite often involved students as facilitators.
- The success of Google Communities for meaningful collaboration and learning.

Highlights of Key Findings

The data shows:

- Overall increase in COLLABORATION, both electronically and other means.
- Overall increase in COMMUNICATION, both electronically and other means.
- Marked increases in the frequency in which respondents use Tools2Go to create documents.
- Marked increases in the frequency in which respondents use Tools2Go to create websites.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Leverage the role of the e-Learning Contact and the integration of Google Apps to increase use of the LMS.

The project had implications for Board planning.

- Use the Google Certified Trainers (7) to help scale Tools2Go to the entire Board.
- The Board is committed to building the leadership and networks required to support instruction and learning in a digital environment.

York Region District School Board

Project Title	Cloud Based Learning Environments – Enhancing Learning through Cloud-Based Learning Environments, Teaching and Learning in a Virtual Walled Garden: Phase 2 – Power Tools for Learning in an Intentional Blended Learning Environment
Brief Description	Brings to scale cloud learning spaces for collaboration and knowledge building for teachers and students. The impact of cloud-based tools on the learning environment from the varying perspectives of teacher, student and parent/guardian will form the basis for this project. The inquiry will be framed on the basis of our board's inquiry model. • Explore new approaches for outreach, collaboration, and sharing. • Work with districts to develop better strategies for use of release time and for development of teacher knowledge, skills, and attitudes.
Context	Number of schools: 80 Number of teachers: 200+ Number of students: 2500 Grades/Program: All staff and students for full implementation in Sept 2013.
Phase of Change and Impetus	*Continuation* YRDSB will continue to explore the potential and the realities of "cloud" collaborative learning spaces through the implementation of Google Apps for Education. The intent is to enable broader access to collaborative, knowledge-building tools that are secure, always available to teachers and students, and that are used in a manner that models the power of learning with such tools in ways that are not available otherwise.
Goals & Priorities	The focus has been on exploring ways in which a collaborative environment such as the Google Apps "Walled Garden" would support, shape, and even transform student interactions as they explore inquiry based questions.
Role of Technology	The impact of cloud-based tools on the learning environment from the varying perspectives of teacher and student will form the basis for this project. The technology is essential to the 21Century learning environment model that we are deploying in YRDSB. Understanding the impact of these learning tools is a part of the project, but more important is the development of an understanding of the teacher PD that is necessary to expanding our implementation to the full system.
Areas of Impact	• Pedagogy • Learning environments/technology • Leadership • System capacity building • Professional learning
Indicators of Success	The outcomes from this project will include: A wider range of experienced users, practiced in the instructional approaches determined as most effective for this type of learning environment. A deeper understanding of cloud based tools used to support student learning and engagement in this type of blended learning environment. Enhanced collaboration among students both within the traditional classroom and by connecting learning environments from other schools. Increased collaboration between school districts in the development of practical implementation plans, built on success criteria determined during the "proof of concept" phases.

Project Title	Cloud Based Learning Environments – Enhancing Learning through Cloud-Based Learning Environments, Teaching and Learning in a Virtual Walled Garden: Phase 2 – Power Tools for Learning in an Intentional Blended Learning Environment
	The implementation will be completed in consultation with the ABEL leadership program at York University to identify conditions for success for school leaders.
Capacity Building in Teaching	Introduction to and training of key teachers in schools in a "train the trainer" model.
Leadership, Sustainability, Scalability	• The relationship of all departments in the organization has been enhanced through the broad deployment of the Google cloud tools and this is leading to an implementation that will be sustainable as these tools become a part of the learning and working culture of the organization. • Significant buy-in from students involved in the project has helped to establish some positive pressure in classes where Google Apps is not currently being used. • Privacy and Information Management considerations regarding what types of information can be placed in a cloud storage system.

Summary of Data Collection
- ABEL partnership for research using focus groups of teachers and students.
- Online survey of teachers who have participated in the PD.
- General response of teachers to the sessions through evidence of classroom usage as measured by the Google analytics tools.
- Follow-up sessions with DLRTs (Digital Literacy Resource Teachers) to continue capacity building.

Highlights of Successes
- Constant expansion of the usage of tools by teachers and students for collaborative learning purposes (metrics – how much increase in usage).
- Significant interest/demand from new users to explore Scripts for document management.
- Creation of multiple resource points, including web based and person based.
- Interest from teacher users in developing integrated use of Google Apps for portfolio work.
- Interest in implementing large-scale use for student data tracking.
- Wide variety of resources developed by and rolled out to our system and beyond, to enable blended just-in-time learning for people new to cloud computing.

Highlights of Challenges and Unexpected Results
- Challenges in cross-board collaboration.
- Going to scale with the full board will continue to be a challenge; this project has helped us understand what will be required to move to full system implementation in September.
- The importance of working with other system partners has also been illustrated and so we are working more closely with the board Communications department in the Director's office to ensure alignment and avoid conflict with the other board communication tools.
- Teachers saw opportunities to support and reinforce strong assessment practices.
- Multiple department interest in use of collaboration tools and provision of support to business related practices of the organization.
- Strong relationships with other board teams (ITS, Communications, Purchasing Services) have been strengthened even further and the awareness of all groups to the needs of others and to the specific needs of teachers and students in schools has been a very positive unintended result.
- Teachers identified just as many opportunities for staff use and collaboration as they did for their students and proceeded in both areas.

Highlights of Key Findings

Extensive research summary report to follow. ABEL research team will incorporate the research of York Region DSB, Simcoe-Muskoka Catholic DSB, and Upper Grand DSB.

Additional Statements Related to Areas of Impact

"So long as there is no push to adoption, I fear this large-scale roll-out will have few takers. I've been talking to teachers in some American boards where Google Apps is in use, and in one way or another, often through Email adoption, they had it thrust on them. It's hard to imagine we'll have significant uptake without some kind of push. Perhaps that will come via a significant PD program, although I don't know how we'll manage that, given next year's even tighter PD schedule."

To this end, we strive to connect this implementation plan to our board KSA's (Knowledge, Skills, and Attitudes) for Digital Literacy as well as to the implementation of many other board initiatives. To ensure the PD is connected to system priorities, Google Apps implementation will go beyond training to develop a deeper focus on pedagogy in relation to Inquiry Based Learning and critical thinking initiatives.

Follow-up and Future Directions

The findings provided direction for future related work related to the initiative.

- Increase PD opportunities through alignment to other system project implementation.
- Alignment with CIS initiatives to ensure system capacity (PD for consultants and support staff).

The project had implications for Board planning.

- Revise the board implementation plan for Google Apps for Education to reflect learning from pilot.
- Integrate the implementation plans for various projects (KSA's, Blueprints for Change, and other board initiatives) to better ensure effective deployment of key tools.
- Implementation of board Knowledge, Skills and Attitudes for Digital Literacy with Google cloud tools as a fundamental tool set in line with the Board Plan related to 21st Century learning objectives.
- Develop a plan to reach out to the parental community and provide them with "training" around Google Apps so that they can better understand 21st Century learning and support their learners.

1. How does this technology-based project enhance your board's vision of 21st teaching and learning?

2. How does your project contribute to building the life skills necessary for living and learning in a digital world?

3. Describe how your project has influenced teachers' practice.

4. How has student engagement and achievement been recognized during your project?

5. Technology often has an influence on learning environments. How is this statement reflected in your project?

6. What broader influence does your use of technology for teaching and learning have beyond your school and board?

Depending on the project's areas of focus, further questions guided the conversations.

Impact on student engagement, learning, and achievement and on instructional practices

- What are the common characteristics and elements of the projects that are having the most promising impact on student engagement, achievement, and instructional practices?
- What measures provide the impact evidence for student engagement and achievement, leadership competencies, and change in teacher practice?

Relationship to Curriculum Policy Implementation

- What curriculum policy documents established the foundation for program and assessment related to the implementation of the technology-enabled project?
- How is technology-enabled teaching practice supporting and enhancing curriculum and program implementation?

Indicators of 21st Century Leadership

- How is the pilot addressing 21st Century skills and competencies?
- What attitudes, behaviours, and skills associated with the project allow for the development and promotion of 21st Century leadership?
- What are any unique qualities of educator leadership that are positively enhancing the success and impact of technology-enabled initiatives at the school and system levels of implementation?
- What evidence and research inform the leadership practices in the board/pilot team?

Pedagogy (Instruction-Best Practice)

- What is the pedagogical framework that informs each local innovation project?

- How does the technology-enabled project support students with special needs? What is the impact evidence?

- What key evidence/insights from the learning sciences research (how people learn) and technology-enabled pedagogy are informing instructional practice?

- How is technology-enabled instruction supporting differentiated instruction and personalized learning? What is the impact evidence?

- What are the project's measures of effectiveness, results achieved, and lessons learned that would help other teachers in making their own professional pedagogical decisions about when and how to harness technology for better learning?

- How is this pilot project inviting parent/community engagement?

Learning Environments/Technology

- What specific influence is technology having on learning environments for teachers and for students?

- How is technology impacting collaboration between and among teachers, between and among students, and between teachers and students?

- How is technology impacting student retention and recruitment, program offering, and identity building in French-language schools?

- What are the challenges the project is encountering in implementing the technology-enabled pilot and how are they overcoming those challenges?

Scalability and Sustainability

- What patterns of planning, funding, and teacher practice provide evidence that the project is sustainable and scalable for implementation more broadly?

- How are the effective practices achieving their results, and how are they scalable within the system?

- How will the results of participating in the 2012-13 pilot investigation influence the school board's plans and priorities for the future?

Part 1: Project Information

School Board: **Submission Date:**
Project Title:
Contact person (role, email, phone number, etc.):

Scope of the project:
          Number of schools:
          Names of schools participating:
          Number of classrooms:
Other Information:

Number of students directly involved in the project (estimate only):

Number of teachers and staff directly involved in the pilot project:
          Number of teachers:
          Number of non-teaching staff:
Provide specifics on the roles of non-teaching staff, (e.g. IT, administration, etc.)

Identify the target group of the pilot project activities. (e.g., specific grades, courses, curriculum/subject area, group of students based on identified need, teachers, …)
Is this project a continuation of a project from Round 1 of this initiative (2011-2012)? Yes No **If so, describe how.**