

**A Passport to a Changing Landscape:
Advancing Pedagogy and Innovative Practices for
Knowledge Mobilization and Skill Development
in the 21st Century**

**Local Innovation Research Projects in Ontario
Round 3**

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Final Report

Submitted by:

Pauline Beggs
Director of PD&RDS
Curriculum Services Canada

Prepared by:

Dr. Carmen Shields
Professor
Schulich School of Education
Nipissing University

Stuart Telfer
Research Consultant

Jean Luc Bernard
Research Consultant



Curriculum
Services
Canada

Service des
programmes
d'études Canada

Table of Contents

Executive Summary	1
Prologue	
Rethinking the Metaphor of the Landscape for the 21st Century Research Initiative	4
Chapter 1	
Focusing on the Rich Pictures of the Digital Terrain: Background and Purpose for Round 3 Projects	5
Chapter 2	
Tools for Mapping a New Topography: Methodology and Methods	10
Chapter 3	
Project Designs and Innovative Practices: Describing Participants and their Projects.....	12
Chapter 4	
In the Midst of Exploring a New Topology: Perspectives on Learning and Growth	23
Epilogue	
Redesigning the Landscape: A Changing Environment.....	37
References	40
Appendix	
Project Stories and Report Summaries	43

Executive Summary

The Ministry of Education and the Council of Ontario Directors of Education (CODE) continue to be invested in gaining insight into the impact of technology in changing teaching practice and strengthening student engagement, learning, and achievement, with emphasis on 21st Century skills. The overall goals of the Round 3 research initiative build on promising practices and lessons learned in the Round 1 (2011-12) and Round 2 (2012-13) pilot studies.

In the *21st Century Innovation Research Initiative (Round 3)*, the research team used the metaphor of the landscape from Rounds 1 and 2 to provide a sense of continuity in portraying an increasingly broad and discriminating vision of innovative technology-enabled educational practices in Ontario. Landscapes are diverse and changeable. In Round 3, there are 79 technology-enabled projects in progress involving all 72 school boards, four school authorities, and one provincial school. The Round 3 study was comprised of 67 English-language projects and 12 French-language projects. Projects provided impact evidence related to the role of technology in teaching and learning and in system scaling to achieve sustainability.

It is apparent that designing and continuing to extend new landscapes for technological use in teaching and learning is fueled and sustained by the commitment of educators and system personnel across Ontario. For Round 3, projects focused on further advancing innovative, technology-enabled teaching and learning practices that impact student engagement, learning, achievement, and acquisition of 21st Century competencies. This emphasis continued to support projects implementing innovation practices that are suited to system scaling and sustainability and can serve local and provincial stakeholders in their quest for continued excellence in Ontario schools.

Case study research focuses on both the process of gathering data, and on the final report (Stenhouse, 1984). The research team used 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. Case study lends itself to analyzing both qualitative and quantitative data received from each project. In this final report, the data provides qualitative insights that align with the study purposes as well as data that are quantitative in nature.

The quantitative data included numbers of students, educators, and schools involved in the innovation research projects. Based on the numbers reported by projects, over 160 000 students across the province were directly engaged in aspects of the initiative. The number of students in each project varied widely by the scope and nature of the project activities, with 500 students per project being the median level of involvement. All projects identified involvement by classroom teachers in the initiative. Based on the numbers reported by projects, over 6000 teachers across the province were directly engaged in aspects of the initiative with 24 teachers per project being the median level of involvement. As well as classroom teachers, projects reported that, in total, over 1000 administrators and over 800 support staff had direct involvement in the project undertakings. All projects identified the number of schools involved in the initiative. Based on the numbers reported by projects, over 1450 schools across

the province were directly engaged in aspects of the initiative, with 8 schools per project being the median level of involvement.

From an analysis of the qualitative information provided by the projects, the results suggest that Ontario schools are taking progressive actions that continue to build insight into the impact of technology in changing teaching practice and strengthening student engagement, learning, and achievement, with emphasis on 21st Century skills.

The data reported by the projects seemed to indicate that across the province, entry into the new terrain of 21st Century technology-enabled teaching and learning is consistent with the deliberate and steady move noted by international experts who are researching in this field. As well, there is evidence that increasingly, the relationships between and among students, teachers, and systems as a whole are shifting towards a more collaborative, coordinated, and connected way of impacting teaching and learning.

In terms of student engagement, achievement, and acquisition of 21st Century skills, the data indicates that there is a noticeable increase in students' opportunities to experience technology-enabled learning. International researchers note that achieving real gains in deep learning is, as yet, no easy task. It seems clear from the final data reported by these projects, that aspects of student achievement are changing as 21st Century technology-enabled teaching increasingly becomes the pathway for learning. Likewise, teachers note that achievement is visible in areas such as collaboration, creativity, and critical thinking on the part of students, which is consistent with 21st Century skill development.

Once technology becomes a usual part of instruction and learning, the shift toward a more active and creative construction of knowledge by individuals and groups of students emerges as a natural outcome. There is evidence that change is underway in the province to shift from content mastery to developing students' capacity to actively apply their learning. For example, across a number of projects, teachers described aspects of student responsibility for learning that are connected to technology use. Project participants described students as being more aware of taking responsibility for their own learning, becoming empowered to accomplish more than they thought they could, and producing more sophisticated work than they could have done without technology. Additionally, student voice echoed an increase in confidence. Comments in our data speak to the emergence of a changing role for students – one where leadership is foregrounded in the learning process. Students were change agents, partnering with teachers and fellow students using technology. Students seemed more invested in their learning, which resulted in better quality work and communication between teachers and students.

Teacher comfort with technology and devices was an important aspect of new learning. Formal teacher collaborative inquiry was described as having the strongest impact on teacher learning. The value of teachers collaborating within their schools and across the system indicated that the overall result was better quality student work that leads to increased achievement. Teachers developed a deeper understanding of what collaboration is and what it looks like in practice. Their willingness to use instructionally appropriate technology and to learn alongside their students was foundational. Teachers demonstrated that they are becoming life-long, enthusiastic learners – traits that they model for their students. A number of projects mentioned the importance of principals and administrators being

included in professional development sessions in order to be leaders in continuing to develop and support 21st Century technology-enabled learning in schools and to contribute to ongoing system planning. These indicators suggest a move forward in terms of practice that is sustainable and scalable and in creating environments that embrace the skills necessary for deep learning.

Much as the current literature on 21st Century teaching and learning suggests, it is clear that students, teachers and systems across Ontario are continuing the progress made over the previous two years of this initiative in mobilizing new knowledge and building capacity for sustainable and scalable practices as they explore the landscape of what it means to engage in deep learning. Teachers and students have taken new paths across the terrain of technology-enabled teaching and learning, and are progressing toward the ultimate goal of preparing learners to be active global citizens.

Going forward, the challenge for education in Ontario will be to continue the transformation of instruction and learning practices supported by system plans and policies. This journey of preparing learners to be active global citizens includes continuing to develop the technology-enabled skills that teachers and students need to engage with learning partners locally and globally and for systems to invest in supporting with the necessary infrastructures. Overall, the data offers a sense of the growing acceptance that new ways of viewing learning require new ways of assessing progress and carrying out the business of schooling on all levels.

Prologue

Rethinking the Metaphor of the Landscape for the 21st Century Research Initiative

In the *21st Century Innovation Research Initiative (Round 3)*, the research team is using the metaphor of the landscape from Rounds 1 and 2 to provide a sense of continuity in portraying an increasingly broad and discriminating vision of innovative technology-enabled educational practices in Ontario. We signify the expanding nature of the landscape metaphor in the chapter titles, choosing words and terms that stretch and broaden our impressions of the landscape as it is reshaped through the continuation of innovative and locally determined projects that comprise Round 3. Like the projects described in this study, landscapes are diverse and changeable. In Round 3, there are 79 technology-enabled projects involving all 72 school boards, four school authorities, and one provincial school.

As in each of the 79 projects, the divergent terrain calls for particular needs and actions (Dewey, 1938) in both geographic and digital terms. Specific circumstances give rise to differing visions of innovative local practices such as population needs, topography, and a desire for pedagogical change. Differing visions can provide the impetus for change such that given new conditions, multiple elements that comprise a landscape can emerge. The resulting data in the form of rich pictures of experience can inform and sustain the seeds of ongoing development for students, teachers, and educational systems in the technological present and future.

In this final report, there are descriptions included that detail individual projects with such information as numbers of participants including students, teachers and staff, and the technology being used. We provide evidence-based information and outcomes, emerging from the projects that have impacted teaching, learning, and system practices. We also report on implications for sustainability and scalability.

In Chapters 1 and 2, we describe the purpose and the background for the study and the study methodology. In subsequent chapters, we present our analysis of the information reported by the innovation projects through the dual perspectives of learning and growth. In our epilogue, we draw conclusions and identify possible directions that lie ahead on the terrain of teaching and learning in a digital world.

It is apparent that designing and continuing to extend new landscapes for technological use in teaching and learning is fueled and sustained by the commitment of educators and system personnel across Ontario as this final report on *21st Century Innovation Research Initiative (Round 3)* demonstrates.

Chapter 1

Focusing on the Rich Pictures of the Digital Terrain: Background and Purpose for Round 3 Projects

In terms of landscape, ‘rich pictures’ refers to a schematic view of the terrain being investigated by projects where the main components and directions forward are described. In this report, final data from the *21st Century Innovation Research Initiative (Round 3)* are delineated. This initiative follows from both provincial and global investigations into how to equip schools for 21st Century teaching and learning. For Round 3, projects focused on further advancing innovative, technology-enabled teaching and learning practices that impact student engagement, learning, achievement, and acquisition of 21st Century competencies. This direction continued to support projects in implementing innovation practices that are suited to system scaling and sustainability and that can serve local and provincial stakeholders in their quest for continued excellence in Ontario schools.

Purpose of the Study

The Ministry of Education and the Council of Ontario Directors of Education (CODE) continue to be invested in gaining insight into the impact of technology in changing teaching practice and strengthening student engagement, learning, and achievement, with emphasis on 21st Century skills. The overall goals of the Round 3 research Initiative build on promising practices and lessons learned in the Round 1 (2011-12) and Round 2 (2012-13) pilot studies.

Round 3 is focused on:

- promoting local innovation and leadership for 21st Century (next generation) teaching and learning
- supporting evidence-based and research-informed decision making that is focused on the instructional core
- situating Ontario’s local innovation efforts within the wider context of current international research on the features of strong districts, whole system reform that integrates effective technology-enabled pedagogy, and emerging evidence on ‘21st Century effectiveness’ in innovative learning environments
- promoting sector-wide engagement, fostering common understanding, and supporting capacity building and knowledge mobilization in moving to scale-up pedagogy-driven, technology-enabled practices for optimizing learning

Background: 21st Century Innovation Research Initiative (Round 3)

In February 2014, the Ministry of Education and CODE indicated their intention to work in partnership for a third consecutive year to support innovation research projects on effective practices for technology-enabled teaching and learning across Ontario's school system. Curriculum Services Canada (CSC) continued to work with the innovation projects in documenting evidence of impact on teaching and learning within a common research framework. The data that these projects submitted in November 2014 forms the basis for this final report in February, 2015.

The Ministry and CODE are committed to mobilizing the knowledge and effective practices that are growing across the province. Lessons learned from Round 2 (2012-2013) projects are consistent with both international trends in 21st Century next generation learning and with Ontario's education strategy (April, 2014). Local and provincial vision and the possibilities of whole system change and a more global perspective for continued capacity building for the 21st Century create a powerful environment for the digital terrain through the *Innovation Research Initiative (Round 3)*.

Deciphering New Topography on the Changing Educational Landscape: Pedagogy before Technology

A Ministry of Education letter (December, 2010) made reference 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. The important distinction pertained to both the Round 1 (2011-2012) and Round 2 (2012-2013) Pilot Projects and remained applicable for the *Innovation Research Initiative (Round 3)*. 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 3 study, Lin notes "...an appropriate performance analysis, which emphasized the analysis of 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 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).

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” (p. 58).

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 the second edition of their text *Rethinking Pedagogy for a Digital Age*, Beetham and Sharpe (2013) write: “Our digital native students may be able to use technologies, but that does not mean they can learn from them. Being able to read and write never meant you could therefore learn from books ... we need guidance. Pedagogy is about guiding learning, rather than leaving you to find your own way. Pedagogy puts the onus on teachers to guide the learner’s journey to a particular and productive end ...” (p. xvii).

In a 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).

More recently, Fullan & Langworthy (2014) define the need for what they term ‘new pedagogies’ noting, “The ‘new pedagogies’ can be defined succinctly as “a new model of learning partnerships between and among students and teachers, aiming towards deep learning goals and enabled by pervasive digital access” (p. 2).

Given the nature of changes in pedagogical practices driven by the digital environment, it seems clear that the Round 3 innovation research projects are central for continuing to develop clarity and compelling insights into system reform initiatives that can move technology-enabled teaching and learning forward in the 21st Century.

New Topography Continued: Knowledge Mobilization and Impact on 21st Century Innovation Practices

As education has increasingly moved into the global community in the 21st Century, ways of enhancing connections between research, policy, and practice have emerged as central to accelerating up-to-date skill development in teaching and learning.

By definition, to mobilize knowledge means to amass it for action, based on a pre-determined theoretical grounding – the very opposite of a top-down model where new information is ‘delivered’ to school communities to be carried out without their input. The concept of knowledge mobilization in Dede’s (1999) terms means that the “islands of innovation” that local projects represent can become a mainland of collective experience, thus greatly impacting the educational community on a wider scale in regard to utilizing 21st Century skills.

With regards to widespread implementation of innovative practices, Dede (1999) notes three important points that can enhance or impede knowledge mobilization: 1) Emerging information technologies enable a shift from the transfer and assimilation of information to the creation, sharing, and mastery of knowledge; 2) Dissemination efforts must include all the information necessary for successful implementation of an exemplary practice, imparting a set of related innovations that mutually reinforce overall systemic change; 3) A major challenge in generalizing and scaling up an educational innovation is helping practitioners “unlearn” the beliefs, values, assumptions, and culture underlying their organization’s standard operating practices” (p. 2).

In terms of this *Innovation Research Initiative (Round 3)*, it seems clear that the purposes of the study coincide with the focus in the national research agenda in Canada, funded by the Social Science and Humanities Research Council (SSHRC) where the term ‘knowledge mobilization’ has been in use since 2009: “Knowledge mobilization is about ensuring that all citizens benefit from publically funded research. It can take many forms, but the essential objective is to allow research knowledge to flow both within the academic world, and between academic researchers and the wider community. By moving research knowledge into society, knowledge mobilization increases its intellectual, economic, social, and cultural impact” (SSHRC’s Knowledge Mobilization Strategy, 2009-11).

Fullan & Langworthy (2014) note: “Mobilizing whole systems towards new pedagogies is not a small undertaking. It requires nothing less than addressing the fundamental challenges and new potential of education systems in our age” (p. 75).

A Feature on the Topography of 21st Century Innovative Practices: Considering Reflection

Educators across all levels of teaching and learning have accepted the concepts of reflection and reflective practice as processes for professional development, research, and daily practice for many years. Schon (1983) described reflective practice as the capacity to reflect on action so as to engage in a process of continuous learning. He coined the phrase ‘reflection-in-action’ as a means of describing practitioners’ way of being when coping with issues or situations in the moment, using their own prior experience, and ‘reflection-on-action’ following an action taken, when a practitioner analyzes the consequences of their reaction.

Brookfield (1995) described four critically reflective lenses through which teachers can check in on their assumptions. They are: 1) our autobiographies as teachers and learners; 2) our students’ eyes; 3) our colleagues’ experiences; 4) theoretical literature.

In addition, over the last several decades, many practitioners and academics in education have promoted Action Research (AR), which includes reflection as a key component of its research cycle (Kemmis & McTaggart, 2000; Stringer, 1999; McNiff, 2000), as a way of analyzing and improving pedagogical practice.

However, in a book entitled *On Reflection: An Essay on Technology, Education, and the Status of Thought in the 21st Century*, Rose (2013) ponders the present day definition of reflection in education, noting that to many in present day "...reflection is not a unitary phenomenon but essentially a skill that each person performs in his or her own way, in accordance with his or her particular situation, preferences, learning style, and capabilities. There is a willingness to accept such diverse phenomena as brainstorming sessions, online discussions and thinking on one's feet in the workplace as instances of reflection ... [which results in the] diminishment of personal and social commitment to reflection as a form of thought that takes place within solitude and slowness"(p. 7). Furthering her point, Rose quotes Prensky (2001) who observes: "One key area that appears to have been affected [by technology] is reflection ... In our twitch-speed world, there is less and less time and opportunity for reflection ... One of the most interesting challenges and opportunities in teaching Digital Natives is to figure out and invent ways to include reflection and critical thinking in the learning but still do it in the Digital Native language" (p. 8).

In the increasingly fast-paced world of education, Rose posits 'reflection-then-action' as a means of taking time to slow down to think about next steps or actions. She asks us to be clear about what we mean by reflection (as opposed to critical thinking or collaboration) and to think about how the proliferation of technology affects the quality of human life. She asks that we make the use of technology itself a topic for study along with other curricular subject matter.

Perhaps attending more specifically to this particular feature on the topology of the digital terrain could help support the 'deep learning' noted by Fullan & Langworthy (2014). As Boud et al. (1985) write: "Reflection is an important human activity in which people recapture their experience, think about it, mull it over, and evaluate it. It is this working with experience that is important in learning" (p. 19).

Chapter 2

Tools for Mapping a New Topography: Methodology and Methods

Study Methodology

As in the Round 1 and Round 2 pilot projects, the research team continued to utilize case study methodology for this *21st Century Innovation Research Initiative (Round 3)* for the purpose of continuity of reporting data. The Round 3 study consisted of 79 technology-enabled projects involving 67 English-language projects and 12 French-language projects. Projects provided impact evidence related to the role of technology in teaching and learning and in system change.

Case study research is well established in various disciplines such as law and medicine, as well as education (Sacks, 1990, 1995, 2010; Coles, 1993; Hartley, 2005; Yin, 2009; Flyvbjerg, 2011), 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 the final report (Stenhouse, 1984). Case study lends itself to analyzing both qualitative and quantitative data received from each project. 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.

More specifically, the research team is 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. 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 that was accompanied by a thorough guide and a supporting slide presentation. CSC significantly expanded its research team to include field researchers. This team interacted with the project leaders throughout all phases of implementation as innovation projects collected and analyzed rich data that identified evidence of impact for sharing collectively and broadly. Each member of this team was responsible for liaising directly with a number of innovation project leaders, thereby providing ongoing support to all projects. They engaged in focussed conversations and interactions through electronic communications such as phone conversations and emails as well as selected face-to-face site visits. Innovation project leaders indicated that this interaction was a significant support in clarifying the requirements for reporting on their initiatives.

Knowledge Mobilization

To promote broad sharing among and across the innovation projects, the research team monitored an e-network that was established to be used internally by the project team and for sharing among other projects. This was a further way of communicating and sharing information and gaining insight into the overall research initiative.

As a source of additional data, the research team capitalized on information that the innovation projects presented using another perspective. Project stories, featuring all projects in the *21st Century Innovation Research Initiative (Round 3)*, showcased how Ontario is addressing 21st Century teaching and learning supported by digital technology. By sharing their stories, projects offered valuable insights for others in integrating technology within their systems to help their students achieve success.

Chapter 3

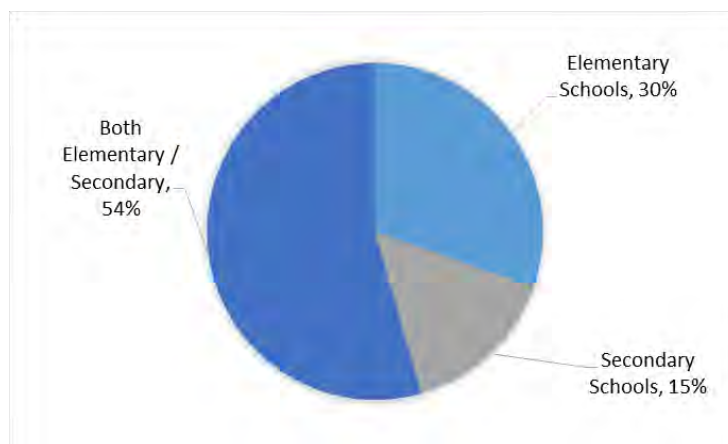
Project Designs and Innovative Practices: Describing Participants and their Projects

In November 2014, innovation projects submitted final reports, using the reporting guidelines and template distributed by Curriculum Services Canada. From the information submitted, it is clear that there is extensive variation in the strategies employed and the investigative focus of the data collection that directed the innovation activities and guided the submitted evidence. The following charts and graphs provide an overview of selected contextual data submitted by the 67 English-language and 12 French-language projects.

1. Projects by School Organization

	English (67 projects)	French (12 projects)
Elementary Schools only	19	5
Secondary Schools only	10	2
Both Elementary and Secondary Schools	38	5

Projects by School Organization (percentages across all English-language and French-language projects)



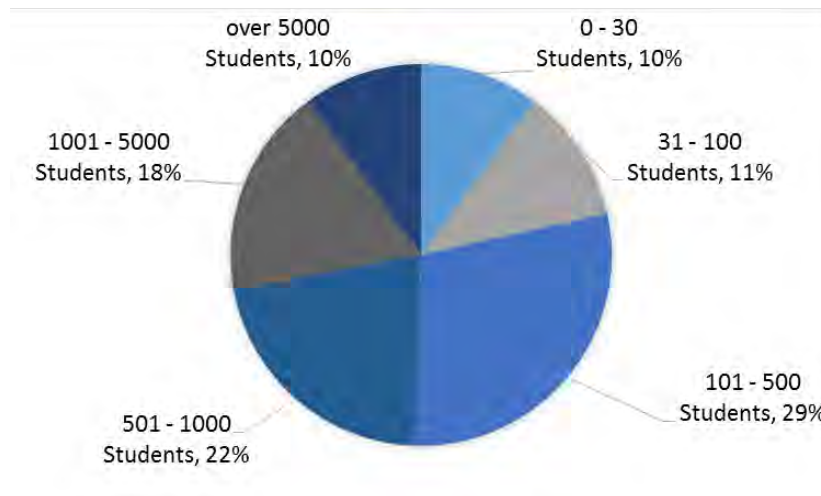
Of the seventy-nine (79) English-language and French-language projects, fifty-three (53) projects are targeted at a specific range of grades or the specific content or skills taught at identified grade levels. Twenty-six (26) projects have a stated system focus (JK-12). Twenty-seven (27) projects identified working in partnership with a business or post-secondary educational institution.

2. Projects by Level of Student Involvement

Based on the numbers reported by projects, over 160 000 students across the province were directly engaged in aspects of the initiative. The number of students in each project varied widely by the scope and nature of the project activities, with 500 students per project being the median level of involvement. Eleven (11) projects are specifically directed, in whole or in part, to supporting students with special needs. There were five (5) projects in total that did not directly involve students in the initiatives, and two projects that reported involvement, to some level, by all students in its system.

	English (67 projects)	French (12 projects)
Projects with 0 – 30 students involved	6	2
Projects with 31 – 100 students involved	7	2
Projects with 101 – 500 students involved	19	4
Projects with 501 – 1000 students involved	14	3
Projects with 1001 – 5000 students involved	13	1
Projects with over 5000 students involved	8	

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

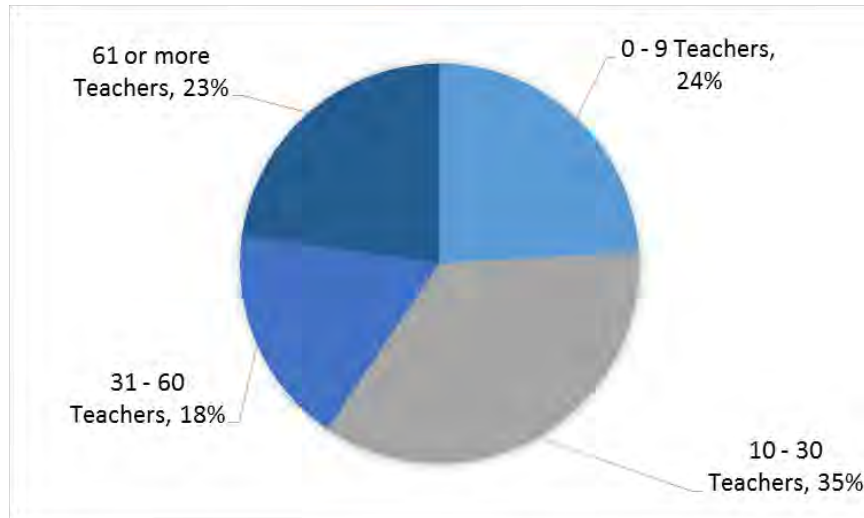


3. Projects by Level of Teacher Involvement

All projects identified involvement by classroom teachers in the initiative. Based on the numbers reported by projects, over 6000 teachers across the province were directly engaged in aspects of the initiative with 24 teachers per project being the median level of involvement. As well as classroom teachers, projects reported that, in total, over 1000 administrators and over 800 support staff had direct involvement in the project undertakings.

	English (67 projects)	French (12 projects)
Projects with 0 – 9 teachers involved.....	17	2
Projects with 10 - 30 teachers involved	24	4
Projects with 31 – 60 teachers involved.....	11	3
Projects with 61 or more teachers involved	15	3

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

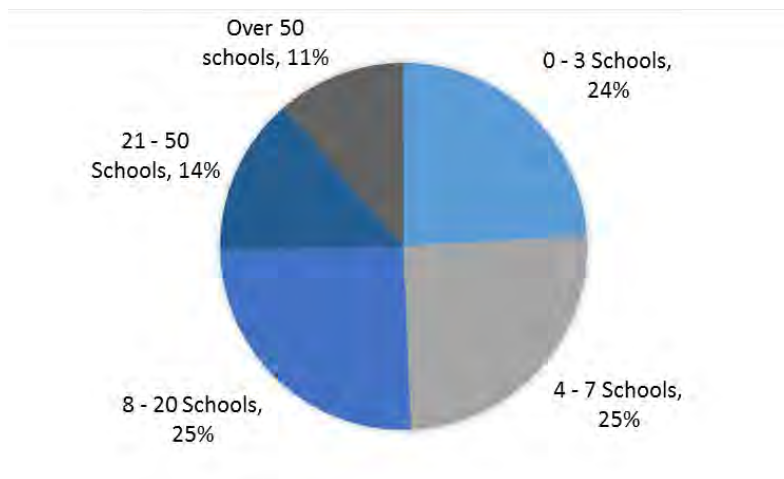


4. Projects by Level of School Involvement

All projects identified the number of schools involved in the initiative. Based on the numbers reported by projects, over 1450 schools across the province were directly engaged in aspects of the initiative, with 8 schools per project being the median level of involvement.

	English (67 projects)	French (12 projects)
Projects with 0 – 3 schools involved.....	16	3
Projects with 4 - 7 schools involved	16	4
Projects with 8 – 20 schools involved	15	5
Projects with 21 – 50 schools involved	11	0
Projects with 51 or more schools involved	9	0

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



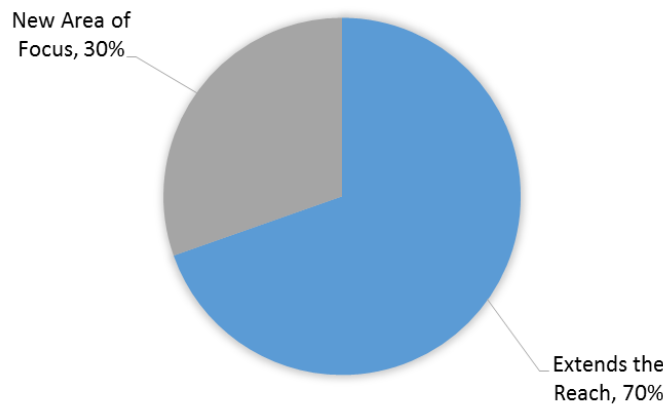
5. Building on the Learning from Rounds 1 and 2

Projects were asked to identify if the Round 3 research was directly building on the direction established in Rounds 1 and 2, or was intended as a new and independent area of focus. The majority of projects indicated that their investigations were building on or extending their learning from previous rounds.

	English (67 projects)	French (12 projects)
Extends the Reach or Broadens the Scope.....	44	11
Investigates a New Area of Focus based on Learning	23	1

Included in the numbers for projects that are investigating a new area of focus are four (4) School Authority projects that were not involved in previous rounds.

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



6. Areas of Impact

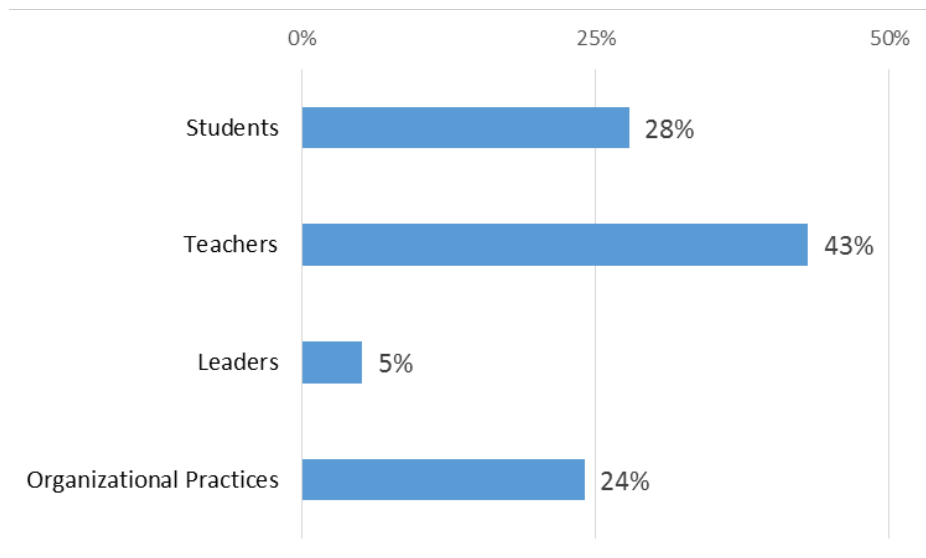
Projects were required to align data collection and the submission of evidence of *measurable* impact related to one or more of the following four stated areas: students, teachers, leaders, and organizational practices. Each project identified one primary area of impact to guide their research.

English French
(67 projects) (12 projects)

Primary area of impact:

Students: Engagement/Achievement, 21st Century Competencies	17	5
Teachers: Professional Learning, Innovative Practices	30	4
Leaders: 21st Century Leadership	3	1
Organizational Practices	17	2

Percentage of Projects with Identified Primary Area of Impact (combined English-language and French-language projects)



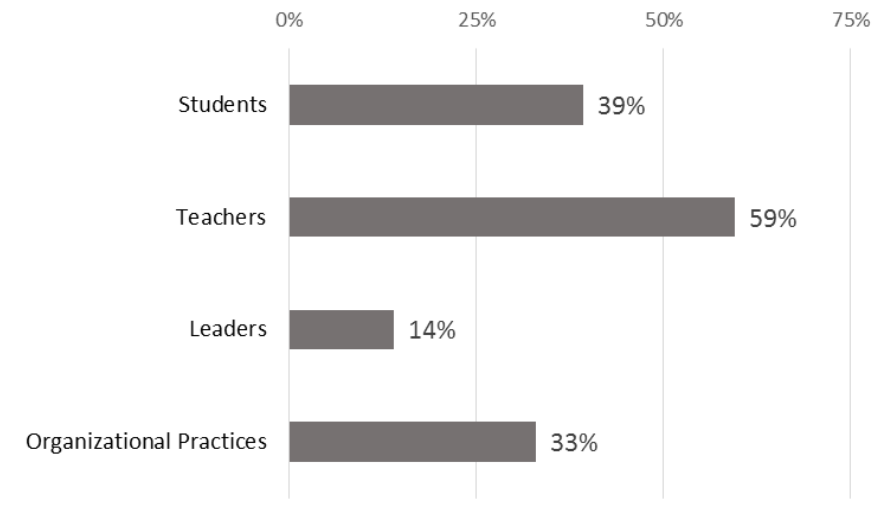
Approximately one-third of projects identified 2 or more of the areas of impact: students, teachers, leaders, and organizational practices in their report. The following chart indicates the frequency that each area of impact was identified by projects.

English (67 projects) French (12 projects)

Identified areas of impact (each project could identify 1 or more):

Students: Engagement/Achievement, 21st Century Competencies.....	25	6
Teachers: Professional Learning, Innovative Practices	39	8
Leaders: 21st Century Leadership	9	2
Organizational Practices.....	23	3

Percentage of Projects that included each Area of Impact (combined English-language and French-language projects)



In the final reports submitted, the majority of projects reported data and findings on multiple areas of impact that extended beyond their initial focus.

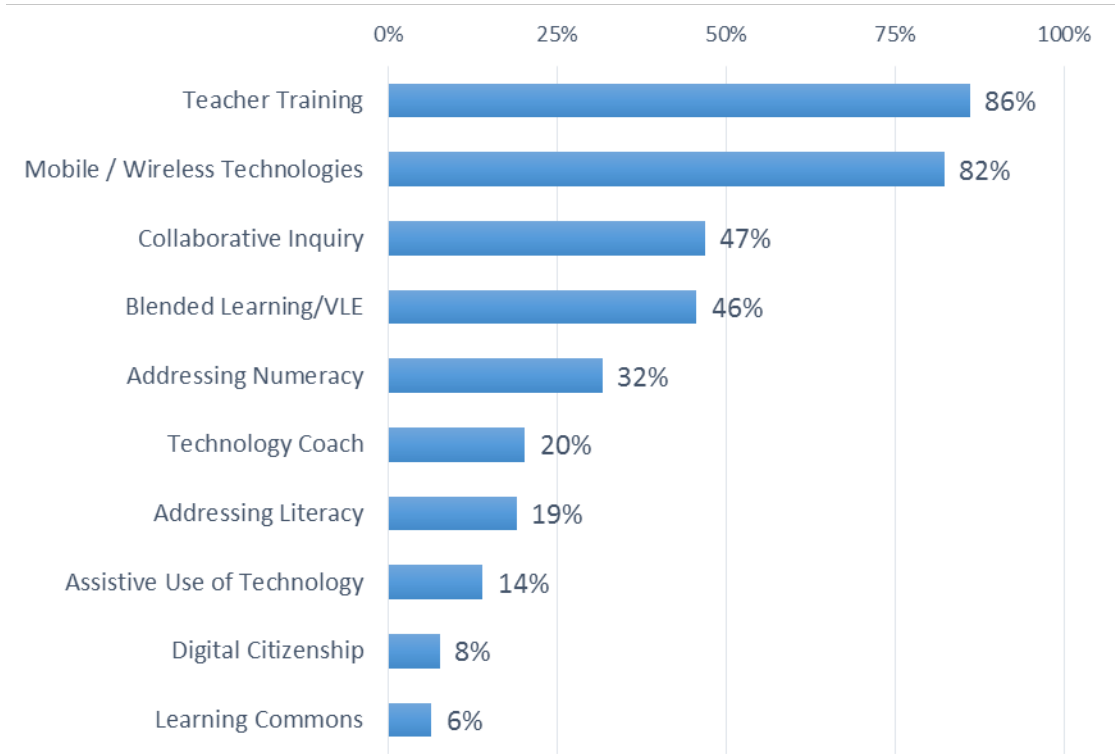
7. Areas of Investigation (combined English-language and French-language projects)

There were multiple areas of investigation within and across all projects. Projects had multiple aspects and differing combinations of activities related to the scope, use, training, and instructional focus of their technology-enabled project.

The list of areas of investigation shown below is not meant to be exhaustive, but they are the most frequently identifiable across all projects. These areas of investigation run through the projects with widely varying degrees of emphasis and purposeful actions. For some, it is a central focus. For others, it is a feature of implementation rather than a measurable outcome. These categorizations by areas of investigation are intended to highlight trends and patterns, but are not a reliable or practical means to label the focus of individual projects.

	English	French
Addressing Literacy	15	
Addressing Numeracy/Mathematics.....	25	
Teacher Training/Using Technology.....	57	11
Collaborative Inquiry	30	7
Blended Learning/VLE	30	6
Digital Citizenship (ethical use of technology)	6	
Assistive Use of Technology/Special Needs	10	1
Learning Commons.....	5	
Technology Coach (job-embedded technology support).....	13	3
Use of Mobile / Wireless Technologies	56	9
<i>Sample Sub-Topics for Mobile Technology</i>		
Use of tablets (e.g., iPads)	45	7
Use of Laptops/Netbooks (e.g. Chromebook).....	32	5
Cloud technologies/Infrastructure	36	6
Bring Your Own Device	15	2

Percentage of Projects for Identified Topics (combined English-language and French-language projects, with topics sorted by frequency)



8. Identified Issues and Challenges (combined English-language and French-language projects)

In the final reports, projects identified a number of challenges that re-directed or delayed their activities over the course of the implementation. For some projects, the issues were effectively resolved and new strategies employed, while other issues were significant within the timeframe of the initiative and limited the effectiveness or disrupted the flow of the planned activities. Some of the issues were unique to a particular site or set of conditions, while others were identified multiple times in the final reports and conversations with field investigators. The following chart identifies some challenges that emerged most frequently across projects.

	Total
	(79 projects)
Poor networks/wireless connectivity	37
Hardware (delays, distribution, maintenance).....	24
Short timelines to complete tasks.....	23
Unexpected need or time for teacher training	23
Software/apps (management issues, lack of effectiveness)	9
Teacher/administrator resistance/uncertainty.....	9

The vast majority of the issues and challenges focused on limited infrastructure, management and logistics related to hardware, and organizing people and professional training within constrained timeframes. Challenges caused by perceived teacher reluctance or resistance to explore technology-enabled practices were rare and reported as diminishing.

9. Sustaining and Scaling Initiatives (combined English-language and French-language projects)

In the final reports, projects identified how their innovation initiative is being maintained or expanded as a result of their learning. As well, projects detailed how their initiative contributes to scaling-up and sustaining pedagogy-driven, technology-enabled practices in their system.

With rare exceptions, projects identified the clear intention to continue, expand, or adapt the initiative based on their findings. The following chart identifies the number of projects that specifically identified sustaining and scaling systemic actions related to each of policy development, leadership development, expanded training and professional development, and enhanced use and access to technology.

	Total
	(79 projects)
Continued or expanded professional development to build capacity / collaboration / professional capital.....	59 (75%)
Expanded or enhanced wireless infrastructures or targeted funding of additional hardware/software.....	40 (51%)
Expanded support and opportunities related to 21st Century leadership development	35 (44%)
Development or alignment of a system-wide plans or policies related to the support of technology-enabled instruction and learning	34 (43%)

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

In the Midst of Exploring a New Topology: Perspectives on Learning and Growth

In this chapter, the research team presents information that encompasses the areas of investigation noted in Chapter 1 that form the focus and intent of this study. The overall goals of the Round 3 research initiative build upon promising practices and lessons learned in the Round 1 (2011-12) and Round 2 (2012-13) pilot studies. Overall, the results suggest that Ontario schools are taking progressive actions that continue to build insight into the impact of technology in changing teaching practice and in strengthening student engagement, learning, and achievement, with emphasis on 21st Century skills.

As Glesne (2011) notes: “Data analysis involves organizing what you have seen, heard, and read so that you can figure out what you have learned and make sense of what you have experienced” (p. 84). 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). In analyzing the final data from innovation projects, the research team found that aspects of learning, and of the resulting growth, that pertain to students, teachers, and systems as a whole were reported.

As in the Round 1 and 2 pilot projects, the research team continues to utilize the metaphor of the landscape to support consistency as well as to analyze and interpret the data. As 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 recent years, several international studies on 21st Century technology-enabled teaching and learning have also employed metaphors to share their perspectives. For example, Fullan & Donnelly (2013) use the metaphor of the swamp as they suggested ideas for navigating new digital innovations in education, writing that: “New digital creatures are being born every day so the swamp is teeming with life” (p. 25). As well, Fullan & Langworthy (2014) use a geological metaphor in their report entitled, “A Rich Seam: How New Pedagogies Find Deep Learning.”

International Stamps on the Passport of Changing Landscapes: Entry into a New Terrain

In the Foreword to *Towards a New End: New Pedagogies for Deep Learning* (Fullan & Langworthy, 2013), Sir Michael Barber likens the search for new pedagogical approaches for the 21st Century to locating and then climbing a mountain. He credits the report by Fullan & Langworthy noted above along with Fullan’s book, *Stratosphere* (2012) with helping educators locate the mountain and begin the climb.

In *A Rich Seam: How New Pedagogies Find Deep Learning* (2014) Fullan & Langworthy define ‘new pedagogies’ as “a new model of learning partnerships between and among students and teachers,

aiming towards deep learning goals and enabled by pervasive digital access” (p. 2). They write that ‘new pedagogies’ education is “geared towards fundamentally different aims for learning; aims more relevant to this era. We and others have begun to call these new goals *deep learning*” (p. 2).

It is interesting to note that the description of deep learning in this report reflects the work of proponents of a constructivist vision of education such as John Dewey (1938) and Lev Vygotsky (1934), and later, Jerome Bruner (1987) – that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. Aspects of competencies such as engaging in creative, connected, and collaborative teaching and learning, highlighted by digital access, requires us to ask how ‘new pedagogies’ can support the deep learning needed to assure that the skills necessary for this change can flourish.

Fullan & Langworthy (2014) describe the global landscape in terms of *deep learning*: “We are at the early stages of disruptive innovations, which represent a new period of development, trial, error and further development” (p. 6). Learning and growth are entwined in this progression. The data reported by the projects in this *Research Innovation Initiative (Round 3)* seem to indicate that across the province, entry into the new terrain of 21st Century technology-enabled teaching and learning is consistent with the deliberate and steady move noted by these experts.

Emerging Topographical Features: Learning and Growth across Students, Teachers, and Systems

Fullan & Langworthy (2014) write that *A Rich Seam* is about “the radical change in the relationships between all the key players in learning: students, teachers, technologies, school cultures, curricula and assessments” (p. 1). They present evidence of impact from schools and systems in a number of countries to support this claim. Similarly, in this final report, there is evidence that increasingly, the relationships between and among students, teachers, and systems as a whole are shifting towards a more collaborative, coordinated, and connected way of impacting teaching and learning.

In order to delineate the final data in this report, the research team uses three headings: 1) students, 2) teachers, and 3) systems. Under each of these three headings, learning and growth were reported as projects described the focus of their inquiry and the impact on growth in their final data. It seems clear that provincially, schools have entered a new era in 21st Century learning where the focus and results indicate that a dynamic process to support and sustain learning and growth is underway.

1. Students

In terms of *student engagement, achievement and acquisition of 21st Century skills*, the data indicates that there is a noticeable increase in students’ opportunities to experience technology-enabled learning. Fullan & Langworthy (2014) note that as teachers build their 21st Century pedagogical capacity, students can become more engaged in deep learning. They write: “... linking learning to student

aspirations, providing powerful feedback – build students’ awareness of the process of learning. Learning to learn ... is a fundamental goal in the new pedagogies” (p. 17).

Student Engagement

An increase in student engagement was reported by a number of innovation projects. For example, teachers indicated that when implemented with effective instructional strategies, iPads had a significant impact on student engagement and the quality of the work that students produced. Similar results were found when electronic textbooks were used instead of traditional textbooks, when laptops or netbooks were used in class, and when cloud technologies were implemented. As one student noted: “Since my teacher has allowed us to use apps and BYOD, the class is completely different. I come to class interested, and walk away with something I know I can use in real life. We ask questions instead of listening to someone talk and that makes class so much better.” Another student describing engagement said: “I like the fact that you can work on [assignments] on any type of computer so I can get my work done even when I’m not at school.”

Other comments also reflected a new sense of engagement on the part of students. For example, a teacher said, “Students were engaged. They took ownership of their own learning through independent research and learning. They controlled their learning experience and this helped them to be more independent.” Another noted: “Technology is a great motivator with today’s students. Finding a way to reinforce the big ideas in a visual, hands-on way is the key to success in today’s classrooms. Students have enjoyed learning in this way.”

Observations by other teachers taking part in various technology-enabled innovation projects highlighted aspects of intrinsic motivation in students that was revealed in the quality of and interest in their schoolwork. Teachers cited: the completion of work that students would not normally do; watching reluctant learners become more engaged in tasks; seeing increased creativity; more detailed and polished class presentations; and amplified intellectual engagement.

Student Achievement

Fullan & Langworthy (2014) write: “The new pedagogies are not just instructional strategies. They are powerful models of teaching and learning, enabled and accelerated by increasingly pervasive digital tools and resources, taking hold within learning environments that measure and support deep learning...” (p. i). They also note that achieving real gains in deep learning is, as yet, no easy task. It seems clear from the final data reported by these projects, that aspects of student achievement are changing as 21st Century technology-enabled teaching increasingly becomes the pathway for learning.

Teachers note that achievement is visible in areas such as collaboration, creativity, and critical thinking on the part of students, which is consistent with 21st Century skill development. One teacher found that, “...The students have been able to create, share, and reflect on their own thinking and the thinking

of other students around math. ... I was able to see and hear the use of rich math language. I have [also] noticed that the students who were a little timid to participate in group discussions about math now have a tool and a way to show all of their math thinking ...” Also in mathematics, a project found that 61% of students reported that using learning management systems and online simulations helped them understand and learn math; and 100% of teachers reported that using these technologies helped their students understand and learn math. In another project, a teacher noted: “I have noticed that they are very capable of networking to solve problems and have a very natural tendency to find the ‘easiest way’ to accomplish a task. I have found that the use of technology can give students a chance to problem solve and ‘troubleshoot;’ in doing so [they] create an atmosphere that is conducive to sharing ideas and thinking about math.”

As is often described in the literature about student achievement in a 21st Century context, one project reported that while indicators of success are increasing, actual numerical results are more difficult to obtain. They noted that, “We are still curious about the direct impact that blended learning is having on student achievement. We would like to study two specific classes next semester to see student achievement going in and then after the use of a blended learning environment. We have teacher and student testimony that says ... that they thought that the blended learning environment impacted student achievement, but we would like to gather hard evidence.”

It is not surprising that the achievement reported appears to be in the early stages. Fullan & Langworthy (2014) note that, “One of the biggest systemic challenges to the spread of the new pedagogies is that they are not yet being measured in any coherent way ... most systems that we have seen simply do not yet have ways to measure the new pedagogies and deep learning outcomes Greater clarity and precision of deep learning concepts, followed by valid new ways to measure deep learning outcomes, are essential for the expansion of the new pedagogies across whole systems” (p. 9). In these projects, the evidence suggests that this capacity is developing as students and teachers work together to explore a new terrain for learning. One student stated: “I like the fast feedback. I want to know how I did so I can improve.” A teacher commented: “The networking between student-student and student-teacher has made for a productive, effective, and enjoyable learning atmosphere.”

Acquisition of 21st Century Skills

The deep learning skills required in 21st Century technology-enabled learning are described by Fullan & Langworthy (2014) as premised on re-structuring learning activities from content mastery to developing students’ capacity to “... create and proactively implement their learning” (p. 22). There is evidence that this change is underway in the province; indeed, it seems that once technology becomes a usual part of instruction and learning, the shift toward a more active and creative construction of knowledge by individuals and groups of students emerges as a natural outcome. One project reported: “Students became more engaged with the use of technology in the classroom. They can visibly see and hear their thinking and can critically reflect on their learning. Students no longer have to remember what they said – it can be recorded and reviewed for seamless learning and development of thinking progression.”

However, technological skill development remains an important part of learning. As one project noted: “Teachers identified an issue that we did not anticipate: that students lack the technology skills they need in order to participate fully in learning... .”

Other projects reported improvement in skills that are central to 21st Century learning such as student communication, collaboration, and creativity. In one project, it was noted that 100% of teacher-researchers state that they felt that netbooks and supporting software had a positive impact on student assignment completion, and increased student collaboration, connecting, and communicating with their teacher and fellow students. One teacher remarked: “My students have become more confident in the way they approach new tasks. They have a variety of resources readily available to them now, which they didn’t before. They have embraced this technology ... I have noticed that this technology has allowed for greater collaboration, better problem-solving skills, and more creative and critical thinking.”

Collaborative student work was enhanced through the use of the SMART Table[®] in one project and through the use of cloud technology in another. A student noted that, “Google Drive has changed the way I communicate with my teacher and classmates, because instead of shouting across the room or having to take turns working on a project, we can work on it at the same time and comment when we correct each other.”

In terms of developing creative, confident individuals who can become independent learners and work with ease with others in the global village, lifelong learning is an important goal to strive for.

Student Growth

While student growth is embedded in aspects of student learning reported in the above section, the research team identified three specific areas of growth that are significant in terms of the deep learning goals embraced by schools in the recent study by Fullan & Langworthy (2014). They are: increased *responsibility for their learning*, taking on *leadership* [roles], and *achievement*.

Responsibility for Their Learning

Project participants described students as being more aware of taking responsibility for their own learning, becoming empowered to accomplish more than they thought they could, and producing more sophisticated work than they could have done without technology. Across a number of projects, teachers described aspects of student responsibility for learning that are connected to technology use. For example, a teacher noted: “Students are taking the initiative and now going above and beyond what we have taught them by incorporating new tools that they have discovered.” Another said: “They are more open to learning and have a more positive attitude about ‘school’ as an institution because they are seeing how [technology] can change to meet their needs and preferences.” Expanding on these comments, a teacher found that: “Students are taking more control over their learning, and I’m seeing a different level of creativity that I have not otherwise seen.”

In a project that included students with individualized learning plans (IEP), an unexpected outcome was a transformation in their everyday lives in the classroom when iPad technology was used by all students. A new confidence and willingness to try emerged as they became more a part of the class as a whole. One teacher found that: “Several students said they put more effort into the work they did on the cloud, either because it made it easier to do the work or it made it more fun.”

Student voice also echoed an increase in confidence. In one innovation project, students were requesting ‘new kinds of assignments’ and ‘new ways of working with each other.’ One student reported: “I am a much more efficient learner with my device because my device opened my eyes to what great work I can do.” Another noted: “[The new computers] are really helping me with all my work. It is making me a better person. I can type, I can do all my work, I can go on the Internet ... I feel better about myself.”

Leadership

In *Towards a New End: New Pedagogies for Deep Learning* (2013), Fullan & Langworthy ask: “What kind of learning work prepares [students] to be healthy, happy, productive members of our new society? And more fundamentally – how do they feel about it?” (p. 15). Comments in the project data speak to the emergence of a changing role for students – one where leadership is foregrounded in the learning process. One participant reflected that students can be change agents for one another and for teachers as well; a role reversal or, as Fullan & Langworthy (2014) suggest, partnering with teachers and fellow students becomes part of the new pedagogical practice made possible by technology use in the classroom. One student expressed: “I’ve really enjoyed sharing documents with my friends and making comments on their work. I also like being an app expert. When students need assistance using GarageBand®, they come to me for help. ... [The teacher] has been great about letting us try it out for a few assignments in language and history.”

Another individual recounted that in the process of considering the teachers’ needs and the students’ wishes, the project focus shifted from training teachers to training students. Students were trained at a full-day student summit featuring GAFE and then were encouraged to teach peers and their teachers in their home schools. Similarly, the value of student voice as an integral component of system learning was reported by a project as a key factor in understanding that students represent an undervalued resource for technology support. One teacher said: “This project empowered many of our students and gave them a sense of accountability and responsibility ... they appreciated the opportunity to be heard and have their thoughts and ideas respected.”

Achievement

Returning to perspectives shared by Fullan & Langworthy (2013), they write: “It stands to reason that to prepare youth for effective participation in this kind of world, our education systems should refocus on engaging students ... where ideal outcomes are not achievement scores on tests but students’ capacities

to collaborate, connect with others, create innovative products, programs and solutions, and ultimately to implement them in the real world” (p.16). In line with this perspective, projects reported achievement in areas such as retention of learning over time and the ability to transfer that learning across subject matter. One innovation project noted that students seemed more invested in their learning, which resulted in better quality work and communication between teachers and students. In another project, a teacher described students as “gaining knowledge in how to pose good questions for learning. As a result, this has also led to improved answers to open-ended questions! They have improved their research skills, as well as their ability to work cooperatively and respectfully with others, online and face-to-face.”

2. Teachers

Fullan & Langworthy (2014) suggest that the role of teachers engaged in deep learning practices for 21st Century technology-enabled instruction shifts to one of partnering with students, colleagues, and the broader community in the learning process. In the data reported in this study, teacher learning is described in *professional learning* and *pedagogy*.

Professional Learning

Professional learning sessions consistently afforded teachers with opportunities to learn how to use technology in their instruction as well as gaining an increased comfort with the technology itself. Another strong focus was to create a network of professionals who were comfortable and willing to share their growing expertise with aligning technology and pedagogy, for example, by establishing a digital space where participants could share resources, ideas, and issues.

Teacher comfort with technology and devices was echoed by other projects as an important aspect of new learning. One project found that it wasn't until teachers were engaged in self-directed, iterative inquiry that training translated into practice. They noted that teacher choice and autonomy, much like student choice and autonomy, leads to deeper learning. In another project, a teacher reported that hands-on learning models with colleagues worked well, saying: “I love this learning model. It allows us time to explore new learning then try it out in the classroom right away. So many times, we get these ideas and never have a chance to try them out during the session. It's nice to problem solve as a group and work through obstacles as they come.”

Other innovation projects identified the value of collaborative inquiry, noting that the cycle of co-learn, co-plan, co-teach, co-observe, co-reflect is a powerful model for lasting change in teacher practice. Formal teacher collaborative inquiry was described as having the strongest impact on teacher learning. Another comment on the value of teacher collaboration among classrooms and between schools, noted that the overall result seemed to be better quality student work and increased achievement.

Several participants found job-embedded learning a positive source of professional development, while others mentioned that supportive professional learning communities were established to share new ideas and practices in a positive environment. However, there continues to be challenges in adapting to technology-enabled instruction. It was noted that some teachers wanted access to technology but remained reluctant to collaborate with their colleagues to change their instructional practices.

Pedagogy

It seems important to note that the characteristics of deep learning noted by Fullan & Langworthy (2013) apply to teachers as well as students. For example, learning to work collaboratively, to communicate effectively using a variety of digital tools, to be open to a global view of citizenship, to implement creative ideas, and to display leadership are all important shifts in instruction and learning. Examples of these attributes seem to indicate that in innovation projects, headway was being made in connecting deep learning for the 21st Century to pedagogy. For example, one project reported that teachers were more focused on student voice because they had learned how to capture student thinking with video, audio, pictures, and annotations. In another example, teachers felt they had developed a deeper understanding of what collaboration is and what it looks like in practice. One project reported that, because of their participation in the project, teachers were better able to facilitate learning by creating environments that meet the needs of all learners. One teacher said that “... making the students’ thinking visible is important in order to identify where the misconceptions are taking place. ... Through the use of Apple TV, apps, and web tools, students felt more at ease sharing their learning with the class. That helped me identify where they were struggling and impacted my planning.” In another project, teachers felt that their involvement in the project had resulted in increased technology use in the classroom, new ideas for program delivery, consideration of alternative assessment methods, and new ideas for differentiated instruction.

One project explained that through the professional learning community in their family of schools, teachers worked together to understand the critical thinking process and the teaching and assessing of critical thinking skills. A teacher in another project noted: “The ability to engage in pedagogical documentation using [technological] tools and capture the learning journey in my classroom has changed the way I teach. Students are engaged and invested in our collective learning and because of this, growth is celebrated!”

Fullan & Langworthy (2014) represent the learning environments that support the new pedagogies required for the development of 21st Century skills. They note that previously technology combined with pedagogical capacity was used to amass content knowledge in order to reach content mastery. In the new pedagogies, ubiquitous technology and pedagogical capacity are used together to discover and master content and to create and use new knowledge, which results in deep learning. Many projects reported aspects of this change in their final data.

One project started with the firm belief that teachers must change their practice, and student achievement will follow. In their results, they found that the initiative changed how teachers teach.

In another project, participants learned how technology can be used to enhance pedagogy and deepen students' learning. Their willingness to use instructionally appropriate technology and to learn alongside their students was foundational. Teachers demonstrated that they are becoming life-long, enthusiastic learners – traits that they model for their students. One teacher said: "I now know that slowing down, observing students and talking with them will produce effective results." Another noted: "The students become extremely excited when it comes time to use the iPads. They help me see and hear things I would have otherwise missed ... the valuable conversations that would potentially have been missed have become a great benefit to the students' learning."

One project noted that the percentage of teachers who reported using technology multiple times each week increased from 29% to 79% over the course of the innovation project. Another found that teachers moved from being uncertain about the benefit of an adaptive, analytic learning environment to being increasingly more confident of its impact on student learning. Yet another project reported that it was very encouraging to see the high levels of enthusiasm that educators expressed once they discovered the different ways they could use technology to engage students, to provide feedback on learning, and to differentiate instruction.

All of these various changes to teaching practice transform classroom environments in ways that point to the goals of deep learning – that new knowledge can be created that is meaningful and sustaining for both teachers and students.

Teacher Growth

Embedded in teacher learning are aspects of teacher growth and development. Fullan & Langworthy (2014) write: "...in the new pedagogies ... the foundation of teacher quality is a teacher's pedagogical capacity – their repertoire of teaching strategies and their ability to form partnerships with students in mastering the process of learning" (p. 3). The data from these innovation projects suggest two areas where teacher growth is notable: *instructional practice* and *collaboration*.

Instructional Practice

In their review of studies of teachers using technology, Luckin, Bligh, Manches, Ainsworth, Crook & Noss (2012) noted: "... findings are invariably drawn from evidence about how technology supports existing teaching and learning practices, rather than transforming those practices" (p. 9). Evidence from these innovation projects though, suggests that a move toward using technology to transform teacher practice rather than to support existing practices is beginning to occur. A teacher describing her growing comfort with technology use found: "Technology has allowed me to give students different opportunities to showcase their learning. It has allowed me to think outside the box and use technology to enhance my lessons and lesson planning. I have also been able to streamline some processes and be more efficient."

A powerful comment from a teacher describes change in instructional practice. “The most transformational aspect on my teaching has been a fundamental change in my philosophy of teaching. I have converted to a more student-led classroom structure instead of a teacher-directed instructional method. This has had a huge effect on my student learning.” More testimony displays shifts in instructional practices: “... My planning of lessons has broadened to encompass technology and reach the more reluctant learners. I am still at the beginning of my learning curve and look forward to continue on next year with some of these same students and watch their progress and mine.” And another teacher found: “Learners actually use the feedback that teachers and peers give them because it comes “during” the process, rather than at the end of the process ... assessment as learning.” In one project, teachers reported becoming more comfortable with “being uncomfortable with technology” in front of students; a necessary step in moving from “the sage on the stage” to a “guide on the side.” In another project, the most significant finding was the positive impact that technology integration had on teachers’ sense of self-efficacy and their capacity to foster creativity and adjust lessons to meet the need of all learners. One teacher noted: “I have learned that perhaps the biggest need as a teacher is resiliency, and to know that mistakes are part of the process. The most important thing is to learn, and to reflect about how or why something didn’t work, and not to be afraid to tweak some aspect and try again.”

Comments from innovation projects indicate that a shift in vision toward 21st Century technology-enabled learning is beginning to be understood in the context of new pedagogical practices that lead to deep learning attributes. As one teacher said: “After 19 years of teaching, I have been renewed and refreshed because these tools have let me give the learning back to the students.”

Collaboration

Fullan & Langworthy (2014) note: “A collaborative climate decreases teacher isolation and, at the same time, enables greater risk-taking. In schools and systems with collaborative climates, the risk of trying new approaches becomes shared” (p.54). One project reported that there was a positive change in the nature of communication and an increase in collaboration between teachers and students, which resulted in increased flexibility and ease in collaboration. Another found that teachers and students were using netbooks in project-based and collaborative learning situations to enhance and develop higher order thinking skills. Teachers and students became co-learners as they explored and discovered the potential of these devices.

Teacher collaborative inquiry was described as transforming practice across schools and was also effective for adding value to staff learning in terms of cross-subject and cross-grade groupings. One project reported that they were expanding professional capacity with 21st Century learning and subject-based learning through technology in a variety of modalities including reflective practice. A teacher stated: “I’m taking more chances with my class and trying things with my students even if I’m not entirely comfortable with the software/hardware myself. I am also more able to share ideas with other teachers in different subject areas.”

Growing confidence was also realized with the assistance of technology coaches, which were seen as a key factor in teachers integrating technology devices into daily teaching. It was reported that growth in the use of cloud technology by teachers had grown dramatically. One teacher said: “The project pushed me to go places I may not have gone on my own. I have made an account with Google and been using Google Docs to collaborate.”

Cloud-based resources were mentioned in several projects as a way to provide more collaborative learning opportunities for teachers and students and professional resources for staff to facilitate a culture of professional learning that is sustainable.

3. System Learning

Fullan & Donnelly (2013) writing of system change, note: “The digital swamp is full of innovative ideas and products that have outcomes in a limited environment. However, we have yet to see true transformation at scale” (p. 17). They describe the necessary ingredients of support for scaling to the system level as requiring two areas: “one is technical; the other is pedagogical” (p. 18). The research team presents the data on system learning from this study under the headings *system structures and services*, and *sustainability*. System structures address issues such as networks and hardware, while supporting services include human resources, professional development, and learning environments. We highlight the system vision necessary for building increased capacity and scaling up 21st Century technology-enabled learning.

System Structures and Services

Increasingly, systems recognize the importance of having a reliable infrastructure to allow for ubiquitous access to technology in supporting 21st Century teaching and learning. There are still challenges with making this a reality. In one project, because of the challenges for teachers and students with wireless networks, it was felt that the school district’s effort to creating 21st Century connected classrooms has yet to have the desired impact with staff and students. Another noted that with more devices and more users on the network, increased pressure was placed on infrastructure. Still another found that guest access presented a problem because of security. A number of projects identified slow speed and inconsistent connection as problems impeding learning.

Hardware also posed difficulties in some projects. For example, one innovation project mentioned that much of their computer equipment is dated, and as a result, some teachers were hesitant to more fully engage in blended learning. Another reported that management and support of devices impeded learning progress because of the updating process and installation of software; their IT support was stretched beyond capacity.

Many positive comments focusing on human resources and professional learning were visible in the data. For example, projects that instituted or continued to use system-wide coaches were found to be

effective in building capacity for online tools and usage in classrooms. In one project, teachers wanted to increase the consistency of their professional learning by having system departments come together with IT to see how technology could be used across initiatives. Another project reported that their IT department was building capacity to become more proactive in growing relationships with educators and keeping abreast of leading-edge technologies to help inform future needs. Several projects reported either examining the effectiveness of computer labs or moving away from that structure toward increasingly mobile and in-class technology usage.

Sustainability

Fullan & Langworthy (2014) note: “Mobilizing whole systems toward new pedagogies is not a small undertaking. It requires nothing less than addressing the fundamental challenges and new potential of education systems in our age” (p. 75). A number of projects noted the importance of setting sights on sustainable practice and scalability. One project found that their challenges were rooted in tensions between enabling technical changes and supporting adaptive change. They discovered that mindful integration of technology emphasized the role of pedagogy over superficial uses of devices.

One project provided the insight that relying on early technology adopters to further system learning was not as useful as providing consistent tools and meaningful professional development. Another declared that system culture must be one of continuous learning and a mindset shift that encourages people to see that change in teaching and learning is good for all who are involved. Another project described a key finding as the need to build broader capacities that align with both the system vision and investment in tools and devices for learners. Yet another found that the project resulted in understanding that both ‘bring your own device’ and distributed deployments of school-owned technology are important elements of a rich technology eco-system, which empowers teachers and students to engage deeply in their learning in a personalized, differentiated manner.

Building capacity was noted by another project in the form of having a lead person to assist teachers with integrating technology and learning. Another project mentioned that they now have evidence based in practice for next steps in 21st Century skill development.

System Growth

Fullan & Langworthy (2014) write: “System-level realignment of purpose, human resources and professional learning strategies, new assessments and accountability measures, collaborative networking, financial resources and new roles for everyone will all bring powerful system levers to the change process” (p. 73). A number of these attributes were reported in the data from projects; described here as growth in *capacity building* and *scalability*.

Capacity Building

Evidence from the data highlights the fact that in many innovation projects, gains in understanding the value of technology-enabled teaching and learning contributed to system planning for the future. Several projects described links to changes in system planning. A project said that their work served as a timely opportunity to generate and document innovation practices that support the 21st Century learner that can be shared within their system.

More purposeful and focused professional development aligned to system plans was reported by innovation projects. A number of projects also mentioned the importance of principals and administrators being included in professional development sessions in order to be leaders in continuing to develop and support 21st Century technology-enabled learning in schools and to contribute to ongoing system planning. One project resulted in a decision to build a professional development model that is school-centred, tapping into the expertise within each school to scale up 21st Century teaching practices and to help schools take ownership of technology integration.

One project expressing this viewpoint noted that job-embedded professional learning opportunities to support the integration of technology as a teaching and learning tool have now been identified as a priority. Another reported that the models used in their project provided a lens for analyzing what instructional change looks like and sounds like that the system will use to craft a framework for organizational change.

In terms of cloud technology, one project reported moving forward with approaches that they feel more naturally incorporate and impacts 21st Century pedagogies. Another is providing in-service for school administrators to ensure they are familiar with cloud computing and related applications. In more general terms, a project noted that as a requirement for change, teachers should be comfortable and confident in exploring new pedagogies and technologies, which are at the forefront of systemic transformation.

Scalability

All this data suggests that jurisdictions are planning ahead for continued growth and development in 21st Century technology-enabled teaching and learning. Several projects said that evidence they gathered helped inform decisions for the allocation of human and financial resources. As well, scaling up inquiry-based learning and working on an integrated approach to teaching and learning were highlighted as steps moving forward.

One project described different departments continuing to develop closer working relations to support technology-enabled practice. Several projects mentioned that lessons learned in the project would help them expand ideas into the broader context of learning across schools. For example, the need for teacher-coaches was identified, as was stronger communication and collaboration between program departments and IT departments. One project added two additional mentor-pairs in different areas of their school system to better scale mentorship capacity. One project described the formation of a 21st

Century learning committee, which would include classroom teachers, program coordinators, principals, IT personnel, and the digital learning coach to move forward plans for 21st Century learning goals. Another reported that they are creating more opportunities and building the web-based infrastructure to promote collaboration in a move toward including students and parents, community partners, and other stakeholders in changing system dynamics. Another reported that they will further emphasize the unique needs of individual settings and cultures in classrooms and schools in order to scale up technology-enabled learning.

These results indicate a move forward in terms of practice that is sustainable and scalable, and suggests that gains have been achieved in these projects that will effect student achievement as learning environments embrace the skills necessary for deep learning. It seems clear that learning environments are changing to accommodate and welcome new ways of understanding the link between pedagogy and technology. One project noted that they have now established technology use as a habit, not a special event, and it has become embedded in teacher practice. Another described their realization that teachers need to have control over how they use technology and flexibility to choose which apps to use for effective instruction. A positive impact on student learning was noted by projects, including for students at-risk, as was a move toward making digital citizenship a priority.

In terms of the expansion of innovation projects, one reported taking the original plan of the project that was developed for six schools and scaling it up to all the thirty-five elementary schools in the district. Another noted that the piloting of Office365 in their secondary panel in this project will be expanded to their elementary schools during the next school year. Yet another project said they would be officially scaling up 'bring your own device' pilots as a result of their project. Other projects mentioned their continuing interest in scaling up specific hardware such as tablets and netbooks. One project reported that investigation will continue through Professional Learning Communities (PLC) looking more specifically at uses for devices for blogging, creating electronic portfolios, and increasing student skills through access to social networks and web-based platforms.

Overall, it seems that more purposeful use of technology-enabled teaching and learning going forward was a positive outcome of the innovation projects as a whole.

Epilogue

Redesigning the Landscape: A Changing Environment

In concluding this study, a return to the notions expressed in the title of the investigation provides a platform for the research team's final remarks. First, the idea embedded in the image of a passport is that entry is a means of crossing into new territory. When a passport is stamped and the gate is crossed, new experiences, situations, and events beckon across the landscape. Large and small changes in perception open as ideas are explored and places that were formerly unknown come to life. Maintaining a spirit of open-mindedness can result in gaining more knowledge that then can be mobilized in learning in more innovative and deeper ways.

This description applies to these innovation projects. It is clear that individuals, groups, schools, and systems have crossed into deeper territory in regard to embracing 21st Century technology-enabled skills in this Round 3 initiative. Teachers and students have taken new paths across the terrain of technology-enabled teaching and learning, and are progressing toward the ultimate goal of preparing learners to be active global citizens.

Reflecting on the results of the Round 1 (2011-2012) and Round 2 (2012-2013) pilot projects, it is clear that understanding and acceptance of the changing pedagogical landscape brought by 21st Century skills has deepened as participants continue to embrace the challenges of technology-enabled practices. As the current literature on 21st Century teaching and learning suggests, it is clear that students, teachers, and systems across Ontario are continuing the progress made over the last two years in mobilizing new knowledge and building capacity for sustainable and scalable practices as they explore the landscape of what it means to engage in deep learning. The learning and growth reported across all projects highlights the increased attention to the development of 21st Century competencies that are central for deep learning as described by Fullan & Langworthy (2014).

Evidence of an increasing level of mobilizing knowledge and building sustainable practices was visible in the intensity of teachers' willingness to engage in some of the new pedagogical practices noted by Fullan & Langworthy (2013). For example, teachers worked collaboratively with peers and their own students and shifted their instruction to accommodate student voice and leadership. They supported more inquiry-based classroom environments where students were able to embrace a more self-directed approach to their learning, taking more pride in and responsibility for their work. Evidence also suggests that as teachers enhanced their pedagogical skills they developed positive attitudes toward integrating technology into their practice. This move signals a shift in their roles. The evolving partnership of students and teachers in the learning process foregrounds the importance of the critical thinking and reflection so necessary for constructing new knowledge in a technological world. This transformation coincides with the position suggested by Fullan & Langworthy (2014): "The foundation of teacher quality is pedagogical capacity – teachers' repertoire of teaching strategies and ability to form partnerships with students" (p. 3).

There was also evidence that growing system attention to constructing new learning environments for 21st Century technology-embedded learning was of critical importance for keeping momentum going at

the local level. This growth in mobilizing knowledge was visible in system visions for redesigning professional development and learning environments to scale up the informed practice of technology-enabled learning. There was evidence that connections among and between groups across the system such as teachers and principals, curricular and IT departments and other services could enrich and hasten growth in 21st Century skill development.

One area where challenges and needs were evident was in the network infrastructure and hardware acquisition necessary to keep the growing momentum of technology use going in schools. It was clear in the data that the purchase of hardware and issues around security, reliability, and ease of accessing networks are of critical importance to address, as next steps for sustainable and scalable practice to be achieved.

In reflections about growth and sustainability, there is little doubt that technology-enabled teaching and learning is increasing and is being embraced with greater understanding by educators at all levels across the province. Congruent with the connections between theory and practice for deep learning that Fullan & Langworthy (2013) describe, system-level strategies that enable broader collaboration and sharing are progressively being adopted, as are new pedagogical models that can foster deep learning.

Fullan & Langworthy (2014) write that "... of [increased] importance would be measuring the full range of students' deep learning competencies: 1) students' mastery of the learning process, including their ability to master new content; 2) students' key future skills, including their abilities to create new knowledge using the collaboration and communication skills necessary for high-level value creation; 3) students' proactive dispositions and levels of perseverance in the face of challenges; and 4) the effect of students' work products on intended audiences or problems" (p. 40). They conclude that in their research internationally, much of this work is in the early stages of development. In Ontario, knowledge about how teachers adopt deep learning practices is at a beginning stage in how to measure these practices. It seems clear that attributes of deep learning will require new strategies to measure new learning.

Going forward, the challenge for education in Ontario will be to continue the transformation of instruction and learning practices supported by system plans and policies. This journey of preparing learners to be active global citizens includes developing the technology-enabled skills that teachers and students need to engage with learning partners locally and globally and for systems to invest in supporting with the necessary infrastructures. Along the journey, the education system must seek valid and reliable ways to measure progress in student learning relevant for a 21st Century context so that their achievement can be made visible. Overall, the data offers a sense of the growing acceptance that new ways of viewing learning require new ways of assessing progress and carrying out the business of schooling on all levels.

In conclusion, much has changed in terms of technological growth in teaching and learning over the course of the three years of investigation into 21st Century learning in these pilot studies and in this innovative research initiative. In this study, the research team was impressed with what Jerome Bruner has called "the cultivation of reflectiveness" (p. 449) in the final reports where it was clear that the

fundamental shift in the culture of schooling brought by 21st Century technology-enabled teaching and learning is now being thought about on a deeper level, embraced by an increased number of teachers and enriched through dialogue that is engaging educators from all levels of the system in order to find the next steps forward for successful implementation. To use Sir Michael Barber's metaphor referenced in Chapter 4, these projects indicate that we have 'found the mountain and are in the midst of climbing it' to meet the needs of present and future learners across Ontario.

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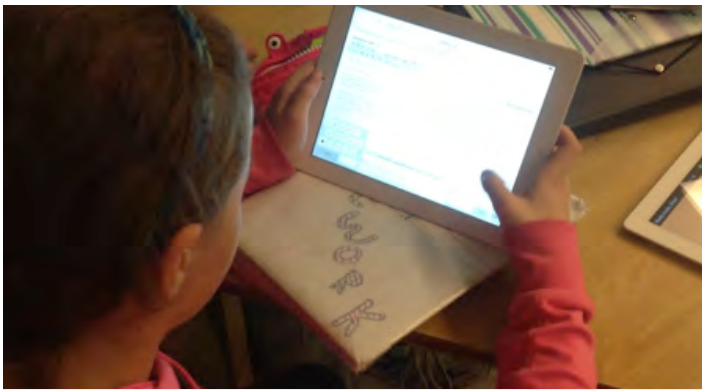
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Appendix

Project Stories and Report Summaries

Supporting 21st Century Skill Development Through Emerging Technologies

Our teachers are engaging students in innovative experiences that maximize achievement, build confidence, and develop responsible citizens while using technology in purposeful ways to support learning. Teachers are focusing on preparing our students for success in a collaborative, dynamic, technology-intensive and increasingly connected world. Students and teachers are piloting several emerging technologies for 21st Century skill development to mobilize knowledge and skills needed for today and for the future.



Student using tablet technology

"I think that the more we use technology in class, the more everyone knows about technology. I would personally want to use technology more in class because I know that there is going to be a lot of technology in the future and everyone needs to know how to use it, how to properly use it and make sure it is completely functional while you are using it."

Student

Our students and teachers are using tablets and Chromebooks in project-based and collaborative learning situations to enhance and develop higher order thinking skills. Teachers and students are co-learning as they explore and discover the potential of these devices. Students access web-based tools where they can create, share, support, and extend their learning, using a blended learning platform and a productivity/collaboration Cloud environment. Students are showcasing their knowledge, understanding, and creativity through a variety of original products like interactive timelines, multimedia presentations, blogs, online science experiments, documents, and creative publishing.

Students are making informed and conscious decisions about selecting the appropriate device for the learning situation. For example, they choose a desktop or laptop for its functionality to generate a Prezi, and then select a tablet with a mobile app to display and present it. The tablets provide students with an efficient tool for problem solving in math, for using an interactive whiteboard app, for participating in an online class discussion, and for conducting research.

"As a student, having tablets in the classroom really comes down to efficiency and accessibility. The tablets can be used for researching any topics related to school work, for taking notes to save for later or to interact with other students about ideas."

Student

To support the development of 21st Century skills, we are evaluating several applications to support collaboration in the classroom, using tablets and student-owned devices. We are developing a technology standards document and standards for students to have regular opportunities to use technologies that support and encourage critical thinking, creativity, communication, and collaboration in class and in their daily life.



Teachers exploring the potential of devices to support instruction and learning

Algoma DSB

Project Title	Supporting 21st Century Skill Development Through Emerging Technologies
Brief Description	During Round 2, teachers were provided professional learning opportunities on the use and integration of netbooks to support student learning and the development of technology skills. Our focus in Round 3 is to build from the successes in the Netbook project. We plan to start the replacement of the netbooks with Chromebooks and investigate tablet technologies. Three different tablets will be examined in 4 junior and intermediate classrooms. To support the development of 21st Century skills and enhance a collaborative environment, we will evaluate several collaboration applications and implement with the tablet and Chromebook pilot classrooms.
Context	<i>Number of schools: 5</i> <i>Number of teachers: 5</i> <i>Number of students: 125</i> <i>Grades/Program: Grades 4-8 classrooms in 5 elementary schools</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The projects undertaken in Round 1 and 2 created the framework for our Round 3 project. During the first 2 rounds, the focus was on professional learning and the integration of technology, specifically netbooks. Our Round 3 project is structured to include emerging technologies like tablets and Chromebooks for technology integration and 21st Century skill development.
Goals & Priorities	<i>System Learning:</i> A <i>Technology Standards document</i> will be developed for implementation in 2014/2015. This document will provide a system-wide direction for the integration technology skills JK to 12. <i>Student Learning:</i> The objective is to allow students, throughout our system, the opportunity to use the technology in project-based and collaborative situations to enhance and develop their higher order skills.
Role of Technology	Technology plays the key role in this pilot project. The tablets, Chromebooks, and collaboration application will be used to support student learning and the development of 21st Century technology skills. The development of the Technology Standards document will be critical as we build capacity with our teachers.
Inquiry Question	How do we support the development of 21st Century skills with a variety of emerging technologies?
Indicators of Success	Teachers and students will provide feedback on the use and functionality of the tablets, Chromebooks, and collaboration application. At the end of the year, a survey will be used to collect data from students and written observations will be collected from the participating teachers.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Algoma DSB)

Students completed a survey to provide feedback on the use of the emerging technology. The survey focused on how the device supported their learning, ease, and effectiveness of the device as a learning tool, and the development of 21st Century skills, specifically in the areas of collaboration and creativity.

Teachers completed a report detailing their experiences, reflections, and recommendations for the devices, support for the development of 21st Century skills, and further resources and professional learning opportunities.

The devices challenged students to develop and refine their overall skill set in the use of technology. Students used problem solving skills to enhance their use of the devices and applied critical thinking skills to information or digital products. Furthermore, the student's ability to think critically about the technology they chose to use was another benefit of using the devices. By teaching students how to locate the best tool for the task, students are able to become more comfortable with applying their growing knowledge of technology and accessing various digital resources that ranged from specific content apps to web based learning or presentation tools.

Successes, Challenges, and Unexpected Results

As a result of the work with the Educational Technology Working Group, a need for improved access to appropriate web applications was identified.

The implementation of Microsoft Office 365 was more involved and took longer than originally anticipated. This application is a key component for our system moving forward by providing staff and students with common platform with access to Word, PowerPoint, Excel, Publisher, OneNote, and OneDrive for storage.

Sustainability

The evidence gathered from our *Supporting 21st Century Skill Development Through Emerging Technologies* project helped inform our decisions for future investments in emerging technologies and provided the opportunity to develop strategies and resources to support student learning and the acquisition of important higher order 21st Century skills.

As a result of the findings from this project, the Algoma DSB has moved forward with the purchase and implementation of some tablets and Chromebooks. We developed a tablet strategy and procedures document for the acquisition of iPads for student use. Another component of our project was to establish an Educational Technology Working Group to support system-wide direction for the development and integration technology skills JK to 12.

The ADSB Standards for Digital Learning, K-12 document will set the conditions for students (JK to 12) to have regular opportunities to use technology and outline expectations for skill development. This

(Algoma DSB)

document will be implemented in 2014/2015 and provide a system-wide direction for the development and integration technology skills JK to 12. The ADSB Standards for Digital Learning, K-12 document is the foundation to build capacity with our teachers and prepare our students for success in a collaborative, dynamic, technology-intensive, and increasingly connected world.

We are in the beginning phase of our Educational Technology Lead plan. Job embedded professional learning opportunities to support the integration of technology as a teaching and learning tool has been identified as a priority. We have also launched a Career Studies Blended Learning Initiative utilizing Chromebooks. This initiative focuses on the development of rich summative tasks within the Career Studies course and the use of the LMS within the context of the task.

Embedding Technology into Numeracy Curriculum Grades 4-8

Algonquin and
Lakeshore
Catholic
District
School Board

We began a technology review in the summer and fall of 2013. At that time, we partnered with IBM to gather information about how teachers and students in our schools were utilizing technology. There were many rich discussions that involved all stakeholders. We considered best practices in pedagogy and instructional use of technology, and created a Technology-Embedded Learning Plan from the recommendations resulting from our discussions.

To implement this plan, we needed many sources of funding for hardware, digital resources, and professional development of our teachers. We aligned our innovation research project with our plan to bring technology to the point of instruction – our students. We purchased laptops at a ratio of 6:1 for all Grades 4-8 classrooms in two pilot schools. The schools began to implement the vision of the technology plan with the help of newly assigned central staff and an extensive professional development plan.

The Grades 4-8 classroom teachers, Special Education teachers, and the Information Technology contacts from the two schools met in small groups. They learned about the Board's vision, about the software on the new computers, and how to support students through technology-enabled instruction and learning. We introduced new software and best practices for embedding technology into the teaching of mathematics.

The D2L platform is our communication tool and our discussion forum. As teachers join the roll out of laptops in all Grades 4-8 classrooms, they are able to log onto to D2L and participate in a board-wide discussion about imbedding technology into learning.

Teaching and learning are leading and making way for the integration of technology. It is no longer about the device but about learning and how it can be supported and enhanced by state of the art educational software.

Algonquin Lakeshore Catholic DSB

Project Title	Embedding Technology into Numeracy Curriculum Grade 4-8
Brief Description	This technology embedded innovation research project is to support and stimulate best practice and more effective use of technology for the purpose of improving student achievement. The project is to incorporate a broad-based approach to technology, addressing the areas of classroom integration, network infrastructure, instructional hardware and software, professional learning, student and teacher access, standardization and resource allocation. The development of this technology embedded learning strategy will be used to guide system-level decisions regarding access to technology, professional development, resource development, resource allocation and infrastructure.
Context	<i>Number of schools: 6</i> <i>Number of teachers: 25</i> <i>Number of students: 630</i> <i>Grades/Program: Grades 4-8 classrooms in 6 elementary schools</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> The development of this technology embedded learning strategy will be used to guide system-level decisions regarding access to technology, professional development, resource development, resource allocation, and infrastructure. <i>Student Learning:</i> Access to the technology will create learning environments for students where both teacher and student are learners, understanding becomes as important as knowing, and students and teachers connect with their community and the world.
Role of Technology	Building of a data repository for use by the teachers in this project as well as to make it available across the district. Web 2.0/3.0 Tools. Centrally maintained digital resources (videos, templates, lesson plans).
Inquiry Question	What is the effect of classroom based point of instruction on equitable and inclusivity access? Has the availability of computers in the classroom made an impact on equitability and inclusivity?
Indicators of Success	Populated data repository for all teachers to use as we move forward with scalability.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Algonquin Lakeshore Catholic DSB)

Pre and post teacher surveys related to technology use as it relates to their instructional practice and student assessment. Student survey on how was the technology used in their class.

- A robust and reliable infrastructure supports innovation.
- Collaboration of learning technologies area and program team is vital to ensure success of this kind of project.
- Reliable infrastructure allows teachers to focus on the technology in a different way, energy is not used up in trying to make something consistently work.
- Teacher learning resulted in student learning.

Successes, Challenges, and Unexpected Results

The challenge continues to be accessing high speed internet in remote and rural parts of our board. To cope with this challenge creative problem solving was needed at all levels as well as cooperation and sharing of our vision with outside contractors.

Relationship building between the academic and technology sides of the house is a definite added success.

Sustainability

This innovation research project was the kick start we needed to change practices in our schools. We have taken the plan originally developed for 6 schools and expanded it to all our 35 elementary schools.

The ability to test the infrastructure, the image, the device, and the professional development plan in a thoughtful and controlled environment has provided our team the structures, practices, and relationships required to be successful on a much larger scale.

Leveraging Technology to Support AMDSB's Student Outcomes

Avon Maitland
District
School Board

The foundational principles for the creation of this initiative are equity and opportunity. Equity is enacted by providing each student with a mobile device. Opportunity follows from students having the option to access information in differentiated ways and produce a wide variety of products to demonstrate learning and thinking.

"I was surprised how easy it is to connect to other students to do assignments and to talk to my teachers about work that I didn't understand at home."

Student

The philosophical base for this program shifted from a focus on the technology and the mobile device, to development of teaching practices and student outcomes. Our program, Next Generation Learning Program (NGLP): School 3.0 is enriching and supporting the development of the instructional approaches and the tools we use to assist students and build their success.

Our program began with the selection of a small family of five schools. We provided approximately 460 Grades 6-8 students with an iPad2. For teachers, we provided direct support through training opportunities, access to a coach, and a collaborative blog. For students, we provided verbal instruction, written guidelines for using technology, and ongoing informal support from our tech trainers, teachers and coaches. For parents, we provided access to an open blog and parent information nights.

We are beginning to measure positive changes in overall attitudes towards teaching and learning. Teachers are moving from applications that focused on efficiency to applications that advance student learning opportunities. The students are voicing requests for "new kinds of assignments" and "new ways of working with each other." Initial anecdotal evidence suggests increases in student confidence, more productive attitudes, and more sophisticated student products.

"Student engagement and creativity has increased as the ability to offer a lot of choice in terms of how to complete assignments is now wider and easier."

Teacher

Avon Maitland DSB

Project Title	Leveraging Technology to Support AMDSB's Student Outcomes
Brief Description	The focus will be to leverage technology to support our board's student outcomes which include student efficacy in collaboration, communication, critical thinking, problem solving, and creativity. The project will now be cross-curricular.
Context	<p><i>Number of schools: 6</i> <i>Number of teachers: 60</i> <i>Number of students: 425</i></p> <p><i>Grades/Program:</i> Intermediate Students from Grades 7-9 with a cross curricular focus. The intent here is to embed Literacy and Numeracy within the rich context of subject disciplines and using technology as a tool to access resources and create artefacts of learning.</p>
Area(s) of Impact	Teachers
Phase of Change	<p><i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i></p> <p>In last year's project we noticed that although student engagement increased we wanted this to reach higher levels. By moving to an environment where students had full day access to iPads (not just Math Class), student use and engagement will reach higher levels and more cross curricular connections will be made.</p>
Goals & Priorities	<p><i>System Learning:</i> In our strategic planning, AMDSB will be implementing a 1-1 iPad project for students in Grades 7-12. This project will inform effective implementation in our secondary schools with the intent of influencing the impact on student outcomes in all curricular areas.</p> <p><i>Student Learning:</i> We have conducted an initial survey of students and preliminary indications are that there is tremendous opportunity to bring relevance to the work that students do in class, especially in math where only 36% of students feel that math learned is useful for everyday life.</p>
Role of Technology	We continue to notice in classes where technology is not utilized (especially in Math) student engagement is low according to EQAO Grade 9 survey results. By implementing the use of technology within a SAMR framework, we project that we will be able to reach these goals of student engagement and high levels of efficacy in collaboration, communication, critical thinking, problem solving, and creativity.
Inquiry Question	If we provide support and devices to teachers and students, then teachers will modify and refine their instructional practice incorporating the AMDSB's Student Outcomes and 21st Century Skills.
Indicators of Success	Teacher pre and post surveys will enable us to measure growth and mindset of our teachers to utilize the iPads in a variety of ways that demonstrate some movement along the SAMR scale of implementation.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Avon Maitland DSB)

Teacher pre and post surveys conducted by Apple enabled us to measure growth and mindset of our teachers to utilize the iPads along the SAMR scale of implementation. The teacher survey provided staff with a second look at their understanding of the SAMR model and their progression along the continuum of technology integration in the classroom. ...what became evident, when talking with teachers about these results, was that through the course of the term they became more aware of the requirements of the SAMR model and their “more realistic” place on that continuum.

Teachers reported a revitalization of their practice. Specifically, teachers are reporting that they are enjoying the use of technology in their classrooms. They find that they are more efficient with the administrative tasks; made easier with applications that track student work and progress. Teachers are also reporting their interest in new ways of assessing student work, building a repertoire of new lessons, and new techniques.

Pre and post surveys of student attitudes towards learning within Literacy and Numeracy context, comparable to EQAO, was used to establish baselines of comparison year to year and to Grade 6.

We used qualitative analysis strategies to analyze the work samples of our students and map these samples according to student outcome objectives.

The student survey illustrated a clear trend towards more productive and positive student perceptions about themselves as learners. Students demonstrated a significant increase across all of the items provided. In both Language and Mathematics, students demonstrated marked increases in how much they enjoyed the subjects, how they identified their abilities in Math and Reading, how they are able to communicate their understanding, and how they organize and complete their work.

For students, the impact of these devices has been immediate and profound. Students are finding new ways to be engaged in the curriculum. Gamification of practices has brought a large number of students back to the table. They are engaged and willing to learn using digital media. Disengaged learners are participating and creating new ways to demonstrate their understanding.

Successes, Challenges, and Unexpected Results

A surprising and unintended result of this project has been the tenacity of student voice. In fact, students have been the driving force in the acceleration of teacher progress and in the actual speed of iPad deployment. Students have been asking important questions of their teachers regarding the use of mobile technology in their classrooms.

Perhaps the most powerful unexpected success has been with many of our identified students. These students have experienced a transformation in their everyday lives in the classroom. With all students (including identified students) having iPad technology, they are all able to learn in their own unique way. Identified students don't “stand out” from others. Having technology to assist in the classroom has become “normal” for all students.

Sustainability

(Avon Maitland DSB)

At this time, the NGLP is a central initiative for our Board. A great deal of resources, staff hours, and planning time is going into the timely and effective use of mobile devices in our intermediate and secondary classrooms. Included in this process has been a good deal of attention provided to teachers, in the form of professional development and direct coaching. These efforts have been essential to the success of the program. This approach has intentionally placed the emphasis on teaching and learning and removed the device to the background.

We were able to take this pilot and apply the lessons learned to a broad expansion of the program across the Board. These lessons included the need for: teacher-coaches in Elementary schools and embedded teacher-coaches in our Secondary schools; stronger communication between our Program and Information Technologies departments, and a more responsive approach from our IT department, to meet the evolving needs of students and teachers in these new mobile-technology classrooms.

With regards to the role and function of Information Services, much planning has been done to re-imagine the role of this department. In earlier versions, the IT department was designed to respond to technical failures, order devices when required, and offer support when it was requested. Our current department is building capacity to become more proactive, building relationships with schools, and taking on leading-edge technologies to help predict future needs.

In the area of communication, a great deal of effort is being put into building bridges between the departments and personnel that are needed for a successful program. This has included the creation of a forum by which various technology initiatives can share their work with each other and with other Board staff.

Students are engaged and teachers are energized. This, in turn, has fed the need to scale-up the program. The time-table has been moved up for deployment, as has the provision of coaches and the development of new pedagogies that fit the modern classroom.

Tapping the Potential of Technology Through Strong Pedagogy

Bluewater
District School
Board



Teacher learning leads to student learning

The purpose for our work is to determine if iPads can be utilized effectively in the classroom to impact student learning and affect teacher instruction in our elementary and secondary schools with the goal of improved student achievement. Our inquiry question is: "How can we exploit the potential of technology to enhance and transform learning and teaching." We formed a steering committee of teachers who were involved with the previous year's technology pilot. Curriculum lead teachers, administration, and coaches worked in pairs to facilitate sessions with teachers. Teachers who applied to be part of the project, outlining their area of interest and indicating what they hoped to achieve by the end of the inquiry, were formed into groups. Each group was supported by the Communications Disorder Assistant who specializes in using assistive technology with LD students and by the e-learning contact teacher.

Technology is the catalyst for engaging teachers in collaborative inquiry. While teachers are learning about specific elements of technology, they are exploring effective instructional practices.

We launched the project with an intensive professional learning session that included research regarding the effective integration of technology, the introduction of the SAMR (Substitution, Augmentation, Modification and Redefinition) model, the creation of an on-line learning community to share ideas, and time to form inquiry groups and establish timelines with the leads. We also introduced data gathering tools to measure the impact of their inquiry. Each group considered the themes of inquiry-based learning: differentiation, supporting LD students, digital citizenship, digital literacy, e-learning, and electronic collaboration, and chose one as its focus for collaborative inquiry. Groups created a lesson and then chose either to implement it in the school they were visiting or in their own classrooms, or both.



Student engagement and learning increases

In follow-up sessions, the groups reflected on their experience. Overall, they indicated that when implemented with effective instructional strategies, iPads had a significant impact on student engagement, student motivation, and the quality of work produced. Teachers remarked that the iPads allowed for more insight into students interests and needs and they were able to give timely feedback and refine learning goals. Teachers also reported that experts emerged in the class building self confidence and participation among the students.

Bluewater DSB

Project Title	Tapping the Potential of Technology Through Strong Pedagogy
Brief Description	Promoting sector-wide engagement, fostering common understanding, and supporting capacity building and knowledge mobilization in moving to scale-up pedagogy-driven, technology enabled practices for optimizing learning.
Context	<p><i>Number of schools: 26</i> <i>Number of teachers: 54</i> <i>Number of students: 1310</i> <i>Grades/Program: Grades K-12, teachers have been divided into five groups based on division. Each group includes at least one developmental learning (DL) teacher or a learning resource teacher (LRT).</i></p>
Area(s) of Impact	Organizational Practices
Phase of Change	<p><i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The 2014 project will build on the finding that technology has the most impact when combined with effective instructional strategies. The scope of the project will be expanded to include all devices (laptops, iPad tablets and iPad minis) and will also include three schools piloting Windows 8 HP tablets.</p>
Goals & Priorities	<p><i>System Learning:</i> During the first round some great examples of the effective use of technology was beginning to emerge in some classrooms. It is hoped that we will be able to spread and expand some of that learning to other classrooms and develop a shared understanding of the uses of technology to increase student learning.</p> <p><i>Student Learning:</i> Students will demonstrate a greater interest, engagement, and motivation in their learning and there will be evidence of critical thinking, problem solving, and collaboration in their work.</p>
Role of Technology	As teachers move towards developing learning opportunities for their students that require augmentation and eventually modification, redefinition of traditional tasks technology becomes essential. Technology will allow students to access, collaborate, and convey their learning to a wider and more authentic audience than is possible using traditional pen and paper or even word processing.
Inquiry Question	How can we exploit the potential of technology to enhance and transform learning and teaching?
Indicators of Success	<p>Teachers will know, understand, and be able create learning opportunities for students in which the technology enhances and extends learning.</p> <p>Students will know, understand, and be able employ technology in ways that enhance and extend their learning beyond what might be capable without the technology.</p>

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Bluewater DSB)

Teacher pre and post survey data was compared to gauge changes in teacher attitude, confidence, and belief. Randomly selected teachers and students were interviewed to collect qualitative data pertaining to their experience as a result of the involvement with this project. Teachers provided documentation, samples of student work, and anecdotal observations with regards to implementation of technology in their classroom.

Inquiry teams at all levels indicated keen interest in both the SAMR model, as well as TPACK, recognizing the need to change current practice to meet the needs of 21st Century learners.

- When implemented with effective instructional strategies technology had a significant impact on student engagement, student motivation, and the quality of work produced.
- Technology facilitated problem solving and the development of critical thinking skills.
- A theme of Digital Citizenship was identified by all divisional groups. Students were provided with collaborative opportunities to explore the risks and rewards related to having a digital presence.
- When students used technology more work was produced and in less time, particularly by students who did not usually hand work in. Students discovered their own areas of strength and seemed to demonstrate increased belief in their own abilities.

Successes, Challenges, and Unexpected Results

Sometimes the product produced was different from the task assigned (for example when assigned a writing task, some students produced oral and media response). Teachers needed to be sure to clarify the task or be flexible to recognize the big idea in the product submitted.

Teachers identified a need to ensure that students are good Digital Citizens. A collaborative framework was developed for system implementation.

Sustainability

As part of our BIPSA, schools were encouraged to submit inquiry proposals to the Program department. These inquiries are based on school need, for staff and/or students learning, and REQUIRE principal involvement. This encourages and supports principals in their leadership of the school. As a result of the 21st Century Innovation Research proposals were submitted by many schools seeking to improve the pedagogy around the use of technology in the classroom. These schools received the support of both Program and IT department personnel as they investigate their school based inquiry.

Allowing for the submission of technology related School Based Inquiry Proposals has allowed the Program department to reach a wider range of schools, teachers, and students. Administrators have looked at EQAO data in concert with Program staff and have frequently identified areas of need that technology could influence.

(Bluewater DSB)

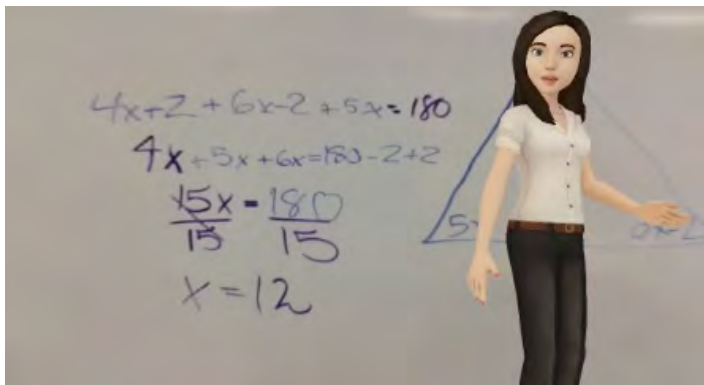
Key personnel involved in facilitating school based inquiry have been given the opportunity to expand their own understanding of technological pedagogy.

As a result of successful iPad pilots, the board Technology Master Plan now incorporates tablet technology, which has a planned improvement of a 4:1 ratio of students: laptops or tablets in elementary schools, a significant improvement from the previous model of only laptops at an 8:1 ratio. New technology elementary roll-outs will be evenly split between laptops and iPads. Accompanying this roll-out will be pedagogical training based on our continued learning.

Refining the Process:

Eliminating Known Barriers to Technology Use and Knowledge Mobilization Within Our District

Brant Haldimand
Norfolk
Catholic District
School Board



Giving voice to their thinking: Students create animated characters to explain math concepts and processes

We have pockets of extraordinarily effective use of technology and these practices need to be more effectively shared to mobilize that knowledge. Our project is broken into several sub-projects across elementary and secondary schools, each supporting our overall goal of reducing barriers to engaging with technology and providing support for more effective methods of communication, collaboration, instruction, and learning. This story will focus on just one of these initiatives: Grade 9 iPad-Supported Math Project.

We facilitated a secondary math collaborative inquiry learning investigation into how to improve student engagement, promote the expression of student thinking, and support teacher assessment of mathematical thinking. The iPad was added as a tool to support the learning.

Our research investigation is revealing several important findings that are promoting more widespread use of the technologies and approaches. Some are purely technical in nature, but are essential to sustain and promote teacher use. For example, we now have a practical and inexpensive software solution that enables mirroring of the iPad to the projector via the Windows-based computers in the classroom. As well, a mobile device management solution enables us to manage app purchases and push the apps wirelessly to the users.

Other findings provide evidence of positive impact on teaching and learning. Teachers report becoming more comfortable with “being uncomfortable with technology” in front of the students; a necessary step in moving from a “sage on the stage” to a “guide on the side.” As well, secondary math teachers are more comfortable with students working in groups, making mistakes, and “figuring things out for themselves” as a result of their involvement.

We are learning that providing clear expectations along with the right tool is a much more effective way to manage change than leaving it up to staff to deal with all the barriers associated with new and innovative practices.

Brant Haldimand Norfolk Catholic DSB

Project Title	Refining the Process: Eliminating Known Barriers to Technology Use and Knowledge Mobilization Within Our District
Brief Description	Our project is broken into several sub-projects, each supporting our overall goal of reducing barriers to engaging with technology and information to support more effective methods of communication, collaboration, instruction, and learning. Our sub-projects include: introducing a learning station to each elementary classroom; an iPad-supported Grade 9 math activity that enhances and scales up a previous pilot activity; a math resource development activity that supports different entry points for our junior and intermediate teachers; a project in our high schools to explore the use of our student information system to collect assessment and evaluation data in a manner that aligns with Growing Success; and a complete redevelopment of our Board's Portal to enhance internal communications, add functionality to our student users, and enhance access to information for our community partners.
Context	<i>Number of schools: 40</i> <i>Number of teachers: 20</i> <i>Number of students: 10 000</i> <i>Grades/Program: K-12, many elements, and many programs directly engaged</i>
Area(s) of Impact	Teachers Students, Leaders, Organizational Practices are evident due to scope of activities
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> We had pockets of extraordinarily effective use of technology and that these practices need to be more effectively shared to mobilize that knowledge. Staff were underutilizing the Portal and other central web-based resources, partly due to the complexity of the resource we had created.
Goals & Priorities	<i>System Learning:</i> We have learned that providing the expectation along with the right tool is a much more effective way to manage change than leaving it up to staff to deal with all the barriers associated with new and innovative practices. <i>Student Learning:</i> When teachers use 21st Century skills to be successful in a project (e.g. collaborate on a shared document to co-construct success criteria) we are more likely to have our students use them.
Role of Technology	<i>Examples stated include:</i> Classroom learning station will ensure equitable access to existing classroom technology and Board-provided resources for all staff and students. Technology will enable staff and students in Grade 9 math classrooms to access/share/collaborate on solutions to problems.
Inquiry Question	Will removing the barriers identified through feedback reduce access challenges, lead to greater use by occasional and itinerant teachers, more effective use in the area of mathematics instruction, more widespread use of electronic collaboration spaces, and greater use of data to support teaching and learning?
Indicators of Success	Indicators were identified for each of the diverse elements in the initiative.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Brant Haldimand Norfolk Catholic DSB)

As a district, we are working with staff to develop the practice of data triangulation (make decisions based on observations, conversations, and products). To “walk the talk” we are working to develop ways for participants in the various sub-projects to collect the same kinds of artefacts.

The project had multiple components being monitored.

Elementary Learning Stations Project

- Outcomes:
Each elementary classroom now has a computer which we refer to as a learning station. Each learning station has the same standard software image, is locked down to ensure maximum “uptime,” and is connected to all existing classroom peripherals.
- Results:
...equity of access and improving student engagement.
The Learning Station has made the technology less visible and allowed the learning to be the focus.

Gr 9 iPad-Supported Math Project

- Outcomes:
Each teacher with a Grade 9 math section received an iPad, software to mirror the device to the ActivBoard, and PD support to enable a specific set of co-constructed success criteria. Participants met the success criteria identified.
- Results:
Informal feedback indicated a number of IT support and PD related challenges, (e.g., Our board is a Microsoft Board and lack of familiarity led to some challenges. Providing the device to students created some potential security risks.)

Portal Project

- Outcomes:
Staff – improved workflows, access to information, access to collaboration spaces, and the ability to create spaces that promote access to information for the people they support.
Students – access to online storage space, online productivity suite, online collaboration spaces, and online spaces related to their classroom and areas of interest.
Access to tools to create evidence of learning with the ability to collaborate and receive descriptive feedback are seen as key drivers to improve student learning.
- Results:
The existing Portal has been enhanced marginally to enable achievement of some goals in the short term. The bulk of the work has been done in the new incarnation, which is not yet live. Some members of the Student Achievement Team are using the Portal and OneNote to manage the PLCs they support, providing improved access to the shared learning and the possibility to do work and learning beyond the face to face activities. Some teachers are taking advantage of OneNote to support their professional learning and the management of their work-related information. Staff are reporting greater clarity around which tool is used for what function (e.g., professional learning – Portal, managing content for students – D2L).

Math Flipchart Project

(Brant Haldimand Norfolk Catholic DSB)

- Outcomes:
Small group of teachers released from their classrooms to work with the System Math lead and the 21st Century consultant to construct a set of templates that capture the most current instructional design concepts. Group built/posted to Portal a few flipcharts that are usable in classrooms (address learning expectations that are being covered at this time of year).
- Results:
These participants have become a resource to help us further build capacity around the effective use of ActivBoards to support student learning. Sample flipcharts provide different entry points for staff.

Successes, Challenges, and Unexpected Results

Gr 9 iPad-Supported Math Project

- Had to develop and fine-tune processes related to using iPads.

Portal Project

- Originally we were going to hire a company to create the Portal for us. Decision was made to build internally. Unintended result was significant capacity-building for staff who are building the Portal and who will maintain it for us.
- Having a large project like this has led staff to develop some internal processes that make managing something of this scale more efficient.

Math Flipchart Project

- Unexpected success - rich discussions and greater learning about learning goals, success criteria, lesson design, and technology use.

Sustainability

Elementary Learning Stations Project

- Used feedback from staff to monitor whether the devices, software, and infrastructure that are in currently in place in learning environments are enabling achievement of Ministry and District goals.
- Build costs for maintenance of these resources into annual budget.

Gr 9 iPad-Supported Math Project

- Meeting with staff from other Districts to identify best practices that we may use to overcome the challenges and to decide whether the outcomes warrant the costs associated with implementing more new practices.
- Consider mobile devices as replacement for the student workstations we distribute to classrooms in our District in light of the new learning.

Portal Project

- Have internal staff developing their capacity to build in the SharePoint environment and integrate our resources. They will enable us to grow the solution to meet our changing needs.

Math Flipchart Project

- Perhaps the flipchart is a nice by-product of more valuable learning – the new processes to do work and share learning may be the greater outcome because they can be adapted other areas.

The Collaborative Classroom:

An Integration of Google Apps for Education (GAFE) and the Virtual Learning Environment (VLE)

Bruce-Grey
Catholic
District School
Board

Our focus is to increase student engagement and achievement through the use of the GAFE. Existing blended learning classrooms in three schools are incorporating Chromebooks and Google Apps for Education (GAFE). The project involves 6 teachers and approximately 325 students ranging from Grades 8 to 12.

Each class started the semester as a typical blended learning environment without the use of GAFE and Chromebooks. We used our midterm marks as a baseline for student achievement. We introduced Chromebooks to the classes and gave each student a GAFE account within the school board. We used final term 2 marks as another data collection point to compare student achievement in the project. The data collection process continues, however, our informal observations and student responses indicate an increase in student achievement.

“Chromebooks makes it easy to collaborate with your partners for doing projects ... you can share documents.”

Student



Using technology in a blended learning classroom environment

We used GAFE to distribute a survey to some of the students to complete at the end of the semester. The results indicated that 93% of the students felt more organized using GAFE and having everything available to them online. Over 70% of students felt that communication with the teacher and their peers was easier and that they were able to collaborate more effectively on the course outside of the traditional school setting.

“The teacher puts all our work online so we can access it from school or at home ... it makes it so much easier and faster.”

Student

Our next step is to incorporate GAFE and Chromebooks into the blended learning classes from the beginning of the school year and to continue focusing on student achievement and engagement. We will also examine strategies to create sustainable use of GAFE and Chromebooks throughout our blended learning environments and to open up student collaboration with classes in a different school board.

“We use it [GAFE] for most assignments ... students are definitely more engaged.”

Teacher

Bruce Grey Catholic DSB

Project Title	The Collaborative Classroom: An Integration of Google Apps For Education (GAFE) and Virtual Learning Environments (VLE)
Brief Description	Our current blended learning classroom utilizes small group instruction to encourage higher order thinking skills. With our target groups this semester, we are looking at localizing our classrooms through cross-curricular interactions with the intent to globalize our courses to other classrooms across the province.
Context	<i>Number of schools: 2 Number of teachers: 6 Number of students: 295 Grades/Program: Grades 9-12, multi-discipline</i>
Area(s) of Impact	Students Organizational Practices
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Our current blended learning classroom utilizes small group instruction to encourage higher order thinking skills. With our target groups this semester, we are looking at localizing our classrooms through cross-curricular interactions with the intent to globalize our courses to other classrooms across the province.
Goals & Priorities	<i>System Learning:</i> The increased use of blended learning at the board level and the introduction of GAFE will support teachers in being able to move up the SAMR model. <i>Student Learning:</i> Offering students the option to redefine the learning activity can allow them ownership in the process and make the teacher a co-learner with the students. This research project will assist in students `owning their learning`.
Role of Technology	In order to ensure equity for students using an online environment, the technology is essential.
Inquiry Question	If students are given the opportunity to use and access the GAFE and VLE on a daily basis, their level of engagement will increase with a direct relation to their achievement.
Indicators of Success	Qualitatively we've seen student engagement increase through online participation with GAFE. Quantitatively, we have seen an increase in student achievement due to the ease and accessibility for students to access opportunities to respond to the teacher's feedback.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Bruce Grey Catholic DSB)

Each class started the semester as a typical blended learning environment without the use of the GAFE and the Chromebooks. We used our midterm marks as a baseline for student achievement. The Chromebooks were introduced to the classes and each student was given a GAFE account within the BGCSB near the end of April.

We have used final term 2 marks as another data collection point to compare student achievement in the project. A random sample of 205 students was chosen, 182 secondary students and 23 intermediate Grade 7 and 8 students.

- Grade 9-12 Students: 1% average increase in student achievement from term 1 (no access to Chromebooks or GAFE) to term 2 (Chromebooks and GAFE were used).
- Male students increased in achievement 0.5%, female students 1.5%. Students Identified with an exceptionality increased by 1%.
- Grade 7-8 Students: 1.5% average increase in student achievement from term 2 (no access to Chromebooks or GAFE) to term 3 (Chromebooks and GAFE were used).
- Achievement by strand: Oral Communication 1.4% increase, Media Literacy 1.5% increase, Written 1.6% increase, and Reading 1.4% increase.

We surveyed teachers for their input and observations as well.

Through the GAFE, we were able to extract student usage and engagement data as they participated with online learning. In regards to student engagement, a survey was published (using the GAFE) and distributed to some of the students to fill out at the end of the semester. Very positive results were compiled in the report.

Successes, Challenges, and Unexpected Results

An unintended result was the quick acceptance to using the GAFE and the number of students and staff that welcomed the platform with open arms. Students and Staff who were not participating in the study were expressing interest and wanting to learn more about the use of the GAFE within their classes.

Challenges we encountered were with the infrastructure in the schools and the ability to host the high number of devices we were using.

Sustainability

The innovation project has expanded in our school board as a result of this experience. Teachers and administrators seeing the impact and motivation of students using Chromebooks within the classroom has resulted in the number of Chromebook devices at the schools having more than tripled.

Use of the virtual learning environment and GAFE reached over 55% of all students using the online learning site within two months of the 2014-15 school year. Through the GAFE we were able to communicate on a frequent and consistent basis, answering any question that was posed and coming up with solutions quickly and efficiently through a collaborative approach.

Multi-Media for the Multitudes:

Integrating Technology

Catholic District
School Board of
Eastern Ontario



Students work together on a tablet to solve math problems

The purpose of our initiative is to examine the benefits of using appropriately integrated multimedia technology in the classroom. Our K-8 Schools involved in the project are using a variety of devices including interactive whiteboards and tablets in conjunction with various apps and web-based programs. To date, our observations indicate that the use of these types of technology encourage increased student initiative, independence, and engagement. As well, it allows teachers to differentiate instruction and create cross-curricular learning opportunities.

We found that the use of tablets and QR codes successfully increase student engagement. Students scan QR codes to independently access a variety of websites, photos, videos, text, and audio recordings. They find this to be a fun and engaging way to learn. Teachers find that QR codes create independence in a controlled learning environment. In a Kindergarten classroom, students explore websites, listen to stories online, and access videos with ease.

We observe that, by using whiteboard tablet apps, students can write, import pictures, and orally explain their thinking. We use this app to work on math problems when problem solving in groups; in French, to orally describe and annotate pictures; and in Science, to explain student thinking and label images.

“The students become extremely engaged and excited when it comes time to use the iPads. They help me to see and hear things I would have otherwise missed. ... The valuable conversations that would potentially have been missed have become a great benefit to the students’ learning.”

Teacher

We have success with students using video recording and editing software to showcase learning throughout the school board. Students use it to present projects in a more creative manner and teachers use it to highlight successful moments in the classroom.

“Students are taking the initiative and going above and beyond what we have taught them by incorporating new ideas and using new tools that they have discovered while completing their work.”

Teacher



Students use a QR code to access a video on a tablet

Catholic DSB of Eastern Ontario

Project Title	Multi-Media for the Multitudes - Integrating Technology
Brief Description	The project is an opportunity for educators to work collaboratively to shift their pedagogical approach to teaching inquiry through integrating technology into their lessons. The goals include an increase in educator capacity and student learning and engagement.
Context	<i>Number of schools: 7</i> <i>Number of teachers: 14</i> <i>Number of students: 350</i> <i>Grades/Program: K-8.</i> The subject areas of focus include mathematics, language, science, and social studies.
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Our work will be extended by involving 3 more schools in the pilot project, which includes a streaming component to the program.
Goals & Priorities	<i>System Learning:</i> The success of the implementation of this teaching practice will be discussed at board-wide forums (e.g., Realization, administrator meetings) to motivate other educators and administrators to investigate the purposeful implementation of technology in the classroom. <i>Student Learning:</i> Determine if the implementation of technology has effectively enhanced increased student engagement.
Role of Technology	Technology is the centre upon which our inquiry regarding teacher capacity is based. By building educator capacity we anticipate that this method of planning and implementation will become common practice in all teaching experiences.
Inquiry Question	By building educator capacity to differentiate instruction using multi-media, student engagement and learning will increase.
Indicators of Success	Increase in educator capacity regarding the use of technology to differentiate and enrich lessons. Increase in student engagement through the use of various technologies.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Catholic DSB of Eastern Ontario)

[There was] increased student engagement. There was an increased level of student confidence through technology. When students were able to orally record their explanations or document their thinking using technology, some quieter students found their voice. Students became more reflective and creative thinkers due to multiple methods of showing their thinking.

Enriched lessons – Educators are using technology to allow for the creation of new tasks that were previously inconceivable (e.g. Using Skype in the classroom to connect worldwide).

Multiple methods for students to show their thinking (video, audio, pictures, and annotations). Teachers are more focused on student voice because of their new ability to capture student thinking which is helping them learn more about each individual student.

Successes, Challenges, and Unexpected Results

Resistance from educators: Initially some educators were resistant to change. By focusing first on educators who were keen to implement new learning, resistant educators seemed to be more interested in the project once they saw success happening in the classrooms of others.

Tech glitches: Schools struggled with slow internet, device malfunctions etc. ICT department attached a member of the ICT team to each of our seven 21st Century schools. Issues from these schools were prioritized so that quick solutions could take place.

iPad/tablet management: Due to the new dependence on various types of technology, new problems arose quickly around how to manage these devices.

App management: Schools discovered that housing apps on their fleet of devices became an issue. Some schools are trying new methods such as Air Watch.

Storing student work: Educators realized that trying to store video, pictures, and audio of pedagogical documentation on shared devices became a huge problem. By using external drives, Cloud/web-based apps and Surfaces (which have a USB port), the task of removing pedagogical documentation from shared devices became much easier.

Sustainability

Continued professional learning opportunities to support educators.

Information being shared by curriculum consultants to inform more educators about current practices in the area of technology.

The curriculum team worked closely and consistently with educators, which helped to form a trusting relationship where educators were willing to take more risks and try new things. This built capacity in the schools and then educators began to share their knowledge with others through staff meetings, CPLCS or just through casual conversations.

New Educational Strategies in the Digital Age

Conseil
des écoles
catholiques du
Centre-Est

In the first years of the project, we offered a number of training sessions on learning in the 21st century. Topics included critical thinking, creativity, D2L, SMART Board and Google tools. The sessions were open to all teaching staff from all our schools and were in response to requests and interest in them in the field. We noticed, however, that having different people at training sessions did not facilitate the creation of links between the various training sessions being offered or the creation of a communication network between staff from the different schools.

We have changed the training model this year so as to better identify the levers that lead to a change in behaviour with respect to the efficient integration of new educational strategies—we developed a series of new training sessions targeting a specific group of teachers.

We have so far noted that the new increased coaching model is quite effective. The teachers were better able to make connections between the training sessions and deal in depth with the integration of the new educational strategies in the classrooms.

“I think it is important to follow training sessions in a logical order, like I did this year. It was very enlightening for me and provided solutions and ideas throughout the process. It enabled me to progress in my personal development and also to help the students with theirs.”

Teacher

Rigorous coaching of the targeted staff also facilitated the creation of professional learning communities, networking and collaboration between staff from the different schools.

“The support was very important. Without it, I would not have known whether I was on the right path. Thanks to the support I received though, my activities were successful—I felt better prepared, so I was more confident.”

Teacher

We noticed the extent to which training and coaching of teaching staff is important for providing better support for the development of 21st-century skills among students and for integrating new digital-age educational strategies into the classroom.

“I can hardly believe that I have tried so many new things and learned so much in only a year!”

Teacher

Conseil scolaire des écoles catholiques du Centre-Est

Project Title	New Educational Strategies in the Digital Age
Brief Description	The goal of phase 3 of the research project is to measure the impact of professional development on teacher practices and school culture. Having targeted a series of training sessions and enhanced support to go along with them, the School Board is looking to identify the key points that lead to a change of teacher practices with regard to an efficient integration of the new pedagogy (skill development and technology integration).
Context	<i>Number of schools:</i> 4 <i>Number of teachers:</i> 13 + 3 teachers on special assignment <i>Number of students:</i> about 500 <i>Grades/Program:</i> Elementary and Secondary
Area(s) of Impact	Teachers Leaders
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This year among its projects, the CECCE, extended the 2012-2013 projects in the school to include 2 elementary schools and 1 secondary school. The goals of the 21st Century school was: <ul style="list-style-type: none"> • The integration of the development of the critical thinking model. • The implementation of innovation projects allowing teachers to experiment with and explore innovative teaching practices while integrating technology, e.g. Google Apps, Chromebooks, D2L. • The implementation of teaching practices as a result of hybrid education. • The Board focused on training for about 4 teachers in its targeted schools, including a coaching process according to the needs.
Goals & Priorities	<i>System Learning:</i> Having targeted a series of training sessions and enhanced support to go along with them, the School Board is looking to identify the key points that lead to the efficient integration of the new pedagogy (skill development and technology integration) and a change in school culture. <i>Student Learning:</i> The integration of technology to enhance learning as well as the teaching and learning of numeracy skills are an integral part of the student profile at graduation and the professional model that is proposed.
Role of Technology	Technologies used are, Chromebooks, Tablets, and Netbooks. <ul style="list-style-type: none"> • The Google platform to steer toward virtual exchange and training spaces. • Google and D2L platforms to integrate hybrid learning.
Inquiry Question	What are the key points that can be mobilized to facilitate the efficient integration of the new pedagogy in a school (skill development and technology integration)?
Indicators of Success	<ul style="list-style-type: none"> • The impact of the training on the school leadership. • The impact of reflection and coaching on integration of the new pedagogy. • Measuring the level of integration of the new pedagogy by means of a survey and an interview with teachers and school administrators. • Amount of use of technology tools (Google, D2L, etc.) by teachers and students.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire des écoles catholiques du Centre-Est)

The data will be collected in this fashion:

- An interview / videos (teachers and administrators affected by the project).
- A survey (teachers affected by the project).
- Statistical use of the technology identified by a survey – A matrix of technology integration in the secondary school.
- Student results in the professional learning communities (at the elementary level).

The rigorous coaching of the targeted teachers promoted collaboration among the schools, networking, and the creation of professional learning communities.

Twelve out of thirteen teachers, having followed a training series, told us that the training allowed them to:

- Teach and assess 21st Century skills efficiently.
- Efficiently integrate technology in the classroom.

Another result of this research touched on the perception of 32 secondary school teachers who took part in the project. The survey results showed a large gap between the initial survey (March 2014) and the last one (October 2014) in terms of the efficient integration of critical thinking in the classroom.

Student learning in conjunction with the development of the HP3 skills was closely followed in two elementary schools. The data show an improvement in student learning.

Successes, Challenges, and Unexpected Results

All 4 schools involved in the project integrated the new pedagogy in their classrooms. When all was said and done, the integration of technology was done efficiently in the schools. However, the integration of critical thinking was more difficult in the school that was using technology as an entry point.

We also noticed similar tendencies in the secondary school involved in the project. It was only in the second semester that the teachers began to realize that they had to adapt their teaching to a new technology context.

Sustainability

This project showed the importance of:

- Offering a series of strategic trainings to the teachers.
- Putting a coach in place to ensure an efficient implementation of the new pedagogies.
- Focusing, from the beginning, on the pedagogy by better defining the skills that are linked to the annual school improvement plan.

(Conseil scolaire des écoles catholiques du Centre-Est)

In accordance with these results and with a new strategic vision, the CECCE provided an additional allocation of funds to each of its schools to create a “Lead” position whose responsibility would be, among other things, coaching teachers in the field.

At the same time, the CECCE created 4 new positions for computer specialists – computer applications to offer technical support in the schools.

The Board has also revised its Mission, its Vision and its Student Profile for graduating students. These strategic changes will allow CECCE to systematically align our mandate to the professional practices and the resources to be deployed in light of the change to the digital age.

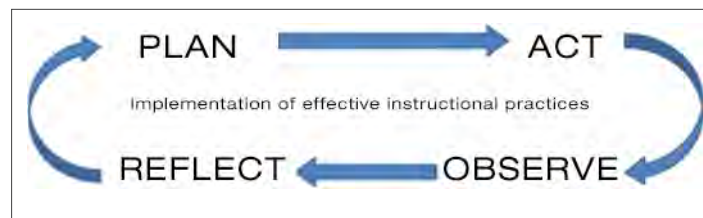
In terms of communication strategies, CECC has produced a series of four videos and a website.

Student Engagement in the Digital Age

The activities planned for each of the project's three phases were based on a universal teaching practices model that directly impacts the mood in the classroom, instructional strategies focused on assessment for learning, and instructional strategies designed to develop students' skills and work habits.

The project objectives were: to increase the level of engagement in learning among students in grades seven to ten by integrating information and communications technologies (ICTs) in the schools targeted by the project, to develop the skills and work habits of those students and to work in collaboration with the team of researchers in motivation and academic engagement.

On the basis of recommendations made by experts in the field and of lessons learned during Phase 2 of the project, we have decided this year to focus on the integration of ICTs in teaching, by using the professional learning cycle to ensure that teaching practices make students active. As a result, we studied the use of ICTs on two levels: the use of technology in the classroom by students and the application of effective instructional practices.



The professional learning cycle: implementation of effective instructional practices.

Coaching offered to members of the school team by the teacher consultant and through the implementation of the professional learning cycle was intended to find, assess and recommend technopedagogical uses and new digital resources; to help teachers adopt and commit to improving 21st-century skills among students (collaboration, communication, creativity and critical thinking); and to promote the implementation of recommended instructional practices and the professional learning cycle—a collaborative learning and reflection process that allows teaching staff to implement instructional practices adapted to the needs of the students.

We are eagerly awaiting the data analysis to confirm our observations on progress in the area of student engagement and the development of skills and work habits, effective technopedagogical practices for incorporating ICTs in the classroom, and staff leadership that enables them to self-regulate their instructional interventions and to develop a common understanding of the learning assessment process.

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

Project Title	Student Engagement in the Digital Age
Brief Description	The course of action in question comprises two large interrelated elements: (1) a coaching system offered to school team members by a board consultant whose role is specifically for that purpose and (2) the implementation of the Professional Learning Cycle. The goal of the course of action is to help teachers develop efficient teaching strategies, gain new competencies to integrate information and communication technologies (ICT), and develop greater leadership skills allowing them to self-regulate their teaching practices and develop a common understanding of the process of evaluating learning.
Context	<i>Number of schools: 5</i> <i>Number of teachers: 20</i> <i>Number of students: 370</i> <i>Grades/Program: Grades 7-10</i>
Area(s) of Impact	Leaders Students Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> The results of the research will allow us to perfect the implementation of the Professional Learning Cycle and to share lessons learned across all the schools of the CEPEO, thus ensuring the development and the sustainability of the approach. <i>Student Learning:</i> The pedagogical practices fostering the acquisition of the 4 skills (collaboration, communication, creativity, and the development of critical thinking) among the students are put to the test in the framework of the Professional Learning Cycle. Not only does this approach allow us to respond to the needs of the students, but it also allows teachers to acquire these needs themselves through the “collaborative process of learning and reflection” of the Professional Learning Cycle.
Role of Technology	We will put the emphasis on the integration of technologies and teaching by means of the use of the “Professional Learning Cycle” with a goal of ensuring that teaching practices are used as a means of developing 21st Century skills.
Inquiry Question	What is the impact on the course of action of the integration of ICT as a pedagogical tool and the implementation of recommended teaching practices? Have the teachers gained new skills to integrate ICT into their practices? Have the teachers developed greater leadership allowing them to self-regulate their teaching courses of action?
Indicators of Success	Among these five schools participating, four of them are part of the program (receive the intervention) and the fifth one is the control group (does not receive the intervention). Students complete a survey at the beginning of Oct (Time Frame 1 – reference measure), and again in mid-to-end of Jan (Time Frame 1 – post program). Teachers of the 2 groups (program group and control group) are invited to fill out the implementation of efficient teaching practices self-assessment.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

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

Students from Grade 7 to 10 participating in the program answer a short online survey at the beginning of October and again at the beginning or middle of January. The survey contains a few demographic questions, questions on student engagement and success, as well as questions for students related to their perception of their skills and work habits and their level of appreciation of IT in the classroom.

Moreover, teachers are invited to fill out the *self-assessment on the implementation of the recommended pedagogical practices* at the beginning of October and then again at the beginning or middle of January. Discussion groups among certain members of the school teams participating in the school program interventions were conducted in the spring of 2014 to answer questions associated with the implementation of the intervention.

- The timetable of coaching activities was, in large part, respected. The technology specialists met with each school at least 3 or 4 times and offered training on the tools recommended by the CEPEO.
- New teaching practices promote understanding and the integration of evaluation criteria linked to competencies, skills, and work habits (e.g., co-constructing evaluation criteria in a context, during a lesson or a project, encouraging self-assessment of skills and work habits).
- Teachers put into place winning practices using different tools (platforms, devices, Google Docs) at their disposal, thus improving student cooperation, engagement, and self-regulation.
- We observed an improvement in the averages of three types of practices, those that support autonomy, skills, and the sense of ownership among the students.
- Teachers in the program significantly improved the integration of technology tools into the lessons and are using even more technologies to connect with students outside school hours.
- Coaching had an indirect impact on the students through the changes in pedagogical practices among the teachers participating in the project. The comparison in scores between the students in the program and the control group allowed us to conclude that coaching seemed to have a positive effect on most students' engagement as well as their skills/work habits.

Successes, Challenges, and Unexpected Results

- The project revealed the need to see how the pedagogical practices were put into place in subjects other than those targeted by the project.
- At the beginning of the project, we targeted math to evaluate the impact of the project since we hypothesized that students would be less engaged in that subject as opposed to others. The results of the reference survey among students suggest otherwise: the average of the commitment to schooling and students' intellectual engagement is more elevated in math than in other subjects.
- Despite the emphasis on the implementation of IT, among the best practices in the self-evaluations, the practices implied in IT seem to have been integrated to a lesser degree (that is, the average scores are weaker compared to other best practices).
- The lack of time and leaving the classroom to help in coaching sessions, and the lack of time to learn to use and integrate IT.

- The lack of communication among teachers limits the transfer of knowledge related to efficient practices, including those linked to IT within the schools.

Sustainability

- The project continues for the school year 2014-2015 to expand it in the Board and to maintain the knowledge that was acquired.
- A monitoring tool will be developed with school administrators to ensure the sustainability of the acquired knowledge and promising practices.
- A tool has been developed to assemble recommended practices inspired by the theory of self-determination. This tool allows teachers to self-assess and to take into consideration the recommended practices that they implement and those that they could adopt to improve their teaching.
- A planning tool has been created to allow teachers to implement the recommended evaluation policies found in the Ministry document *Growing Success*.
- Teachers who participated in the project will be invited to co-plan and co-teach with other teachers to share with them the practices that gave rise to student engagement. We recognise that practices can evolve over time, but these were implemented and perfected during the professional learning Cycle. This Cycle is a process of collaboration and coaching that is easily transferable from year to year.

Towards a Broader Use of Technology in Verbal Communication

Conseil scolaire
catholique
de district
des Grandes
Rivières

This year, our digital-age innovation project targeted the use of technology as an aid and catalyst in teaching and learning verbal communication among early childhood students. It took the form of collaborative inquiries at nine schools that had used SMART Boards and tablets to support the development of verbal communication among students in a learning centre.

The tablets were used to film verbal communication lessons. The recordings were then viewed by the students so that they could comment on their performance and back up their personal assessment in view of the learning criteria targeted in the lesson. In some cases, watching the lesson brought about self-regulation when the students saw themselves interacting with other students.

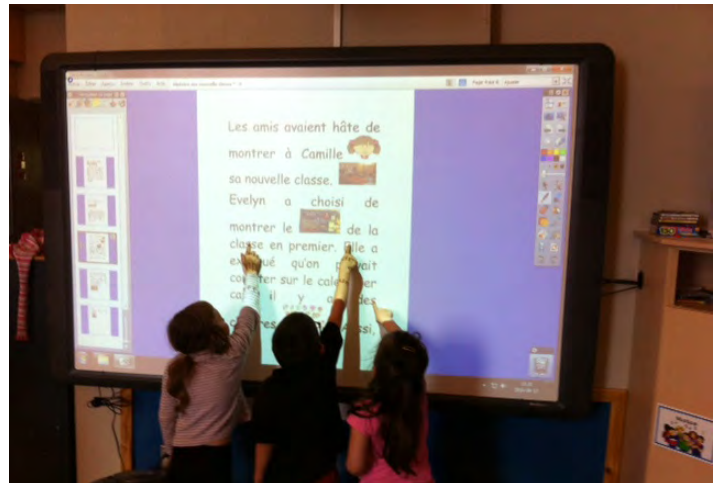


By using tablets, students can watch the lesson and comment on their performance.

The tablets also served as a tool to guide a reflection on practices during discussions on pedagogy in professional learning communities, in terms of both student learning and instructional strategies.

Moreover, in the full-day kindergarten (FDK) program, the tablet was used to support instructional documentation. Photos and videos with explanatory notes from the teacher were used to share the children's learning with their parents. The practice provided a visual representation of the children's thoughts and learning, in addition to increasing communication of the children's learning to their parents.

We also explored the use of SMART Boards to practice new vocabulary in the co-creation of a story by the students and the teacher. But the story did not end there for the students—using the tablet, they created an EPUB audio book to share with the other classes participating in the collaborative inquiry into verbal communication.



Students learning new vocabulary using the SMART Board.

During the year, we were able to note the positive impact of the technology tools on teaching and learning verbal communication and on student engagement. The students use them as fun tools for learning, creating and collaborating.

Conseil scolaire catholique de district des Grandes Rivières

Project Title	Towards a Broader Use of Technology in Verbal Communication
Brief Description	Our research continues in 2013-2014 in the form of three collaborative inquiries, one per school region. The goal of the project is to improve student oral communication. Some of the research foundations come from the research work of Carmen Crevola.
Context	<i>Number of schools: 8</i> <i>Number of teachers: 34</i> <i>Number of students: 456</i> <i>Grades/Program: K-2</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The goal of the project is also to integrate technology into the teaching and learning processes. This year, some teachers used the tablet as a tool for documenting teaching, and students will access different digital applications that foster the development of oral communication.
Goals & Priorities	<i>System Learning:</i> We anticipate continuing to extend the project each year in the Board, by adding classrooms and schools. The winning practices in oral communication and technology integration will be implemented in all our schools with students from K-2. <i>Student Learning:</i> Critical thinking: the student must critically judge his or her learning based on the targeted criteria. Communication: students must listen and communicate their thoughts orally to the peers and to an adult, with or without the presence of technology.
Role of Technology	Digital tablet: the digital tablet is a documentation tool for the teacher as well as a feedback tool for the teacher and student. The interactive whiteboard allows for the integration of interactive activities.
Inquiry Question	<ul style="list-style-type: none"> • How can technology integration improve student oral communication? • How can technology integration improve teaching practices? • How does this research on innovation foster student acquisition of 21st Century higher-order critical thinking skills and competencies?
Indicators of Success	<ul style="list-style-type: none"> • Identification an implementation of efficient teaching and learning practices in oral communication. • Improvement of student learning in oral communication according to established criteria. • The sense of the teacher's efficiency with regard to the use of technology. • The achievement of results of learning and established criteria by the staff in the process of monitoring the hubs.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire catholique de district des Grandes Rivières)

- Entrance profile and ongoing evaluation: evaluate students' needs in terms of vocabulary comprehension, clarification strategies, compensation strategies and use of vocabulary.
- The language acquisition tool: evaluate comprehension and oral expression.
- Diagnostic evaluation of oral communication: guide the selection and the frequency of teaching strategies according to the specific needs of students.
- Monitoring charts: the use of iPads with the goal of encouraging the practice of reflecting.
- Case studies: collection of data and evidence by means of observations, note-taking, recordings, videos, samples of work, and evaluations
- Use of photos and the interactive board with the goal of bringing the students to use their new fields of knowledge at the vocabulary level. The use of visuals to encourage students to expand the range of their vocabulary allows students to increase their lexical repertory and gets them into the habit of re-using the word they've learned in context.
- Use of the digital tablet with the goal of recording a song. Therefore, the use of technology had a crucial role to play at the level of learning and teaching strategies.
- Use of the Creative Book Builder application with the goal of creating a collective book. With the use of technology, students can collaborate in the creation of a book. The teacher then can use oral communication as a bridge to reading and writing.
- Scrapbook of teaching and learning. Visual and auditory activities can mitigate student participation in their vocabulary learning.
- Use of videos with the goal of using descriptive feedback to foster critical thinking. When students observe themselves in a working situation (on the video), they are able to look critically at their success related to targeted criteria.

Successes, Challenges, and Unexpected Results

An unanticipated result linked to the process was the variation in the level of participants' engagement, most particularly faced with the use of technology.

Even though the configuration of the wireless network across the Board is a prime goal, the accessibility of the wireless network remains a challenge in many of the schools in the Board.

The data produced and the results demonstrate unequivocally that the integration of technology supporting oral communication has a significant impact on teaching and learning in the 21st Century.

Sustainability

(Conseil scolaire catholique de district des Grandes Rivières)

Future considerations are foreseen in order to deepen even more the integration of technology, answer specific professional development needs related to the new technologies, and support the development of skills in the 21st Century.

Each year, in the context of our coaching model in the schools, we propose to extend our initiative by adding in more classrooms as well as more schools, so that integration of technology practices becomes systemic.

The increased collaboration during this phase of the project brought about, among other things, a more unified vision with regard to students' learning of French which then led to a supported and deliverable approach to learning vocabulary.

In our Board, there is an evident transformation produced in terms of culture and pedagogical practices.

In 2014-2015, the number of digital tablets for each classroom benefitting from coaching by the Board's team should go from 1 to 3.

A Move into the 21st Century for the Conseil Franco-Nord

Conseil scolaire
catholique
Franco-Nord

This year, the Franco-Nord team took on the goal of moving the Conseil further into the 21st century. We refined our development plan for teaching staff and the implementation framework for our move into the 21st century; this move will remain at the centre of our decisions, plans and new directions in the years to come.

For the past three years, our team has led a project to improve technology integration with more than 80 teachers from elementary and secondary levels. The Conseil also provided each school with a trolley with 15 to 40 iPads, along with a SMART Board for each classroom. This year, we started by targeting five schools where teaching staff had attended coaching and development sessions on the use of portable computers and iPads to integrate technology into their teaching approach.

The professional development plan we will carry out in the coming years has two components. The first is intended to transform teaching approaches on a system-wide basis. The second consists of four phases that target teaching staff in targeted schools: an introduction to the use of technological tools; training and background information on teaching support technologies; direct coaching for teachers and their students on the use of technological tools in the classroom and outside of classroom hours; and differentiated coaching based on the ongoing needs of teaching staff.

To assess the progress of teaching staff and students in the context of this project, we developed an assessment framework based on the SAMR Model (substitution, augmentation, modification, redefinition). Based on our observations, the teachers in the five schools that participated in development sessions on the use of new digital devices have started their move into the 21st century with great enthusiasm.



The professional learning cycle: implementing effective instructional practices

Conseil scolaire catholique Franco-Nord

Project Title	A Move into the 21st Century for the Conseil Franco-Nord
Brief Description	<p>While continuing to support teachers to integrate technology into their students' learning, we have also chosen to target 12 classes that will become laboratory classes on learning in the digital age.</p> <p>For these 12 classes, we are developing a professional development and coaching plan. This professional development plan comprises two strands: a) the first strand is professional development whose goal is the transformation of teaching approaches across the system; b) the second strand comprises four phases: i) an introduction to the use of technological tools; ii) a training and a targeted contextualisation for the teachers who will participate in phase 3 of the integration of technology to support teaching; iii) a targeted training for the teacher and students on the management of technological tools in the classroom and after classroom hours; iv) differentiated coaching according to the continuous needs of the teaching staff involved in phase 3.</p>
Context	<p><i>Number of schools:</i> 5 <i>Number of teachers:</i> 50 <i>Number of students:</i> 400 <i>Grades/Program:</i> Grades 4-8 in targeted schools (elementary and secondary)</p>
Area(s) of Impact	<p>Students Teachers</p>
Phase of Change	<p><i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This year, the project (phase 3) includes the same participants as phases 1 and 2. This team meets weekly to share the next steps.</p>
Goals & Priorities	<p><i>System Learning:</i> This year, the board used a vision for the transformation of learning in the 21st Century. Our innovation research allowed us to validate the key elements of our vision and our strategic planning for the digital age before implementing everything in our system. This research will allow us to better understand the needs in professional development, to foresee the challenges related to the implementation of student-centred teaching linked to technology integration.</p> <p><i>Student Learning:</i> Our teaching staff will be equipped to better target, among the students, the development of skills and higher-order critical thinking skills that are essential in the 21st Century. The addition of technological tools will support this approach.</p>
Role of Technology	<p>We foresee using the following digital technology and resources: iPad tablets, Smart Board, MacBook Air computers, the EAV from D2L, Office 365, wireless network in all schools and our date management of achievement (the tool).</p>
Inquiry Question	<p>How can we support the staff from a professional development point of view to ensure the success of the implementation of a teaching approach in the digital age?</p>
Indicators of Success	<ul style="list-style-type: none"> • The level of student engagement. • The level of collaboration among students and among students and teachers. • The level of absenteeism. • The improvement of student achievement on system evaluations, report cards and the EQAO evaluations.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire catholique Franco-Nord)

To evaluate the project, we want to define the way that data will be collected within our frame of reference. We must also plan for a digital survey for the students, teachers and possibly, even the parents. Finally, we will also collect evidence showing the impact of the project by means of observations and small-group exchanges, as well as by audio and video demonstrations according to John Hattie' principles of *visible learning*.

Access to technology allows teachers to target more teaching strategies linked to the new pedagogy (partnership for learning, construction of knowledge, in-depth learning...).

It is difficult to measure the impact on student learning at this stage of the implementation. On the other hand, the integration of technology seems to have:

- Increased the level of student engagement
- Had a positive effect on collaboration among students
- Had a positive effect on the use of assistive technology by special-needs students in particular

Successes, Challenges, and Unexpected Results

Beginning with the vision document, we created an implementation plan that contained the guiding principles, a list of actions to take, and a series of measurement indicators.

Once the vision of change is defined, it is essential to define, in an implementation plan, the actions necessary to execute the changes while also indicating the performance measures that will confirm the achievement of objectives.

A plan for professional development, support, and technical assistance is essential for the pedagogical transformation in the classroom to be successful.

Another unintended result is the professional development started by our staff responsible for scholastic success. During this year, with the support of our partner, Apple Canada, we undertook a series of training sessions to build on our team's capacity to integrate technology.

Sustainability

We have launched our systemic change of direction for the 21st Century in five pilot schools for the school year 2014-2015. Based on our results and our observations, we will begin the next phase of our change of direction by targeting three or four schools.

Pedagogy is at the centre of our change of direction in the 21st Century. We are focusing now on the transformation of pedagogical practices in the classroom.

Assessment for Learning

Conseil
scolaire
catholique
du Nouvel-
Ontario

This year, our project focused on enhancing the abilities of teaching staff to use technology for the ongoing and reliable tracking of the acquisition and development of students' learning skills and work habits (LS/WH).

To promote practices of data collection and analysis on student learning, we developed support resources and the Teacher's Notebook, a digital tool from the Conseil. We also structured a plan for providing training and differentiated coaching to schools, focusing on the use of the Teacher's Notebook to develop teaching staff's abilities regarding assessment for student learning. Staff's reaction to the use of the Teacher's Notebook has been positive.

"The Teacher's Notebook is an indispensable tool that helps me create assessment grids and generates a bank of criteria that I use to describe skills and LS/WH. This helps me communicate more easily with parents about their child's performance and about improving learning and LS/WH."

Teacher

Thus far, best practices for tracking and assessing student learning have been observed when teachers, equipped with a tablet and Internet access, are coached in integrating technology in the classroom and the Teacher's Notebook in their teaching practice. We have also found better evolving environments for learning in these schools and progress in student learning, partly thanks to ongoing feedback provided by teaching staff.

"When I'm preparing assessment grids, I can easily modify and improve them. The criteria are clearly identified so I can measure my students' progress and so they can understand their strong points and know which skills and LS/WH need improvement."

Teacher

Building on what we are learning and on comments from teaching staff, we will continue our coaching sessions on using the Teacher's Notebook to facilitate LS/WH assessment for students, with the goal of promoting students' acquisition of 21st-century skills and habits.

Conseil scolaire catholique du Nouvel-Ontario

Project Title	Assessment for Learning
Brief Description	Prepare the submission, implementation, and related reports, in consultation with the administrators of other services, members of the curriculum team, and the Technology department. Coordinate the elaboration of support resources, the provision of training sessions, the gathering of data, and analysis of student results, and provide practical reflection.
Context	<i>Number of schools:</i> 24 elementary schools and 8 secondary schools <i>Number of teachers:</i> 160 <i>Number of students:</i> none <i>Grades/Program:</i> Grades 1-12
Area(s) of Impact	Teachers Leaders Organizational practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> By means of the Calepin de l'enseignant, the exercise of communicating student learning will all be integrated in one tool. <i>Student Learning:</i> Teachers will be better able to: <ul style="list-style-type: none"> • Chart the progress of all their students with regard to their learning and the development of work habits/learning habits. • Provide descriptive feedback to their students and the parents related to work habits/learning habits on a more regular basis. • Model the work habits/learning habits in the classroom that need to be improved. • Offer their students differentiated strategies for improvement. • Better answer the variety of learning styles and multiple intelligences (differentiation) in order to improve on student learning.
Role of Technology	The technology will facilitate the implementation of a culture of data administration and analysis through the use of a computer-based tool (Calepin de l'enseignant) and will foster better practices in terms of charting the improvement of student learning. Technologies include wireless network and Internet and PC tablet.
Inquiry Question	What are the strategies to emphasize in building teachers' capacity to better chart learning and the development of their students' work habits/learning habits by means of a computer-based tool (the Calepin de l'enseignant in the CSCNO depository)?
Indicators of Success	Observations, by school administrators and member of the learning support staff, of better practices in charting the progress of the students. Increase of the use of the Calepin de l'enseignant as well as the observation charts for the work habits/learning habits. Increase in teacher engagement with regard to the collection and analysis of data related to the charting of student progress.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire catholique du Nouvel-Ontario)

- Observations during school and classroom visits.
- Written comments for certain teachers and pedagogical consultants.
- Rate of utilization of the Calepin and observation charts linked to skills and work habits.

The rate of participation exceeded the expected results:

- 18 schools foreseen became 32 participating schools.
- 66 teachers were expected, but 160 teachers received the upgrading training.
- 50 other requests for training are pending.
- Positive and infectious feedback from teachers is, to us, an excellent indicator of success.
- The use of the Calepin to track skills and work habits almost doubled.
- The training also anchored some practices, such as the use of learning results and criteria, discussions about the integration of general objectives and the adaptations of EED and ALF.
- 6886 students were entered into the Calepin beginning in September. Since it is based on skills listed in the grid, work habits, and learning criteria and results, we estimate that they will be better informed about the learning to be accomplished, their strengths and next steps (which promote 21st Century skills).

Successes, Challenges, and Unexpected Results

- Certain teacher questions ensured that the consultant services had to address them to standardize our practices.
- The limited budget did not allow us to pay for the whole program.
- The programming took longer than anticipated, thus delaying our training plan.
- The partnership with TACTIC was difficult because of the reorganisation of FARE and the fact that we didn't know the consultant who would be coaching us.
- The consultant who offers the training on the Calepin couldn't coach all the schools in three months because of her other responsibilities.

Sustainability

- Since the Calepin is our own product, we continue to improve it in light of teacher suggestions.
- It is anticipated, in our priority projects in the Board's Improvement Plan for 2014-2015, to develop in the Calepin, according to the established criteria, personalized grids for each student, which will allow students to self-assess and will foster peer-assessment.
- We are presently developing and trying out a portal for parents that could extract information from the Trillium data bank (basic information, attendance, credits, report cards, etc.) and from the Coffre and the Calepin (single data points). This tool will be, above all, a communication tool for school parents. Over the next few years, we anticipate making available to our students a portal that will facilitate their self-regulation.

(Conseil scolaire catholique du Nouvel-Ontario)

- We are also working on the layout of our premises, mainly new libraries so that they can focus even more on learning in the 21st Century.
- The revision of our vision fostered cooperation among all the pedagogical services (teaching, EED, identity building, accountability, technology integration), in particular on skills and work habits.

Increasing Our Technopedagogical Capacities:

A Systematic Transition to Cloud Computing

Conseil scolaire
catholique
Providence

This year, we took into account the successes from the multiplying agents model during phase 2 of the project to introduce system-wide technological initiatives within the Conseil. Our goal was to use the same model to conduct the systematic transition to cloud computing to develop schools' technopedagogical capacities. We have established a project that has two components.

Component A focused on creating a media studio for each of our schools. The plan and the model for the studio were developed with cooperation and collaboration by the IT and technopedagogical sectors. The studio provides access to the computer network, digital devices and the latest communications technologies to create and distribute videos (for example, announcements, reports and school projects) in delayed time and in real time. We will put in 30 more media systems, based on the configuration of various prototype models of this year's studio.

In addition, using the multiplying agents model as a basis (with students involved not only as users but also as educators of other students and staff), technopedagogical staff will coach schools for the official opening of the studios. This will help ensure the project's sustainability.

Component B of the project, which is supported by a systematic framework, focused on the introduction of Google Apps for Education. The goal was to implement a suite of office tools for cloud computing to be used by all the Conseil's stakeholders: students, teaching and non-teaching staff, and school principals. The two key tools were the calendar and email. We have already made the transition to a new digital platform for employees and created most of the Google accounts for staff and students under the Conseil's domain.

We are eagerly looking forward to further advancing our project and to new initiatives that will increase schools' technopedagogical capacities and the development of our students' 21st-century skills.

“Formal and informal feedback from Component B activities has shown us that the implementation of Google Apps for Education was a great success... We have created almost 13,000 Google accounts under the CSC Providence domain, 10,000 of which are for students.”

Conseil scolaire catholique Providence

Project Title	Increasing Our Technopedagogical Capacities: A Systematic Transition to Cloud Computing
Brief Description	During phase 3 of the project, we are beginning to adopt our “multiplier agents” model developed and put in place during phase 2 of the project. We are attempting to expand the use of tools and cloud technology to include all the board staff. There are two specific scenarios in which we would like to use the training model: the expansion of “studio-schools” for approximately 50% of our schools in the board, and use of the Google for Education suite across our system – 100% of our schools.
Context	<i>Number of schools:</i> 5 elementary, 1 secondary <i>Number of teachers:</i> 12 <i>Number of students:</i> 1200 <i>Grades/Program:</i> elementary and secondary
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> We are attempting to expand the use of tools and cloud technology to include all the board staff.
Goals & Priorities	<i>System Learning:</i> The studio schools initiative will be spread out over several years and will be integrated into school culture as a means of communication and natural collaboration. The implementation of a cloud platform for all staff in CSC Providence will be an important step in the progression toward the digital age. <i>Student Learning:</i> Studio-schools and cloud technology will increase student engagement with regard to his or her learning (presence of technology, traces of learning, use of resources).
Role of Technology	A studio-school will facilitate the broadcast of media productions in a timely fashion. It will serve as a station for production and editing for the classrooms in the school. To facilitate the implementation of the cloud technology, each school will receive a Chromebook. This tool will facilitate the training sessions for the staff member responsible for support inside the school.
Inquiry Question	What are the data collection methods to use and the indicators of success to measure in the implementation of an initiative that uses “multiplier agents” that will allow us to obtain precise and detailed results?
Indicators of Success	Studio-schools: The results will be measured by the quantity and the quality of the broadcasts that will happen in each school, by the engagement of the students, and by the integration of the studios in the teaching activities in the classrooms. Cloud technology – “Google Apps for Education”. The results will be measured by the satisfaction survey for the staff, by the quality and the number of actions needed by the support team and by the engagement of the participants in the workshops and training.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire catholique Providence)

As a first step, we are going to use the analysis data to determine the strengths and weaknesses of the “multiplier agents” model. The goal of Scenario A is to facilitate the communication of school announcements, success stories, and the dissemination of media works. As for Scenario B, it is by deploying a cloud suite as a central tool to the activities that we establish a “backdrop” on which we work, communicate, and collaborate.

For Scenario A, “Digital studios”, morning announcements are made daily in the schools. This results in the feeling of belonging to the school community, the development of oral communication, the support and encouragement to participate in cultural and sports activities in the school and the instilment of a certain pride in the students for their school community.

For Scenario B, a principal result is the engagement of students to use Google Drive for school activities. The rate of use of the Google tools by the students and the teachers is growing, especially since November 3, 2014, when we put student emails in place.

There are many indicators that confirmed the success of the implementation of Google Apps: the quantity of documents created by Google Drive (system reports), the requests to access the tools, requests for training, etc.

At the system level, an important result is the growth of collaboration thanks to Google tools and a better communication in terms of emails and sharing of resources.

As far as Scenario B is concerned, it is difficult to come to a definite conclusion in terms of learning at this point because the nature of Scenario B was the deployment of a cloud tool across the system, not only in a pedagogical context, but also an organizational one.

Successes, Challenges, and Unexpected Results

An unintended result is the willingness on the part of the teachers to use the Google tools, most particularly “Google Classroom” and “Google Drive.” We had to review and adjust our planning to undertake the creation of email addresses for the students. Another unanticipated result was the school administrators’ requests to purchase Chromebooks for their schools.

With regard to Scenario A of the project, there were a few small challenges that were solved over time. The launch of the studios in the schools was also delayed because we couldn’t deploy the studios and deliver the training for the promised dates. Another aspect that we hadn’t included in the original planning was the training for the classroom teacher. With regard to Scenario B, the greatest unexpected challenge was the pressure from the teachers to put Google Classroom in place. This meant having to accelerate the implementation of student email addresses.

Sustainability

(Conseil scolaire catholique Providence)

For Strand A, we are going to go on to “Phase II” which will in effect be the pedagogical integration of the Studio in the classroom, offering teachers the possibility of creating media products that can be disseminated in the classroom, the school, or externally, in the school network.

Just as we had begun with the use of the Google suite and Google Classroom in the Board, we are going to continue our efforts to put in place a cloud system in the pedagogical practices as well as in organizational practices.

As we are nearing the end of our strategic plan and our 5-year technology plan, we are in the planning and designing phase of a renewed technology vision in CEC Providence.

ScribTIC Project

Conseil scolaire
de district
catholique
des Aurores
boréales

The goals of the ScribTIC project were to increase student motivation for written communication; improve the quality of their written work; and increase their use of a variety of technology tools in the first steps of the process. We also wanted to know whether the daily use of mobile assistive technology would improve independence, organization and the quality of written work produced by special need students.

We worked with four English and French teaching staff members with the following students: 15 Grade 9 to 12 students with special needs in writing and 5 mentor students chosen using a profile that reflects strong writing, communication and technology skills. We provided each student and teacher with a laptop.



Working everywhere, anytime.

As part of our implementation plan, we offered one-day training to the teaching staff involved and to the five student mentors on how to use the technology to help students further develop their writing. We then worked with the 15 students for a half-day on how to use the technology in the writing process, along with progress sheets to help the students use the technology during the writing steps. We then organized a meeting for all students to help them establish meeting and collaborative work procedures.

In order to analyze the project's impact on student learning, we collected two written assignments along with achievement charts, at the start and finish of the project. We also used a survey at the start and finish of the project to see whether the number of tools students integrated into their writing process had increased. In addition, the teaching staff provided anecdotal comments on student motivation.

After analyzing the feedback and data, we would like to continue integrating technology into the educational strategy in order to increase student learning skills.

Conseil scolaire de district catholique des Aurores boréales

Project Title	ScribTIC Project
Brief Description	The goal of the project is to increase the motivation of students for written communication. This year, we targeted a specific group, our special-needs students in secondary, for whom assistive technology should be able to enhance the quality of their written production.
Context	<i>Number of schools:</i> 1 <i>Number of teachers:</i> 4 <i>Number of students:</i> 10 <i>Grades/Program:</i> Grade 9-12 students who have an IEP (problems with writing)
Area(s) of Impact	Students
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> For the first time, we will give special-needs students in secondary access to technology, that is, a portable computer to take home. In addition, we will train a team of mentor students who have good writing skills and an affinity for technology to support the participants in their school work and beyond. We want to give access to assistive technology to secondary students to better prepare them to use this technology in their post-secondary years and for life. <i>Student Learning:</i> Special-needs students at the secondary level will collaborate with student mentors (according to the profile: ability to explain or help others; patient and resourceful; comfortable with a variety of software or able to understand it; a good knowledge of the stages of the writing process) who will help them link the roadmaps for the steps of the writing process, to software and Web 2.0 tools that can help support them. We want to improve their ability to communicate in writing while allowing them to feel more comfortable with the assistive technology.
Role of Technology	The technology will allow the students to improve their written production. In addition, it will facilitate the collaboration between special-needs students and their mentors. <ul style="list-style-type: none"> • Portable computer (or tablet) for each participant (students and mentors) • Collaboration software: Skype, Google Hangout • Portable digitizer (Magic Wand)
Inquiry Question	Does the daily use of mobile assistive technology improve autonomy, a sense of organisation and written production in special-needs students?
Indicators of Success	These results/indicators of success should link to the identified areas of impact: <ul style="list-style-type: none"> • A sample of student written work at the beginning and end of the project • Improvement in vocabulary. • Lessening of spelling errors. • Increase in the length of the texts. • A survey on the capacity of the use of the tools to improve writing. • Increase in the number of tools that the students are able to use.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire de district catholique des Aurores boréales)

We established evaluation criteria with the students with regard to written production. Next, we gathered samples of written production by students participating in the project – once at the beginning of the project and once at the end to measure the impact of this technology on the improvement of student achievement. We also administered a survey to measure the quantitative aspect of the project to see if students can now use more technology tools to help them with the writing process.

This project allowed students to use a greater number of tools to support them in following a writing process. Another result of the project was at the level of student motivation and teacher engagement. We received requests to extend the project for a second year, requests that students be allowed to use their portable computers for exams, and requests to see if all students in the class could use portable computers and not just those who were targeted.

Finally, the project had a slight impact on student achievement in writing. We saw an improvement in achievement (five students out of ten increased their level of achievement by one level).

Successes, Challenges, and Unexpected Results

An unanticipated result was the positive impact on student motivation. We had not planned on measuring this aspect, so the result comes only from anecdotes. The students asked us if they could continue to use their portable computer during the next school year.

To overcome the teachers' reticence, we gathered the teachers for training and in CAP to identify the issues that would prevent teachers from becoming engaged in the project.

Sustainability

We intend to continue the project this year with certain modifications. We will increase the depth of technology's role in student learning by personalizing the vision according to students' needs. We will also indicate the way forward by recommending explicit teaching to help the students' progress.

Our goal is to focus on the link between the use of technology in the school and the role of technology beyond secondary so that students realize that using technology can serve them in their daily lives and help them succeed in everything they do.

The Development of 21st Century Skills Through a Virtual Learning Environment

Conseil scolaire
de district
catholique
Centre-Sud

Under our project, we wanted to have schools use the D2L platform from the virtual learning environment (vLE) for instructional purposes. We launched a pilot project in one elementary school and one secondary school. The principals, students and members of the teaching staff, as well as school communities, were all involved. Our goal was to develop students' 21st century skills through a virtual learning environment.

The IT and programming departments helped us implement the project and create a techno-pedagogy committee whose members included both departments and both participating schools. For this project, we used Google Docs and various digital devices and software to integrate technology into the educational strategy. We also sought feedback from participants throughout the year, including parents from both school communities.

"The electronic portfolio is fantastic. The photos make a big difference and allow us to see what our kids are up to during the day. Thank you for all your hard work."

Parent

Thanks to observations and comments from stakeholders, we have noted the technology's impact on students' learning skills. Teaching staff have observed that students were more motivated to work when they used the technology.

"Let's not forget that we are the ones that should be engaging students to learn! By putting students in situations where they learn to use new tools, they were instantly engaged, especially when they saw what the tool could do to improve their production."

Teacher

In our next steps toward the digital age, we will consider setting up increased coaching with support from a technology consultant in eight other schools that would like to integrate technology into their educational strategy and classrooms.

Conseil scolaire de district catholique Centre-Sud

Project Title	The Development of 21st Century Skills Through a Virtual Learning Environment
Brief Description	At Sainte-Trinité (Grades 7-9), regular classroom teachers and certain specialists targeted an increasing use of EAV (virtual learning environment) as a resource. At Saint-Michel (K-6), junior kindergarten and kindergarten teachers targeted the use of the digital portfolio tool of the EAV. In each school, we allocated a sum (split between 25 % at elementary and 50% at secondary) for a technology resource teacher. From the beginning of the school year, the staff of the two schools targeted features to integrate into the planning based on the matrix of technology integration. During the professional learning communities' meetings (CAP), they revised their self-assessments and demonstrated the evidence of learning.
Context	<i>Number of schools: 2</i> <i>Number of teachers: 5 at elementary, 17 at secondary</i> <i>Number of students: 101 at elementary; 180 at Grades 7-9; a total of 281 students</i> <i>Grades/Program: K-9</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This year, the project was undertaken from K-9. Next year, we anticipate extending the project to Grade 12.
Goals & Priorities	<i>System Learning:</i> The goal of these projects is not to increase the technology in the classroom, but to foster learning with an inquiry approach, where the student is asked to be creative and innovative. We will give priority to this approach within the CSDCCS Board over the next few years (2-4 years). <i>Student Learning:</i> For our projects during the year 2014-2015, we would like to develop these skills in the students, particularly communication, critical thinking, problem-solving, collaboration, and creativity across many engaging teaching practices using a variety of technological tools.
Role of Technology	Windows Tablets and iPad: To use the EAV electronic portfolio tool. Interactive table and touch screens: Students work on collaboration and communication with these learning tools that are connected. Interactive whiteboards: Tool brings students together - well used in both schools. Microsoft Lync: This application is accessible to all school board employees and is very user-friendly. Given the heavy schedules and the long distances between schools, we were able to have many team meetings in this fashion.
Inquiry Question	What changes are there to a teacher's practice when he/she sets a personal learning goal based on a feature of the matrix of technology integration? How do these changes in teachers' teaching practices allow students to develop 21st Century skills?
Indicators of Success	We will analyze the teachers' progression in terms of number of levels on the matrix scale, and document samples of student work to support it. This will be recorded for the two schools of the project.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire de district catholique Centre-Sud)

We administered a survey and we are compiling the self-evaluations (at the beginning of the school year, in the middle of the school year, and in the present).

During this project, we came to several important conclusions:

- In order to succeed, we judged that it was not important to have a 1:1 ratio, tool/student: the integration of technology for learning, on the other hand, needs a good number of tools in the classroom, available to the students at all times and staff who know how to use them and how to integrate this technology as learning tools.
- When a systemic project begins, many services must work together so that we can more quickly recognize the practices we need to focus on (e.g., differentiated coaching), and those that are less favorable to integration in many schools (e.g., coaching that is identical in all the schools).
- To integrate the changes, we have to integrate the support system, technology services experts and teaching services experts.
- In 2013-2014, we noticed that students were more able to use technology in the classroom given that we gave them access to it at all times, when the pedagogical need warranted it.

Successes, Challenges, and Unexpected Results

1. We had conversations about aligning our coaching services in our schools.
2. We decided to put the network into place in all the Board's schools.
3. A large variety of needs exist in terms of techno-pedagogy, as much for the teachers as for the administrators.
4. There are many challenges, for example:
 - a. The ability of staff to get technology tools
 - b. The ability of staff to integrate technology at the teaching and learning levels
 - c. The support of school administrators
 - d. The versatility and availability of members of the teaching team in the digital age

Sustainability

The 2014-2015 project will allow us even more opportunities to see the impact on student achievement and learning, given that we are collecting many types of data. We will be able to see the difference in achievement in Social Studies, the teachers' and students' comfort level linked to technology by means of self-assessment surveys, the improvement of achievement linked to the inquiry approach by means of diagnostic and formative tasks, etc.

For the 2014-2015 school year, we are trying out a new coaching model and a new working team format. We hope, as much as possible, to align the interventions to the priorities that have already been identified by school administrators so as to ensure the synchronisation and the integrity of the project.

In addition, it would be consistent with developing the capacity of the consultants and technicians already working in the various services so that they can also use technology as a learning tool, as much as possible, for all their portfolios. We are hopeful of this change and it will be extended over many years.

The Impact of Learning Environments in the Digital Age

Conseil scolaire
de district
catholique de
l'Est ontarien

During the initial years of the project, we defined the cloud computing environment, the structure of the modelling premises, the digital tools and the teacher education model. This year, our goals were to expand the scope of learning and cloud computing environments in the classroom and integrate coaching into our support model. With this in mind, and to promote higher-level thinking skills among students, a system-level group of teachers took part in our learning cycle.

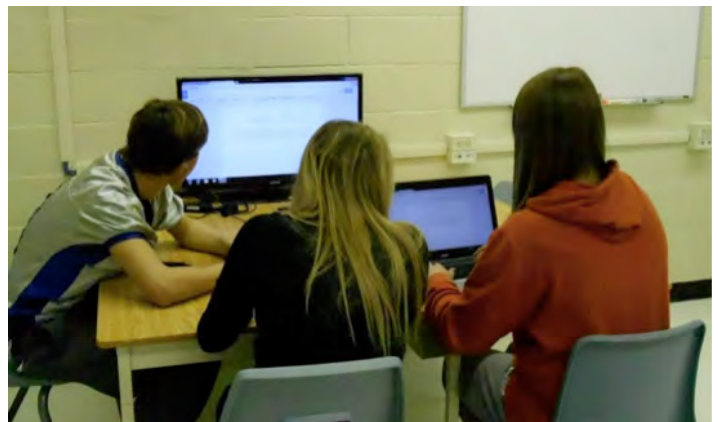
These additions to our infrastructure and instructional strategy have enabled us to work first with the instructional services and school principals and later with teaching staff. As part of the four steps of the learning cycle, the teachers planned the change in practice and revised their planning using the following criteria: put students in action; call upon the learning environments and students' skills (collaboration, communication, creativity and critical thinking); have students experience the investigative process; integrate an assistive technology using the D2L platform and strive to redefine the environment, as specified in the technology integration matrix.

Depending on the transformation target, teachers have also been involved in teaching a digital-age class in front of colleague observers. In addition, a classroom consultant was present as a coach to support them in their planning, teaching and reflection process.

Based on what we heard from teachers, classroom consultants and school principals, to date we have noted a positive impact from our coaching model in digital-age learning environments. We noticed a change in the instructional practices of participating teaching staff and increased engagement from students as they learn.

Students do better orally than in writing—we need to get them talking to get them to write better, which is encouraged in learning environments.

Teacher



Teachers engaged in a professional dialogue.

As part of our initial planning for next year, we propose more support, such as adding cohorts to training and coaching sessions on learning environments, teaching using the D2L platform, or having an inquiry process to help teachers shift their classrooms over to the digital age.

Conseil scolaire de district catholique de l'Est ontarien

Project Title	The Impact of Learning Environments in the Digital Age
Brief Description	In 2013-2014: integration of learning environments in the classroom with the goal of showcasing the integration of 21st Century skills, transforming the classroom, updating the pedagogy, developing the processes and higher-order critical thinking skills, and responding to the needs of the school improvement plan.
Context	<i>Number of schools:</i> 25 elementary schools and 7 secondary schools: all our schools are involved <i>Number of teachers:</i> 31 teachers <i>Number of students:</i> 620 students <i>Grades/Program:</i> elementary and secondary
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Broaden the scope and extend the 2 environments (learning and cloud) in the classroom. Integrate these 2 strands to a new coaching model in order to contribute to the transformation of the classroom and teaching across the system. Allow us to work on the 6 competencies and higher-order critical thinking skills.
Goals & Priorities	<i>System Learning:</i> Envisioning a system <i>Bring in technology for September 2016</i> , "Technology will allow us to redefine teaching, create new learning strategies, and propose new tasks that would have been unheard of in the past." Because of our research and collaboration with researchers, we were able to create a model that includes a variety of winning practices in the following areas: <ul style="list-style-type: none"> • Coaching • Higher-order critical thinking skills • Learning environment • A process to support core programs • The transformation of the classroom model, SAMR <i>Student Learning:</i> We will use the <u>Matrix of Technology Integration</u> to present to the participants various entry points that facilitate the transformation of teaching in the digital age.
Role of Technology	Tied to the MIT of DR 9 (<u>Matrix of Technology Integration</u>), the tools will be integrated to enhance teaching and learning and vary the learning environments. The list of tools could be provided with the final report.
Inquiry Question	Does the learning environment (2012-2013 project) have an impact on the integration of 21st Century skills in the classroom? Does the learning environment (2012-2013 project) have an impact on the integration of the digital age in the classroom?
Indicators of Success	Number of teachers taking part. Report on the changes brought about on the classrooms (arrangement and management, tools, strategies). Student survey about their engagement in the task.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire de district catholique de l'Est ontarien)

The consultants will collect the data on the changing practices and the new practices and strategies that were integrated by the participating teachers:

- Coaching report
- Progress in the learning cycle
- Videos, conversations, photos (our evidence and data follow the triangulation model)

The teachers took part in training sessions in the local modelling centres. They did become more open to coaching, even coaching in the classroom.

As for the students, their engagement increased through the use of technology. It doesn't last long if it's not accompanied by strategies that develop the 6 C's, or the higher-order thinking skills that students perceive as an add-on to their autonomy in the way they do things.

The change in practice seems to be more sustainable if the consultant comes into the classroom and if tools are available so that she/he stays in the classroom.

Direct impact on the students:

- Improvement in lesson planning includes: vary the learning environments, integrate approaches that promote the use of technology tools, platforms, or software.
- Create a continuum of integration of technology habits and teaching of these skills.

Indirect impact on the students:

- When the teacher changes his or her practices to increase learning or engagement, there is an indirect impact on student learning.

Successes, Challenges, and Unexpected Results

- Creation of a website: *Teaching in the 21st Century: To better learn in CSDEO*
- Creation of training and coaching models
- Creation of pedagogical planning models

Sustainability

- Expand the approach in all types of meetings that we have – this coaching and transformation of lessons approach, among other things, to vary the learning environments, integrate technology, and integrate higher-order thinking skills can be done in all our contexts: from administrators' meetings chaired by the Executive Council to the administrators' CAP meetings.
- Add a link, a component to the researcher: [TC2](#) Garfield Gini-Newman: which was done by our colleagues of the CECCE to expand even more with its approach to the explicit construction of critical thinking.
- Add the student strand – strategy, student-researchers.

The Impact of Coaching on Teaching in the Digital Age

Conseil scolaire
public du
Grand-Nord de
l'Ontario

Our goal this year was to develop a diverse training and support model to build teachers' skills and encourage them to integrate technology in the classroom, so they could present dynamic and interactive lessons that would motivate students to participate more actively in the learning process.



Students using an interactive SMART Board to learn math.

Professional learning communities (PLCs) were the perfect professional development solution and provided a forum to discuss successful strategies. We used educational capsules in the PLCs. We started the day by looking at the software. Teachers were then given time to try things out and apply what was presented. Their exploration was backed by differentiated, personalized support.

"I love that there are so many existing lessons that are ready to be used. I couldn't go back to teaching without my SMART Board."

Teacher

"What a great way to learn and share! We were able to work with the Notebook software and receive support during and after our PLC. Now, I feel more comfortable creating dynamic lessons that will capture students' attention. I can also cater to different learning styles. The possibilities are endless. Playing with the tool and sharing what works is the only way to keep developing personally and professionally when it comes to using new technologies."

Teacher

Previously, in all schools, we observed spontaneous exchanges between colleagues. Based on that fact, the next PLC encouraged greater sharing of the different schools' many successes. Teachers were invited to go into the school board's virtual learning environment and upload their lessons that support technology integration. About a hundred electronic files were shared and are still available to our professional community. This is a testament to the positive impact that coaching has had on teaching in the digital age.



A teacher using a SMART Board to teach vocabulary.

Conseil scolaire public du Grand Nord de l'Ontario

Project Title	The Impact of Coaching on Teaching in the Digital Age
Brief Description	Coaching on the use of the IWB (interactive white board) (elementary). Have professional learning communities (CAP) in all the K-6 elementary schools train the teaching staff on the use of the IWB so they can maximise its use while increasing their confidence level in the use of a technology tool. Facilitating the implementation of the BYOD initiative (secondary). Coach and support teaching staff in the integration of new technologies that are now varied, with a goal of creating a pedagogy that is more participative.
Context	<i>Number of schools:</i> 14 <i>Number of teachers:</i> 71 elementary (K-8) for the IWB project; 4 Grade 4-6 teachers for the Chromebooks project; 8 teachers for the coaching for the BYOD initiative. <i>Number of students:</i> 630 <i>Grades/Program:</i> Elementary and secondary
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Maximize the use of a basic tool in the majority of classrooms. Increase the capacity in the school by putting support in place.
Goals & Priorities	<i>System Learning:</i> Create video capsules that can be placed in a training area in the Board's virtual learning environment (EAV), available to everyone and fostering training and professional development. <i>Student Learning:</i> The professional learning communities and the coaches will guide the teaching staff in the adoption of a more differentiated pedagogy while allowing them to become guides/coaches. The success of these initiatives will foster student acquisition of 21st Century competencies and learning skills.
Role of Technology	IWB and digital resources from the CFORP. After the roll-out of the BYOD initiative, students will have access to a personal technology tool that will permit continuous learning. Chromebooks to maximize the potential of the Google environment and its apps for education.
Inquiry Question	If we develop teachers' abilities in the use of technology for their teaching, will student and teacher engagement increase? Will the roll-out of the BYOD initiative and coaching on site create the necessary conditions to change teaching practices? Will the exploitation of a cloud environment foster the development of 21st Century skills?
Indicators of Success	Teachers are more comfortable with the basic functionalities of the IWB and use it more frequently to turn their lessons into more interactive ones. Teachers are more comfortable with the integration of a variety of tools in the classroom; they are led to change their teaching practices. Students who have access to Chromebooks have an opportunity to increase the development of 21st Century skills, specifically in communication and collaboration; the impact of the continuous improvement of student achievement.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire public du Grand Nord de l'Ontario)

- A survey for the students – increased percentage related to the use of technology for learning purposes.
- One for the teachers – whether their practices had changed; their openness to using technology; changes in their roles; percentage of time spent on the integration of new technologies.
- A survey will be administered to the teachers at the beginning and at the end of the coaching period.
- Teachers are more comfortable with the basic functionalities of the IWB and use them more frequently to make their lessons more interactive; students are more motivated and engaged.
- Teachers are more motivated to change their teaching practices.
- A bank of resources for the IWB is now accessible to all members of the teaching staff.

Students are more engaged in their learning. They use (and ask to use) the technology at their disposal.

Successes, Challenges, and Unexpected Results

- Difficult to free up a teacher for 33% of the time in the middle of a semester.
- We were not able to free up a teacher at Hanmar Secondary School.
- We were finally able to free up a teacher at Macdonald Cartier Secondary School at the end of the school year, so it was difficult if not impossible to put the initiative in place.

Sustainability

- Two classes were added to the Chromebooks project and we anticipate adding more.
- This model was adapted for Google training.
- We anticipate adding CAP IWB.
- We anticipate adding IWB activities to the EAV.
- Change in technology – include the technicians in the decisions to purchase materials and the pedagogical process.

Computer and Digital Literacy for Success in the 21st Century

Conseil scolaire public du Nord-Est de l'Ontario

Since early on in our project, our goal has been to integrate technology into the classroom to help students in the 21st century develop learning skills. To build our understanding of how technology affects students' initiative, independence and motivation, we had previously targeted specific classrooms. This year, we aimed to take technology as a motivational agent and extend that to the school board's other kindergarten to Grade 6 classes.

Our work involved looking at previous pilot projects. One school had students develop their independence as learners through the use of a personal D2L electronic file. Another school used Google tools to improve contact between students and teachers, which enabled learning to be assessed by triangulation. Some classes worked with laptop computers, some with tablet computers, and some with students' own personal communication devices.

We noted that with Google software and tablet computers, teachers could better track students' progress. They could gather evidence of student learning and record this information in students' files to support their learning. We also noted that teachers were able to offer students more feedback. As a result, students were better informed and more motivated to seek out solutions or to make changes to improve their school performance.

"The feedback given online motivates students to actively take part in the learning process."

Teacher

"Right away, with the techno-pedagogical tools, students were much more involved in their education."

Teacher

We are really excited to be moving this large-scale project of ours into the digital age. We will be providing the structures and support needed to bring D2L electronic files to every classroom, starting with preschool and primary divisions.



A student's electronic file showing their self-directed goals.

Conseil scolaire public du Nord-Est

Project Title	Computer and Digital Literacy for Success in the 21st Century
Brief Description	The goal is to provide teachers from K-6 with the technology that will allow them to put into practice the learning from the 2011-2012 and 2012-2013 pilot projects. This will provide a harmonious transition from the pilot project to a system-wide model. From now to the end of the school year, we will equip our teachers with the technology and train them in its use.
Context	<i>Number of schools: 7</i> <i>Number of teachers: 78</i> <i>Number of students: 1000</i> <i>Grades/Program: Elementary and Intermediate levels</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> From the learning arising from the pilot projects over the last 2 years, we will try and develop a more systemic approach in elementary using D2L as the base platform to develop electronic portfolios.
Goals & Priorities	<i>System Learning:</i> The goal of the expansion of our pilot projects is to encourage learning across the system. We are confident that this step is essential to bring all our staff members to make the switch to learning in the digital age. <i>Student Learning:</i> In fact, higher-order critical thinking skills are at the basis of our project. Among others, we will target the development of autonomy, communication, learning about the world, and character development.
Role of Technology	The choice of the tool is far less important than the support and the coaching to give to our staff so they can ensure their classes are 21st Century learning centres. Among others, the teachers and students will be able to use D2L (particularly the electronic portfolio), GOOGLE Drive, and One Note on electronic tablets. Each teacher will receive a Surface type of tool and each classroom will be equipped with a centre of electronic tablets.
Inquiry Question	How does the approach in the teaching of information technology encourage technology integration in teaching practices in order to develop 21st Century skills in students? How does the integration of technology into teaching practices have an effect on the autonomy and motivation of students and staff?
Indicators of Success	Surveys on motivation given to students will show that technology has a motivating effect. Work habits/learning habits – motivation and autonomy. Survey given to staff – senses of efficiency.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire public du Nord-Est)

- Bulletin about skills and work habits – autonomy
 - Survey for the students – motivation
 - Interviews with the teachers based on two research questions
 - Logbook and evidence (photos, videos, etc.)
 - Discussions during meetings with the technopedagogical team (evidence of conversations)
-
- The sense of autonomy, initiative, and self-regulation of students who participated in the project is improving.
 - Teachers and students taking part in the project have access to technology and use it to support learning.
 - The survey administered to teachers indicated that they use technology for a variety of tasks linked to the classroom: a) prepare on a daily basis; b) write up notes; c) prepare their lessons; d) interact with their colleagues; e) prepare technology teaching lessons; f) research resources for collaborative projects.
 - One piece of data that we measure is the impact of autonomy, the sense of initiative and self-regulation. The data show a direct impact on student learning with regard to skills and work habits
 - Surveys administered to teachers show as well that our students are more motivated and succeed better.

Successes, Challenges, and Unexpected Results

A desire on the part of the teachers to have technology developed. People want to use it more and more. We had some challenges with the D2L platform. These challenges were caused by important delays in our plan to standardize our elementary practices.

Sustainability

We are only at the beginning of pedagogical documentation.

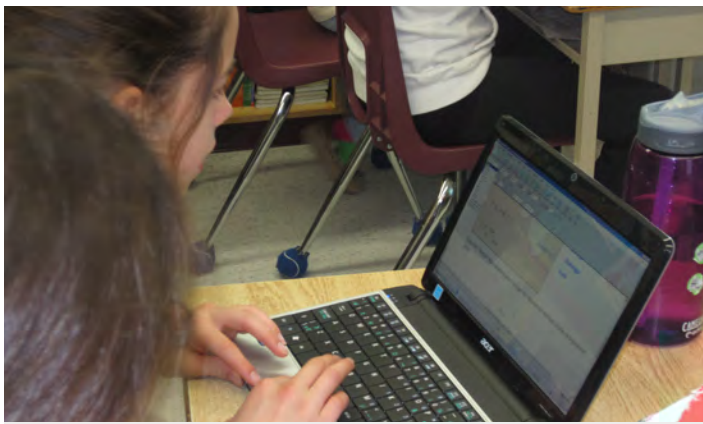
Our projects in pre-school and kindergarten as well as in Grade 7 will serve as a first step toward putting a complete plan in place in the Board. We plan on extending it to Grade 2 and Grade 8, then to Grade 3 and Grade 9, and so on for the next five years.

The five-year plan will allow us to involve all the teachers and students in the Board. In addition, the pilot projects over the last three years created such excitement that the staff felt more comfortable in trying new strategies that integrate technology and pedagogy.

Using Technology to Improve Instructional Practice and Develop 21st Century Skills

Conseil scolaire
Viamonde

The objectives of our project were to increase teacher capacity and independence in integrating technology into teaching, learning and assessment. This year, we provided coaching to staff at two elementary schools and one secondary school on the use of Ontario's Virtual Learning Environment (VLE) in the classroom.



A student is focused on a learning task, using a laptop.

The initiative focused on blended learning (incorporating technology into current planning) and on the many possibilities it offers teaching staff and students. By developing their own technology skills for blended learning and distance education, the teachers created learning environments where students could progress, learn and self-assess.

"The teachers help each other in working with the various VLE functions. These are interesting tools that have huge potential."
Teacher

A team of classroom consultants including a consultant in education technology and a classroom consultant from the Consortium d'apprentissage virtuel de langue française de l'Ontario (CAVLFO) developed the training modules and offered VLE training to the participating staff.

Using a professional development network, the teachers worked on their planning in order to integrate elements that promote student involvement, differentiated instruction, the development of analytical skills among students as well as judgment, creation and independence, so that students are able to approach learning in a different way and develop strong communication skills.

"We noticed changes in motivation and independence, and also a greater sense of responsibility."

School Principal

We will examine the results of the surveys and of student learning in order to continue integrating technology into instructional practice and to develop 21st century skills and abilities among students.

"The blended learning model matched the profiles of the targeted students because it responded to their needs and style and because it offered them the flexibility to work at their own pace, according to their own circumstances. This is very useful for the recovery teacher, especially in subjects that are not their specialty. The courses are quite complete and the assessments are pertinent."

Teacher

Conseil scolaire Viamonde

Project Title	Using Technology to Improve Instructional Practice and Develop 21st Century Skills
Brief Description	To provide teachers with opportunities for collaboration, co-planning, and sharing of practices and resources. To increase the capacity and autonomy in the schools. Attention will be given to the integration of technology with teaching, learning, and evaluation in light of inclusion and differentiation.
Context	<i>Number of schools: 2 Number of teachers: 6 Number of students: 90</i> <i>Grades/Program: One K-6 school: one kindergarten class and one 5/6 class; one K-8 school: one 7/8 class. One secondary school: credit recovery program that touches many school subjects with students in Grades 10-12 who risk delaying their accumulation of their credits.</i>
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Because the project extends the scope of the work done last year, it will continue the exploration of EAV (virtual learning environment) and allow teachers to plan and use various virtual teaching strategies, and to offer their students a range of learning opportunities based on technology and in response to various needs. The emphasis is placed on hybrid integration (integration of these existing planning tools) and on the numerous possibilities that this integration offers the staff and the students, in terms of their profiles and the specific projects.
Goals & Priorities	<i>System Learning:</i> Models developed and tested in the first phases of the project by the participating teachers will be shared with other members of the teaching team. Modifications to established practices will be done. New products will be developed. By means of a network of professional development related to 21st Century skills, teachers taking part in the project will have a chance to work on their planning in order to integrate elements fostering the development of habits and skills among students. <i>Student Learning:</i> Students use specific 21st Century functional skills – digital abilities; analysis, judgmental and creative skills. Students are self-sufficient in using these skills; they should achieve a higher level of autonomy, look at learning from a different point of view and develop strong communication skills.
Role of Technology	AEV platform; computers, iPads, smart phones, IWB, various software fostering learning or as support for specific student needs (e.g., Kurzweil).
Inquiry Question	If the teachers develop technological skills in line with hybrid learning and long-distance teaching, then the students could evolve, learn and self-assess in a virtual universe as well as develop skills particular to the 21st Century.
Indicators of Success	From student work, but also from the developed skills and attitudes over the course of the project, it will be possible to measure the success of the procedures. Besides the achievement of defined evaluation criteria and presented to the participants, autonomy, self-regulation and respect of the set timetables will allow us to measure the impact of the project on the academic and personal learning of the students and on teaching practices.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Conseil scolaire Viamonde)

Evidence of learning was collected by means of assessment charts, log books and surveys to participating teachers and students. Teachers target identified students and follow their progression linked to academic achievement as well as learning skills and work habits. This data allows us to measure the impact of the initiatives. In addition, data collected from the surveys provided qualitative data for measuring reflection, decision-making, and actions linked to their targeted practices.

The results of this project allowed us to see the positive impact of the hybrid model to:

- Increase student capacity and autonomy.
- Improve student achievement.
- Plan and use a variety of virtual teaching strategies and offer students a range of learning opportunities based on technology and answering a variety of needs.

For credit recovery, four students out of four succeeded. This indicated a positive impact on the use of the hybrid model and the teachers observed that student achievement was equivalent or superior to the traditional method of credit recovery. For example, a student with anxiety problems and who was frequently absent was successful in the course by working at his own rhythm at home.

Successes, Challenges, and Unexpected Results

Lessons learned:

- Offer follow-ups and coaching to the teachers as a result of the requests for the courses to see the level of use and to offer support.
- 2/3 of the teachers had prior experience with the EAV (D2L); the approach has to be adjusted for people with no experience.
- The function of the hybrid format is to differentiate among learning styles and student needs.

One working group was tasked with creating an interactive guide for planning the learning and evaluation for the Board which was published in September 2014.

We also created:

- A spectrum for the level of use of the EAV that was shared with the 12 school boards.
- A spectrum of the pedagogical use of the IWB to use with teachers.
- A self-regulated course in the EAV to store capsules of self-training (“Do you have two minutes?”) for the use of the EAV, the IWB, and other technology tools.

Sustainability

The deployment of the EAV supported by the consultants and the PREAV in all the secondary schools in various courses (hybrid courses, credit recovery).

Increase the offer for the students to have a positive impact on student retention.

The “Bridgit” project will be continued this year in three schools.

The use by some people spurred the interest among other teachers. There has already been an increase in the number of other course requests received this year. Teachers who have already participated in the project will continue using the model.

Online Math Grades 11 and 12 Homework Help

District
School Board
of Niagara

Building on the success of the Grades 7–10 Math Homework Help initiative, where over 35% of Grades 7–10 students activated accounts and supports, the DSBN further enhanced its online homework initiative. For many senior mathematics students there are a limited number of available supports outside of the classroom. The DSBN Grades 11–12 Math Homework Help program extends the school day for many students by providing an online homework support network that helps learners further understand the complex concepts within senior mathematics courses.

Teachers and students access live supports using Adobe Connect between 7 p.m. and 10 p.m. on Sunday, Tuesday, and Thursday evenings. Homework Help teachers incorporate various technologies into their sessions with the focus on using tablet computers running Microsoft OneNote to deliver supports. All sessions are recorded and students can access previous recordings and best sessions from the D2L Homework Help Support Course. When live support is not available, the Homework Help Support Course also gives students access to Ministry provided resources, digital tools, and asynchronous discussion threads. Students who access supports have the opportunity to interact with a number of online tools while further developing their skills in self-efficacy, communication, and collaboration.

Students have indicated that when material is presented in a different manner than the textbook, it significantly helps with their understanding. Knowing students learn math in a variety of ways, the teachers providing supports through the Homework Help program use a constructivist approach to solving mathematics problems. Interactive chat pods, voice, and whiteboards provide live, real-time interactions during these recorded sessions.

Students are active participants in the sessions and they enjoy the interactive and step-by-step approach to solving problems. Student co-learning plays a role in the learning process as evidenced by the interactive chats taking places between students online.

Successful practices and strategies developed through this project can be used to inform teachers in better understanding how 21st Century skills and technologies can be integrated successfully into the classroom to better support student learning.

Students work and chat online to build understanding

DSB of Niagara (Project #1)

Project Title	Online Math Grade 11 and 12 Homework Help
Brief Description	Building on the success of the current Grade 7 to 10 Homework Help-Ontario initiative and the 2012-13 DSBN Grade 11-12 Homework help program, the DSBN would like to further enhance its online homework support network that will help students further understand the complex concepts within the subject of mathematics. The goal of this research will be to determine to what extent this online support network is successful in increasing student confidence and achievement in the area of mathematics.
Context	<i>Number of schools:</i> 18 <i>Number of teachers:</i> 3 <i>Number of students:</i> 1354 <i>Grades/Program:</i> Grades 11-12 Math
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Building on the success of the current Grade 7 to 10 Homework Help Ontario initiative and the 2012-13 DSBN Grade 11-12 Homework help program.
Goals & Priorities	<i>System Learning:</i> This data can be used to inform future online, blended and online eLearning initiatives both within DSBN and across Ontario. <i>Student Learning:</i> Determine to what extent this online support network is successful in increasing student confidence and achievement in the area of mathematics.
Role of Technology	Students will be able to access the Homework Help program via any device that has a web-browser (Homework Help site access) and can use the Adobe Connect software (compatible with IOS, Windows, and Android operating systems and will operate on all devices).
Inquiry Question	To what extent can 'just in time', personalized online math homework support increase student's engagement, confidence, and achievement?
Indicators of Success	The number of students who use and re-use this service during the project. Entrance and exit surveys will be used to evaluate student confidence in math before/after accessing this service. Student achievement trends in mathematics courses for students who regularly access the service. Surveys of participating staff and students to identify effective online teaching strategies.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(DSB of Niagara - Project #1)

Students completed an entrance survey before they accessed the Live Supports for the first time.

Students who accessed the Live Supports through the link within the D2L Learning Environment were tracked along with usage time within the Adobe Connect interface.

Exit Surveys were deployed within the D2L Learning Environment in May and June to capture the student voice and feedback.

- Increase in student access to support (both nightly and overall use).
- Increase in quality of questions/support being requested.
- Positive student experiences as indicated by the surveys, which led to student learning and increased achievement.
- Students taking “math heavy” courses (physics and chemistry) were seeking out supports.

Students indicated through surveys that Homework Help has assisted them with their understanding of concepts delivered in class. Classroom teachers noted an increase in homework attempts by some students who normally would have “given up” but accessed Homework Help and persevered through homework attempts and completion.

The number of teachers trained on delivering the online supports has increased since the implementation of the project. This provides not only an awareness but understanding of the technology and how it is being used to support student learning. Secondary mathematics teachers are aware of the online support and have access to the site. Teachers have witnessed the power of the “step by step” video walk through of a lesson which has impacted a number of our classrooms.

Successes, Challenges, and Unexpected Results

Reduced number of days led to an increase in usage (3 days per week compared to 4 days per week in the previous year). During the current school year, supports have been increased to 4 days per week.

Challenges included managing teacher/tutor turn-over, training teachers, and making adequate technology available for use.

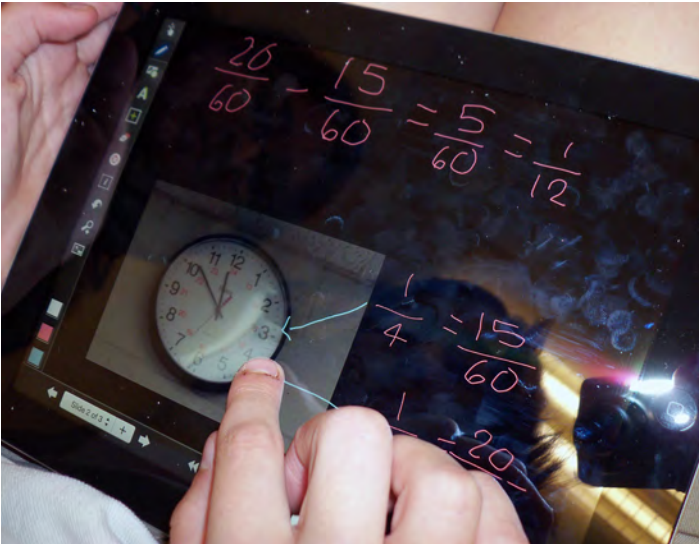
Sustainability

The project has been expanded from three nights a week (three hours per night) to four nights a week (three hours per night) based on the demand that was experienced during the 2013-2014 school year. Usage will be monitored and the opportunity to increase the number of nights per week during key times of year may be available to meet needs.

The Central Math Team has ensured that the project has been shared with all math teachers within the board and it is included in all central learning sessions for math. We continue to reinforce that the technology is being used to enhance the instructional practice and learning opportunities for students.

Effective Use of iPads in Elementary and Secondary Mathematics Classrooms

District
School Board
of Niagara



Building understanding through explaining: clocks and fractions

Incorporating new technology initially can be exciting, but the learning curve is often steep. For this project, because of the demonstrated familiarity with the hardware and operating system, we use iPads as our tool. This enables the focus to be on learning mathematics, rather than learning the technology.

As math teachers, we have an abundance of student products as evidence of learning, however what we often lack is evidence of learning through student conversation. The iPad provides for user-friendly apps that allow students to record their thinking using writing and voice simultaneously. This benefits teachers by obtaining a clearer picture of student understanding and misunderstanding, and in providing feedback. It benefits students by requiring them to describe, explain, or justify their thinking which in turn builds deeper their understanding of a concept or procedure.

Research confirms the value of inquiry in the mathematics classroom. Specific apps allow students and teachers to explore concepts in a greater depth than do traditional approaches. Some examples of questions students have explored include: “What does the slope have to be so a line is vertical?” or “In how many ways is it possible for three planes to intersect?” Having the iPads available within reach in the classroom students can investigate their own questions when they arise. As well, several apps take the drudgery out of calculations and procedures, allowing students to focus on conceptual understanding.

Understanding and use of graphical representations are prevalent throughout the mathematics curriculum. Web-based graphing programs facilitate classroom activities that enable students to graphically represent an event given an animation or image (e.g., a water-tank filling, motion of different carnival rides). While students create their graphs, the teacher watches in real-time what they are making. Teachers can provide specific and descriptive feedback in the moment.

We are continuing to explore the use of iPads and the supporting apps and web-based programs for teaching and learning mathematics.



Grade 12 student researching using technology

DSB of Niagara (Project #2)

Project Title	Effective use of iPads in Elementary and Secondary Mathematics Classrooms
Brief Description	In Round 2 we piloted a new piece of technology in the classrooms involved. While some of the teachers found success with incorporating the technology effectively, others found the learning curve with the new technology to be steep. Teachers recognized that for the technology to be engaging for the students they needed to find new innovative approaches to the curriculum by using technology that is more familiar to both teachers and students (iPads), then teachers can focus more on how the technology can enhance their instruction.
Context	<i>Number of schools: 2</i> <i>Number of teachers: 5</i> <i>Number of students: 261</i> <i>Grades/Program: Grades 8-12 Mathematics</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> In Round 1 we started with the introduction of LCD projectors and clickers in the applied level Grade 9 classroom. In Round 2 we moved to the use of tablets (1:1). We found a steep learning curve for both teachers and students in learning to use the tablets. The tablets created some frustrations and we saw a decline in use over the duration of the project.
Goals & Priorities	<i>System Learning:</i> By using technology that is reasonably common for staff and students to own, the instructional and assessment strategies that these teachers find effective will be able to be shared with other secondary mathematics teachers. The use of a more common device may even allow schools that are moving to a BYOD model to implement the strategies shared without having to purchase class sets of devices. <i>Student Learning:</i> Improve student engagement.
Role of Technology	iPads - class set/s for each school
Inquiry Question	If teachers and students are given an opportunity to work with familiar technology in their mathematics classroom, they will be able to focus on their use for mathematics learning rather than learning the technology. If students are expected to explain their thinking by working in a 1:2 technology environment (rather than a 1:1 model), or by capturing their thinking with a device, teachers will observe an increase in student metacognition.
Indicators of Success	Surveys to examine change in teacher beliefs and practices. Observation to examine the engagement level of students. Pre and post survey to examine change in student belief and attitude.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(DSB of Niagara - Project #2)

Teachers and students completed a pre-survey and a post-survey.

Teachers gathered anecdotal data throughout the pilot through observation as well as capturing video, pictures, and student work.

An improvement in student communication and collaboration skills was recognized. Students improved in the communication of their reasoning of answers. Students were able to provide rationale for their answers by using specific apps (i.e. Explain Everything). This allowed teachers to gain a better understanding of how students were thinking and therefore develop stronger questioning skills based on what should be asked next. Teachers stated that they had students provide more detailed answers by using some of the apps available.

Students are more proactive in asking to make use of the technology. Students are recognizing that technology can be used as a tool to support their learning and that it has purpose beyond social media.

Successes, Challenges, and Unexpected Results

As with any computer software, it can be difficult to find apps which allow you to enter mathematical equations in a way that students are familiar with. We continue to look for apps and on-line interactive tools that would enhance our curriculum delivery

Students that have their own devices are downloading and using some of the apps themselves even when the iPad lab is not in the classroom.

Sustainability

The project continues to be centrally supported in the original schools. Use of the iPads has expanded into science classes in one school due to teacher movement from mathematics to science. The new mathematics teacher is being supported internally and centrally with the implementation of iPads. 100% of all Grade 8, 9 and 10 mathematics students within this school will be using iPads in their classes and 100% of all Grade 9 and 10 science students will be using iPads in their classes.

In addition to the original project schools, the central mathematics team is working with individual schools supporting initiatives. Project teachers are involved in sharing their personal learning on their use and implementation of iPads within their classrooms.

A strong partnership exists between the central mathematics team and the IT4 learning team within the board. The teams have collaborated on this and other projects which ensures that supports and communications are consistent across the system. Both the central mathematics team and IT4 learning team plans, coordinates, and facilitates individual, department, school, and large scale professional learning opportunities for teachers on a regular basis throughout the school year and summer.

Enhancing Math Reasoning Through Talk with SMART Tables

District
School Board
Ontario
North East



Planning for effective use of the technology

Our primary teachers are encouraging 'math-talk' in their classrooms and fostering students to use proper math vocabulary to explain their thinking. Teachers reflected on the Math-Talk Learning Communities evident in their classrooms, using the growth continuum from EduGAINS. We believe that the SMART Table – an interactive collaborative learning centre – helps facilitate talk. Through our project, a dozen primary teachers are directly involved in integrating the technology into their classrooms to examine the impact on learning through math-talk.

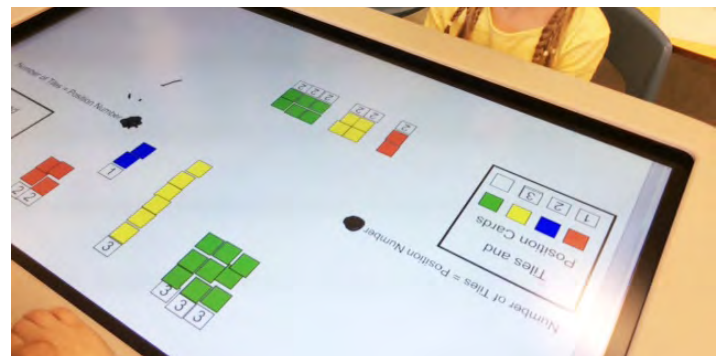
The teachers set goals to implement new strategies to enhance the talk structures in their classrooms. Teachers are hearing evidence of math-talk further developing in their classrooms; however, they recognize that they need to explore additional strategies so that the technology serves as a natural facilitator for the student discourse.

In June, teachers reflected on the development of their Math-Talk Learning Communities and shared effective strategies. Math-talk improved, both in quantity and quality in all classrooms. Students are more eager to ask each other questions, and explain, defend, and justify their thinking with greater confidence. Teachers have an improved understanding of the value of math-talk. There is consensus that the interactive learning table helps facilitate social norms and a culture of learning through collaboration. Teachers also recognize that technology barriers often prevent students from engaging in talk that is evident around the classroom with students using traditional concrete manipulatives to support their thinking.

“The SMART Table encouraged collaboration ... the students had to learn to come to a consensus in a small group and talk through their thinking.”

Teacher

Moving forward, teachers are eager to establish a positive math-talk learning community with their students and to encourage the transfer of these talk structures to other subject areas. The SMART Table will continue to be used with further emphasis on increasing collaboration more broadly.



Building understanding through Math-Talk

DSB Ontario North East (Project #1)

Project Title	Enhancing Math Reasoning Through Talk with SMART Tables
Brief Description	We are investigating if the SMART Table technology will offer more opportunity for students to engage in “talk” as this technology seems to promote more social opportunities for students to manipulate virtual objects in collaborative settings. The focus will be math and patterning and algebra. We are also investigating the power of “talk partners” in collaborative settings to engage students in thinking.
Context	<i>Number of schools: 5</i> <i>Number of teachers: 11</i> <i>Number of students: 200</i> <i>Grades/Program: Grades 1-3 Primary teachers are involved with student math talk.</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Our previous project focused on putting technology in the hands of students with special needs. This project does extend parts of the previous year’s thinking/learning in that we want to go deeper with the communication piece.
Goals & Priorities	<i>Student Learning:</i> Incorporating a SMART table as a center in primary classrooms will facilitate the social norms and a culture of learning as learners actively engage and participate in authentic mathematics.
Role of Technology	The essential idea of our project is to embed the learning within the technology (SMART Table, Virtual manipulatives, Smart Exchange resources and lessons).
Inquiry Question	What questions might teachers pose that support student math talk and reasoning? How will we foster students using proper math vocabulary to explain thinking? How will student mathematical reasoning be enhanced through math talk?
Indicators of Success	Through our data collection, we will identify if the SMART Table enhances math reasoning and talk, specifically in the area of patterning and algebra. Once students enhance their talk and reasoning skills in one strand, this can be transferred to other strands of the curriculum and other subject areas.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(DSB Ontario North East - Project #1)

A Primary Patterning and Algebra Assessment was used for pre and post data collection. Videos of student talk were captured at the SMART Tables throughout the project. The videos were moderated for growth in math reasoning, using a Math Reasoning continuum that has been developed.

Based on a pre and post self-reflection, using the ministry's Math-Talk Learning Community Action Trajectory, teachers identified growth in student communication in their classrooms. Teachers expressed that although the math talk increased throughout the project, it was not always a result of the collaboration at the SMART Table. Routines specific to the SMART Table, such as learning to work collaboratively, agreeing and disagreeing, etc. were created and reinforced throughout the class to support student discourse in mathematics. As students worked through a math activity, they were encouraged to ask each other questions, explain their math ideas, and build on or extend each other's ideas.

This project focused on both teacher collaboration and student collaboration. The learners worked together to extend their understanding of incorporating technology to enhance mathematics. Teachers supported each other in learning the new technology and shared resources and strategies they found effective as they integrated the SMART Table in their classrooms. Student communication was also a focus, as the teachers modelled and encouraged effective math talk in their classrooms – using appropriate vocabulary and reasoning skills to justify their thinking. While student achievement did improve, we cannot directly correlate it to the implementation of the SMART Table.

Successes, Challenges, and Unexpected Results

Challenge #1 – Aligning with Curriculum and Classroom Instruction: Teachers wanted the SMART Table to be more than a classroom “centre” and tried to incorporate the table in their three-part lessons. Teachers found it difficult and time-consuming to always be creating new activities for the SMART Table, especially when concrete manipulatives were readily available. Teachers also found that some of the problem-solving tasks they planned provided a higher cognitive demand than the activities available on the SMART Table. This brought the SMART Table back to more of a classroom learning centre that would build on students' understanding.

At times, the SMART Table hindered student discourse as problems with the technology became a roadblock for the students (ex: technology glitches were distracting). In comparison, students that were using concrete manipulatives in the classroom were able to effectively communicate their mathematical thinking without the added component of learning the technology of the SMART Table. Ongoing use of the SMART Table will better support students' ability to use the technology more effectively so it is not a barrier to their learning.

Challenge #2 - Sharing the Technology: We originally thought that the SMART Table could be effectively shared among two or three classrooms in each school, as the table is portable and easy to move.

However, after trying out a variety of different sharing schedules among the classrooms, teachers still found it difficult to plan rich instructional tasks for the SMART Table in the time allotted.

Challenge #3 – Capturing Student Thinking: Capturing student thinking is very difficult with the SMART Table. Unfortunately, there is no option to take a screen shot or save the student work that has been completed at the table. Some teachers have decided to include the SMART Table as part of their guided instruction in mathematics.

Sustainability

Teachers are finding more value in providing students with open tasks on the SMART Table, and are looking to create their own activities that directly relate to the Ontario Curriculum. Further professional learning will take place to create and share open tasks that promote reasoning and student discourse. Using collaborative learning groups with the math coach seems to support the initiative in sustaining the learning and scaling this project up. The vast majority of our elementary schools now have a SMART Table and our primary teachers have had the opportunity to engage in professional learning with the SMART Table.

Future small group sessions will be scheduled throughout the year to continue this professional learning for educators and to monitor student thinking, as it pertains to mathematical reasoning supported by the use of the SMART Table as an option. As we move forward, we are also looking to partner teachers who are using the SMART Table extensively across all curricular areas to share their learning and co-plan instructional practices with their colleagues.

Collaboration and Communication:

Enhancing and Enriching the eLearning Experience to Sustain Equity of Access for Programming with Declining Enrollment

District
School Board
Ontario
North East

As a rural northern board with several of our secondary schools serving fewer than 300 students, it is difficult to offer the full range of programming required by all learners. We recognize the importance of e-learning as a vehicle for students from small schools to have equitable access to courses and to specialist teachers. However, e-learning is not without challenges. Often feedback provided to students can be slow in coming, and many students identify reduced motivation when learning outside the classroom. We are investigating the use of technology to support e-learning experiences that provide more timely “just in time” feedback and an increased sense of community for learners.

Our “Enhanced e-Learning Teachers” use web conferencing software (Adobe Connect) to hold regular “virtual classes” where students ask questions, engage in class discussions, and receive feedback. Teachers generate video content using interactive whiteboards and tablets to give rich feedback and instruction that is engaging and responsive.

Some teachers found that some students are reluctant to ask questions when they are struggling, and that online time logs are insufficient to determine when students are having difficulty. Using integrated assessments, students are now directed to the next level of content once they demonstrate mastery of key concepts.

With courses such as mathematics, students struggled to complete assignments electronically, as it was easier to show their equations and calculations in written form. As a solution, students scan their written work and submit it to the teacher for review. After supporting students in using and accessing the required technology, as needed, teachers open the scanned file on an iPad and use a stylus to provide feedback. Students are increasingly familiar and comfortable with this method and style of feedback.

“I’d have to say overall it was a very positive experience for me and for the students. Obviously no one is going to think that any e-learning course will be better than a regular classroom where a teacher is always present ... I think it’s very clear that enhanced e-learning is significantly better than other non-classroom options, including regular e-learning.”

Teacher

From a review of the preliminary data and from teacher comments, we see that students are being more successful in our enhanced e-learning classes than was previously evident in traditional e-learning settings, correspondence courses, or independent study.

DSB Ontario North East (Project #2)

Project Title	Collaboration and Communication: Enhancing and Enriching the eLearning Experience to Sustain Equity of Access for Programming with Declining Enrollment
Brief Description	The research focus for this project will centre on how technology can be utilized to enhance the eLearning and blended learning experiences for both students and teachers and to equitize access to and quality of course offerings for all students in our board, regardless of school size or location. This Innovation Research will focus on the use of eLearning to sustain equity of access and learning for all students.
Context	<i>Number of schools: 5</i> <i>Number of teachers: 13</i> <i>Number of students: 75</i> <i>Grades/Program: Grade 12 (in math, science and social science)</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Our project is going in a completely different direction this year, as we look to support our students and smaller schools through eLearning. We are looking to see how we can offer these courses through an enhanced eLearning format to ensure that all students have access to these courses. This project will focus on how we can improve the sense of community by making the content more interactive, and adding “live” session to the e-learning course.
Goals & Priorities	<i>System Learning:</i> This Innovation Research will focus on the use of eLearning to sustain equity of access and learning for all students in the board. If the results of this project are positive, we expand “Enhanced eLearning” to 7 more eLearning courses for next year. <i>Student Learning:</i> This project will extend the benefits of online learning by exploring additional techniques for fostering collaboration and communication between students and between students and teachers.
Role of Technology	Technology provides the vehicle that drives the innovations tested by this project.
Inquiry Question	What existing online pedagogical practices are most effective in engaging students and specifically encourage collaboration and communication? How can additional enhancements to eLearning be used to better engage students?
Indicators of Success	Measurable outcomes included in the final report will include retention rates and student achievement levels for participants in the study. These will be compared to existing data regarding retention and student achievement from similar online courses and similar courses in traditional face to face classrooms.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(DSB Ontario North East - Project #2)

We compared previous year's pass rates, and mark distribution for these classes, pre- and post- survey data from students and teacher pre- and post- survey data.

The calculus and chemistry course both experienced an increase in student retention. Meaning that more students remained in the course for the entire semester, and fewer students dropped the course. The teachers believed this occurred because students were getting more timely feedback and one-on-one help than they had in previous eLearning courses.

All three classes experienced an increased pass rate. Considering that more students remained in the calculus class and the chemistry class than before, we are very pleased with the results. When looking at the mark distribution for each course, all the courses experienced a shift in the bell curve moving up as more students achieved a level 3 or above than had previously. With the improvement in retention rates, pass rates, and a shift in the bell curve, we can definitely say the project had an impact on student achievement.

Students went out of their way to create a sense of community. They spontaneously created their own Facebook group for the course, and created virtual study groups on their own, using Skype.

Providing feedback to students worked well, when students submitted scanned or electronic assignments. This was particular easy with the HHG4M course, but more difficult with MCV4U and SCHU4U when dealing with formulas and equations. Some students struggled to complete these types of assignments electronically, as it was easier to show their equations and calculations in written form. The solution was for students to scan their written work and submit it the teacher for review.

Successes, Challenges, and Unexpected Results

The assumption of the group had been that students were very adept at using technology, but they were not. Teachers all said that they would require all students to participate in an "Adobe Connect" training session where students were explicitly taught how to use Adobe Connect and group norms for this type of interaction. This would be supported at the home school by student success teachers. Teachers also said that they would require all students to then participate in a "Getting to Know You" session. Two of the three teachers who did this, reported positive feedback from students because they got to know their classmates better.

Sustainability

(DSB Ontario North East - Project #2)

For the current school year, we are continuing to offer “Enhanced eLearning” courses that blend synchronous and asynchronous components. We have aligned all secondary school schedules so we can offer these courses in period 1 and period 4 at all secondary schools. We have shifted the focus so that enhanced eLearning is used to support math and science courses only. We are offering enhanced eLearning for the following courses: MHF4U, MCT4C, BAF3M, SCHU4U, SNC4M, MCV4U, SPH3U/4U, BAT4M, SBI3U/4U.

We have taken some of the learning from this project and applied it to our regular eLearning courses by making use of Adobe Connect Sessions for supporting students that are struggling with eLearning course content. As well, we have all eLearning teachers trying to be more present online to build a sense of community and have used our enhanced eLearning teachers from this project to support all eLearning teachers with the use of Adobe Connect.

Tablet and Mobile Carts Investigation

Dufferin-Peel
Catholic District
School Board

We are examining the integration of computer technology for classroom learning, using both computer labs and mobile tablet computers. Our primary focus is the use of computer technology to support student learning and encourage student engagement.



Students using technology as they work through a task

Initially, we administered an online survey to gather information about how teachers and students are using technology for a range of activities. The teachers who participated represented all seven of our families of schools and were from all the core curriculum areas in elementary and secondary schools. They reported on their use of technology to plan and deliver instruction and to monitor learning.

“The learning curve was very quick to learn the tablets and essentially there was very little, if any, instruction on how to use them given by the teacher.”

Teacher

Responses provided information on student frequency (e.g., weekly or more often) and use of computers (e.g., to find information on the Internet and practise routine skills; to write or edit stories, reports, or essays; to analyse data or other information). Teachers indicated that they noticed an increase in student engagement. They identified the lack of sufficient numbers of computers for student use as a major challenge in supporting learning with technology.

Students identified the benefits of using tablets. They like having access to search engines like Google and find that using tablets helps them engage with the task as they can work independently to find the information they need.

“I like to work on the tablets because it helps us understand our work, and we can use WordQ to help us do more.”

Student

We anticipate that the frequency of richer, collaborative, and inquiry-based learning experiences can be enhanced with the accessibility of mobile tablets in the classroom. Also, as part of their ongoing professional learning, teachers can collaborate with peers or experts outside the school, post blog entries, and access resources online.



Students working collaboratively on an inquiry-based task

Dufferin Peel Catholic DSB

Project Title	Tablet / Mobile Carts Investigation
Brief Description	Baseline data regarding the use of computer technology will be extended through the analysis of both instructional data and technological data measurement. Educator inquiry into the effective pedagogy related to the use of computer technology to support student learning and engagement in the classroom is the primary focus.
Context	<i>Number of schools: 13 Number of teachers: 35 Number of students: 325 Grades/Program: Grades 1-12</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> We are learning to create and nurture a culture where technology-embedded instruction is an integral part of the everyday learning in classrooms. <i>Student Learning:</i> We are learning to utilize a learning management system (LMS) to provide one-stop, 24/7 access for students, teachers.
Role of Technology	We will also be comparing and contrasting implementation of tablets with the more traditional fixed computer labs in schools to understand the role of each in the pedagogically effective use of technology in learning environments.
Inquiry Question	If we provide interactive digital tablets on mobile carts to classroom teachers in Grades 1-12 for use with students who struggle with engagement, then we will see improvements reflected through student voice and differentiated assessments <i>for, as, and of</i> learning.
Indicators of Success	First, identification of the existing range of pedagogical application of mobile and fixed computing formats to support student learning is sought through this initiative. As well, assessment of student engagement, learning, and well-being with the tablets will be undertaken.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Dufferin Peel Catholic DSB)

Data collection was undertaken primarily via online surveys, hosted over mobile tablet computers and/or fixed lab/library computers. Educators completed both pre- and post-initiative surveys and a system professional learning exit ticket, while students completed one survey during the initiative. Focus group data are to be collected from a group of participating teachers to augment survey data.

Findings from the survey suggested that frequent use of the tablets by teachers to plan and deliver instruction was low, while frequent use of the tablets by students to undertake a few basic tasks (e.g., find information online, practice skills and procedures, and write stories or essays) was relatively higher. In contrast, the frequency with which students used the tablets to perform richer tasks that leveraged the mobile technology was much lower. These findings suggested that, at this very early point in the course of the tablet study, teachers require support for the pedagogical implementation of the mobile tablets beyond students accomplishing the most basic computing tasks.

Tasks such as simulations, animations, accessing resources, and collaborating demonstrated high rates of infrequent student use of general technology in the June 2014 survey. These observations continue to suggest that, while many teachers have integrated some computer access into their classrooms, many activities conducted on these resources are done infrequently by most teachers. Additionally, most of the more complex computer activities identified on the survey are done infrequently at best. However, it is hoped that, as use of the tablets progresses during the course of this inquiry, the rates of infrequent student use of technology to accomplish these tasks will decline as teacher confidence to integrate the tablets in the classroom improves.

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Successes, Challenges, and Unexpected Results

Analysis suggested that two most commonly reported barriers were problems related to charging the tablets. Additionally, some teachers expressed concern regarding the time required for the physical distribution, login, logout, and collection of tablets for student use, while another issue of concern was that there was insufficient access, particularly in terms of the number of tablets available for use.

Sustainability

Many teachers are still just at the beginning of exploring the use of the tablets in their classrooms, and tasks integrating student use of the tablets tend to be those related to accessing websites and/or applications. Collaboration, connections with peers, and development of digital media will hopefully appear more frequently as teachers are supported in the use of the tablets through in-servicing and participation in our board's Virtual Learning Environment.

Online and Just-in-Time: Revolutionizing Descriptive Feedback

Durham Catholic
District
School Board

A Grade 10 Applied Level English class was asked to describe OneNote, cloud-based software, to someone who has never used it. A young man looked up from his computer screen, and stated rather matter-of-factly, “godly.” The software had impressed its toughest critic – a teenager.

In three Grade 10 Applied English Classes, we explored the combined benefits of blended learning using D2L, cloud-based technologies, and one-to-one device use. How did these tools benefit students? The answer can be summed up in three words: organization, collaboration, and engagement.

The students used Cloud-based software to create a “virtual binder” that helped organize all their work and could be accessed anywhere there is Wi-Fi. They could access work at home or at school. They used the virtual binder for traditional inputs (notes and handouts) and for inputs that would be impossible using a paper binder (video recordings, voice recordings, internet clippings, ...). Students also benefited from the software having spell check and the ability to read text aloud.

Collaboration is an important skill for the workforce in the 21st Century. Students could “share” documents and receive timely descriptive feedback from both their classmates and teacher. Students can work on the same document at the same time while in different locations! This contributes to increased student engagement, quality work, and reduced the need for paper.

Students submit final copies of assignments to their teacher via the D2L drop box, get notifications from teachers, and access course materials and discussion forums.

Students offered reflections on the best part of the project: “The computer reading my rough work to me,” “Easy organization,” and “It helped me be able to hand in more work.”



Student shares work using his virtual binder

We are endeavoring to improve teacher-to-teacher collaboration, specifically through a forum where the teachers can meet virtually to post questions, collaborate on documents, and get posts from the project lead.

“The consistent environment between home and school makes working online really smooth for both students and teachers. The collaborative opportunities mean that students can begin the collaborative process in the classroom, and then continue that work outside of the classroom.”

Teacher

Durham Catholic DSB

Project Title	Online and Just-in-Time: Revolutionizing Descriptive Feedback and Student Organization
Brief Description	The inquiry will focus on using a blended learning model (D2L) and collaborative applications and software such as Sharepoint, Yammer, Lync, and One Note to improve student engagement and achievement in Grade 10 applied English classes (ENG 2P). The information gathered will be invaluable when those collaborative tools become available to teachers and students across our system.
Context	<i>Number of schools: 3</i> <i>Number of teachers: 3</i> <i>Number of students: 60</i> <i>Grades/Program: Three Grade 10 Applied level English (ENG 2P) classes</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Those involved in last year's <i>iPadegogy</i> pilot project found that there were problems with infrastructure. A Scoop.it site will be maintained to provide teachers with information on technology and pedagogy.
Goals & Priorities	<i>System Learning:</i> We will work closely with the Board's Technology Enhanced Learning Committee to develop a plan for scaling up best practices developed through our project. <i>Student Learning:</i> The blended learning model is also designed to enhance communication, both student to student, student to teacher, and teacher to teacher.
Role of Technology	The use of 1:1 laptops is an essential element in this project as many Applied level students require the use of a variety of tools to assist with their learning (typing for legibility, spell check, speech to text software, text speaking software). OneNote and other Cloud-based technologies are necessary as these students often have difficulty with organization and the transfer of materials from school to home and home to school.
Inquiry Question	If teachers and students use collaborative software in a blended learning environment will there be improvement in student engagement, organization, and achievement?
Indicators of Success	<ul style="list-style-type: none"> • Increased student engagement and achievement • Increased student and teacher collaboration • Improvement in student organizational skills • Effective use of descriptive feedback (student and teacher)

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Durham Catholic DSB)

Student and teacher surveys were conducted online using the Survey tool in D2L both before and at the conclusion of the project. Semi-structured interviews with students and teachers were conducted.

Student mid-term and course marks were compared. Historical achievement data was retrieved from the Board's Student Information System (Grade 6 EQAO results) in order to gauge student improvement.

Student "OneNote Binders" were evaluated in order to determine changes in student collaboration.

The use of 1:1 laptops improved student engagement as 80% of students reported that they enjoyed doing their schoolwork on the laptops.

100% of the teachers involved reported that their students were both more engaged and on task as a result of working with the laptops.

Cloud-based technology can potentially improve student learning as 86% of students believed that the ability to access their work using any device would improve their learning.

Successes, Challenges, and Unexpected Results

One unintended result was that our board made great progress in the area of both D2L and O365. We did not realize how much needed to be done to setup students to work in these environments.

We were not able to get the student laptops into the classrooms until May 2. This left little time to train the students and teachers and to work through technical difficulties.

At one of our high schools we encountered issues with firewalls, WiFi, and server login problems. All of the school encountered some issues around the creation of student emails.

We attempted to train the students and teachers at the same time using an outside company (Fair Chance). We found that the teachers were not able to focus on the training due to classroom management issues.

Sustainability

We have also started a pilot of O365 at all of our secondary schools during the 2014-2015 school year. Our CODE project was "a pilot of a pilot". All of the learning that took place informed our O365 rollout as we move forward. Durham CDSB is now moving toward a single sign-on process for the school network and the D2L platform.

We are piloting O365 at all of our secondary schools and will introduce it to our elementary schools in 2015-2016. Digital Citizenship and Literacy will be the focus of our safe schools week and all students in the system will complete lessons in this area.

(Durham Catholic DSB)

A key observation, likely to bear upon future decisions, is that the hardware needs to be flexible enough to accommodate the needs of the teachers/students and the features of the applications that are fundamental to the learning process. In this case a device that would allow both fluid typing and stylus entry would be beneficial.

Wireless infrastructure remains an area for further review. Sustaining a single device per student is being achieved. The challenge is to accommodate multiple devices per student in a BYOD and system provided technology environment. This is especially true as Cloud based technologies, including the ones being explored in this project, become more prevalent.

Refining the Process:

Durham District
School Board

Enabling Cloud Resources and Learning Opportunities through Microsoft O365, D2L and other District Resources

Central to our school board's Strategic Plan is a new vision for technology to engage all students –JK to Grade 12- at the point of learning and to expand learning beyond the walls of the classroom. As part of implementing the plan, staff and students are trained in digital citizenship and teachers are invited to take part in an aggressive training program after which they receive a laptop for instructional purposes. We are making infrastructure improvements such as investments in bandwidth, wireless technology in all learning spaces, and installation of digital projectors in all classrooms.

In previous pilots, we focussed on the use of Google applications for Cloud and the use of personal mobile devices. Highlights which informed our current Cloud pilot include: successful online collaboration for students and staff; enhanced student products; pre-population of online classroom environments to facilitate collaboration for all teachers and students; and seamless integration with our existing student information systems.

The rollout of 21st Century resources and tools requires a scalable, manageable, safe, and personalized portal so students can easily locate their learning files on any mobile device. To this end, we created the DDSB Mobile Campus portal and piloted a number of personal device and BYOD initiatives.

Using Mobile Campus as a launching pad, our Cloud pilot provides a scalable and automated, teacher and student-friendly interface that allows all students and staff to create, edit, modify, and collaborate on projects, using Microsoft O365 tools. We created a tool to link our Student Information System and Active Directory structure so students and teachers could share the Office365 environment while working within the safety of the DDSB Cloud.

Students and teachers can create and launch any Microsoft tool from the web regardless of what device they are using and save their work to the Campus Cloud. Students can access a teacher's folder that contains documents shared with them. And, they can share their work and collaborate with others.

We continue to provide opportunities for all students and staff to interact within the DDSB Mobile Campus environment and further build capacity by training all school leaders.

"Office 365 made it very easy for students to work on assignments at home and at school without the need to transfer files. The consistent environment between home and school makes working online really smooth for both students and teachers. The collaborative opportunities mean that students can begin the collaborative process in the classroom, and then continue that work outside of the classroom."

Teacher



The Mobile Campus portal provides teachers and students with a scalable, manageable, safe, and personalized environment.

Durham DSB

Project Title	DDSB Digital Campus: Enabling Cloud Resources and Learning Opportunities through Microsoft O365, D2L and other District Resources
Brief Description	The focus of this project is to document the operational and pedagogical steps necessary to enable a personalized cloud computing learning solution for students which will provide applications to promote peer collaboration, student voice, and multi-device access to shared learning resources and products.
Context	<i>Number of schools: 3</i> <i>Number of teachers: 5</i> <i>Number of students: 60</i> <i>Grades/Program: Initially Grades 9-12 (project is intended to expand to all schools and all students Grades 4-12)</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This plan required as part of its goal, the creation of an online collaborative environment for students. Past projects allowed our district to pilot a Google collaborative environment as well as an anytime, anywhere online web presence for students called the DDSB Mobile Campus.
Goals & Priorities	<i>System Learning:</i> This project is the culmination of a 2 year project to bring together our Student Information System, a robust and secure cloud solution for staff and students, and our online Learning Management and Resource applications.
Role of Technology	Tools include online collaboration areas offered through Microsoft Sharepoint & O365 as well as MSOffice Tools delivered to board owned student devices and through student BYOD devices. We will be using our DDSB Mobile Campus solution to direct and authenticate student access to D2L and other DDSB and OSAPAC resources.
Inquiry Question	Can a system which integrates our DDSB Student Information System, Microsoft O365, and D2L be implemented which will allow students and teachers an easy-to-access, anytime learning environment for collaborative document sharing and online tool use? Will such an environment provide students with opportunities to share documents with one another as well as with their teacher?
Indicators of Success	Quantitative evidence of success for this project will be a completed integration of our current "Mobile Campus" for students with a cloud based collaborative environment (MSO365) that is attached to D2L and other district learning resources. Organizational practices will include documentation of student, teacher, and central office staff use of cloud learning applications as well as accompanying professional development learning workshops and online learning tools.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Durham DSB)

Teacher survey and anecdotal interview – indicating teacher comfort in the cloud environment, perceptions of student comfort and confidence, description of cloud use, and anticipated academic outcomes for students.

Teachers & Administrators:

- Required minimal training to navigate the collaborative environment.
- Reported to prefer and were pleased to be delivered to a pre-created classroom space for collaboration of documents and media.

Student survey and observation – indicating student comfort in the cloud environment:

- Students reported and were observed to have little difficulty navigating an online collaborative space which was new to them. Student training was minimal and student surveys indicated students were using the product more frequently as the project progressed.
- Students and teachers are able to engage in live collaboration within shared documents.
- Students who worked together online benefited from the ‘anywhere’ and ‘anytime’ environment.

Central IT Staff and Programs Training Facilitators:

- Required the ability to readily be able to lock or unlock a student space when issues of safety were concerned.
- Required a method of viewing and retrieving student files when student safety or discipline warranted.
- Required an automated system to create and move accounts for all students which linked these cloud accounts to classrooms.

Successes, Challenges, and Unexpected Results

Observations of classrooms using the collaborative environment provided evidence of students who participated with classmates while absent from school. The ‘Mobile Campus’ environment provided teachers and students confidence that work that they completed at school or at home could be accessed whenever and wherever it was needed.

Parent Engagement workshops held by Programs Technology Staff consistently resulted in parent groups providing a feedback that they were greatly appreciative of the centralization of all student access through one ‘Mobile Campus’ online application

Sustainability*(Durham DSB)*

This experience has been an excellent example of how student and teacher needs can assist IT departments and Program Service Departments in working together to form a close and positive relationship. Training for this initiative was planned and coordinated through a steering committee of technology and curriculum facilitators.

This project has provided both a pedagogy-driven and technology-enabled scaled practice for the DDSB. All of our technology related training for teachers in the past year has been grounded in pedagogy first. By linking the project to our Board Improvement Plan, we were able to incorporate Numeracy and Inquiry Based Learning into our cloud training initiatives. This was especially topical for all of our schools and provided an authentic foundation for our training needs.

The architecture of the DDSB Mobile Campus provides links which can be added to, modified or removed depending on the needs of the district. By beginning with this architecture, we have been able to “build out” various applications and projects.

Technology and Pedagogy Tipping Point II:

Grand Erie
District School
Board

Achieving a Paradigm Shift that Transforms Teacher Practice

In 2010, the Grand Erie DSB began the implementation of one of the most extensive educational improvement strategies in its history. During the subsequent five years, the Educational Technology Initiative plan is to provide every classroom with a standard complement of technology equipment, specifically a new device for all classroom teachers, a mounted projector, a mounted projection surface, student devices (five at elementary, eight at secondary), and specialized software. Teachers receive 3.5 days release time for professional development as well as ongoing support given by the Information Technology Teacher Consultant and two itinerant support positions – one at elementary and one at secondary.

“Technology integration is a paradigm shift, and it’s huge. Honestly, ... that’s where we’re going to be in five years.”

Teacher

Currently, with extensive support from our school board researcher/MISA contact, we are undertaking a program evaluation of the Educational Technology Initiative, based on the overall question: Has the Ed Tech Initiative made a difference for students in Grand Erie? We are collecting qualitative data from teachers through anecdotal notes compiled by the itinerant teachers, as well as through semi-structured interviews with our researcher.

“Students who use assistive technology worry about the social stigma, but... with the equipment, they become a leader in the classroom.”

Teacher

Using resources provided through the 21st Century Innovation Research Initiative, we purchased two online data collection tools that we are using at the school level to determine the overall school climate with respect to technology integration, and for teachers to self-identify their current placement on the continuum of technology integration.

An exciting aspect of our innovation project revolves around our second Student Forum. On May 15, 2014, students and educators gathered to participate in an interactive technology forum during which they shared ideas and student voice was heard.

We look forward to continuing with this exciting work and with sharing our findings as they evolve.

“Knowledge is power. With everything available at someone’s fingertips, there is no longer an excuse not to learn about the topic that interests you.”

Student



Student Forum: Students and teachers share ideas for an ideal classroom environment

Grand Erie DSB

Project Title	Technology and Pedagogy Tipping Point II: Achieving a Paradigm Shift that Transforms Teacher Practice
Brief Description	We expect it to yield key formative and summative information about implementation and impact that will be used to focus the direction of the Educational Technology Initiative going forward. Through this investigation we will have the evidence we need to make strategic decisions regarding the focus of support and scarce resources to sustain the Initiative system-wide into the future. The process of involving teachers, principals, and support staff in this research will deepen understanding of technology integration while building capacity among instructional leaders to support teachers.
Context	<i>Number of schools: 75 Number of teachers: 1800 Number of students: 27 000 Grades/Program: Grades K-12</i>
Area(s) of Impact	Organizational Practices Teachers, Students, Leaders
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s) Investigates new area of focus based on learning from previous project(s)</i> This research builds on last year's pilot expanding the evaluation research to involve the entire system.
Goals & Priorities	<i>System Learning:</i> Through this investigation we will have the evidence we need to make strategic decisions regarding the focus of support and scarce resources to sustain the Initiative system-wide into the future. <i>Student Learning:</i> <i>Grand Erie Educational Technology Initiative Evaluation Framework</i> has specific constructs for intended areas of impact.
Role of Technology	Dell Venue Tablets are the devices our teachers and students are using in phase 4 of the Initiative. Through this project we can subsidize the acquisition of these devices and appropriate applications for instructional leaders in order to work with and support teachers and students.
Inquiry Question	How do systems move beyond embedding technology in classrooms to transforming the teaching and learning environment for 21st Century learners? How do teachers use technology to enrich learning? How is technology making a difference in students' daily learning?
Indicators of Success	Four <i>constructs</i> were selected to be measured in order to answer our inquiry questions: 1. Teachers try new ways to integrate technology. 2. Technology is seamlessly integrated and transforms practice. 3. Students are guided to use technology in a variety of ways to enhance learning. 4. Students are provided with different ways to demonstrate their learning using technology.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Grand Erie DSB)

Construct 1. Teachers try new ways to integrate technology

Findings from our Technology Uses and Perceptions Survey reveal that most teachers have very positive views of the value of technology in education with 87% agreeing or strongly agreeing that they would like every student in their classes to have access to a digital device. 79% believe that technology skills are essential to their students' success in school and 92% believe that technology skills are essential to their students' future success in the workplace.

Construct 2. Technology is seamlessly integrated and transforms practice

Semi-structured interviews were conducted with 15 teachers across the system with representation from elementary, secondary, rural, urban, and various subject areas. When asked what they needed from the Ed Tech Initiative going forward, most teachers stated that they did not want more technology. They wanted to focus on learning to use what they have really well. They want to see Ed Tech paired with curriculum and supported by all other program areas so that they have opportunities to see how technology can be used across initiatives and strategies. They are asking for consistency in professional development and support such that everything provided by the system is done through a technological lens.

Not surprisingly, many teachers identified weaknesses in infrastructure that affect classrooms and they suggest that future funding address those issues before investing in more classroom technology. They also identified an issue that we did not anticipate: that students lack the technology skills they need in order to participate fully in learning because, although we think of them as "digital natives", they lack fundamental word processing, research, and spreadsheet skills.

Construct 3. Students are guided to use technology in a variety of ways to enhance learning

The distribution of observations confirms what Ed Tech staff observed: that the level of integration varies widely between classrooms but that, for the most part, progress toward integration is being made. We believe we are well positioned to switch gears in year 6 to focus on integration in more detail and with relevance to individuals.

Construct 4. Students are provided with different ways to demonstrate their learning using technology

We invited teachers, administrators, and students from each school to spend a day to explore their ideal learning environment and how technology affects their learning. We have not finished the content analysis of the video footage but will be using that for our year 6 planning in December and January.

Successes, Challenges, and Unexpected Results

(Grand Erie DSB)

Teacher interviews regarding the professional development model used for current year participants revealed that many teachers found professional development overwhelming due to the volume of information shared with them. Even though the learning was spaced out across the year in 4 separate sessions, many teachers felt that they did not have the capacity to implement in their classrooms what they had learned.

Meeting with the Student Senate (student leaders from all high schools) told us that students want to be involved in professional development with teachers so they can learn alongside teachers and help share new knowledge about technology integration with other students and teachers in their schools. This finding will inform the professional development model for the 2015-2016 infusion.

Sustainability

Our innovation project will be maintained and expanded to collect further information from stakeholders in Grand Erie as we continue to develop our plans for the future Ed Tech rollout. We intend to use the themes identified through teacher interviews conducted by our board researcher to develop a questionnaire to be completed by all Grand Erie teachers. The results of this questionnaire will help us determine whether the information collected from our sample teacher group is representative of the needs and goals of all teachers in Grand Erie. Again, this will help inform our future PD plans.

We now intend to develop a PD model that is school-centered and makes use of the influentials that exist within Grand Erie. Tapping into the expertise within each school will help us scale up. Providing options for school-based PD will allow schools to take more ownership and move forward with technology integration.

Based on our feedback from students, we understand it is vital to hear their voices. We now intend to directly involve them in PD going forward. We are considering a model where students participate in Ed Tech PD and then return to their schools to share with staff and students at school-based PD alongside the school lead tech innovators.

The Role of Formal and Informal Leadership as it Pertains to Technology Integration

Greater Essex
County District
School Board

We continue our work from previous projects in exploring the role of formal and informal leadership on the use of technology in our classrooms. Our commitment to this work is ongoing and will continue beyond the scope of this project. For example, the learning from the “Student Leadership” element of this project in terms of the value of student voice is mirrored in the work of our provincial “Student Work Study” research.

“This project empowered many of our students and gave them a sense of accountability and responsibility. ...they appreciated the opportunity to be heard and have their thoughts and ideas respected and considered.”

We conducted a technology review, using the SAMR model as a guide, for the purpose of identifying more specifically how and where technology is being used, and the extent to which technology is impacting the instructional core and changing the task students are being asked to do.



Teacher and students engaged in technology-assisted learning

“Students are looking forward to more opportunities to take on the leadership role and some even mentioned that they would like to ‘recruit’ other members to join the team.”

We developed a model of professional learning that puts schools in charge of what they are learning, and when and how they engage in this learning. Schools are in charge of their own release time and undertake work to support their SIPSA. Many schools have included an element of technology use in their school improvement work, and we used funds from this current 21st Century innovation project for those schools to further explore this. We have seen an increase of over 60% in the number of schools considering the use of technology to address the student learning needs in their school. We offered a variety of summer learning opportunities for our staff to support learning around technology and 21st Century learning.



Working collaboratively on an inquiry-based task

The use of technology has grown exponentially in our schools, and the spread is such that the support can no longer fall on only one person at the central office level. Everyone supporting learning in the schools needs a chance to incorporate and lead using technology. To that end, we offer access to some of the funding for teachers in the program department to assist in their ongoing projects.

We continue to work on knowledge mobilization and distributing leadership in technology, to achieve greater depth and spread throughout our system.

Greater Essex DSB

Project Title	The Role of Formal and Informal Leadership as it Pertains to Technology Integration
Brief Description	We will continue to explore the role of the school administrator in leading the effective use of technology in their buildings, as well as the impact of networked learning for administrators. We will support administrators with their monitoring practice, and how technology can support their pedagogical documentation. We have identified other system leaders who we did not activate during the first round of the project, including program consultants and secondary department heads.
Context	<i>Number of schools: 78</i> <i>Number of teachers: 35 (78 administrators)</i> <i>Number of students: 1000</i> <i>Grades/Program: K-12, all programs</i>
Area(s) of Impact	Leaders
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The project takes the work and learning from the last project to go deeper while also broadening the scope of our work across the system.
Goals & Priorities	<i>System Learning:</i> We primarily deal with the concepts of “learning” and “leadership”, transferable and sustainable skills that are the foundation of any significant change in practice and thinking. <i>Student Learning:</i> We believe that increasing teacher/leader efficacy in the use of technology to support learning will lead to positive changes in practice. We believe that when students have a role in leading learning in their schools, they are more engaged and invested in the outcomes.
Role of Technology	Technology used will include mobile technologies such as iPads and Windows laptops and desktop technologies. Digital resources will include online platforms to store and share documentation as well as platforms to provide digital resources and online learning experiences to adults and children in the system.
Inquiry Question	How does increasing the capacity of formal and 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?
Indicators of Success	Areas that focus on leadership capacity will use pre- and post- surveys and interviews to gather information on the impact of increased efficacy on practice and action. Areas that focus on students and student leadership will use data generated through surveys, interviews, conversations, observations and formal assessments, and report card data. The timeline of this phase of the work is somewhat prohibitive to connecting precise causal relationships to student outcomes.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Greater Essex DSB)

With the large number of strands to this project, there are a variety of approaches to gathering evidence and data. Looking more broadly at the project, we are concerned with the impact and effect of distributing leadership on the spread of programs and practices, the efficacy of teachers and leaders, and the role of the student. Each project can be linked to one of these big ideas in some way.

Our direct method of data collection has included a number of pre- and post-surveys to capture voice and beliefs, and to measure the change in these. We are using models such as SAMR to classify our classrooms and use this information to identify trends and necessary supports. We are exploring ways to look at learning in a qualitative manner through the documentation of learning and outcomes.

CIESC/Principal Session

The use of technology to support specific student learning needs, as identified in the School Improvement Plan for Student Achievement and Well-Being, has grown significantly.

Administrators have been asked to engage in this conversation with their staff to determine what the most appropriate purchase and use of technology would be aligned to their vision for learning in their school. In our previous model where there was central ownership of this decision, not surprisingly there was less investment in the use and deployment of the technology. By shifting this ownership to the school level, we expect to continue to see the trend of schools planning for the use of technology in their SIPSA to continue.

... an ongoing dialogue exists, including teachers, administrators, and students, that is changing the nature of learning in the classroom to include refined and specific uses of technology to support teaching and learning.

Student Leadership Project

Perhaps the most significant piece of learning or acceptance that this project led to is the realization that our students are the single most under-utilized resource for technology support. The lack of pedagogical or curriculum background brought to the project by the students ended up being insignificant compared to their ability to articulate how they learn outside of school. Working with students to understand how they learn is now arguably more important than what they learn, and this appreciation for the dynamism of the world around us led to more sustained changes in teacher practice than we have experienced through other forms of learning.

Students in this project were impacted in two ways. Firstly, the use of technology to support learning in the classroom increased. That this was linked explicitly to how students articulated their learning preferences was an additional success. Secondly, the experience of having an authentic and powerful voice in the schools learning structures, and having a role in adult learning, changed the way students saw themselves in the school and the way their voice was received by the adults. This has significant impact on school climate, belonging, and community.

Student Email/Technology Support Coach

(Greater Essex DSB)

[An instructional technologies coach] has supported school administrators with creating a web presence in all school communities, which has included not only the use of our board platforms but in some cases elements of social media.

A weakness was observed in the way we deal with digital citizenship and teaching students to be digitally responsible citizens. As a board we reviewed and revised our policies over the last year, including the perspective of this coach, to a more comprehensive overview of digital responsibility for staff and students.

Empowering Formal Leaders

There is clear evidence that teachers and leaders see a role for technology in student assessment, and it is beginning to emerge as to what this might be. These projects touched on the way that technology use can enable differentiated assessment, enable teachers and students to focus on readiness for assessment, and to highlight the need for triangulated assessments.

Educator Professional Learning Opportunities

For sustained change in pedagogy to occur, the learning needs to be ongoing and supported. A teacher simply does not make sustained changes to practice through a workshop alone. However, a workshop can be a catalyst and inspiration to change, and often result in the teacher trying one thing differently the next day, which snowballs into more profound changes...so we continue to provide them but with plans for follow-up, integration, and future supports.

6 C's Inquiry

This is a project founded in the work of Michael Fullan and linked to presentations at the Ontario Education Research Symposium in 2014, where OECD's Francesco Avvisati addressed the "6 C's" by having students create and develop projects based on their community. We have set up a group of teachers who are devoting one hour per week of class time to 'making something in the community better'.

Students are engaged in an inquiry-based, problem-solving model of learning about and impacting a social issue of relevance to them.

Successes, Challenges, and Unexpected Results

One of the parts of this work that we take pride in is the fact that this funding was used to accelerate existing priorities. The challenge we anticipated was creating unsustainable structures and a series of events, rather than being able to impact the long-term, ongoing learning in our system.

(Greater Essex DSB)

Within the Student Leadership Project, and in fact within any project that used an iPad, we were severely challenged at the support and organizational level. These devices are horrific to manage and support, including the updating process and installation of software within the Volume Purchasing Plan. Our IT support is stretched beyond capacity supporting the use of these devices, and coupled with the rate at which use is growing, we are about to reach our breaking point. We have developed partnerships with Apple and processes and system to manage this technology, but quite simply they have not properly considered the education market on a large-scale.

Sustainability

This direction and focus on leadership, both formal and informal, as the key to sustained change and growth, has been part of our philosophy from the outset. Our BIPSA-WB clearly identifies the need to engage and empower educators, students and communities, and this work links directly. As such, we will continue all elements of this work, both funded internally or linked to existing structures. For example, the student leadership project we developed is powerful and impacts teachers and student profoundly. We will continue to offer this model, but are also challenging schools to look at student voice differently and include it in their own structures.

Everything we did was with an eye for scaling and sustainability. If there was something that could not be moved to system scale, or was not sustainable outside of pilot funding, we did not pursue it.

Professional Learning Design:

A Mechanism for Growing 21st Century Teaching and Learning

Halton Catholic
District
School Board



Sharing learning and expertise

While our board has been engaged in identifying and implementing 21st Century outcomes for a few years, we have yet to move beyond pockets of excellence into systematic implementation. The question we needed to answer was: How can we design a professional learning model to grow quality 21st teaching and learning throughout our system? We developed a theory of action and a professional learning plan to address this question and guide our work.

We invited teachers to develop and submit proposals to their school leaders and then to the school board team. The team analyzed the proposals based on the project criteria and then engaged seven school-based project teams in collaborative inquiry. Each team developed a challenge, an inquiry question, a theory of action, and a professional learning plan connected to criteria that met our overarching school board inquiry question. Teams met independently to engage in their inquiry and, in some cases, were supported by board staff and school leaders. Teams met with one another and the school board leads at several points throughout the process to refine their plans, analyze their evidence, share their findings, and identify next steps.

A preliminary examination of our evidence shows that our version of collaborative inquiry resulted in quality professional learning. For example, the majority of respondents to our participant survey strongly agreed that a supportive professional learning community was achieved during the project, the professional learning was relevant and balanced, and that the facilitators were supportive of their work. However, they also noted that they wanted more opportunities to share their learning with other teachers at their schools.

As a result, we will provide teams with opportunities to share their learning with their schools; connect to other projects and collaborative inquiry projects within the school board; and invite and encourage all school leaders to attend and discuss with their system leadership team.

"I used to think I had to be the expert in front of my students. Now I think 'the smartest person in the room' is the room."

Teacher



Putting the pieces of the plan together through Collaborative Inquiry

Halton Catholic DSB

Project Title	Professional Learning Design: A Mechanism for Growing 21st Century Teaching and Learning
Brief Description	We are supporting 7 collaborative inquiry projects. We are curious about how a professional learning model characterized by quality, facilitated, and collaborative learning can best support students and teachers in demonstrating the 21st Century outcomes outlined in the HCDSB 21st Century teaching and learning Blueprint. Each approved project will provide evidence of best practices of students' learning and demonstrating the board's 21st Century outcomes. The evidence from these projects will be used to create critical mass for supporting system change.
Context	<i>Number of schools: 7 Number of teachers: 29 Number of students: 600 Grades/Program: K-12</i>
Area(s) of Impact	Teachers Organizational Practices
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> The teachers involved in Round 2 recognized that they had more learning to do about blended learning and its impact on student learning. We learned that the participants needed to formulate their own inquiry questions to feel ownership of their learning.
Goals & Priorities	<i>System Learning:</i> We have developed a working Theory of Action for the project that outlines some of our thinking about how the project will contribute to system learning, scaling up, and sustainability.
Role of Technology	Project teams were asked to identify which technology would best support them in pursuing their inquiry questions and facilitating student learning. The funds used to purchase the technology could be no more than 1/3 of their professional learning budget.
Inquiry Question	How can we design a professional learning model to grow quality 21st teaching and learning throughout our system?
Indicators of Success	Success of the project will be measured using the following short-term outcomes/success indicators: <ul style="list-style-type: none"> • <i>Interest from our staff</i> • <i>Participation from our staff</i> – e.g., attendance records, meeting logs • <i>Teachers' perceptions</i> about 21st Century educational practices and about using the Collaborative inquiry method as a professional learning model • <i>Students' perceptions</i>

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Halton Catholic DSB)

The teacher survey provided direct evidence of how participating in a collaborative inquiry project influenced professional growth.

Project participants reported high degrees of satisfaction with this learning model. Each individual team submitted logs and reports indicating that they used their time effectively to support their learning goals. As for teacher perceptions captured in the survey, teachers reported moderate improvements in the areas of knowledge and use of teaching practices, technology, and the HCDSB 21st Century outcomes. They strongly agreed that the project achieved a supportive professional learning community. They collaborated and shared new ideas and practices as well as a commitment to improve strategies and learning process to a great extent. They also strongly agreed with the statement that the new knowledge and skills that they learned during the collaborative inquiry process are useful to their teaching practice.

Most teachers reported improvements in student learning, independence, and engagement.

Successes, Challenges, and Unexpected Results

We planned a showcase that would allow project leads to share their learning with school and system leaders at a face-to-face session October 8th, 2014. In addition to the 7 CODE project team leads we had 8 additional project leads present their learning. All projects addressed the board's 21st Century outcomes. We also provided additional release days to each project school to allow them to continue to collaborate and expand the learning within their schools.

Our short timelines for the project resulted in unexpected successes in the speed and depth of the change in teacher practice. Some teachers were initially skeptical that change could be achieved in such a short time, but in June 2014 many teachers reported that the short timelines resulted in increased intensity of focus on the team's learning goals and on their willingness to make changes to their instruction.

Our short timelines also presented us with challenges. Because project teams identified their own technology to support their learning, ordering and providing it took longer than expected.

Sustainability*(Halton Catholic DSB)*

This project has given the board an opportunity to identify a core group of teachers who are doing innovative work and who are able to direct their own professional learning. We have been able to connect the initial group to other teachers in the board doing similar work. Due to changes in staffing we have been able to expand the project into two new schools this September. It has led to a renewed interest in and understanding of the board's 21st Century learning outcomes and has become a key part of planning to meet the HCDSB's 21st Century Blueprint goals.

The project has also provided us with evidence to define our next steps. For example, the 21st Century showcase for administrators was an event that resulted from the survey data collected and because the administrators themselves were looking for a deeper understanding of what the work could look like. The individual school's presentations have provided us with powerful examples so that people can see the work and learning in action. We are currently looking to redesign our web presence for the 21st Century outcomes and framework to include the examples and research results to make them public for every educator in the board.

Scaling Up, Skilling Up

Halton District
School Board

We believe that 21st Century classrooms must reflect a 21st Century world infused with web-based technology. As browsers perform low-level tasks such as finding, recalling, and computing, students must have opportunities to practise higher-order skills: creativity/innovation, critical thinking, problem solving, decision making, collaboration, communication, information fluency, and digital citizenship.

There are different contexts within the schools with regard to classroom technology and teacher capacity (e.g., different devices and software, varying instructional methods to engage, differentiate, and help students with technology).

"I really liked the online brainstorming and it made us think more about what we wanted to share."

Student

21st Century learning in the classroom is certainly driven by effective pedagogy, but it also highly dependent on systemic technology infrastructure and change. Several major aspects of scaling up includes ensuring stable, adequate, annual funding for classroom technology, staff learning, ICT coaches, and additional funding for needier schools. This scaling up of our technology infrastructure provides an accessible, equitable ICT "base layer" for students and staff.

"The 'transformation' phase (SAMR model) now has a name in my practice! More than ever, I consciously strive to redefine learning in my inquiry classroom. I am so eager to explore new ways to achieve this with ICT in an FSL environment."

Teacher

Our focus is on Cloud devices and supporting personal technology. Systemic adoption of Google Apps for Education (Halton Cloud) provides a wide range of collaborative, creative, and analytical tools for all students and staff regardless of device, operating system, and location. We adopted a "Bring I.T." (BYOD) approach that augments our infrastructure and works well with the Cloud approach.

We are expanding professional capacity with 21st Century learning, subject-based learning through technology in a variety of modalities including formal collaborative teacher inquiry (co-plan, co-teach/observe, co-reflect), informal inquiry (co-plan, co-reflect) and a variety of other professional learning sessions. Finally, a partnership with IT staff, system leaders and teachers provides opportunities to strategize, plan, enable, and monitor change.

"Students became more engaged with the use of technology in the classroom. They can visibly see and hear their thinking and can critically reflect on they're learning. Students no longer have to remember what they said it can be recorded and reviewed for seamless learning and development of thinking progression. Students enjoy and look forward to using assistive technology and push their learning by seeing what they have accomplished."

Teacher

Halton DSB

Project Title	Scaling Up, Skilling Up
Brief Description	We have moved past the early adopters of both BYOD (Bring I.T.) and the use of cloud-based learning environments and are approaching a systemic scope for the learning that these strategies enable. Since 2011-2012 we have grown our use of Halton's (Google) Cloud for Learning from 33 pilot schools, 60 teachers, and approximately 2000 students to making the system available to the entire district. One of the goals of this work is to broaden and deepen this type of learning from classroom pockets, to entire schools, to the entire system. The focus will be on enhancing classroom learning through cloud-based environments and technologies.
Context	<i>Number of schools: 80 Number of teachers: 300 Number of students: 7000 Grades/Program: K-12</i>
Area(s) of Impact	Organizational Practices Students, Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> We are approaching a systemic scope of adoption (late majority and late adopters) in the cloud, and the early majority with Bring I.T. We have the positive impact of making higher-order, 21st Century skills a focus for learning.
Goals & Priorities	<i>System Learning:</i> Bring I.T. complements board-provided technology in schools. BYOD is highly scalable because students acquire, manage, and learn how to use their own technology, thus allowing teachers to focus more on learning and less on management. The Halton Cloud (GAfE) has become a major driver of sustainable, equitable, and robust use of classroom ICT in the first year of implementation post-pilot. <i>Student Learning:</i> Strategies and resources from the most successful inquiries can be shared and scaled across the system, to maximize the impact on student high order thinking and 21st Century Skills Development.
Role of Technology	The technology is absolutely essential to leverage the cloud-based environment and provide opportunities for collaboration, critical thinking, problem-solving, and creation, as well as development of digital citizenship and research fluency skills.
Inquiry Question	Samples of school-based inquiry questions: <i>How can we provide opportunities for student voice through the use of tools in the cloud? How can we use digital portfolios to monitor student accountability for their own learning? What impact will technology have on improving student ability to communicate thinking within the problem solving process?</i>
Indicators of Success	Significant student use of 21st Century skills in the classroom. Increased teacher capacity to provide meaningful opportunities for students to apply 21st Century skills. Tracking the use of Google Docs for education. The number of non-board owned devices on the network. Achieving the goal of 9% of home rooms being Bring I.T. classrooms.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Halton DSB)

Each of the 10 groups participating in the collaborative teacher inquiries completed a self-reflection of teacher practice and classroom observation of student outcomes survey for every day that they participated. Each survey included questions tailored to that group's inquiry question as well as questions related to common outcomes across all groups. The common outcomes are related to the 21st Century skills in our overall goal. The results from the surveys inform us of the progress of each inquiry and achievement of the outcomes overall.

Formal collaborative teacher inquiry, involving the complete cycle of co-learn, co-plan, co-teach, co-observe, and co-reflect (repeat!) is a powerful model for lasting change in teacher practice and student achievement. A balance of teachers from different divisions reported:

- significant quality and quantity of teacher learning during inquiry
- significant change in classroom practice (even on non-inquiry days when back in their classrooms)

Throughout the initiative, teachers also completed exit surveys and gathered artefacts and student samples for each individual collaborative inquiry based on specific inquiry focus questions. Overall, the vast majority of teachers reported a significant or very significant impact on student learning from this initiative.

Student engagement was the most significant outcome observed by teachers through the use of technology. Achievement and learning outcomes also were noticed but intellectual and academic engagement was most positively affected.

Throughout this initiative, a range of learning modalities were selected and adapted based on the situation, and are listed below in order from most resource intensive (with a narrow/deep impact) to less resource intensive (with a shallow/widespread impact).

- Formal Teacher Collaborative Inquiry - This intensive learning model has the strongest effect on teacher impact. Small groups of teachers co-learning, co-planning, co-teaching, co-observing, and co-reflecting on student work (full day), repeated 4-5 times at different schools over a 2-3 month period.
- Informal Teacher Inquiry - Small groups of teachers (2-10) from schools co-learning (highly differentiated with on-the-fly choice in learning topic during the sessions), co-planning, and then returning 3-4 weeks later after implementing ICT classroom practices.
- After-School Sessions - Groups of approximately 20 teachers with no formal affiliation exploring and practicing the use of ICT strategies (e.g., cloud collaboration) with each other in a traditional, one hour after-school session.
- Symposia - Separate summer and weekend conferences have been held and planned for hundreds of staff to spend a full day interacting with colleagues across the board.

Successes, Challenges, and Unexpected Results

Formal Teacher Collaborative inquiry transforms practice across schools and had similar effectiveness for adding value to the staff learning in terms of cross-subject and cross-grade groupings.

Another unanticipated result of our process was the realization of the time and iteration required to take teachers from a focus on low-level technology operations to move to pedagogy, then to higher-order thinking in students. For example, the learning focus in one inquiry shifted throughout each session between each of the following aspects:

- Research into the characteristics of effective flipped classrooms.
- Helping students develop criteria for effective blended resources for learning.
- Effective curation and use of blended/flipped resources by students for learning.
- Pursuing deeper inquiry and 21st Century skills in the time saved by using the flipped approach.

Sustainability

Staff learning funds are being continually allocated from board budgets to continue both formal and informal ICT staff learning. After-school sessions and Symposia continue to be held to augment and complement the deeper staff learning models described in this initiative. They also build capacity in leading learning. System and school PD days also provide many opportunities for staff to engage in learning around ICT in the classroom.

Scalability approach is illustrated by the adoption curve, where over 60% of staff and students have adopted this technology in the first 18 months of adoption. Further, daily use (i.e., full adopters) has climbed from just under 10,000 users to 14,000 users, an increase of 40%, in the first two months of this school year alone.

A range of factors drive this scalability:

- Pedagogy - Cloud approaches naturally incorporate and impact powerful 21st Century pedagogies such as collaboration, creativity and critical thinking, research and information fluency, digital citizenship and more, thus inviting and rapidly including teachers and students to explore the potential of its use on teaching and learning, formative assessment and timely descriptive feedback.
- Ease-of-use, web-based applications including Google Apps for Education are simple-to-use and provide a unified interface (and common login) across multiple tools such as writing, drawing, spreadsheet, presentation, video editing, blogging, web site creation and much more, thus allowing for rapid adoption and scaling.
- Access - the availability of cloud tools on a vast range of operating systems, devices and technology platforms yields an incredible power of scaling, not only to all board technology but virtually any student-owned, teacher-owned or home-based device.
- Open policies - the GAfE legal agreement which was amended with the assistance from the Ministry of Education, overcomes the concerns with using cloud based services. We see GAfE as a secure information repository.
- Critical mass - with any technology adoption, growth is highly dependent on adoption. GAfE's high adoption rate, has created an environment of community support and expectation that it will be used. Users must access GAfE in order to access content created by other users.
- Wireless network access has been provided in every instructional area of all schools to support the use of cloud technology and student personal devices (as of June, 2014).
- A migration plan for all staff and students in terms of email and communication/collaboration systems toward cloud services will align the in-class efforts.

Bring Your Own Device (BYOD):

Supporting the Development of the Learning Commons

Hamilton-
Wentworth
Catholic District
School Board

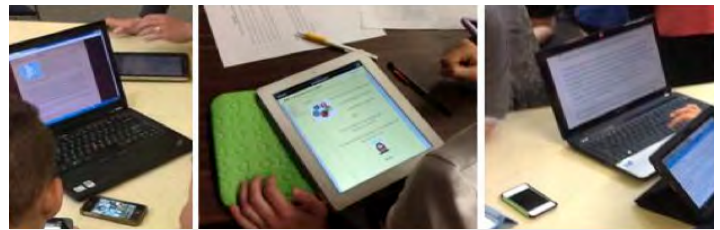
We recognize the numerous possibilities technology offers students and see technology as a key tool for learning, engaging students, and providing them with immediate access to information; as a means to make their thinking and learning visible; as a vehicle to collaborate with others, and as a means to build skills necessary for future success in an ever-changing world.

Over the past two years, our school board has been involved in an exciting 21st Century innovation research project designed to explore how the introduction of a Bring Your Own Device (BYOD) environment can support the transition of traditional school library resource centres to a Learning Commons in which students and educators experience learning beyond the walls of the school. This year, we expanded our project to include all remaining elementary schools (38 in total). Each school received a BYOD in a Box – iPad Minis for the Learning Commons Kit. We provided school teams with a half day of professional learning that focused on familiarity with the mobile devices, digital citizenship, and BYOD.

Based on our previous findings of challenges to the growth of BYOD in schools and the development of a school-wide Catholic Learning Commons, we modified the project plan to include the formation of a Grades 1 to 8 Digital Citizenship Lesson Writing team to help build digital citizenship awareness and promote the co-construction of success criteria for the safe, responsible, and appropriate use of technology. In addition, we developed suggested steps for establishing BYOD learning environments in schools, and we provided intensive professional development for teacher-librarians on the school board's Guiding Principles for Catholic School Learning Commons. We encouraged collaboration with resources by teacher-librarians being available to have a presence within classroom virtual learning environments (LMS) to support classroom teachers, and we offered professional learning opportunities to support school-based collaborative inquiries.



Promoting and fostering the integration of technology to enhance student engagement



Providing an open, flexible, and welcoming learning environment

Through this project, our school board is refining its vision of a Catholic School Learning Commons, is fuelling the development of essential learning partnerships within schools, is increasing teacher comfort with technology, is providing new learning experiences and opportunities for our students, and is engaging our students in showcasing and extending their learning beyond the walls of the school.

Hamilton Wentworth Catholic DSB

Project Title	Bring Your Own Device (BYOD): Supporting the Development of the Learning Commons
Brief Description	Teacher Librarians at each Secondary school will work with classroom teachers to develop concepts of digital citizenship as we continue to move towards a Bring Your Own Device (BYOD) environment that supports student inquiry, engagement, and achievement. This year's Innovation Research will allow for a K-12 development of the Catholic Learning Commons in elementary schools and assist in the growth of a BYOD environment across the board.
Context	<i>Number of schools: 48 All elementary schools</i> <i>Number of teachers: 388</i> <i>Number of students: 9025</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The project will be a direct extension of the 2012-2013 project by expanding to include all remaining elementary schools to have access to iPads for students, appropriate WiFi connection, and the training and ability to develop a BYOD environment.
Goals & Priorities	<i>System Learning:</i> Allow for development of the Catholic Learning Commons and assist in the growth of a BYOD environment across the board. The development of digital citizenship concepts will help students become discerning readers of information readily accessible via the internet; reflective, creative and holistic thinkers; effective communicators; caring family members within world-wide family; and effective collaborators.
Role of Technology	WiFi connections allow for mobile Internet access, as well as, the use of personal devices to support teaching and learning. Board issued iPads, laptop computers and desktop computers, interactive white boards, LCD projectors, and related accessories help provide equitable access to web-based learning resources. Technology brought to school by students (BYOD)) helps students learn to understand how such devices can be used to support learning.
Inquiry Question	How can the introduction of BYOD environment support the transition to a school Learning Commons in which students and educators experience learning beyond the walls of the school? How will a focus on inquiry-based learning and skill development support the transition to a school Learning Commons in which students and educators experience learning beyond the walls of the school?
Indicators of Success	Noticeable shifts from the teacher-librarian (T-L) directing information seeking to the T-L facilitating individual and collective knowledge creation. Noticeable shifts of the Learning Commons to a networked and global learning environment that facilitates collaborative learning.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Hamilton Wentworth Catholic DSB)

The introduction of a Bring Your Own Device (BYOD) environment supported the transition of traditional school Library Resource Centres to a school Learning Commons in which students and educators experience learning beyond the walls of the school. In addition, the focus on inquiry-based learning and inquiry skill development and the resulting innovative use of technology in schools also supported this transition.

Teacher-Librarian survey results showed that respondents found the introduction of a BYOD environment, augmented with the provision of the BYOD in Box Kit, to be effective or very effective in transitioning the school Library to a School Learning Commons. In addition, it provided students with the opportunity to better understand how technology can be used to support their learning, and to become critical analyzers of information, collaborative contributors to the learning process, effective communicators, and self-directed learners.

A focus on inquiry, and resulting innovative integration of technology into teaching and learning, led to increased collaboration between Teacher-Librarians and classroom teachers as evidenced by comments made by project participants. In addition, survey results indicate that Teacher-Librarians engaged in co-planning and co-teaching throughout the project. They co-planned and co-taught inquiry based lessons, collaborated in the exploration of BYOD and Digital Citizenship concepts. The focus on inquiry led to the redesign of student activities to allow students to explore topics of interest to them and develop the skills necessary to become discerning consumers and ethical creators of knowledge.

A focus on inquiry-based learning and inquiry skill development in schools, along with the introduction of BYOD within HWCDSB has facilitated the formation of learning networks through which students and teachers work effectively as interdependent team members to extend learning beyond the walls of the school by providing students access to learning activities and resources 24/7.

Teacher participants shared that their involvement in this project has led to the increased use of technology in the classroom, to new ideas for program delivery, to alternative assessment methods, and to additional ideas for differentiated instruction. Participants noted increased student engagement and achievement.

Successes, Challenges, and Unexpected Results

In trying to assess how the introduction of a BYOD environment and a focus on inquiry-based learning and inquiry skill development in schools supported schools in transitioning from a traditional school library to a school learning commons, it became apparent that we needed to develop a common understanding of the characteristics of the Learning Commons within HWCDSB.

Much learning was gained in regards to the setup and management of iPad minis designated for shared student use. The establishment of a school iPad Management team, the creation of a device restrictions

profile, and the need to provide central messaging regarding the storage, upkeep, and maintenance of devices to schools emerged as lessons learned through this project.

Initial school team in-services, brought to light various concerns teachers had regarding establishing BYOD classroom learning environments. Commons concerns included inappropriate use of devices by students, theft, and teacher responsibility for student devices. To address these concerns, schools were informed of the HWCDSB mobile device policy and were provided suggested steps for launching BYOD in classrooms. This led to the establishment of a Digital Citizenship Writing Team.

The increased number of personal devices in schools, the provision of pervasive WiFi in secondary schools and the opening of student access YouTube strained available bandwidth. In response, schools practiced patience, identified off-peak times to conduct certain activities, and allowed for additional time for completion of given activities.

The demand for technology related professional development exceeding available supports was also an issue. Limited human resources and supply teacher availability impacted the number of opportunities available for LMS training, the ability to run workshops to support the integration of technology into teaching and learning, and support co-planning and co-teaching. In response, technology updates were provided during Elementary Curriculum Team meetings

Sustainability

Five main aspects of the HWCDSB innovation project will continue to be a focus of technology and digital learning during the 2014-2015 school year:

- The characteristics of a Catholic School Learning Commons developed and adopted as Guiding Principles within the research initiative will be examined for revision and adoption as a board wide vision of a Catholic School Learning Commons.
- The Digital Citizenship Framework for Grade 1 through Grade 8 and corresponding lesson plans will be revised, and shared via a web-based solution with all elementary administrators and educators. In addition, efforts are being made to expand Digital Citizenship Instruction to Secondary.
- The establishment of BYOD learning environments in schools will continue to be encouraged and supported.
- In response to the Principles of Learning Commons Implementation Analysis Survey completed by Teacher-Librarians and the Cultivating Instructional Design to Promote Inquiry completed by School Principals in November 2014, professional development focused on the creation of virtual learning spaces, innovative integration of technology, inquiry, and co-planning and co-teaching will continue to be provided for all elementary Teacher-Librarians to support the continued transition to a school Learning Commons.
- Blended learning will continue to be expanded within HWCDSB.

The Essential Conditions for System Change

Hamilton-
Wentworth
District
School Board

We are committed to “Transforming Learning Everywhere,” by focusing on implementing pedagogy that creates an inquiry-based learning environment where creativity, collaboration, and critical thinking skills are honed. We believe this shift is accelerated through the integration of technology. We recognize that to be successful, there are three components we must provide: the tools, professional development, and a professional learning network.

Providing consistent tools creates common language amongst users and helps foster shared leadership among all stakeholders so that we can move beyond pockets of excellence into system-wide adoption. These tools are both the hardware and the platforms we use to collaborate.

HWDSB is not engaged in a technology project; rather, we are engaged in a process to enhance instruction, to invite students to engage in rich learning tasks and to rely on student voice to drive the learning environment in classrooms and through technology.

Transforming Learning Everywhere

Providing job-embedded professional development reinforces the focus on pedagogy and changing instructional practice.

Providing a professional network for a community of learners on the same journey fosters a culture where people continually collaborate throughout the year.

We provided each classroom in Grades 4-6 in seven elementary schools with an iPad for each teacher, and a kit of six iPads. In September, we will provide an iPad for each student and teacher in Grades 4-12 in seven elementary schools and two secondary schools. By 2019, we will fully implement our vision: 1:1 tablets accelerating the pedagogy that creates a personalized learning environment.

By focusing on using the iPad as a tool for creativity and as a means to make student thinking more visible, students are taking more ownership in their learning, and becoming more aware of audience when they are creating. Empowering the students with access to information is changing how our classrooms operate, and the ways in which teachers organize the learning tasks in their classrooms. By providing multimedia outlets for students to share their learning, they can demonstrate their learning in different ways. As teachers re-examine assessment practices, there are opportunities for more interactions and feedback: teacher to student, student to teacher, and student to student.

We believe technology accelerates the ability for educators and students to learn deeply and differently, never forgetting that the focus is our students, effective instruction and the learning, not the tools.

Transforming Learning Everywhere

Hamilton Wentworth DSB

Project Title	The Essential Conditions for System Change
Brief Description	This project builds on the ongoing goal to identify the essential conditions necessary to promote and sustain inquiry-based, blended learning environments. The first two projects focused on tools and resources we felt were required to support this vision. This third round applies those system supports to a sub-section of classrooms within the board, adding technology, and professional development, to explore the necessary conditions to get every classroom on board (not just the early adopters or the more "tech savvy").
Context	<i>Number of schools: 7</i> <i>Number of teachers: 100</i> <i>Number of students: 1300</i> <i>Grades/Program: Grade 4-6 teachers and their classes</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> We consider this research project to be Phase One in an ongoing deployment that will provision a device for each student within Grades 4-12 across our school board. What we learn from this project will allow us to scale up across the board. <i>Student Learning:</i> This research project is aimed at changing the learning environment within the classrooms of HWDSB to ensure student inquiry is a key component.
Role of Technology	The software and hardware provided as part of this project enable student inquiry-based learning environments by allowing the role of the teacher to shift to that of a co-learner.
Inquiry Question	How do we move pockets of excellence within a school board, towards a system in which all classrooms embrace blended learning as a key strategy to create inquiry-based collaborative learning environments?
Indicators of Success	Increased adoption of digital tools across the system and across educators with varying degrees of expertise. Increased adoption of Blended Learning across the board. Increased integration of Blended Learning and digital tools use and de-centralization of initiatives across the board with strong and increasing levels of student and educator ownership.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Hamilton Wentworth DSB)

Data collection involved the use of surveys (educator and student), use of analytics related to digital tools (e.g., D2L analytics), Discovery Education classroom observations (e.g., student activities, learning tasks, types of hardware and software), ratings of various processes (e.g., creativity, collaboration, digital citizenship), and educator focus groups.

We found that providing consistent tools, along with meaningful professional development is an effective way to ensure that every staff member feels included, and able to participate in the learning. In our first year of implementation we introduced some components of blended, inquiry-based learning. This second year, with the introduction of 1:1, and further job-embedded professional development opportunities, we are beginning to see growth across all seven of the participating schools:

- Teachers are beginning to feel more comfortable using the technology with their classroom practices including use of D2L and iPads.
- Teachers are beginning to understand the importance of blended learning and how to provide opportunities blended learning using technology.
- Teachers are able to construct learning opportunities that leverage the technology, are inquiry based and provide students with a collaborative approach to learning.
- Students are learning how to take a lead in their own learning and understanding how to think critically, ask good questions, and find creative ways to solve problems.

In the first year of implementation, there was a small increase in the percentage of Grade 4, 5, and 6 students in North Project schools who achieved level 3 or 4 in reading, writing, and science when comparing February 2014 to June 2014 report card marks: reading increased 3%; writing increased 4%; science increased 4%.

Successes, Challenges, and Unexpected Results

Although the plan last year involved larger "ballroom-style" training days, we have realized that these sessions are not effective in meeting the needs of the different stakeholders. This year we are ensuring that the members of the PD team are sitting at the table when curriculum unit planning is taking place, and finding opportunities to embed the technology within the planning taking place. This is ensuring that pedagogy remains at the forefront of the project, accelerating the learning, rather than being the sole driver to change.

Our relationship with our partners has also changed. We recognize that we know our learners best, and despite their having experience in other school boards, the packages they offer needed to be customized in order to meet the needs of our teachers. In year one we plotted out the professional development in pre-planned sessions offered by our partners; in this following year, we are finding ways to be much more responsive to the individual needs of schools, grade teams, and individual participants in the learning.

Sustainability

(Hamilton Wentworth DSB)

This innovation project is currently being expanded to include three high schools, and two additional grade levels in the 7 existing elementary schools, along with a number of other projects that all relate and build upon the work we began within these schools. The kits of 7 iPads have been increased to providing 1:1 technology into the hands of all of the students and teachers in these schools from Grade 4-12.

In addition to the expansion of this work with the possibilities availed to classrooms through the use of digital tools and resources, we are participating in Michael Fullan's New Pedagogies for Deep Learning in 16 other schools in the board, to investigate inquiry-based learning practices. We are also partnered with the Rotman School of Management exploring Integrative Thinking practices as a framework for teaching in an inquiry-based environment.

The schools involved in this project are learning on behalf of the rest of the system. The work we are doing within these schools is informing both the operational elements of the plan to ensure we can effectively roll-out 1:1 technology across the school board by 2019. We are learning a great deal about the infrastructure necessary to implement and support this plan.

Along with these operational and stakeholder needs, we are tracking the needs of our teachers as we move towards changing how our classrooms look, and types of things our students are doing within those spaces.

Inquired and Wired:

Closing the Engagement and Achievement Gaps for Our Adolescent Learners

Hastings &
Prince Edward
District
School Board



Teachers and students work together in an LDCC class to brainstorm questions that students can pursue using personal electronic devices and selected Web 2.0 tools.

The intent of our project is to connect students more authentically to knowledge and opportunities both within the classroom and in their daily lives; to deepen our connections to our students; and to improve communication between teachers and students that in turn would close achievement gaps for adolescent learners who are potentially at-risk. We explored the impact of integrating Desire2Learn and Web 2.0 technologies in Co-Operative Education courses, Locally-Developed Compulsory Credit courses, and Canadian and World Studies (CWS) and English courses in Grades 9 and 10.

The use of iPads and Desire2Learn (D2L) transformed Co-Operative Education at eight schools as the technology was a way for students to stay connected to teachers and the school community while working at their placements. The teachers noticed greater student engagement in course tasks and greater task completion. As well, teachers had greater possibilities for differentiation depending on the needs and history of the students.

Our Locally-Developed Compulsory Credit (LDCC) course focus involved five schools and fifteen teachers. Teachers created student profiles based on student needs and then could identify the most promising instructional strategies and technological tools for closing gaps. Effective instructional practices were supported by the use of Web 2.0 tools, assistive technology, Chromebooks, and personal devices to increase students' sense of ownership in and connection to their learning.

"The use of technology in Co-Op has given students a life line. Immediate responses to students' concerns about workplace responsibility and safety, reporting of their attendance and clarification of expectations has encouraged communication...we are now communicating with students on a daily basis!"

Teacher

To address the concern that Grades 9 and 10 students in the Applied or Open courses could be at-risk of not achieving credits, e-readers are used in English Literature Circles to improve students' reading experiences. Additionally, twenty CWS teachers are exploring inquiry-based learning in Grade 9 Geography (Applied), Grade 10 History (Applied), and Grade 10 Civics (Open), using Google Apps for Education and D2L. One school is piloting the use of Chromebooks in compulsory Grades 9 and 10 CWS courses.

We are closing gaps and increasing engagement by connecting students' authentically to worlds within and beyond their classrooms. Key information emerging from our initiatives include the importance of students: using technology to see themselves reflected in their learning; having opportunities for sharing; and assuming greater ownership over content knowledge.

"Bringing Web 2.0 into the class is more than just a new tool for teachers and students; it is an equalizer that is revolutionizing the boundaries of the classroom. The four walls of the classroom are only a physical space ... learning has limitless possibilities for all students, no matter the tools they use to access it."

Teacher

Hastings Prince Edward DSB

Project Title	Inquired and Wired - Closing the Engagement and Achievement Gaps for Our Adolescent Learners
Brief Description	Our research in 2012-2013 was based on our efforts to support the development of global-minded citizens that are proficient not only in core literacy and numeracy skills, but also in accessing, activating, and assessing digital technologies. Our work examined the relationship between the instructional core and blended learning platforms. We have determined that a next step would involve focusing more specifically and intentionally on adolescent learners, particularly those who - in light of data such as course pass rates, course mark distribution, observations and conversations with teachers across the system - are at-risk of not attaining compulsory credits in the Intermediate secondary grades due to disengagement.
Context	<i>Number of schools: 8</i> <i>Number of teachers: 40</i> <i>Number of students: 600</i> <i>Grades/Program: Grade 9-10, students in Applied, Locally Developed and Open level course types.</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Focusing specifically and intentionally on adolescent learners, particularly those who are at-risk of not attaining compulsory credits due to disengagement.
Goals & Priorities	<i>System Learning:</i> The project will directly contribute to system learning on our BIPSA System Collaborative Inquiry Questions: What impact will collaborative teaching and learning that focuses on closing the gap for students with urgent learning needs have on student engagement and student achievement? <i>Student Learning:</i> Our goal to support students, by way of the project, in acquiring 21st Century skills is closely linked to our BIPSA Pathways goal which states that our students will be intellectually engaged in authentic and experiential learning that reflect their voices and individual identities.
Role of Technology	Technology is essential to this project insofar as participating teachers are introducing Blended Learning, by way of the provincial LMS resources, into instructional practices in their classrooms.
Inquiry Question	What impact will collaborative teaching that focuses on the design of authentic learning opportunities using the resources and tools of the provincial LMS have on the engagement and achievement of adolescent learners enrolled in secondary compulsory courses at the Locally Developed, Applied, and Open levels?
Indicators of Success	How do we know that our instructional practices are having an impact on the achievement & engagement of our students? In what ways has our participation in collaborative teaching and learning impacted our teaching practice?

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Hastings Prince Edward DSB)

Participants completed an online survey at various points throughout the project. These survey questions are framed in the same terms as our BIPSA Monitoring questions. The qualitative data generated through teachers' responses, in combination with the evidence of student and teacher work that will be shared at our pilot's culminating learning fair, provided insight into the success and challenges of the project.

Our focus has been on developing enabling conditions that will best support and complement our investments in digital technologies. We understand that "[w]ithout the broader vision and capacities, investment in devices for everyone rarely pays off in terms of learning outcomes" (Fullan, 2014).

A key finding of our research and innovation project indicates that we must, as Fullan notes, build broader capacities that align with both our vision and our investment in tools and devices. In order fully to realize our vision and to use devices to their full potential, we have found it essential to support teachers first, in re-visioning instruction to integrate technology and second, in becoming confident users of devices and tools themselves. Specifically:

- Expanding Secondary e-Learning Courses will be analyzed for future programming.
- Community Connections: We have enhanced existing technologies to support student, employee, and trustee learning, and to make it easy for families and communities to connect with district supports.
- Enhancing Learning Materials and Resources: Teacher/Facilitator resources have been used to develop local Adult Education Curriculum. In addition, similar teams have been developed at the secondary level to support new provincial curriculum (HHS4U) and the creation of e-Learning resources for senior students and teachers.
- Canadian and World Studies (Focus on Compulsory Grade 9 and 10 courses, Applied): We found that there is a need for greater range and variety of relevant, at-level resources for students with persistent literacy and numeracy challenges in these courses.
- Co-Operative Learning: Students experienced greater success with task completion and submission. There was improved communication and feedback while students were in the workplace.

Student learning was impacted in a scaffolded way with an initial emphasis on familiarizing students with the capabilities and functions of tech devices. We then moved, by way of the Gradual Release of Responsibility, toward supporting students' learning in terms of communication, critical thinking, and collaboration using digital tools.

Our early findings indicate that we have more secondary students using the technology, staying engaged in school, and earning credits in a variety of learning environments including blended learning, cooperative learning, and self-directed or student-inquiry based learning. We have noted increased task submission and improved quality of student work where technology has been mindfully integrated into the learning experienced by our adolescent students.

We have identified, in other contexts, a focus on supporting Youth in Care at locations within the system. These students range from Grade 4-10. A number of these learners are benefiting from a more intentional focus in our secondary schools on engaging students through a range of digital avenues.

Our focus on attending to engagement by way of VLe resources have opened up new options for student enrolled in the OSSLC at our Alternate sites. These options have led us to reconsider and reinvest in instruction and assessment planning in regular day school delivery of the OSSLC.

VLe Blended Learning resources were developed in co-writing and co-planning settings to support teachers in the engagement of students deemed “at-risk” based on grade level and course level completion. Various teaching strategies were developed for pedagogically-driven integration of digital resources.

Successes, Challenges, and Unexpected Results

Our challenges are rooted in tensions between enabling technical changes and supporting adaptive change. Our focus on mindful integration of technology has emphasized the role of pedagogy over superficial uses of devices. Though our philosophies of teaching and learning have begun to transform practice to align with 21st Century values, we are finding that ensuring that 21st Century tools arrive in classrooms is difficult. A key concern that we are facing at this time pertains to a lack of parity of personnel, human resources, in comparison to the volume of technological tools, material resources, which schools are beginning to access.

In a similar vein, we are learning that our organizational structures as a district, and in our individual schools, are not premised on models of integration. Historically, IT has operated as a separate entity from Curriculum and Programming. In a 21st Century environment, we need to create structures and protocols that enable partnership and collaboration across departments.

Sustainability

In our district we have recognized the importance of the individual settings and cultures in our classrooms and schools. A key component of our ability to scale-up technology-enabled practices by way of this initiative has acknowledged the unique needs of school and classroom communities involved and differentiating implementation and support practices, accordingly.

We have mindfully avoided what Dede calls “the ‘replica trap:’ the strategy of trying to repeat everywhere what worked locally, without considering challenges of size and contextual variations in needs/resources” by providing group, small group, and one-on-one support to teachers and schools in the basics of operating within the G.A.F.E. environment, in effective pedagogy in VLe, and in the use of tools and resources meant to provoke student engagement and achievement in a digital context.

(Hastings Prince Edward DSB)

Sustaining our technology-enabled practices has been dependent largely on personalized, precise support to teachers and students through the work of Curriculum Services and the work System Leaders in literacy pedagogy and technology integration as already noted. Collaborative teacher learning to build teacher capacity in technology and other areas of knowledge and skill is an essential focus in the district.

An additional component to scaling-up our work involved our summer learning Consortium whereby educators voluntarily spent 2 days in August learning about integrating technology into daily practice. Finally, at our annual BIPSA Learning Fair, educators in the system were able to learn from, discuss, and plan to build on work done in the previous school year regarding the mindful integration of technology.

Pedagogy 2.0:

Using the vLE to Fuel the 21st Century Math Classroom

Huron-Perth
Catholic
District
School Board

Shifting our blended learning strategy from a “technology initiative” to a leading instructional pedagogical approach has proven to be an exciting journey!

Our project objective is to promote blended learning to support student learning of mathematics. Teachers from 16 elementary and 2 secondary schools were invited to virtual or face-to-face workshops as part of our four-week “First 20 Days of Blended Learning” professional development program. One teacher per school was also trained to facilitate in-house supports to teachers.

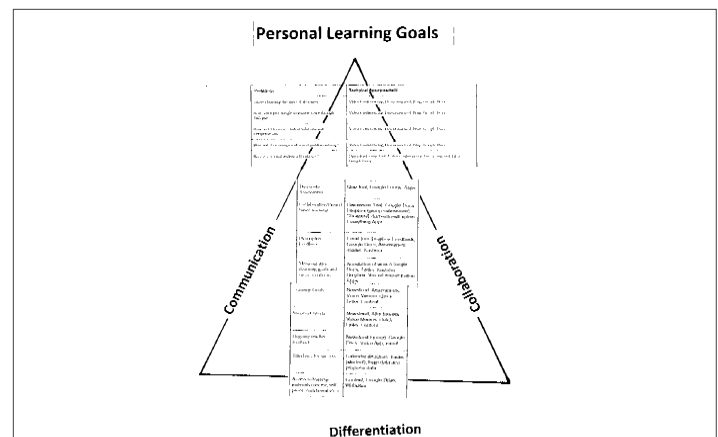
“The PD focused on the learning, not on the technology, which was a different model from past PD about technology. It was awesome to have that shift in thinking which I think leads to better student outcomes. I liked that we talked about learning goals and success criteria, and that we developed a deeper understanding of what collaboration is and what it looks like. I felt like everything I did with my students throughout this project was pedagogically strong as a result.”

Teacher

An instructional template, Personal Learning Goals was developed to illustrate our focus on communication, collaboration, and differentiation as well as our blended learning professional development program. This template models the links between technology and pedagogy to demonstrate how they are connected. Teachers complete this template in order to self-assess their learning and to provide feedback for system monitoring.

To date, we observed increased student engagement when they used Google Apps and digital tools to complete assignments and collaborate with other students. One student said, “I like using Google Docs because I can type faster than I can write.” Meanwhile, in response to teachers using online emails, newsfeeds, calendars, and content tools to provide students with on-going feedback, learning goals and success criteria, another student stated, “I like the fast feedback. I want to know how I did so I can improve”.

We have noted the importance of ongoing and iterative supports for teachers to continue this exciting journey.



Personal Learning Goals Template, an instructional model and tool to inform our Blended Learning strategy

Huron Perth Catholic DSB

Project Title	Pedagogy 2.0: Using the vLE to Fuel the 21st Century Math Classroom
Brief Description	This year’s project will address the “limits to growth” that was identified last year by strategically focusing on the required “growing actions.” This will involve designing an implementation program that will include initial professional development (if needed) and ongoing support in the form of advanced workshops, a video series, team teaching opportunities, and a digital co-teacher/mentor. This will ensure that the blended learning strategy can shift from a “technology initiative” to a leading instructional/pedagogical approach to meet the diverse needs of all students.
Context	<i>Number of schools: 29</i> <i>Number of teachers: 68</i> <i>Number of students: 1725</i> <i>Grades/Program: Mathematics 4-12</i>
Area(s) of Impact	Teachers Students
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> The project will address the “limits to growth” identified last year.
Goals & Priorities	<i>System Learning:</i> By creating a training program that provides high-level support and collaboration, a culture of learning in the vLE will be in place that will be both ongoing and iterative. This will lead to organizational change where the technological initiative will drive real pedagogical change in mathematics instruction and learning. This desired effect will lead to long-term sustainability where the blended learning strategy will be the leading instructional approach that will meet the unique learning needs of all students in math. <i>Student Learning:</i> We believe that blended learning is a meta-instructional strategy (a strategy of many strategies) and should support and facilitate good pedagogy in the classroom.
Role of Technology	Blended learning requires an “online presence” which creates many enhancements which are not available in a strictly online or face-to-face classroom.
Inquiry Question	How will blended learning impact the communication, collaboration, and differentiation practices of teachers using the provincial learning management system (vLE) and other digital tools to augment face-to-face instruction in the classroom?
Indicators of Success	The outcomes/indicators and monitoring activities will be used to assist in redefining and rebranding blended learning in our district. We believe that blended learning is a meta-instructional strategy (a strategy of many strategies) and should support and facilitate good pedagogy in the classroom.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Huron Perth Catholic DSB)

Sustained use of the vLE through blended learning in classrooms provided measurable data in the form of: login data, assignment/task completion, blog engagement, discussion, and other digital tools usage.

We helped teachers redefine and rebrand blended learning. The aim of the professional development was to highlight how blended learning is a meta-instructional strategy (a strategy of many strategies) to enable great pedagogy. Therefore, our definition of blended learning is not what the students do but how the teacher creates a learning environment to meet the needs of all learners in the classroom. As a result, blended learning should support and facilitate good pedagogy in the classroom.

Therefore, as a result of creating this foundation of practice, blended learning is a strategy to enable other strategies. In our case and for this project, we focused on communication, collaboration, and differentiation. This clearly demonstrates the richness in blended learning as a strategy to align many high-yield instructional strategies altogether.

Results from the teacher survey indicated that while teachers continued to perceive small group instruction to require a lot of organization over the duration of the project, about one third of them were persuaded through the course of the project that the classroom structures enabled through blended learning makes small group instruction more viable.

By the end of the 2013-2014 school year, we realized D2L logins reached 94% of secondary students and 50% of elementary students. To this point in the 2014-2015 school year, we are on track to meet or exceed these numbers (64% of secondary school and 51% of elementary students having logged in to the virtual learning environment by November 1st).

We surveyed students on their perceptions of learning when they work with others and what the experience of working with others enables for them. At the beginning of the project most students (91%) felt that they learn well or very well with others. They identified talk and oral communication as having a positive effect on learning. At the end of the project the students were asked the same questions. About the same number of students (90%) felt that they learn well or very well when working with others. They identified the same positive effects, namely being able to talk things over with others as most beneficial for their learning.

During our school visits, class observations, and from our analysis of the video descriptions of the impact of blended learning we can report the following impacts on student learning:

- Student thinking in mathematics is recorded in more efficient ways and enables sharing.
- The quiz tool in D2L enabled quick and informative diagnostic information for teachers.
- Communication of learning goals and criteria for success is more seamlessly shared by the teacher with students.
- Sharing and collaborating using such applications as provided in Google docs, supports learning for students.
- Teachers give more direct and timely feedback and students use the feedback provided to them to improve their learning.
- Teachers found that students who were reluctant to share ideas in class, were much more likely to share their ideas in the discussion forum.

Successes, Challenges, and Unexpected Results

(Huron Perth Catholic DSB)

An unintended result occurred during the student focus groups regarding the role of perceived “efficiencies” and engagement. While interviewing and observing students, they explained how technology makes learning easier for them. However, numerous students voiced frustration towards the learning environment when they were asked to complete tasks that they perceived to be inefficient (handwrite vs. of type, chart paper vs. video record, dictionary vs. spell check, file/organize vs. pile/sort, read vs. watch, passive vs. active etc.). Additional research is needed in order to better understand the relationship between efficiencies and engagement.

An unexpected success of this project was our adoption rate for Google Apps for Education. In a very short period of time, we experienced rapid growth that included numerous students and teachers beyond the project.

A significant challenge still exists for our students and teachers as reliable WIFI is still an issue. However, “on paper” our district’s WIFI system is robust and well-funded. This has created a crossroad where the district’s effort to creating a 21st Century connected classroom has yet to have the desired impact with our staff and students.

Sustainability

This project has been maintained as our district is continuing to support the teachers that participated in this group. We are releasing these teachers for a total of three days to continue with deep implementation of blended learning this school year. In addition, these teachers will be opening their classroom for observation to support both system leaders and new blended learning teachers. This will help model blended learning as a mechanism to support and align multiple instructional strategies in the classroom.

This innovation project is also being expanded with board funds this year by doubling the number of teachers and students that participated last year.

We have added blended learning to our board improvement plan. Moreover, we have identified blended learning as a main enabler to support our cross-panel math and junior math initiatives and our learning disability goal.

We have also committed to building principals’ capacity of blended learning by offering a webinar series, a “looks-for” tip sheet (on what blended learning looks like in the classroom), and other professional development support at principal meetings.

Teaching and Learning in the 21st Century:

Delving Deeper to Continue to Impact Student Achievement Through Digital Learning

Huron-Superior
Catholic District
School Board



Using tablets in the classroom

Our project has three focus areas: provision of online Religious Education courses; use of web technology to support French Core and French Immersion; and, infrastructure improvements that allow for better use of technology in the classroom.

We operate nine elementary schools in rural communities; in many, there are no Catholic secondary schools. We invested in the development of ‘virtual’ Religious Education courses that include a First Nation, Métis, or Inuit (FNMI) perspective, making them both more relevant to our many FNMI students and more culturally informative to our non-FNMI students. For these courses, students and teachers can interact, share, and collaborate online, in real time, regardless of their geographic location.

“Technology is a great motivator with today’s students. Finding a way to reinforce the big ideas in a visual, hands-on way is the key to success in today’s classrooms. Students have enjoyed learning in this new way.”

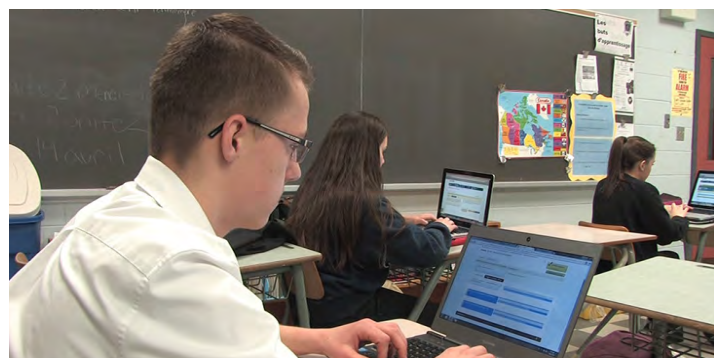
Teacher

We believe that student interest and engagement in language courses, specifically Core French and French Immersion increases through the use of web technologies. Students access an online language acquisition program, “Tell Me More” that is linked with the provincial LMS. We implemented the online program in twelve secondary school Core and Immersion French classes. Within these French classes, students can explore many aspects of French language and culture at their own pace. Using “Tell Me More,” students can study twenty-one other languages. One student who recently emigrated from China used it to learn English.

The demand for more technology in the classroom has led to increased demands on school board infrastructure. We allocated funds for network infrastructure and for mobile devices and tablets in various classrooms at different grade levels. We see increasing student interest and engagement with the use of iPads in elementary programming. The devices provide added value in many areas, (e.g., in documenting student learning using video and photographs, in accessing apps to engage students in mathematics, and in accessing online resources for inquiry-based classroom activities).

“I thought the technology program was a great experience and a good learning experience and helped me to understand better. It made me happy to come to school.”

Teacher



Core French in interactive mode using Tell Me More

Huron Superior Catholic DSB

Project Title	Teaching and Learning in the 21st Century - Delving Deeper to Continue to Impact Student Achievement Through Digital Learning
Brief Description	In 2012-13, the Huron-Superior Catholic District School Board focussed on the pragmatic implementation of the provincial Learning Management System (LMS) for blended learning. In 2013-14, we intend to extend our research on teaching and learning in the 21st Century by addressing the following: hardware and equipment, resource development, teacher professional development, and support for board improvement plan (BIPSA).
Context	<i>Number of schools: 12</i> <i>Number of teachers: 20</i> <i>Number of students: 1000</i> <i>Grades/Program: K-12, multi-discipline</i>
Area(s) of Impact	Organizational Practices Students, Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The 2013/2014 project will have an expanded the scope to include both secondary and elementary programming. The project will also provide subject areas not invested with technologies, the opportunity to engage students with the use of technology (i.e., Core and Immersion French Language courses).
Goals & Priorities	<i>System Learning:</i> By ensuring multiple people in various roles are trained and supported, we are creating champions who will sustain and ensure the growth of technology use at the system, school, and classroom level. <i>Student Learning:</i> Our pilot will look to demonstrate, through teacher observations, that students who are more engaged may be more successful. Although not as quantifiable as measurements of attendance and grades, success can be also be measured by the level of participation (e.g., effort, motivation, time spent on task).
Role of Technology	Hardware and equipment – Laptops, tablets, mobile computing devices, Internet access points, peripheral devices. Software – Tell Me More Language Acquisition Program, Tell Them From Me, provincial LMS.
Inquiry Question	If teachers and students have increased access to hardware, software, digital resources, and learning opportunities, then what will be the impact on student engagement?
Indicators of Success	Student usage of online and digital tools. Quality of student work. Quality of effort and motivation.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Huron Superior Catholic DSB)

Metrics from Online Resources (Quantitative)

Through previous studies and ongoing tracking of student usage, 2014 data from the provincial Learning Management System (LMS) was compared to data from 2012 and 2013. Data evaluated included number of students using the LMS, number of teachers using the LMS, and number of sessions per user.

Teacher Observations and Anecdotal Feedback (Qualitative)

Teachers participating in this project provided statements of observation and anecdotal notes on student work/progress. The observations could be accompanied by exemplars, samples of student work, and/or recordings (video or photographic).

In 2012, a survey on the use of technology was conducted with all secondary teachers within our board. A similar version of the survey was administered to all teachers in 2014. More teachers are using technology more often in their classrooms for a variety of tasks. 82% of respondents indicated they use technology in the classroom on a daily basis. The purchase and acquisition of hardware and equipment (through this pilot) supported these classroom tasks and activities; previously, a common concern from teachers was the availability of reliable technology that fit seamlessly into their curriculum, without interruptions. This increased use of technology includes an increase in the number of teachers and students using online tools, including the provincial Learning Management System (LMS) and the Tell Me More language acquisition portal.

The majority of HSCDSB teachers surveyed indicated that they planned to explore and implement new technologies within their classroom; 82% of respondents planned to increase the use in their classroom in the short term. There has been a marked increase in the number of requests for teacher professional development related to technology; in fact, teachers are still requesting training and support related to the development of deep learning tasks with the tools provided.

The majority of teachers (83%) thought technology could have a positive influence on student learning and achievement.

- Religious Education courses delivered synchronously online address a need for our rural communities, where students do not have access to secondary Religious Education secondary courses.
- To meet the needs of our students during after school hours, our board has developed an online homework help community and live chat area for students in French Immersion and Core French courses (Grades 6-10). The program, provides students with a live teacher in the evening hours to assist with homework in French. It also provides students with a secure online discussion area to converse in French with peers and the teacher delivering the program. The program provides students with the opportunity to enhance their French language skills in an informal, but moderated environment.
- With the acquisition of Tell Me More licenses (language acquisition web software), students are able to enhance and develop skills in a number of languages. This software is available to all members of our board community.

Successes, Challenges, and Unexpected Results

(Huron Superior Catholic DSB)

During the implementation of this pilot, an unexpected success was the cultural shift among board and school administrators on the use of online tools. Whereas in past pilot projects the technology was primarily in the hands of teachers, during this pilot, administration embraced the tools for effective communication, sharing, collaboration, professional learning, and tracking of progress towards goals outlined in the board's Multi-Year Strategic Plan.

A number of challenges presented themselves throughout the implementation of this pilot. The greatest challenge was with the board's network infrastructure. With more devices and more users on our network, increased pressures were placed on network infrastructures, including schools' wireless networks and bandwidth capacity provided by our internet service provider. To overcome this challenge, an investment into the infrastructure was essential and did occur. This included replacement of all wireless access points at all schools and other upgrades to the network infrastructure.

The third challenge that presented itself is the need to synchronize username and passwords across multiple systems (e.g., provincial LMS, board network).

Sustainability

Direction on technology in the classroom will be provided through our '*Teaching and Learning with Technology*' committee. This committee will provide our board with a mandate that will direct the investments and lead initiatives, which will continue to provide our students with rich, meaningful tasks through the use of technology. Furthermore, our board contends that all members of administration and curriculum department should be models on the effective use of technology. Through the modelling and use of the various tools, others will become more comfortable on the technology and begin to adopt technology on a regular basis.

Our board has made a commitment to providing wireless (WiFi) internet access to all students. This investment in infrastructure will also support our Personal Electronic Device Policy, which allows students to bring their own devices into the classroom for educational-related purposes. We have also increased the number of devices (tablets and laptop computers) within our schools to almost a 2:1 (student, device) ratio.

Where sound pedagogical practices with the use of technology are concerned, a number of teachers have been identified as champions within our board. This includes teachers who have been involved in other initiatives, such as the Teacher Leadership and Learning Program (TLLP). These teachers have made themselves available to others, by providing in-service and job-embedded training and co-teaching.

21st Century Cloud-Based Blended Learning Projects at Northern Lights Secondary School

James Bay
Lowlands
Secondary
School Board



A group of students at work

We have great students in our semi-remote, small northern school board, but unfortunately many of them are 'at risk' of dropping out of secondary school. We work to make learning as engaging as possible and do our best to make school a place where students want to be. So far, we've found that our research project using Google Apps for Education (GAFE) and Chromebooks to be successful in helping students be more engaged with their learning.

"I couldn't believe it when the bell rang after our first class; the kids didn't get up to leave! Now a month in, many still are in no hurry to leave at the end of the class. Unbelievable!"

Teacher

At the start of this project, we set up GAFE for our school board, purchased a class set of the internet-based laptops, and provided teachers with additional professional development along the way. The two teachers who signed on for the project are loving it.

We started with students taking tests, and writing notes, and moved up to having students collaboratively edit documents and pictures, create images and posters, and communicate with their teacher and each other on the devices. The students are requesting the conversion of all assignments to digital form so they can use the laptops. Through the GAFE admin console, we can see that they are starting to log in from home and access their documents.

"One of my students, a young man who usually struggles to complete assignments, was away for a couple weeks in the United States. While away on his trip, he created, finished and submitted his project through Google docs! We've just gotten started, but I already noticed an increase in the success of students who otherwise might slip through the cracks."

Teacher

There's far to go with this project, but the excitement generated by our initial work is very encouraging. Students are looking forward to using the devices next semester and have already suggested we purchase more of them.



Student created poster about honey bees

James Bay Lowlands SSB

Project Title	21st Century Cloud-Based Blended Learning Project at Northern Lights Secondary School
Brief Description	This project will explore the benefits of using cloud-based blended learning tools in classrooms in our high school. This will involve the combined and integrated use of GAFE and the provincial vLE in blended learning classrooms.
Context	<i>Number of schools: 1 Number of teachers: 4 Number of students: 83 Grades/Program: Grades 10, 11 Science</i>
Area(s) of Impact	Students
Phase of Change	<i>New project. Not involved in previous years.</i>
Goals & Priorities	An increase in the rate at which assignments are fully completed. An increase in accessibility of computer assignments from the students' homes. An increase in performance on critical thinking tasks. An increased amount of transparency of student's thinking as they learn. A decrease in off-task behaviour and learner apathy.
Role of Technology	The learners involved in the project will primarily access the cloud services through a classroom set of Chromebooks that will be shared among three teachers.
Inquiry Question	Will the use of Google Apps for Education (GAFE) in combination with the provincial Virtual Learning Environment (vLE) on Chromebooks increase student engagement and the rate of student assignment completion?
Indicators of Success	We will be collecting data in the following areas: <ul style="list-style-type: none"> • The level of student engagement with the course content and learning activities. • The level of student participation in online activities, collaboration, and discussions with other students. • Impact on the students' learning skills development. • Students' rate of assignment and homework completion.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(James Bay Lowlands SSB)

Success of cloud based tools depends on the degree to which there is teacher-buy in, so a significant portion of the evidence came from teacher observations.

Surveys were completed by both the students and the classroom teachers involved. Both will be given a pre and post survey about the effectiveness of the existing tools. Teacher-researchers all reported a noticeable increase in student engagement and enjoyment of learning activities. Students self-identified an increase in their own engagement and enjoyment of learning activities.

- Only 12% of students identify that they still prefer the traditional learning tools (pen and paper).
- 70% of students state they prefer using Chromebooks over traditional writing tools.
- 100% of teacher-researchers stated that they felt the Chromebooks and GAFE had a positive impact on student assignment completion.
- 100% of involved teachers reported an increase in student collaboration, connecting and communicating with their teacher and fellow students, and opened up additional possibilities for student creation.
- 83% of students stated that they find it easier to be involved in classroom learning activities and collaborate with other students when using Chromebooks and GAFE.

Successes, Challenges, and Unexpected Results

We discovered that many students were asking for increased use of the Chromebooks and were urging us toward a 1:1 program. We are unable to scale up to that level at this time, but hearing the demand for it from students is quite telling with regards to their buy-in to the program.

Teacher-researchers discovered that by offering a method of communication to the teacher with low 'social risk' (what some have termed, "stealthy communication") students were more comfortable taking a position on a topic, which is an important step in critical thinking and metacognition.

The most challenging hurdle we encountered in the project was local network connectivity problems. On many occasions not all of the Chromebooks could connect to the network, especially if all of the devices were attempting to connect at the same time.

We initially encountered some student misunderstandings of GAFE and Chromebooks due to our assumptions about student knowledge. Some students were not initially aware that the Google Apps account that they use at the school can also be used to log into Google on their home computers giving them access to all the tools and their files from home.

Sustainability

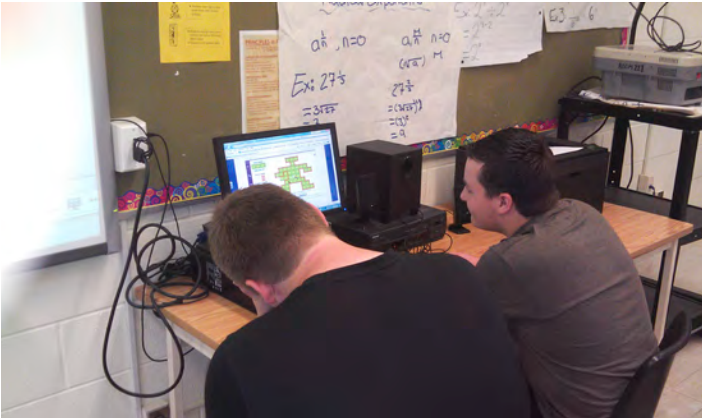
(James Bay Lowlands SSB)

We have now scaled up the use of the devices to any teacher in the school. Having heard the demand from students, several more teachers have begun to use the devices. We will also need to re-examine our local network infrastructure to explore increasing capacity for more devices.

GAFE and Chromebooks have made such a solid impact on learning in the school already that they are now a regular part of life at our school for many of our students. We will continue to move forward with this and are also working on giving access to GAFE to all students in the board.

Integration of Gizmos in the Secondary Blended Learning Math Classrooms

Kawartha
Pine Ridge
District
School Board



Two students using Gizmos in math

Our project includes two aspects, using Gizmos in secondary math classrooms, and our own 21st Century Innovations Symposium.

The Gizmos initiative involved 10 secondary schools, 15 math teachers, and 950 students. Gizmos, which allows students to explore concepts using virtual manipulatives, was used in conjunction with Desire to Learn Learning Management System (D2L). Data was collected using a number of observational, conference, and feedback tools. The results were quite positive.

"I liked D2L and the Gizmos because they teach you, but at the same time it gives you a little bit of fun. Also I found that before I looked at this website I was a little bit lost in the unit that we were currently in."

Student

The second part of the project was our own 21st Century Innovations Symposium, featuring keynote Stephen Hurley and a surprise appearance by Michael Fullan via Skype! Classroom teachers, consultants, and members of our IT department presented on topics such as: Blended Learning, Digital Citizenship, Learning Management Systems, Ontario Educational Resource Bank (OERB), Social Media in the Classroom, Kawartha Pine Ridge Learning Resource Centre (LRC) Virtual Library, Ontario Software Acquisition Program Advisory Committee (OSAPAC) Software & Web Services, Web 2.0 Learning Tools, and classroom software.

At the end of the day, participants had the opportunity to send themselves postcards, highlighting what they intended to do in their classrooms as a result of their learning as well as a To Do list for the new year. These will be mailed to them just prior to the start of the school year.

"This has been a fantastic day. I was so excited to send out my very first tweet! I loved having the time to tinker and meet with the presenters for some additional help. I made some excellent connections and seeing Fullan was fantastic! I can't wait to try out some of these tools and ideas in my class. A great day, thanks organizers!"

Teacher



21st Century Innovations Symposium

Kawartha Pine Ridge DSB

Project Title	Integration of Gizmos in the Secondary Blended Learning Math Classroom
Brief Description	The project will focus on working with teachers to support intentional planning for the use of the Gizmo tools, which are online simulations available to integrate using the Provincial LMS (D2L), for use in instruction in Secondary Math classrooms. We will provide teachers with training and support to use gizmos in the blended learning environment to increase student achievement.
Context	<i>Number of schools: 10</i> <i>Number of teachers: 15</i> <i>Number of students: 950</i> <i>Grades/Program: 9-12 Mathematics</i>
Area(s) of Impact	Students
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> There are several links between this project and the Kawartha Pine Ridge District School Board's Strategic Plan for 2011 – 2014: "Living, Learning and Leading in a Changing World".
Goals & Priorities	<i>System Learning:</i> This project will support our students and staff to increase their understanding of how technology can be used to both support and facilitate learning. Teachers involved in this project will become part of our board initiative to support the adoption of technology tools to support deeper learning. <i>Student Learning:</i> Teachers will engage students through the use of technology within high yield instructional strategies.
Role of Technology	D2L, Gizmos from <i>ExploreLearning</i> , <i>SmartBoards</i> , classroom computers, lab computers, netbook carts, BYOD.
Inquiry Question	If teachers are intentionally planning using D2L with Gizmos then will we see an increase in student engagement and/or achievement?
Indicators of Success	Promoting and increasing on task behaviour and student engagement. Demonstrating observable improvement in student work over time. Facilitating the acquisition of the course expectations and learning goals. Facilitating collaboration among teachers to support deeper learning.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Kawartha Pine Ridge DSB)

Data was collected using daily attendance as an indicator of student engagement student voice surveys set up using the LMS as well as an analysis of student achievement for the unit completed using Gizmos. Data was also collected from teachers involved in the project related to changes in practice.

- 79% of students found D2L and Gizmos easy to use; and 100% of teachers reported that their students found D2L and Gizmos easy to use.
- 61% of students reported that using D2L and Gizmos helped them to understand and learn Math; and 100% of teachers reported that using D2L and Gizmos helped their students to understand and learn Math.
- 49% of students reported that using D2L and Gizmos helped them to enjoy Math more; and 83% of teachers reported that using D2L and Gizmos helped their students to enjoy Math more.
- 20% of junior students were reported by teachers to be off task during Tech days compared to 15% during Non-tech days; and 15% of senior students were reported by teachers to be off task during Tech days compared to 12% during Non-tech days.
- 23% of academic students were reported by teachers to be off task during Tech days compared to 10% during Non-tech days; and 13% of applied students were reported by teachers to be off task during Tech days compared to 16% during Non-tech days.

Successes, Challenges, and Unexpected Results

Unintended results included the working relationships that evolved through the process and the fact that these persisted beyond the pilot as participants continued to communicate and support one another.

Consistent access to the hardware in the schools was the largest obstacle to the successful implementation of the pilot project. Communicating with schools' administrators regarding the necessity of access was very beneficial to helping to solve access issues.

Sustainability

Pilot participants are continued to be supported in their implementation of blended learning and online simulations in their classrooms. Some participants have continued to network with one another and some have delivered PD to members of their departments and schools.

This pilot is part of a larger board initiative to introduce teachers to the concept and practice of blended learning in their programs. The addition of online simulations has added another layer to entice teachers, particularly Science and Math, about the possibilities offered through this approach to teaching and learning. These online simulations have been well received by both teacher and student participants, acting to reinforce curriculum concepts in an engaging and active manner.

Pilot results have been shared with senior administrators, and have been integrated into PD sessions that are being delivered on blended learning.

Creating a 21st Century Learning Environment

Keewatin-Patricia
District
School Board

We are extending our work from 2012-2013 by enhancing the school board's technology infrastructure and constructing a professional development plan that is in direct response to the challenges identified by teachers and principals. The Board Strategic Improvement Plan (BSIP) goal includes the phrase "practice in a 21st Century culture of learning" which challenges us to spend significant time and effort to further refine and work on truly transforming our school board into a learning organization that embraces a 21st Century culture of learning for all.

We are making significant investments to support a robust technology-enabled learning environment for all students and all staff in all our schools. We continue to see significant growth in the use of technology for teaching and learning in schools, and have identified organizational alignment and structures necessary to facilitate the transformation of our past environment to a newer, more relevant and engaging learning model for students and staff. We aligned administrative learning in a 21st Century environment that is tied to the BSIP and to School Improvement Plans.

In our Grades 7-10 schools, professional learning communities are focused on developing critical thinking skills in student learning. Teachers and administrators took a deep dive into defining critical thinking and the necessary skills that must be taught and assessed with students.

At the classroom level, we continue to support teacher professional learning and practice in leveraging technology in instruction to help achieve high levels of learning for all students. This is primarily focused on leveraging technology within an assessment based instruction model, as well as the teaching and assessment of critical thinking skills. We incorporate student and teacher voice and sharing as we assess the impact of technology in teaching and learning.



A technology support teacher assisting a colleague

We recognize that leadership involving the broader focus of 21st Century in client service to students, parents, and other stakeholders at the school board level is critical to our shared success. We continue to examine past practice and provide recommendations for the Director and senior administrative team that build upon change leadership and management.

Keewatin Patricia DSB

Project Title	Creating a 21st Century Learning Environment
Brief Description	Keewatin Patricia is extending the research conducted in 2012/2013 by enhancing the board's technology infrastructure and constructing a professional development plan that is in direct response to the barriers/challenges identified by teachers and principals.
Context	<i>Number of schools:</i> 15 <i>Number of teachers:</i> 50 <i>Number of students:</i> 800 <i>Grades/Program:</i> Grades 7 - 10
Area(s) of Impact	Teachers Students, Leaders
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The barriers/challenges identified in last year's research include: Teachers reported inconsistent online access. Teachers indicated that the biggest barrier to implementing technology was the time required to plan. Principals did not feel they had the technology comfort/skills required to use technology to support their management and pedagogical work. Principals reported that they did not have the time to support the transformation of teaching and learning in their schools.
Goals & Priorities	<i>System Learning:</i> Once the desired results are achieved this professional learning plan will be scaled across the entire system. <i>Student Learning:</i> Students will complete a benchmark writing assignment, teachers will assess the writing in a moderated format, and this data will inform the instructional focus.
Role of Technology	All teachers and all students from Grades 4 to 8 have access to a netbook. This technology will be used to improve student achievement and develop higher order thinking skills.
Inquiry Question	What are the professional learning components required to support teachers as they transform teaching from current practice to an environment where teachers are learning coaches, and master co learners?
Indicators of Success	Increase in students writing skills. Increase in student's critical thinking abilities. Increase in use of technology to support higher order thinking. Increase in student engagement. Increase in teachers' engagement.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Keewatin Patricia DSB)

We completed an additional extensive teacher survey earlier this year to compare growth to last year's survey in the area of instruction and 21C technologies. We have also collected 7-10 PLC minutes and working documents, including student writing samples.

Our system efficacy assessment produced a variety of recommendations for us to consider moving forward. There are a total of 44 recommendations from this work linked to the Strategic Plan and BSIP to consider in moving our system further forward to create a highly functioning 21C learning organization that is focussed on students and student learning. Work has begun in earnest at the Director/Senior team level to both communicate the results of the assessment and begin planning an implementation process for the recommendations.

In our 7-10 family of schools work, teachers worked through professional learning to understand the critical thinking process and the teaching and assessing of critical thinking skills. As a part of this work, teachers developed a critical thinking rubric for use in instruction and assessment in their classrooms. Significant growth was seen in student pre and post assessments over time with significant numbers of students. Families of schools and individual schools are now taking this rubric and modifying it to their context.

Students showed significant growth in pre and post assessments measured with the teacher developed critical thinking rubric. There was also growth in Grade 9 EQAO.

Successes, Challenges, and Unexpected Results

Understanding the critical thinking process deeply was new and difficult learning for many teachers and administrators. Additional time was taken to ensure that we had developed enough common language and understanding to move forward building necessary knowledge. This is still a work in progress for most.

With regard to the Board efficacy assessment, there will be challenges moving forward as many of the recommendations call for significant change in how we have traditionally operated as a Board.

Sustainability

The work completed in 2013-14 is being further deepened by the original group of 7-10 PLC families. Principals and vice-principals were a part of the process last year and are now beginning the work of moving both the conversation and expertise around critical thinking forward in their respective schools.

We have been able to build an effective support structure with 4 curriculum technology teachers that support principals and teachers in leveraging technology to improve student engagement.

The recommendations from the efficacy assessment will further assist us in moving further forward in creating an effective 21C environment for all, by ensuring that all aspects and functions of the Board, at

(Keewatin Patricia DSB)

all levels, support the work to have our students reach higher levels of thinking and learning in ways that are meaningful and relevant to their learning.

Our Board Strategic Improvement Plan has 21C culture of learning embedded in our Board goal. School principals are now focused on leading in a 21C “way” with staff, students and school communities. An accompanying document called “Building Innovative Practice through Collaborative Inquiry - Planning and Reporting Tool” provides an illustrative summary of plans, actions, and reflections to guide next steps.

Technology, Collaboration, and Innovation: Ingredients for a Successful Idea Lab

Kenora Catholic
District
School Board

To motivate effective use of technology to support 21st Century teaching and learning, our project investigating what would happen if our school board provided staff and students with the opportunity to make their own ideas come alive.

We invited our staff and students to ‘pitch’ their idea in a two-minute presentation to school board representatives. If the project was approved, the idea would receive support and funding. The only condition was that it had a project focus on improved student achievement by both utilizing technology and embracing collaboration. We received 22 pitches and approved 20 projects that actualized ideas and moved teams forward in ways that built on and enhanced our board improvement plan. We listened to the voices of the system (teachers, principals, vice principals, EAs, and students) and we put their voice into action.

Within our five schools we now have more than 50 students and 30 staff members directly involved in approved projects. The depth, variety, and complexity of the projects is exciting.

“Technology will be woven into the project and used principally as a tool to aid in students’ inquiries and presentations. The goal is to have students view the technology as an effective way to plan, research, create, collaborate, and present.”

Teacher

These pitches and related projects are serving as the foundation for a new service unit within KCDSB called IdeaLab. The IdeaLab will formalize our process for continual innovation by analyzing, validating, supporting, and mobilizing the collective ideas of our staff and students.

“The research initiative has been essential in guiding and supporting us in creating a sustainable mechanism (IdeaLab) that fosters innovation, collaboration, and creativity in teaching and learning with technology. ... I think that people have begun to change and to see that our system is one that values its staff and students and all of the ideas that make us a rich, collaborative and innovative place to learn and work each day.”

System Coordinator

“We are finding out that we can embed technology in a way that makes it so pervasive it is almost invisible. And we are doing it within our goal of increasing voice and choice for all, recognizing the leadership potential in all.”

Senior Administrator

Kenora Catholic DSB

Project Title	Technology, Collaboration, and Innovation: Ingredients for a Successful Idea Lab
Brief Description	We have committed to funding the Innovative Technology Teachers (ITT) in each school and ensuring these roles for the 2013-14 school year. We have also extended their roles to assist in innovation processes that do not necessarily involve direct technology usage (broadening our research scope); including learning environment, collaborative spaces, and creativity.
Context	<i>Number of schools:</i> 5 <i>Number of teachers:</i> 25 <i>Number of students:</i> 1550 <i>Grades/Program:</i> There is no specific target group for project activities, we have provided all staff and students with the opportunity to participate.
Area(s) of Impact	Leaders Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> We are continuing our work with ITTs based on learning and findings in our Round 2 project. However, the Idea Lab is our next step and is receiving our immediate attention.
Goals & Priorities	<i>System Learning:</i> We'll be focusing new objectives on two areas; changing Board culture (broad scale), the ITT role itself. The Idea Lab represents our effort to stabilize, sustain, and scale innovative teaching and learning. We'd like this to become a permanent unit within the Board. We recognize that we cannot rely on organic innovation to occur on its own. Our ITTs have been successful in inspiring innovative practices. <i>Student Learning:</i> The Idea Lab is a Board level support that is enabling entrepreneurial learning with a focus on collaborative culture, student achievement, and technology. We are monitoring student voice and feelings of success.
Role of Technology	All of our Idea Lab supported projects include technology as one of their core foci. Participants must consider how technology can enhance their work and/or learning.
Inquiry Question	If we provide relevant authentic opportunities for voice and choice, then we will see a growth in collaboration that increases student achievement.
Indicators of Success	Building instructional capacity at the school level. Creating conditions necessary for increased differentiation, student engagement, and voice. Professional development and growth of ITTs.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Kenora Catholic DSB)

While our ITTs remain in place and focused on their core objectives for this school year we focused our reporting data collection and evidence gathering around our three expanded outcomes for 2013-14. Because we are using a theory of action we need to gather evidence of the “if” statement (if we provide relevant authentic opportunities for voice and choice) as well as the “then” statement (then we will see a growth in collaboration that increases student achievement).

Direct focus on teacher and learner interests while also enabling the effective integration of technology has yielded a high degree of involvement from staff and students. Truly putting teaching and learning first has attracted a very broad spectrum of participants in our research project activities. Supporting entrepreneurial teaching and learning is very consuming, and resource intensive. However, the return is worth it. This is a critical component of our innovative process.

We enabled direct student engagement in learning by permitting students to make “pitches” alongside staff.

We had an entire class “pitch” an idea and get support to create their digital presentation station. This represented a true ownership of their learning.

Successes, Challenges, and Unexpected Results

The overwhelming response to our project during the 2013-14 and 14-15 school years has been a pleasant surprise. Our staff and students have been exceptionally engaged in many 21st Century Innovative Research Initiative activities. We have never had this level of purely voluntary participation in an initiative as such.

It is difficult to ensure ITTs have designated daily time to purely focus on improving pedagogy while using technology. Some ITT time is still consumed attending to quasi-technical, organization/management and configuration issues that aren't directly related to instruction. Staff is somewhat dependent on having 'technical' expertise in the school and often times ITTs are accessed to assist with issues not directly relating to instruction.

Innovative Technology Teachers (ITT) in our schools are making progress, but assisting in transitioning practice throughout an entire school will take years. Relationship building and consecutive planning are of great importance.

Sustainability

(Kenora Catholic DSB)

We are very pleased to report that our work is being both maintained and expanded within our Board during the 2014-15 school year (and beyond). Our Innovative Technology Teacher (ITT) position has been preserved within every school. ITTs generally have 0.25 to 0.33 FTE time during the school day to fulfill this role. Currently there are no immediate plans to discontinue this role within our schools. The scope of the ITT role continues to grow and expand as ITTs have begun working to closely support effective technology integration in several Board/Provincial project and initiatives. Each day ITTs are able to continue relationship building, communicating best practices, sharing expertise, and directly interacting with staff and students. ITTs now complete annual plans and we may consider implementing multiyear plans moving forward.

The IdeaLab is now officially established as an entity within our Board. The IdeaLab began accepting applications. It is 'staffed' by employees in our Instructional Services Department who review applications.

Reception has been very positive, we started accepting applications October 24th, 2014.

The IdeaLab has become an avenue to address all sorts of unique requests. We have received applications relating to 3D Printing/Industrial Design, to Minecraft for Problem Based Learning, and 21st Century learning Environments. We are "connecting the dots" for staff/students by aligning resources and supports with their learning needs, professional objectives, and passions/interests.

The scope of the IdeaLab extends into all curricular areas, learning projects, into areas/fields that don't necessarily (by default, inherently) involve technology. This has been a fantastic conduit to spread pedagogy driven changes in practice on a broader spectrum.

Inspiring Information Technology (IT) Champions:

Using Technology to Drive Innovative Teaching Practice

Lakehead
District School
Board

We recently developed an Information and Technology (IT) Plan to support student success in the 21st Century. The plan is grounded in the three pillars of the Board's Strategic Plan: learning, environment, and engagement. Our IT Plan is firmly rooted in sound, research-driven pedagogy that includes the integration of information technology that engages, motivates, and focuses on student achievement.

"All the training this year helped me do things in the classroom now that I did not know was possible. I have had many lessons that incorporated our school tablets and laptops, my students found this highly motivational. They work harder."

Teacher

Through the 21st Century Innovation Research Initiative, we are moving forward with implementing the plan. We have made significant investments to infrastructure, bandwidth, devices, and training.



Primary students using technology as they work through a task

We created the position of IT Champion in every school to support educational staff with the integration of IT in daily teaching and learning. Working collaboratively with central support staff and school-based personnel, IT Champions are helping teachers find ways to develop the skills students need to be successful in the 21st Century.

Perhaps the most important challenge taken on by the IT Champions is a training program for practices related to the Board's new Bring Your Own Device (BYOD) policy. All Grades 4-12 teachers completed champion-led training focused on facilitating the use of student-owned devices in the classroom, and all schools have created a school BYOD policy that encourages students to bring and use personal devices in the classroom for educational purposes.

Teachers and administrators are furthering their professional development in the area of information technology through our INSPIRE Program. Through participation in this program, they receive a board-owned laptop or tablet for their professional use. Many of the sessions are led by IT Champions and include such topics as: Classroom Websites, Digital Citizenship, The 21st Century Learner, and Engaging Literacy/Numeracy. To date, 185 administrators and teachers participated in the program with expected growth in participation during the next school year.

"The INSPIRE training program gave me confidence to be the first Primary class in our school to "Bring Your Own Device" to school. My students were immediately engaged."

Teacher



Students working collaboratively on an inquiry-based task

We are seeing a positive change in the way students learn with respect to technology. We believe that tools alone will not make a difference, but rather that it is excellence in teaching that has the most significant impact on student achievement.

Lakehead DSB

Project Title	Inspiring Information Technology (IT) Champions – Driving Innovating Teaching Practice and Teacher Efficacy
Brief Description	Our 2012-2013 project focused on expanding growth through involvement in a professional learning community. This project saw the creation of a new teacher role (“IT Champion”) at each school. IT Champions from every school in the system will be trained to support their peers as our system shifts to incorporate 21st Century learning. The intent of the project is to create sustainable growth in the area of research based instructional strategies through the use of 21st Century teaching technologies in every school.
Context	<i>Number of schools: 30 Number of teachers: 30 Number of students: 900 Grades/Program: K-12</i>
Area(s) of Impact	Leaders Teachers, Students, Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This project is building on prior successes and feedback with past project to improve the reach and recognition of IT Champions as a scalable and sustainable support within our IT Plan.
Goals & Priorities	<i>System Learning:</i> The training of an IT Champion at every school will contribute to capacity building and sustainability by having a local leader to champion 21st Century learning and work to make it relevant to each school. <i>Student Learning:</i> This technology is an integral part to help support the changes in pedagogy and student success.
Role of Technology	We intend for technology to drive discussion about instructional practice in classrooms from various subjects in K-12.
Inquiry Question	If we empower leaders to use research based instructional strategies through the use of 21st Century teaching technologies, and if we encourage both face to face and online collaboration through professional learning groups, then we will see an increase in teacher efficacy and, and student engagement.
Indicators of Success	Teacher Efficacy – Through local school training as well as having access to the IT Champion as a mentor. Instructional Practice – 21st Century Learner - IT Champions will be leading professional development on 21st Century learning topics, including BYOD, Digital Citizenship. Student Engagement through BYOD – As we train IT Champions in BYOD we expect to see an increase in students who use their personal devices in the classroom to support their learning.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Lakehead DSB)

To measure the impact of IT Champions and their effect of on building capacity within our system, a survey of all teaching staff focused on their use, comfort, and support for IT was done both before and after the project to gauge project outcomes.

Focus groups interviews of IT Champions provided evidence of growth in use of IT due to training.

Interviews and surveys of students of IT Champions will provide qualitative information on the effect this project has had on students.

Survey results highlighting:

- Increase in confidence in incorporating student devices into classroom activities (BYOD).
- Through engaging local school leaders, and providing relevant professional development in Information Technology, we have seen a significant growth in interest in voluntary PD in the areas of Information Technology.
- Increase in staff confidence in quality, quantity, and level of supports/training to integrate technology in the classroom.
- Increase in use of learning management systems and other web services to provide 2 way communication between students, teachers, and parents.

This initiative has seen over 200 teachers, administrators, and ECE's receive training, and equipment (iPad/laptop) to support digitally enabled learning.

The initiative has also enabled IT Champions and Inspire Instructors to take a leadership role in exploring how these practices can benefit students and scale them up in their school.

Successes, Challenges, and Unexpected Results

We have had a significant interest in our Inspire program which has caused us to seek increased funding from other sources. We have also had interest in the program from our local university education faculty to participate in the program which has begun the process of forming a training partnership to ensure new teachers have access to this experience.

Sustainability

This board wide project has been expanded to new employee groups such as ECEs. We have also partnered with other training programs to provide tighter integration of training and opportunities for all staff.

IT Champions are becoming a core support for schools evolving to meet the needs of a 21st Century learner. Many school staff meetings now include a short update from their IT Champion; other schools have a spot reserved for the Champion on their "Monday memo". Our system level IT steering

(Lakehead DSB)

committee has been expanded to include 2 IT Champions so that staff says they are up to date and can provide feedback on our digitally enabled learning vision.

The Inspire program has allowed teachers to experiment with using technology to assess students in the classroom and share this information with them via email or digital portfolio. This is driving a shift in how teachers approach assessment in their classrooms, focusing now on Assessment for Learning. Teachers are excited to try these techniques and this is leading more [teachers] to the Inspire program.

Pedagogical Documentation in FDK Classrooms

Lambton Kent
District
School Board



Bi-weekly sessions to share samples and strategies

The question that guides our work in this project is: “What will be the impact on learning and teacher practice of systematically using technology for electronic documentation of student learning in full day kindergarten?” We brought together more than 80 Early Learning – Full Day Kindergarten (FDK) educators to explore pedagogical documentation and refine our practices by using iPads to record and collect electronic evidence of student learning. We met every two weeks to do professional reading, share documentation samples, and to discuss strategies for making documentation more manageable for teachers and more understandable by parents.

Our educators are making great gains in their use of the technology and in the many ways they use documentation to support learning. Many participants were not previously sharing documentation with parents, but they are now using the technology to send home photos, learning stories, and videos. Several FDK educators who previously believed learning stories were too time consuming and difficult, are now understanding the benefits of capturing and documenting learning digitally. At our last meeting of the school year, they learned how to use an app to create an electronic book. They took this learning back to their classrooms to create books with and for their students.

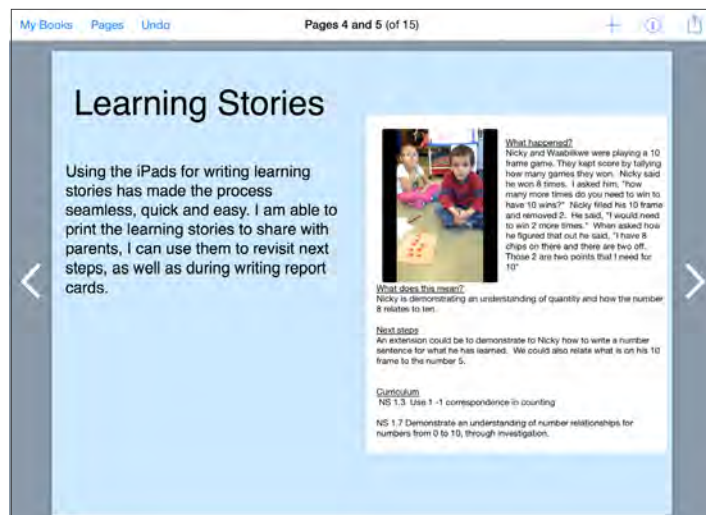
“This style of documentation has made students more aware of and responsible for their own learning. Every experience has the opportunity to inspire further learning, whether it be through repetition of a process, extension of experience, or as a springboard for peer learning.”

Teacher

This project quickly expanded from being about educators documenting student learning to students documenting their own learning. Students now use the iPad to take photos and videos of their own work. Our journey will continue next year as we try to make documentation even more precise and focused on describing significant learning and the next steps for individual children.

“Our documentation journey has moved from the educator perspective to an inclusive team approach: educators, students, family, and community.”

Teacher



Documenting student work with iPads

Lambton Kent DSB

Project Title	Pedagogical Documentation in FDK Classrooms
Brief Description	During our round 2 project, student learning was “captured” in a variety of means through video, photos, and other multimedia formats. The pedagogical documentation strategies learned through this project will be shared particularly within the Primary Division of each school but within the school in general. Many teachers have iPads within their classrooms but are not utilizing them specifically for pedagogical documentation. The learnings from this project will highlight the importance of triangulation of data.
Context	<i>Number of schools: 35 Number of teachers: 48 Number of students: -- Grades/Program: FDK, SK/1, Grade 1 educators</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> The documentation captured will be utilized in school improvement planning processes. <i>Other:</i> Increase the precision of documentation. Increase the educator understanding of purposes and audiences of pedagogical documentation. Increase the educator, parent, and school community understanding of inquiry-based learning.
Role of Technology	Each teacher and ECE will be given an iPad Mini. Professional development will be given on the functionality of the iPad and specific apps in order for the FDK teams to capture student thinking in a variety of formats.
Inquiry Question	If we provide opportunities for electronic documentation, then the quality of pedagogical documentation will be enhanced, student learning will be more visible, and student intellectual engagement and parent engagement will be enhanced.
Indicators of Success	Survey data from participants re: technological expertise. Anecdotes and samples from teacher teams re: change in documentation practices, e.g. student learning stories, photos, etc. Enhanced engagement of parents through feedback.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Lambton Kent DSB)

The pre and post survey was used to determine teacher comfort level as well as if the types and purposes of documentation used over the course of the project.

Educators need time to become familiar with the technology and to practice in their classrooms ... educators that had one year with the device had gained a greater level of comfort than those who had the device for only five months, despite having the same number of formal professional development sessions.

There was an increase in sharing of pedagogical documentation with other FDK educators. The percentage of educators who reported sharing with like-grade colleagues “often” increased from 10% to 24%.

The types of documentation educators are using in their classrooms have changed, with more emphasis on richer sources of evidence. All educators still use checklists to track student progress, however, in the pre-survey, 38% of educators reported using checklists “often” and 41% reported using them “sometimes”. In the post-survey conducted four months later, the percentage of educators reporting using checklists often had decreased to 29%. The use of video and audio evidence has increased.

Where educators have increased their electronic sharing of documentation, communication with home has been enhanced. Parents are sent photos or videos of their child’s learning during the school day, and encouraged to continue the discussion and learning at home. Parents have expressed their excitement about seeing these artefacts of their child’s learning to educators, administrators, and in the community.

Successes, Challenges, and Unexpected Results

The ease of collecting and sharing rich evidence has enhanced the FDK team’s understanding of individual student learning. In professional development sessions, teams have shared how valuable this has been for assessment and evaluation purposes.

Sustainability

By the end of November, every FDK educator in our Board (228 educators in 52 schools) will have an iPad and will be attending regular PD sessions to share their documentation with educators from other schools. By January, all FDK classrooms will also have five iPad minis for student use.

The success of initiative has been one factor in the creation of our Technology Enabled Learning Plan (TELP), which will place an iPad in the hands of every Grade 7 student in the fall of 2015. In preparation for this project, every teacher of Grade 7 students will receive an iPad for educator use, as well as a set of five iPads for student use, in fall 2014.

(Lambton Kent DSB)

Because of the success of this initiative and the creation of the TELP, LKDSB determined that there was a need for additional central staff to support pedagogy-driven, technology-enabled practices across our system. This need resulted in the creation of two *Learning Coach for Innovation* positions this school year. The teachers selected were both involved in the FDK project. These teachers are responsible for continuing the FDK Documentation project, as well as the professional learning to support the TELP.

The Documentation project was successful because the focus was on pedagogical documentation and how that supports student learning rather than focusing on the technology itself. The professional learning plan for the TELP again focuses on pedagogy first, this time with an emphasis on supporting inquiry in the intermediate classroom.

Bring IT: From Infancy to Reality

Limestone
District
School Board



Capturing new learning

The journey of making Bring IT a reality in all our schools continues to be an exciting challenge. We know that without strong pedagogical practice, the infusion of technology will not improve learning. Our six pilot schools involve Grades 7-12 students, school administrators, teachers, IT support, and a Connected Technology teacher. As well, we are partnering with Queen's University's Faculty of Education and Occupational Therapy programs to support the implementation of technology in classrooms and schools to improve learning.

Bring IT successes and challenges were documented through surveys, qualitative interviews with educators, and student focus groups. The consensus is that student intellectual engagement and opportunities are greatly increased when technology, pedagogy, and change knowledge are effectively intertwined. We identified areas for further professional learning for educators around pedagogy, digital citizenship, device management, and increasing community awareness around technology as an effective tool for learning.

Our goals are to foster positive change within the system by focusing on: the role of educator, learning, and administrative training. Our K-12 program team is now directly connected with Information Technology to collectively plan and facilitate an intense professional learning roll out in the fall that will concentrate on the identified needs of the system. A continued and growing partnership with Queen's University is enabling further expertise to evolve. As well, we are planning "Learning Through Technology," a two-day summer institute designed to generate awareness and increase capacity within the system and to provide learning for participants at a variety of entry points.

A priority is digital citizenship resources being generated for sharing with the system in the fall. We are developing a resource package outlining the philosophy behind Bring IT, information letters, practice-in-action videos, posters, device information, and management strategies, using feedback from teachers and students. Another priority is providing resources to assist parents, students, teachers, and administrators around Bring IT.

We will continue to monitor the impact of technology through qualitative measures (surveys, focus groups, observation, conversation, engagement) and quantitative data (academic achievement). With a well-defined communication and implementation plan in place, we will continue to be co-learners with staff, students, and the community to Bring IT into all our classrooms.



Learning and sharing together

Limestone DSB

Project Title	Bring IT: From Infancy to Reality
Brief Description	This project will focus on the implementation of Bring IT (Information Technology) in six of our sixty schools. Our plan is to provide on-going support through a Connected Technology Teacher, develop a professional learning network for staff involved in the project, support attendance at professional learning, and provide additional technology resources through lesson plans and ideas that will assist staff in accessing the learning in technology through a variety of entry points. As a result of what we learn from our work, we will share the knowledge mobilization with the 54 other school communities in order to facilitate the scaling of the learning.
Context	<i>Number of schools: 7</i> <i>Number of teachers: 25</i> <i>Number of students: 500</i> <i>Grades/Program: Grades 7-12 in the following subjects: English, mathematics, social sciences and science</i>
Area(s) of Impact	Organizational Practices Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> There is a new area of inquiry in this project. Effective teaching practices through the use of technology was at the heart of our previous project.
Goals & Priorities	<i>System Learning:</i> As a result of what we learn from our work, we will share this with the 53 other schools that will formally begin the Bring IT journey in September 2014. <i>Student Learning:</i> 21st Century skills will be integrated in the lesson design of the teachers involved with the project. Technology will assist students in researching, seeking multiple perspectives, and demonstrating their learning in different ways.
Role of Technology	A menu of technological devices for specific purposes will be provided to the system based on the recommendations of this project. As we implement Bring IT system wide, we will also be purchasing mobile technology to support further inquiry, thinking, and learning.
Inquiry Question	How do we support schools in successfully implementing Bring IT? Will sound pedagogical practice inform and improve learning through the use of technology in order to foster scalability?
Indicators of Success	Digital Citizenship Admin Procedure is created with input from the schools involved in the project. Educators will plan lessons where students use multiple technologies in their classrooms. School communities will develop a greater understanding of Bring IT.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Limestone DSB)

Successful completion of the Bring IT Admin Procedure with a focus on effective instruction and Self-Efficacy Survey was completed by teachers in the project. Small focus groups facilitated by the Connected Technology Teacher throughout the project unpacked the reflections and thinking of teachers.

Staff involved initially in the 6 schools tended to be pioneers and early adopters in the area of technology and felt comfortable using it. Other educators in the schools became curious as to what these teachers were doing with the technology and became interested in being part of the learning.

Many staff reported that they felt more comfortable with students bringing and using technology as the pilot evolved. In order to support staff who struggled with Bring IT in their classroom, we provided classroom support (co-plan, co-teach, co-reflect) from a Connected Technology Teacher as well as opportunities to engage in Learning Networks and Collaborative Inquiries. This led to increased self-efficacy from educators around technology as a tool for learning to support strong pedagogical practice. This stressed the importance of an aligned and supportive professional learning plan to support the learning of staff. In all of the pilot schools, technology was identified as a strategy to support the goals in the School Improvement Plan.

[There was] a direct impact on student learning through the use of technology to support critical thinking and inquiry skills. In the classrooms where Bring IT was well used and teachers had a good understanding of the curriculum, student engagement and learning was accelerated. According to the student focus groups, there was a higher level of engagement in lessons. Technology provided differentiated platforms for students to extend their thinking, express their knowledge and increase their metacognitive skills.

Student feedback told us that students were more engaged and felt greater ownership towards their learning when they were able to use technology, specifically, their technology device. This provided a greater opportunity to extend their learning through collaborating with other and moving beyond the walls of their classrooms. Students shared that their most powerful learning experiences were related to situations where teachers modelled and supported students in using the technology, but also felt that things worked equally well when teachers took risks and engaged students as co-learners in the classroom.

The evidence had an indirect impact on student learning as the use of technology by students enables work to be easily shared with others for reflection and feedback. Teachers noticed increased motivation, accountable talk practices, and on-task behaviour.

Successes, Challenges, and Unexpected Results

Unexpected Successes – the work that was done in pilot classrooms quickly caught on in some other classrooms; learning has been contagious and staff are seeking capacity building opportunities. There has been an increase in teachers willing to share their best practices (increased self-efficacy) with

others. There has also been a keen interest of staff who traditionally have not engaged in professional learning but are highly engaged in technology and want to learn more.

Unanticipated Changes to the Process – this includes a change to the implementation plan. We anticipated moving quicker during the pilot year. However, we chose to go slower due to some infrastructure and hardware challenges.

The challenges we have encountered are a lack of mobile technology in many schools when this initiative started (this was a reason why Bring IT had challenges, as in some schools, there were very few mobile devices); teachers and administrators not having the technology in their hands to learn and model for students, infrastructure difficulties (lack of wireless in all schools), perception that Information Technology Services are not responsive to the needs of schools. The above issues resulted in hesitation by some educators to embrace the initiative.

Sustainability

Bring IT work this year will continue system wide with the support of the Connected Technology Teacher. Two *Bring IT* awareness days are planned to educate all schools and to demonstrate what *Bring IT* looks like at all levels in elementary and secondary through Practice in Action via teacher demonstrations. Teacher, student, and community resources will continue to be researched, developed, and supported.

The sharing of best practices acquired from conferences, PA Days, Professional Learning Series, and CI groups, is strongly supported by the Board Plan for Student Achievement, School Improvement Plans, Connected Technology Teachers, and School Administrators. Learning is extended through School Parent Council meetings, social media, online communities, planned Learning Series events, and Board initiated events.

We were mindful that technology, pedagogy, and content needs to be integrated to improve learning. As part of our next steps, we will continue to focus on the balance of all three areas, as we move this project District wide.

Partnerships with Apple, IBM, D2L, and Queen's University allow for continued growth and support in learning and leading with the Bring IT initiative. Apple and IBM will be working with Limestone on a long-term vision for technology and learning, aligned with our Board Improvement Plan. Queen's University offers a dynamic partnership where Bachelor of Education students will be working with teachers in our system (who self-identify) on a problem of practice related to technology.

The development of myITS (My Information Technology Website) as a sharing tool and a central hub for *Bring IT* resources has been strongly supported. A Learning Through Technology video series has been created and shared on Twitter and in myITS. Two *Bring IT* videos were developed in the spring and are accessible to all educators throughout the system. All of this is helping to build capacity and transform the culture within schools.

Using 21st Century Learning Strategies to Build Staff Capacity to Inform Teacher Practice

London District
Catholic
School Board



Collaborative planning

Building local staff capacity in a one-time pilot project is one thing; being able to replicate that change across a system and then to sustain it over time is quite another.

This is the challenge that our school board faces as it creates truly collaborative school cultures. Over the past few years, principals across our school board have been learning to use the collaborative inquiry process as they refine their School Improvement Plans for Student Achievement (SIPSA). But how do you capture, archive, and nimbly share the lessons learned from one school to another?

We are working with the Ministry on the Building Innovative Practice Initiative (BIPI). We use Microsoft throughout our school board and we are using the BIPI to build collaborative teacher capacity through the social media networking opportunities available in Office365. Our teachers have developed significant expertise along with a greater awareness of the Provincial Learning Management System through the BIPI process.

The PLMS is the “blended learning” platform that enables teachers (within and across classrooms) to access on-line curriculum and resources. The challenge is that the PLMS can’t be used for staff-to-staff learning, as the direction is from teacher to student only. The solution is to create a Board LMS that allows staff learning to be permanently stored and accessible in one location that can be recognized as the school board’s primary site for professional learning and training.

To test LMS capacity, all staff – from noon hour supervisors to the Chair of the Board of Trustees – will access through the Board LMS the mandatory Ministry of Labour Worker Safety Awareness Training in September 2014. This safety course is locally developed and uses “gaming” techniques to make learning engaging for staff.

The Board LMS could be recognized as the Board’s primary site for professional learning and training.

Our LMS will model for staff the benefits of using blended course instruction for student learning. This could be a cultural change of the highest order in that staff will now have a consistent platform for their own professional learning in support of individual student needs.

London District Catholic SB

Project Title	Using 21st Century Learning Strategies to Build Staff Capacity to Inform Teacher Practice
Brief Description	The LDCSB is one of the Building Innovative Practice Boards and has been using the Office 365 environment to create formal/informal teams of coaches to facilitate teacher and principal networking in support of student achievement. What the 2013-2014 project would do is to extend this capacity and consolidate the Board’s resources into defined “courses” that would include online conversations and support materials rather than having unconnected and discrete websites for professional learning purposes.
Context	<i>Number of schools: 1 Number of teachers: 12 Number of students: 80 Grades/Program: Grades 9 and 10 Applied English and Mathematics</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Builds on Round 2 use of technology (Office 365) in support of teacher collaborative inquiry.
Goals & Priorities	<i>System Learning:</i> The integration and automation with the HRIS will allow for maximum scalability and sustainability for Board teachers, school administrators, and support staff.
Role of Technology	The Board would create the integration between our Human Resources information system (HRIS) and the LMS for user account management, course shell creation, and course enrollments. The end users would use a browser only device to access these “courses” thus experiencing 21st Century professional learning first-hand.
Inquiry Question	If we use and model 21st Century learning strategies with school administrators, teachers, and support staff, then school administrators, teachers, and support staff will be better prepared to address student learning needs in a manner that is personalized, collaborative, flexible, and consistent.
Indicators of Success	Increase Provincial LMS course utilization within the LDCSB by teachers and students in order to encourage student engagement in a blended learning environment. Creation of an LDCSB LMS that would have blended learning courses for teachers, administrators, and support staff.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(London District Catholic SB)

The launch of the Board LMS was extremely successful. At least 90% of all teaching and administrative staff logged into the Board LMS on the September 26, 2014 PD day and at least started the Worker Health and Safety Awareness course. The remaining teaching and administrative staff continued to start and complete the course over the next several weeks. This means the Board has gone well beyond the initial 25% figure of all staff who had previously logged into the Provincial LMS, thus creating in one day a much higher level of exposure to the LMS than was previously the case.

A survey that was attached to the course on the value of a blended learning environment within LDCSB was completed by 152 staff. Of these, 40% noted that they were pleased with the course format and D2L, while another 40% indicated that they liked D2L and wanted greater opportunities to apply what they saw in the Worker Health and Safety Awareness course in their own professional learning. The remaining 20% felt that they were more comfortable with a traditional pen and paper process at this time.

Both the Student Success School Support Initiative (SSI) and the Building Innovative Practice Initiative (BIPI) have found that classrooms that are purposely structured for collaborative learning have improved opportunities for student-teacher communication. Students are better prepared to be their own advocates, and teachers are more apt to ask students directly about whether or not they understand a lesson.

Successes, Challenges, and Unexpected Results

A problem is getting all staff to the point where they understand how to properly structure a classroom and to understand the theory and practice behind specific evidence-based instructional strategies. The use of blended learning through the Board LMS has the benefit of (1) modelling for staff through the principal or colleagues the integration of technology into the classroom and (2) giving staff a “one stop” location to support the research behind a collaborative inquiry.

While the LDCSB is well-placed to move forward with the integration of technology in the classroom (all schools are wireless), much of the computer equipment is dated or well beyond its life span. As a result, some teachers have been hesitant to more fully engage in blended learning. With some future purchases of new equipment, and a greater emphasis on bring your own device, it is hoped that more of these supporting conditions will be in place over the next few years.

Sustainability

(London District Catholic SB)

As part of the SSI project (four secondary schools – John Paul II, Regina Mundi College, St. Mary's, and Catholic Central), the development of the online SSI course will further entrench the work of the SSI within these schools. The SSI online course also gives principals a model through which they can work with their staffs on collaborative inquiries that are focused on evidence-based instructional strategies. By demonstrating the SSI course to principals at a future monthly Principals' meeting, a colleague to colleague learning opportunity will be created that will assist in ensuring consistency in collaborative inquiries.

Because of single sign-on into the Board LMS, the potential to scale blended or eLearning across the LDCSB is both doable and highly desirable. Teachers and administrators can develop materials that can be stored in an accessible site.

The Board LMS has the potential to do much of the LDCSB's professional learning to an online format. Arrangements are being made with Desire2Learn to have an instruction session with Special Education, Mental Health, Student Success, ICT, HR, and Building Services where staff can learn how to create courses.

Ministik School Integrates iPads into Health and Physical Education

Moose Factory
Island District
School Area
Board



Working together and learning about the technology

Our focus is to integrate technology into our Health and Physical Education program to increase student engagement, motivation, and productivity; to promote healthy active lifestyles; to provide student-centred instruction and learning opportunities; and to gather authentic assessment data.

Students are regularly using technology so increasing their use in an educational context is increasing student engagement in learning. The use of iPads and iPad applications has opened new possibilities for collaboration and interaction between students as they explore the Health and Physical Education curriculum. These learning opportunities have enabled students to make some meaningful connections between their class content and real life.

Students collaborate with each other and gather teacher feedback to further develop their understanding of concepts. We use the iPads' Google Drive, a Cloud based technology to provide students with immediate formative feedback. Using Google Forms, student complete online assessments and receive immediate teacher feedback, specifically a quick five question check point, so that students can review concepts and know what to study before their test.

To prepare for our school's track and field day, our Health and Physical Education teacher created an online form for students to register for their chosen events. While other teams were participating in the activity, those not playing completed their registration process.

Teacher observations include noting that students are requiring very little support to use the devices, students are engaged in their learning, and they are very curious about other ways the technology will be used in future lessons.

Our students are very excited about using technology in Health and Physical Education. As a team of educators, we are very excited about implementing our new technology into learning opportunities. We look forward to continuing to enhance and transform our students' learning opportunities!



Students working on tablets during Health and Physical Education

Moose Factory Island DSAB

Project Title	Ministik School Integrates iPads into Health & Physical Education
Brief Description	Our focus is to integrate technology into the Ministik School Health and Physical Education Program. The phys. ed teacher will implement the use of iPads and specifically chosen iPad applications, during individual and/or small group instruction, consolidation, and assessment portions of lessons. The phys. ed and student success/school effectiveness teachers will gather and use the student assessment data to drive instruction and analyze student progress.
Context	<i>Number of schools: 1 Number of teachers: 2 Number of students: 300 Grades/Program: K-8 Physical Education</i>
Area(s) of Impact	Students
Phase of Change	<i>New project. Not involved in previous years.</i>
Goals & Priorities	Using the SAMR model of technological integration (substitution, augmentation, modification, redefinition), we hope to enhance and transform student learning opportunities and the way we currently use technology in our lessons. <i>Student Learning:</i> <ul style="list-style-type: none"> • Increase student engagement, motivation, and productivity • Promote healthy active lifestyles • Provide student-centred instruction and learning opportunities • Gather authentic assessment data to establish next steps for student learning
Role of Technology	Using the devices and specific apps, students will create, assess, and evaluate their understanding, thinking, application and communication of the curriculum expectations.
Inquiry Question	How would the use of subject specific iPad applications augment Health and Physical Education learning opportunities for elementary students?
Indicators of Success	Frequency of effective integration of iPad and iPad applications into instructional practice. Student engagement based on participation and assignment completion (pre & post iPad). Student feedback (Google Form surveys, exit cards, etc.). Rates of student success with higher-order learning activities.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Moose Factory Island DSAB)

iPads in Health and Physical Education allowed students to become more independent and has helped them to self-regulate with the classroom and gymnasium. Participation improved when students were using the iPads compared to Physical Education classes without the iPads. Students are more motivated to participate because they know they can look back at their pictures and videos. Students have started to peer evaluate more effectively and work together as a team. Student engagement in health has increased.

Being able to use the iPads has had a positive impact on classroom behaviour. Students had opportunities to collaborate together while using the iPads in Health and Physical Education classes. Students are now self-regulating and sharing iPads in younger grades.

Successes, Challenges, and Unexpected Results

Ensuring that students use the iPads as tools and not toys had to regularly be reminded.

The application QR Code Reader [was] very useful. Whenever students wanted to go to a website or watch a video, having them scan the QR code was by far the most efficient method. It takes younger students a very long time to type on the iPads; and less time for them to scan the barcode.

Sustainability

We are continuing to use the iPads regularly within Health and Physical Education. Students are becoming more familiar with using them appropriately, as tools not toys. Students are more familiar with the applications and how to navigate them. Google forms are used for feedback and student input for future lessons.

Using Technology to Engage Primary Students for Reading Improvement

Moosonee
District
School Area
Board



Feeling successful and receiving instant feedback

“Why do we have so many Grade 1 students reading at a level 4 or lower?” a primary teacher asked during a divisional meeting. “And, why haven’t they progressed since September?” another inquired. We were sitting around a table, looking at our Development Reading Assessment (DRA) data gathered as part of a school-wide goal for Communication in Literacy and Numeracy included in the School Effectiveness Framework.

As we were discussing how to solve this problem, our Supervisory Officer walked in. We told her of our dilemma. “Well, this may be of interest to you,” she said, handing over the proposal for 21st Century Innovation Research projects. Upon reading it, we were all instantly reinvigorated. We would have access to new technology that would hopefully help us to engage students in the reading process.

For our project, we decided to target those students in Grades 1 through 3 who have not progressed past a DRA level 4, or those who showed no movement from September to January. For the majority of these students, the focus area is letter recognition, letter sounds, chunking and blending letter sounds, and general phonemic understanding. After doing some research, we selected about a dozen reading applications that we loaded onto iPads. Each classroom got one iPad to share among the targeted students in that class.

The number of minutes per day each child spends on the device is tracked. We will continue tracking through to next October. At that time, all graphs will be submitted to the student success teacher, who will compile them to see if using the iPads has helped students be successful. Informal observation indicates that using this technology has already helped the students. Those students who were frustrated by reading now look forward to their daily reading time. They are starting to understand that reading is for everyone!

All the staff are excited to be working with the iPads and apps and, more importantly, their use clearly helps to motivate our students.



Sharing new-found knowledge with a friend

Moosonee DSAB

Project Title	Using Technology to Engage Primary Students for Reading Improvement
Brief Description	The project focus is on building basic reading comprehension skills, beginning with letter and sound recognition through to phonemic awareness. Students selected to participate in the group have shown a need for intervention and a different approach to learning. iPads were selected as the tool; the touch screens provide the opportunity for sensory and tactile learning, and the screen/speakers provide both visual and auditory stimulation. Specific applications designed to target the above mentioned skills will be purchased and uploaded to the iPad for student use.
Context	<i>Number of schools: 1 Number of teachers: 7 Number of students: 20 Grades/Program: Grades 1-3, with reading challenges</i>
Area(s) of Impact	Students
Phase of Change	<i>New project. Not involved in previous years.</i>
Goals & Priorities	<i>System Learning:</i> It is hoped that the progress made within this initiative will be a springboard for other related target areas, as identified through our standard school assessments, in which the application of technology will shrink learning gaps in all subject areas, throughout all divisions. <i>Student Learning:</i> This project provides our school with the unique opportunity of testing out the technology, its efficacy, and its direct impact on student achievement. As such, our findings will benefit our students as they build a strong foundation in reading skills.
Role of Technology	The reading and communication aspect, as it relates to technology, is essential; these students have already shown that they are not learning at a typical development rate given the tools that we traditionally use.
Inquiry Question	What will be the effect of providing a targeted group of Grade 1 - 3 students with iPads while working in both one-on-one and collaborative settings using select applications, on their reading level as measured using the DRA instrument?
Indicators of Success	The Primary Division has focused on measuring the acquisition and use of reading skills. The enhanced program would utilize iPads and iTunes in an engaging and focused way. The prediction is that the growth of reading skills for this group of students will be greater than if these children simply used traditional teaching resources (such as flashcards, worksheets, the WBTT intervention kits, etc.).

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Moosonee DSAB)

We had already collected data using the DRA in September 2013 and January 2014. Once we assessed again in June, and were able to compare the bar graphs outlining how much time was spent learning with the technology, we would be able to surmise if the selected applications were helpful in advancing these students' reading abilities.

At this time our results show no significant difference in the relationship between minutes spent on reading-related applications (on an iPad) and their impact on student DRA scores. Students' total minutes spent on the iPads were accumulated and then compared to their reading growth over time, as measured using the DRA. We recognize that the breadth of our sample size is problematic; many of our students from phase 1 were not available for testing in phase 2, thus diminishing our sample size substantially. In most cases, with the sample of students, most student reading DRA scores increased. Some more significantly than others. However, in relating these changes to the origin of the selection process, it is evident that the students' reading ability increased. Bearing in mind these particular students had not seen significant reading growth over a number of months (fixed at a DRA 2). Any growth over the short period of time in these students is significant. Specifically, the Grade 3 students' growth is the most encouraging.

Where there was hesitation or refusal to complete reading-readiness worksheets, or participate in reading-related activities in the past, students are now engaged, motivated, and happy to be working on reading.

We did not see a trend where more time correlates directly with their increased DRAs, however, we are seeing a trend that supports the notion that those who are developmentally ready (i.e. older) are more positively impacted by the use of technology.

Successes, Challenges, and Unexpected Results

Both teachers and educational assistants report that students love working with the technology. Our educators have also started exploring other uses of the iPads, including picture taking and voice recordings for evidence of student achievement.

One unintended result was that we noticed the biggest increase in DRA scores for those who were in Grade 2 (in phase 1) and Grade 3 (in phase 2). We are wondering if perhaps these students were developmentally more ready and therefore more likely to synthesize the knowledge received from the reading applications and apply it to the various DRA books/questions.

This project generated a common thread between all teachers in our Primary division; it allowed them to approach a given problem with the same tool. This is powerful because usually, as classroom teachers, we are varied in our approaches. Although we may have the same problems, we take different approaches, depending on our schedule, skills, resources, etc. This project provided everyone with the same resource, thereby creating the ability to converse about similar solutions to the same problem.

(Moosonee DSAB)

It became evident that our school needed greater bandwidth, and more WiFi access points, specifically in the Primary end of the school where most of the Grade 1-3 classes are housed. Teachers required some P.D. on their use and, as such, most were not prepared to use them with their students until mid-June.

Sustainability

We have big plans for maintaining and growing this innovation project. We would like to collect data over the course of a full school year so that we can increase both the depth and breadth of our results. We would continue to track the students' use of the iPads (using the bar graphs to track minutes) and compare their September DRA results to their June scores.

Additionally, we would like to experiment with the use of the technology for Grade 3 and 4 students who are fixed at any given level. A child who is not progressing in an age-appropriate fashion could be missing one or two small skills that are holding them back. As such, we would like to upload other reading apps that teach and practice higher advanced reading skills.

Moving Toward Praxis:

Transforming Culture, Pedagogy, and Practice in a Digital Age

Near North
District School
Board

We continue to engage teachers in meaningful, authentic, and collaborative inquiry related to teaching and learning in a digital world. We maintain a continued focus on realizing the Near North: 21 Vision and developing a digital age culture of learning as a systemic focus designed to close gaps in pedagogy, improve teacher capacity and confidence, and grow pockets of excellence into whole school transformations.

We launched the “Near North: 21 Vision” (NN:21) in 2012. This new system vision introduced an evolving organizational framework designed to initiate and sustain a digital age culture of learning, and prepare students to take their place in a world of rapid technological change and global opportunity. An important aspect of the plan includes building capacity. An eTech coach, equipped with the capacity, hardware, resources, and time required to support teaching and learning in a digital age, is working with school teams. The teams develop school-level implementation plans.

We provide the technology to support instruction, professional learning, and collaboration, accompanied by meaningful, relevant and tiered professional learning opportunities that align technology with 21st Century pedagogy. Over fifty percent of our teachers are working with school board-provided iPads, MacBooks, or Windows laptops. We invested in significant upgrades to our wireless network infrastructure to improve the stability of our network applications and to improve stakeholder’s confidence and use of our web services.

We are making a determined effort to break down the walls of the classroom, illuminate innovation, activate professional learning, and engage teachers in collaborative inquiry. Our teachers are becoming more confident and engaged in their use of educational technology and want more opportunities to collaborate and learn from one another. They are mobilizing knowledge through the use of social learning technologies, specifically the Office 365 Cloud tools.

Administrators, lead teachers, and system coordinators participate in capacity building online communities, increasing system-wide engagement. They are building sites that contain irresistibly engaging, dynamic, and relevant curriculum/pedagogical resources and social learning activities to inspire and empower teachers to mobilize knowledge – promoting whole school, and system transformations.

Near North DSB

Project Title	Near North: 21 - Praxis - Transforming Culture, Pedagogy, and Practice in a Digital Age
Brief Description	The Near North DSB will continue to engage teachers in meaningful, authentic, and collaborative inquiry related to teaching and learning in a digital world. We will maintain a continued focus on realizing the Near North: 21 vision and developing a digital age culture of learning as a systemic focus designed to close gaps in pedagogy, improve teacher capacity and confidence, and grow pockets of excellence into whole school transformations.
Context	<i>Number of schools: 42</i> <i>Number of teachers: 41</i> <i>Number of students: TBD</i> <i>Grades/Program: K-12</i>
Area(s) of Impact	Organizational Practices Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In June 2012 and again in June 2013, the board commissioned a diagnostic survey to determine teachers' attitudes, access, usage, and competencies using digital technology. The study has helped to identify gaps in our educational technology planning and implementation and reflects the notion of 'pockets' of excellence.
Goals & Priorities	<i>System Learning:</i> <ul style="list-style-type: none"> • Mobilize evidence as a catalyst for learning • Translate the first wave of success into the second wave (permanent change) • Maintain a focus on our core business (effective pedagogy) • Differentiate professional learning • Provide informed, purposeful and responsive deployment of technology. A focus on growing "culture" will help to ensure learning is a process through which experience causes permanent change in knowledge, thinking or behavior – enabling sustainable, collaborative 21st Century learning community.
Role of Technology	Technology will be used to build 21st Century fluency in all schools. The eTechs will attend specific professional learning workshops exploring 21st Century pedagogy, tools, and resources.
Inquiry Question	Will access to a virtual – collaborative, community space inspire teachers to engage in collaborative inquiry, access, and activate differentiated professional learning, and document and share challenges of practice – within and across schools?
Indicators of Success	Indicators for teachers include: <ul style="list-style-type: none"> • Design and participate in School Capacity Building Projects. • Observe and document 21st Century classrooms "Pedagogical Listening" within and across schools. • Participate in co-learning – including pedagogical documentation, reflecting, and co-planning – within and across schools. • Share wonderings and learning during face-to-face board sessions and via the NN:21 collaboration portal.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Near North DSB)

System leaders have been “pioneers” in creating online professional learning communities. NNDSB Teachers are actively using cloud tools to engage in professional learning. While teachers are subscribing to online professional learning communities – most are passively accessing resources, not contributing to resource creation and sharing.

School teams, including the e-tech coach responded very positively to the opportunity to develop a school level implementation/capacity building plans. Most (36 of 40) schools were able to develop and implement an orientation to the Office 365 tools during the May-June (and September) school level launch. Teachers moved to implement the tools with students very quickly. Teachers have communicated a very high level of satisfaction with the Office 365 productivity and collaboration tools.

Program Coordinators have participated in several capacity building sessions designed to support their efforts to engage teachers in online learning communities. Coordinators participated in the design process – to help establish templates that would expedite the site creation process. There are currently over 30 program sites and teacher use of these sites is increasing.

With access to a common core of cloud based productivity apps, many teachers have a renewed appreciation for BYOD. The cross platform compatibility of Office 365 apps (Word, Excel and PowerPoint) enable students to effectively respond to learning tasks using a cell phone, tablet or laptop.

Successes, Challenges, and Unexpected Results

Students Teaching Teachers: One of our secondary e-Tech coaches partnered with a GPP30 Peer Tutoring Class to develop a student “Tech Squad”. Initially the “Tech Squad” was intended to support teachers and students within the home school, but has since grown to be a family of schools initiative.

It has become increasingly evident that ubiquitous access to common productivity software and collaboration tools (cloud resources) enables teachers and students to share and learn across a range of technologies and platforms – initiating a transformation of learning.

Sustainability

The Office 365 project has always been part of our 21st Century learning road map. However, the CODE initiative has enabled our board to develop a multifaceted capacity building plan, designed to engage teachers from across our region accelerating our path to implementation. This initiative has responded to several gaps in system needs and as a result, experienced a rapid scaling up.

Many of the online professional learning communities are aligned with a collaborative inquiry process, ensuring that the overarching purpose is pedagogy-driven, technology-enabled learning for teachers. All schools are engaged in collaborative inquiry and are now accessing Office 365 to share ideas and

(Near North DSB)

mobilize learning. Evidence of impact, classroom artefacts, and learning resources are now being shared across schools.

Strong school level participation has demonstrated a layer of system leadership and resilience as modelled through the efforts of the e-tech coach and supports the sustainability and scaling up of the project over the next several years.

Access, Engagement and Student Learning Using eText

Our focus for the project is to identify and determine the impact of an eText platform on knowledge mobilization to inform teaching and learning. All Grades 3 to 8 teachers and their students have access to Mathematics Makes Sense (MMS) and the Grades 7 and 8 teachers also have access to Investigating Science and Technology, History, Geography and Literacy in Action. We expanded the interaction and use of eText with projection technologies such as Apple TV in one secondary school. Educational technology coaches were involved in training sessions with teachers and their students.

Teachers indicate that eText is being used in a variety of ways, including research at home, as a studying tool, as a focus tool by using the highlighter and bookmarks, as well as for re-arranging content to suit the class. The eText is being used differently in a number of subjects, with math being the most popular. MMS has enhanced features such as the ability to expand and manipulate pictures that demonstrate concepts easier.

"I believe the greatest benefit was being able to have the text on the interactive whiteboards and use the video tips and interactive areas."

Teacher

Teachers indicate that the BYOD (Bring Your Own Device) scenario and having access to eText on student devices adds to instructional effectiveness. They indicate the eText platform helps foster the activator role of an educator where the students and teachers are learning from each other.

"Teachers will take them so far, then it us up to the students to independently explore and work. Great to spark interest in students."

Teacher

"The possibilities are endless!" That was what one teacher indicated when combining the eText with technologies such as Apple TV. Students are more involved in the process of self-learning and collaboration with the teacher guiding, not driving learning.

"Students could conduct their own experiments and investigations in pairs, solo, or in groups."

Teacher

Niagara Catholic DSB

Project Title	Access, Engagement and Student Learning Using Digital Textbooks and Differentiating Across Different Mobile Technologies
Brief Description	Our focus for the project to is to identify whether the eText platform can facilitate knowledge mobilization and whether it can be used to inform better practice. The project will assess the impact of the eText along with the other components (integration with the LMS and the introduction of streaming devices in select project locations) on Communication - to and from teachers and students as well as students amongst themselves.
Context	<i>Number of schools: 51</i> <i>Number of teachers: 494</i> <i>Number of students: 9305</i> <i>Grades/Program: Grades 3-8 (Math Makes Sense) - In Grades 7&8, there is a five subject bundle, Math, Science and Technology, History, Geography, and Literacy in Action.</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Project based on analysis of the impact of the Pearson eText last year.
Goals & Priorities	<i>System Learning:</i> We intend to evaluate the results against several standards, with the Michael Fullan Innovation index as a primary focus. In the index, pedagogy, system change, and technology are evaluated. This will provide sufficient evidence to determine sustainability and system learning.
Role of Technology	The Pearson eText platform is web based but they do have an iOS app. The Pearson eText user names and passwords were distributed in October 2013. The iOS app was included in the deployment of the Apple iPads during the school year (February and March 2014).The streaming devices will be deployed to 2-3 elementary schools in April 2014.
Inquiry Question	Can the technology engage learners, personalize instruction, and motivate students as well as develop key skills which will help them be successful?
Indicators of Success	Extensive indicators are indicated. Data will be acquired via anecdotal evidence (interview questions) from a random set of teachers as well as quantitative analysis via a survey to be administered across all teachers.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Niagara Catholic DSB)

In order to determine successful implementation of the product, a survey was designed with questions designed to obtain evaluation against two key competencies, 21st Century skills as defined by ISTE as well as the Dr. Fullan's Innovation Index to evaluate the system wide impact of the digital eText. Finally, a multi-year statistical comparison was made between results from the previous and current year utilization of the digital eText.

- 73% of teachers indicated that their students were more engaged and motivated when using eText as compared to the traditional textbook.
- 78% of teachers indicated that the eText help foster an "activator role."

A variety of uses for eText were evident, with research at home, studying tool, focus tool with the highlighter and bookmarks, as well as re-arrangement of content.

- 85% of teachers indicated that the ability to expand the pictures in the eText make it easier to demonstrate concepts.
- 86% of teachers indicated that the whiteboard mode in the eText was useful in illustrating text material and keeping students on target.

Successes, Challenges, and Unexpected Results

The first challenge involved the use of streaming technologies such as Apple TV. In a BYOD board such as ours, there are a variety of technologies students bring into the classrooms. In addition, not all students have these technologies to bring. While the majority of these devices are Apple iPads or iPhone, as a board we need to develop a strategy which works on all platforms.

The challenge faced is the lack of common technology protocols in the physical devices so that they will work on all mobile devices. We had much more success with software driven methods to stream information from student to the teacher and classroom as well as teacher to student devices.

In addition, we found another challenge in our network protocols for wireless access. Guest access to wireless is necessary for a security purposes, but streaming technologies such as Apple TV will not function when logged onto a guest wireless network.

Sustainability

Every elementary administrator sent in a list of requests for eText for a minimum of 1 and almost all of their eligible teachers (Grades 3-8). This is seen as a validation of the impact of the eText had within their schools. As a result, the school board has purchased a Pearson eText license for all teachers between Grades 3-8 with all the subjects available in eText format.

(Niagara Catholic DSB)

We intend to work with Pearson Education Canada to provide additional copies of the eText per school per grade to accommodate situations of students who may be on an IEP (individualized education plan) and may require additional content at a different level.

In addition, we are deploying two additional pilots this year to address students at our secondary schools. The first involves having the eText accessible on the Apple iPads in a secondary school library. We want to verify whether having a resource maintained at the school, but outside of the classroom, will aid in the utilization of the eText. This is in part made to address the equity situation for students who may not have access to a digital device in their homes.

Another pilot involves a secondary school science department. All teachers have received an eText license as well as licenses for students in each of the Grade 9 academic science classrooms. In addition, the department received a set of 20 iPad minis in order to facilitate the use of the eText while in the classroom.

We intend to compare the results with the experience at our elementary schools to determine any causality.

We need to address the two infrastructure challenges to ensure system wide implementation is feasible. For example, we need to acquire the wireless access points and wire the portables that remain. We intend to use some of the proceeds of the project to address this limitation. We have already moved to change all Apple mini's to auto connect to the main wireless network. This will ensure that board issued devices can connect to streaming technologies.

Learning for All:

Taking it to the Cloud!

Nipissing-Parry
Sound Catholic
District
School Board

The 21st Century Innovation Research Initiative 2013-14 aligns with the priorities identified in our Board Improvement Plan as well as the priorities determined by the work of our Teaching and Learning through Technology committee. Our work is focusing on a system-wide shift to seamless access of Cloud-based resources for students and educators.

“Blended learning is the future of education. It is shaping education in new ways. Using this tool has helped organize courses in a way that students can access and submit created content online. They can receive feedback and marks in a convenient space.”

Teacher

Our journey includes a tri-level approach to foster leadership at all levels: system, school, and classroom. The specific focus for our classrooms is to build collaborative and flexible learning environments between students and teachers through the integration of Cloud-based resources such as Google Apps for Education (GAFE) in conjunction with Desire To Learn (D2L).

“Multiple people can work on an assignment at one time. It is easy to share your work with others.”

Student

By building instructional capacity that fosters student creativity, we are working to redefine instruction practices, supported by a variety of technologies. As an example, discussion forums online provide teacher and peer feedback on preliminary work before students submit their final work.

“Our Learning Assistance Centre (Special education) is excited to be launching the D2L and GAFE in our classroom. ... [Our students] have shown keen interest in wanting to make it part of their learning experience.”

Teacher

Our teachers are excited about blended learning and how technology can support both instruction and learning.

Nipissing-Parry Sound Catholic DSB

Project Title	Learning For All Phase II: Taking It To The Cloud!
Brief Description	The 21st Century Innovation Research Initiative 2013-14 aligns with the priorities identified in our Board Improvement Plan as well as the priorities determined by the work of our board's Teaching and Learning through Technology committee and is a timely opportunity for our board to generate and document innovative practices that can be shared within our board and throughout the province. This research initiative will also serve to support a shift system wide to seamless access of cloud based resources for students and educators.
Context	<i>Number of schools: 6 Number of teachers: 20 Number of students: 330 Grades/Program: Grades 7-12</i>
Area(s) of Impact	Organizational Practices Leadership
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> This project will be structured to focus on school leadership based on the principles of the Ontario Leadership Framework (OLF) for 2014 - 2015; teacher instructional practice (April 2014 and ongoing), and student learning (April 2014 and ongoing).
Goals & Priorities	<i>System Learning:</i> This research initiative will also serve to support a shift system wide to seamless access of cloud based resources for students and educators. A key focus of this research is the impact on system change, sustainability, pedagogy, and leadership.
Role of Technology	Technology and its various applications are an essential element to the research as it is the key vehicle to create exciting learning experiences that are "irresistibly engaging for both students and teachers", allow for learning "24/7" and helps to make learning authentic and relevant for our students (Fullan, 2012).
Inquiry Question	How will the effective integration of a variety of technologies at the school and system level continue to support the achievement and engagement of all students including those with special learning needs using an inquiry-based approach?
Indicators of Success	Increase in student achievement as evidenced by formative and summative assessments in a variety of content areas including language arts and mathematics. Increase in Student engagement and motivation as demonstrated by teacher and student surveys.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Nipissing-Parry Sound Catholic DSB)

[There is] increased system engagement in re-imagining learning for students and establishing key conditions as a system for learning. As a system, we developed a common understanding of the skills and aptitudes our students require to be successful in our global context to include but not limited to: digital fluency, collaboration problem solving, communication, critical thinking, creativity, social skills (inter and intrapersonal), self-advocacy, flexibility, and adaptability. Further, we determined as school leadership teams that teachers and students need to work together as co-learners where teachers act as facilitator/activators of learning and students are considered facilitators (partners in teaching and learning).

In a relatively short amount of time and given the current focus of integrating cloud based resources into instruction, students are beginning to develop a high degree of collaboration skills as a result of utilizing cloud based resources (GAFE) as a key enabler. Evidence gathered to date has verified that student quality of work, comprehension of content, and self-reflection has improved.

Students report that utilizing GAFE on a regular basis improves the collaboration between peers and between students and teachers. Feedback from teachers is timely and ongoing to students utilizing GAFE. The integration of cloud based resources has impacted assessment *for* and *as* learning practices and feedback between teachers and students is increasing.

Student learning has been positively impacted by the integration of cloud based resources as evidenced by increased feedback by the teachers, improved quality of final student learning tasks as a result of the feedback provided, increased collaboration between students and teachers, and increased student intellectual engagement.

Successes, Challenges, and Unexpected Results

The engagement of our staff in integrating cloud based resources has been very high and therefore has contributed to an accelerated demand of access to these resources in other divisions.

We have observed and witnessed an accelerated focus on assessment *for* and *as* learning practices throughout the teaching and learning process as opposed to a high focus on assessment *of* learning with the integration of GAFE tools.

Sustainability

This 21st Century Innovation Research Initiative continues to be aligned with the priorities identified in our Board Improvement Plan which include deepening our implementation of assessment *for* and *as* learning as well as the priorities determined by the work of our board's Teaching and Learning through Technology Committee. This initiative serves a timely opportunity for our board to generate and document innovative practices that support the 21st Century learner that can be shared within our

(Nipissing-Parry Sound Catholic DSB)

board. We are currently compiling a video to document effective assessment *for* and *as* learning practices utilizing cloud based resources as a tool.

We are still at the beginning of our learning journey with respect to the integration of cloud based resources. Our project focus will expand to a more detailed focus on the implementation of the SAMR model to redefine learning tasks and focus on the impact of 1:1 learning environment on student learning in the intermediate classroom in the area of assessment *for* and *as* learning as well as the integration of mobile technologies to foster student collaboration in primary and junior classrooms.

In addition, our principals will continue to focus on building 'connected' leadership using the Ontario Leadership Framework as guide. At the secondary level, the focus is on integrating technology to support students with special education needs and French as a second language learning. This innovation project is expanding to further include the voice of our students and a Student Summit is currently being planned for 2015.

My Voice Counts:

Using Student Voice to Impact Teacher Practice in Mathematics

Northeastern
Catholic
District
School Board

We saw our project as an opportunity to update our mathematics teaching practices to meet the needs of 21st Century students. We reflected on where we had been and where we needed to go in order to engage and motivate our students. If we truly wanted to change, we decided that we must capture the voices of our students. By working with our students and proving to them that we value their contributions, we set out to engage students as partners in dialogue and discussions that would inform our programs, activities, and instructional practice.

We created and implemented a survey that was completed by all students from Grades 4-10 in the family of schools. We inquired about their feelings towards mathematics – what they liked, what they did not like, and what they needed for success. We asked that they share their perspective on what teachers were doing effectively to help students, and then asked them to respond freely about barriers they encounter in mathematics.

As a next step, our project team decided that it would be interesting and relevant to see the similarities or discrepancies by surveying the teachers of the student participants. The results of this survey confirmed our thinking. Teachers, like our students, continue to feel overwhelmed. They are quick to identify the barriers for success, but offer few solutions to the perceived problems.

As the school year came to a close, our team worked collaboratively to analyse the information and prepare a plan of action that we will implement early in the new school year. We are establishing opportunities for our teachers to work collaboratively and to discuss student needs and instructional strategies that will be responsive to our learners.

With the integration of key technology tools we anticipate increased motivation and enriched student learning. We are also providing a technology coach who will help our teachers increase their skill, knowledge, and confidence in effectively integrating 21st Century tools in mathematics instruction.

We are committed to honouring the voices of our students and using their words to guide our actions. Together we are destined for success – making every step and every voice count!

Northeastern Catholic DSB

Project Title	MY VOICE COUNTS: Using Student Voice to Impact Teacher Practice in Mathematics
Brief Description	This project focuses on capturing student voice to identify student needs in learning mathematics as well as the factors that impact their achievement. Through the use of technology, students will build skills in problem solving and collaboration, with the goal of helping refine their habits of mind to persevere through mathematical challenges and develop resiliency in the face of difficulty. Our goal is to have teachers use the information generated by students to adjust instructional practices and give greater focus to student goal-setting.
Context	<i>Number of schools: 6 Number of teachers: 17 Number of students: 600 Grades/Program: Grades 4-10 Mathematics</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> The outcomes of this project will serve to direct future professional learning opportunities for educators as well as impact programming decisions and practices, specifically as they apply to mathematics teaching and learning. <i>Student Learning:</i> We will develop specific targets and goals with specific monitoring elements attached to each set action. This plan will identify how our efforts are positively impacting outcomes for our students. Further, we will identify “tracker students” who will represent all achievement levels and determine potential impacts for each of the levelled groups of students.
Role of Technology	Technology will be used to both gather information and monitor progress, as well as to engage students in various types of learning and skill development.
Inquiry Question	What is the impact of student voice on motivation and resilience in mathematics as students’ transition from grade to grade?
Indicators of Success	Achievement will be tracked and monitored. The use of ongoing surveys and interviews will also be used to obtain qualitative feedback from students. This information will be the foundational piece for change in instructional practice and task design. As the project team pursues work in stage two of the project, we will develop specific targets and goals (as a result of the determination of patterns and trends) with specific monitoring elements attached to each set action.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Northeastern Catholic DSB)

Using a qualitative research stance, a survey consisting of 7 open response questions was created by the project team. Analysis of results was conducted by the project team using the Survey Monkey textual analysis tool and through categorization of responses according to emerging themes. These emerging themes provided the data used to inform next steps in terms of instructional strategies.

Additionally, a random sampling of students in various grades within the 5 schools participated interviews conducted by the principal of each school. Using a mixture of open and closed response questions, the interviews focused on examining the type of instruction that is currently occurring within classes. The introduction and use of teacher surveys were added to the process to analyze similarities between the two groups (students and teachers).

We have learned that....

- Our educators continue to need capacity building opportunities to help them understand mathematical concepts and skills while effectively integrating 21st Century tools and technologies.
- Our students do not want to be inundated with new technologies....they want to understand what they are in doing in mathematics and use existing technologies with greater confidence.
- Our students want to develop foundational understanding in mathematics.

We think that...

- More opportunities are required for cross-divisional teachers to work together.
- A continuum of foundational understandings will help guide the instructional program in mathematics and help develop prior knowledge for our students as they progress from grade to grade/transition to schools.
- There is a gap between our teachers and our students that we need to close so that our teachers have the confidence to lead a mathematics program.
- If we truly want students to gain confidence, build resiliency and perseverance in mathematics then our teaching practices must be refined in order to ensure learning settings that promote and encourage the acquisition of such skills.

We worked to develop a continuum of mathematics skills and concepts to guide instruction from grade to grade. This is currently in practice and outcomes will be assessed throughout the current school year. We anticipate that this approach will not only assist teachers in effective planning and instruction delivery, but will ensure that students have the foundational skills and understandings of mathematics as they progress from Grades 4 to 10.

Successes, Challenges, and Unexpected Results

Due to unforeseen circumstances, our work was delayed. It was necessary to combine the work of this project with other strategies already in progress within the board. This had a positive impact on our ability to address both teacher/student learning needs and to ensure coherence in our actions as we attempt to close achievement gaps.

(Northeastern Catholic DSB)

We were unable to secure a technology coach as quickly as we had hoped, to work in partnership with classroom and resource teachers. This was another significant set-back, as the support model was intended to help teachers implement 21st Century learning tools to support student learning in mathematics while enhancing their motivation and perseverance. Though the timing did not match the original plan, this type of support has been helpful in moving the learning forward for both teachers and students.

Our original plan considered the engagement of students only in the survey. After we reviewed the results, we wondered how similar or different the teacher perspective would be in comparison to the student results. As such, we modified the survey and engaged the teachers of the participating students to complete the survey. Though it is student voice that drives our work in this project, we gained just as much information from engaging our staff in a survey. This also helped to clarify the professional learning needs of staff, charged with the responsibility of leading the instructional program in mathematics.

Sustainability

We are establishing processes to ensure that teachers are accessing information about student thinking, achievement, perseverance, and pathway goals using an electronic portfolio that will be shared as students transition from grade to grade/school to school.

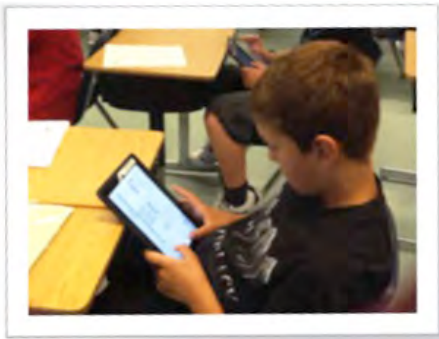
The implementation of technology to track and monitor progress is building a systematic and consistent approach. Outcomes will be shared and analyzed and serve as the basis for local and district action planning.

Further this project was a stepping stone to enhanced work in the area of digital citizenship and *teaching* students how to collaborate, problem solve, communicate, and work safely in an ever evolving world. We are furthering our system thinking about technology and have just introduced our first “Ed Tech Team” – a group of teachers, principals, and system leaders working together to enhance technology at the point of learning across all classrooms in our district school board.

Mobile Technology in the 21st Century Classroom

Northwest
Catholic District
School Board

The primary focus of our project is to determine the effect on engagement and achievement if students are provided with iPads for 1:1 use. We started with iPads in one Grade 8 class with further plans to provide them to all intermediate classrooms. A second focus of our project is to determine the level of support, both educational and technical, that teachers need to use mobile technology effectively in the classroom. The teachers were trained and mentored on the use of mobile technology by a full time technology coach.



Student finding an answer instead of waiting for the teacher

We are recognizing many benefits. Students organize their work more easily as it is all stored in one place, so there is less work being lost and a dramatic decrease in incomplete assignments. Students are introduced to various apps and have a choice in how they complete their work. We soon recognized that tablets are perfect devices for differentiated instruction.

“The tablets help with privacy when handing assignments in because nobody else sees your work like they do when it’s on paper.”

Student

Students are involved in dynamic learning as they can easily express their comprehension using words, images, video, and oral communication. The tablets also foster independent learning and problem solving as students have access to information at their fingertips. Students now search for the answers to their own questions; the teacher is no longer the main source of information.

Having the technology coach as a support continues to be a key factor in teachers integrating technology devices into daily teaching as well as promoting collaboration. For example, the collaboration between the technology coach and the eLearning contact enables a seamless workflow with the Virtual Learning Environment (VLE).

There is much discussion over which apps are most effective; generally, the general productivity apps are proving to be the most effective. Our app list has grown to include ones that meet the needs of diverse learners and teaching styles. For example, iAnnotate, a form of cloud technology, is beneficial for both students with various learning disabilities and those in language courses. As well, it provides a paperless environment in which teachers use their handouts and worksheets.

“Just a short note to let you know that I have added a “vast array” of assignments to my drop box for my students...I want to thank you for your expert help in getting us started with the iPads.”

Teacher

Northwest Catholic DSB

Project Title	Mobile Technology in the 21st Century Classroom
Brief Description	Our focus for this project will be to provide all intermediate classrooms within our Board, approx. 12 classrooms with iPads for 1:1 use. Teachers will be supported/mentored/trained on the use of mobile technology with the support of a full time technology coach. A goal is to determine the level of support (educational and technical) that will be needed to continue to effectively use mobile technology in the classroom.
Context	<i>Number of schools: 5 Number of teachers: 15 Number of students: 220 Grades/Program: Grades 6-8</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> Teachers will be involved in broader discussions with Board consultants and with access to a Lakehead University Researcher to aid in a Research Action Project to compile and share data.
Role of Technology	Technology will play a key role as this entire project will centre on the use of mobile technologies in the classroom.
Inquiry Question	If we support teachers with technology in the classroom to improve their efficacy in use and implementation in teaching and student learning, then the students' knowledge and understanding of digital literacy will improve and have a direct effect on their 21st Century learning skills.
Indicators of Success	We will look at classrooms that have exposure to training and access to mobile technology for these measurable outcomes: expense impact, how the device was used, viability as an E-Reader, and overall enhancement to a student's academic experience. We will look at the evidence of the benefits and uses of mobile technology with young people who experience communication, language, and literacy difficulties. We will evaluate the academic enhancement to the courses, how the devices and the specific apps and web-based tools can be integrated in this capacity, and how the integration of these mobile tools can expand the abilities of students as they enter the workforce.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Northwest Catholic DSB)

The students and teachers have transitioned from the initial excitement of having an iPad and learning how to use the iPad for completing tasks, to recognizing the device as one tool that can be chosen to be used to complete a task. This has become very significant for differentiated learning and teacher instruction, and for the student recognizing who they are as a learner and what tool works best for the task at hand. Teachers have also become more comfortable with using the iPad as a teaching tool and have progressed in their recognition of the iPad being used to fulfill curriculum expectations and not as something to be taught in addition to the curriculum.

There are significant parallels between teacher reporting and student reports of changes in skills, showing high recognition for the influence of iPad use on organizational and research skills. The use of the iPad to enhance listening skills would seem unexplored by teachers and students, leading to a perception of a slightly negative influence. The teachers are unanimous in perceiving improvements in student creativity, much higher than was recognized by the students.

We see that teachers are very much aware of the benefits of student self-directed learning in class and are structuring their classrooms to recognize the value of individual student-driven research. This is a technology where teachers have recognized that students have more experience with iOS devices than they do, but are willing to help their teacher progress, an unexpected collaboration skill!

In this third year of the project, the levels of student engagement continue to be high. Teachers are impressed with student creativity and notice that presentations have gained significant strength. Students are very familiar with the technology and seem to value the ability to research material instantly.

Successes, Challenges, and Unexpected Results

Teachers who were expected to be resistant to changing how they have taught, were very open to suggestions, strategies, and new ways of delivering curriculum. iAnnotate has become a very useful app for teachers who still want to use hard copy handouts and worksheets.

One challenge in our board is the distance between schools. To work through this challenge we partnered up teachers from different schools who were at the same comfort level with using the iPad in the classroom. With the support of the Technology coach they worked together on similar classroom projects.

Several teachers are still resistant to changing their teaching style. They cannot see the benefit of using the iPad as an additional teaching and learning tool. They are having a hard time connecting how to use one iPad to teach a class when the students don't have iPads.

When students start their work on the iPad both teachers and students have the challenge of how and when the work will be completed since the iPads cannot be taken home. Our board implemented student email. There are many challenges with the email. The email does not work consistently through

the mail app so mailing projects from iPad apps is hindered. Implementing an iPad take-home policy may have to be a next step in this challenge.

Sustainability

Increasing support by making the Technology Coach position full time.

Purchasing more iPads as we continue to roll out the devices to Grade 5 classes in the board.

Continued positive collaboration with the board IT department, site admins, and the eLearning Coordinator producing ideas and strategies with several perspectives taken into account.

This project enabled us to create an enabling environment which included bringing in the correct software and technology that was easy to use for staff and students to use. We looked at policies re: equipment use and student policies. For this project we examined the data and looked at the success factors that help scale up this project and asked users to provide feedback on their experiences with the different technology solutions.

Using BYOD and Pods of Technology in Task-Centred Inquiry-Driven Learning Environments

Ottawa-Carleton
District
School Board

We adopted instructional strategies known as “The Big Five,” developed ‘exit outcomes’ for our students, and are focusing on student and staff well-being and leadership in our Strategic Plan. These initiatives centre on instructional practice that is built around rich tasks and deep learning.



A Kindergarten student involved in inquiry-based learning

Advances in mobile technology provide opportunities that did not previously exist with the fixed-in-place desktop computers. We redesigned our IT infrastructure to support anywhere, any device, and anytime access through robust WiFi and Google Application for Education (GAFE) accounts for every staff member and student.

To support these shifts, we are working with a teacher from each school in local Professional Learning Communities (PLCs). These Digital Learning Advocates (DLAs) meet regularly to discuss the use of technology in support of good instructional practice.

Through these meetings and discussions we identified our Big Ideas.

The Pod Project embeds a number of mobile devices (e.g., iPads, Chromebooks, laptops) in every classroom in the school. We chose devices for the classrooms based on the developmental level of the students and the instructional culture of each division. Once we addressed the management of the devices, we saw the emergence of formal and informal PLCs discussing how technology best fits into their instructional practice.



A Grade 6 collaborative map using GAFE

In the secondary panel, we are working intently with schools to integrate students’ personal devices into the learning environment. Our BYOD implementation is very tightly coupled to our instructional drivers as we work to leverage it to increase opportunities for differentiation and personalization, to engage in customized learning experiences, and to share understanding in a variety of ways.

With a common focus on instructional culture and pedagogy, the pilot groups in each of the two panels saw the emergence of both access types (pods and BYOD) regardless of which was the focus. This interweaving of the two access modes is a likely next step as we move ahead in our work.

Ottawa-Carleton DSB

Project Title	Using BYOD and Pods of Technology in Task-Centred, Inquiry-Driven Learning Environments
Brief Description	This project began out of a recognition that a “computer lab” model for using tech was not conducive to meeting instructional goals. Our work in 2012-2013 examined using BYOD and pods of mobile technology to support inquiry based science classrooms at the secondary level in a single school. This year, we have begun investigating this mode of access at a school-wide level in an elementary school, with technology pods in every classroom. We have also started work in two secondary schools deeply examining BYOD use in their Grade 9 cohorts.
Context	<i>Number of schools: 3</i> <i>Number of teachers: 75</i> <i>Number of students: 1500</i> <i>Grades/Program: K – 9 across disciplines</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Our work in 2012-2013 examined using BYOD and pods of mobile technology to support inquiry based science classrooms at the secondary level in a single school. This year, we have begun investigating this mode of access at a school-wide level in an elementary school. We have also started work in two secondary schools examining BYOD use in their Grade 9 cohorts.
Goals & Priorities	<i>System Learning:</i> Round 3 will allow us to scale up our scope even further as we add three additional schools and consider the suitability and sustainability of these models of access across all four panels and in a variety of subject areas and settings. <i>Student Learning:</i> The data captured on the depth of technology integration is important as we hope it leads to a greater understanding of how technology is supporting (as opposed to driving) the learning in our schools.
Role of Technology	This project emphasizes the classroom-based use of both personal and district owned tools and devices. The devices used will include: Laptop computers, Chromebooks, Tablets (iPad and Android), BYOD devices.
Inquiry Question	Do pods of technology and BYOD access models increase the capacity for teachers and students to engage in inquiry-driven learning in their classrooms? What are the conditions required for successful adoption and integration of BYOD and technology pods in classrooms at the elementary and secondary levels?
Indicators of Success	The level of use of our Big Five strategies (rich learning tasks, differentiation, criteria, feedback, and moderation). The depth of technology integration in classrooms.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Ottawa-Carleton DSB)

Before round 2, our technology was deployed either in traditional labs (desktop computers) or in mobile labs (laptop computers on carts). Round 2 showed us some of the potential of a distributed/embedded deployment on a small scale, and round 3 allowed us to explore distributed/embedded deployments and the integration of personal mobile technology on a much larger scale.

To support our “Big Five” instructional strategies, we were looking for a mode of technology access that would best serve our classrooms as they shift to an inquiry-driven task-centric model of learning. It was made clear to us in round 3 that both BYOD and distributed/embedded deployments of school-owned technology are important elements of a rich technology ecosystem which empowers teachers and students to engage deeply in their learning in a personalized, differentiated manner.

Both teachers and students reported that the availability of personal devices in classroom settings through intentionalized BYOD initiatives served as an “amplifier”: when students were engaged in their learning activities, devices enabled more efficient, and/or more personalized ways to engage in their learning. On the other hand, when students were disengaged from the learning environment the devices demonstrated their ability to serve as a distraction.

Staff indicated that Google Apps for Education (GAPE) was critical in developing meaningful learning experiences as it allowed for rich collaboration and feedback as well as providing an ecosystem where ALL mobile technology could interconnect easily. Additional feedback from students indicated that learning tasks incorporating inquiry, student choice, flexibility, and differentiation were identified as opportunities enhanced by consistent, predictable access to mobile technologies in the PODs.

The reporting of appropriateness of technology is striking. At one school 74% of teachers responded that the technology available to students to use is very appropriate, while 0% of teachers responded that the technology available to students to use is not appropriate report. This is reflected in the numbers around frequency of use: with embedded devices that are appropriate for students, the percentage of teachers who report using technology multiple times per week increased from 29% to 79% over the course of the pilot. In addition, prior to the pilot 35% of teachers reported never having access to technology when students needed it; this dropped to 3% after the pilot.

The student advisory panels in the secondary pilot sites reported that the integration of personal devices (whether BYOD or devices embedded in classrooms) served as amplifiers of curiosity and engagement. In classrooms where the instructional practice was focused around the “Big 5” instructional strategies and especially when students were engaged in rich learning tasks, the integration of mobile technology allowed them to go further and deeper, and to differentiate both the process and products of learning.

In both pilots we witnessed a natural shift and acceleration towards accepting BOYD as a valuable shift in learning environments. Analysis of our wireless network at the pilot site revealed details about the mobile devices being used in the PODs but also indicated an increase in personal mobile devices at the site and underlines an important unanticipated outcome; The POD model naturally develops an

environment that welcomes BYOD, enabling students and staff to use the device that best suits their learning styles. The teachers at our elementary pilot site reported an increase of 23 percentage points of teachers actively encouraging students to make use of their personal devices in school.

Successes, Challenges, and Unexpected Results

An unanticipated benefit, that we will continue to encourage was - Informal, ad hoc PLCs formed: sharing of ideas and experiences developed naturally when staff members would borrow mobile devices from one another. "Can I borrow your devices for the afternoon, my class is going to... and it would be better to have additional devices to allow..."

An important process for viewing and assessing device specific WiFi traffic was developed in order to monitor the number and type of devices in each of our schools. The information gathered has helped inform the development of the OCDSB - BYOD draft guideline document as well the Draft Digital Fluency Indicators document.

It was found that the POD Pilot of distributed deployment meshed well with the BYOD Pilots in secondary sites and helped inform the writing of the District's BYOD Info brochure - detailing the District context for engaging BYOD as a site based practice, influencing dialogues about mobile technology and BYOD throughout our school system.

Sustainability

Our Pod and BYOD pilot projects are continuing in our initial sites with growing ownership. At one site, the distributed/embedded technology "PODS" and shift in teacher practice are being maintained through a significant transformation in staff attitudes towards technology. Discussion, co-design and co-creation of resources and shared practices around the management of the devices are ongoing and expanding to be shared with other schools through our Instructional Technology Coaching program.

Formal technology related Professional Learning Communities (PLCs) were developed at one site in order to maintain the shift in practice by adding formal "Tech Bites" at regular staff meetings, with 5-10 minutes attributed to staff sharing successful POD experiences and including suggestions on what it could look like at the other grade levels, making the experience task related and not content or expectation specific.

The OCDSB is officially scaling-up the POD and BYOD pilots by adding two additional POD Pilot sites - These schools are currently in a selection and approval process. There are many other schools that are looking to establish POD or Distributed/Embedded Technology models through their own planning.

Libraries to Learning Commons

Using data applications in literacy (Elementary)

Exposing all students to online learning (Secondary)

Ottawa Catholic
School Board

For the past five years, we have been on a journey of technology transformation. The goal is to leverage technology to engage students and enhance learning as well as to prepare students for the integration of technology in their lives that they will experience when they leave secondary school.



Learning Commons: a conducive environment for learning

Our school board is taking a multipronged approach in transforming to meet this goal: from physical technology and environments, to professional learning, to the approach to teaching and learning in the classroom. We are making concerted efforts to include parents in this transformation.

One of the first steps we took was to invest in technology for staff and students. This included high end laptops for all teachers and staff, more access to mobile devices for students, high end desktops for high end digital courses, wireless everywhere including portables, interactive whiteboards in classrooms, and meeting rooms that inspire thinking and collaboration. We converted libraries to Learning Commons and redesigned schools for learning with technology. We changed policies to promote the safe use of technology in the classroom and acquired tools and resources to ensure that teachers had access to digital resources for leveraging in the classroom.

We are initiating new tools for communication and professional learning as well as new approaches and practices for professional growth to provide more just-in-time access to learning. Before we release any new tools, we prepare online learning, videos, and documents to support learners. When we offer live sessions to groups, we model new ways to learn with access to the videos so staff would learn to rely on online resources instead of on an instructor. As learning leaders, principals have access to videos to support new learning. Our school board moved to Google and Blackboard (with a shift to D2L currently) as key tools across the system for communication, learning, collaboration, and content storage.

We are making these significant changes fairly rapidly. Some of the key understandings that we are gaining are that technology shifts all the time; that everyone will be living in a state of constant change and learning; and that the immediate importance for the 21st Century is to become active learners.



Giving visibility to e-learning

Ottawa Catholic DSB

Project Title	Libraries to Learning Commons / Using data applications in literacy and math to drive DI and small group instruction (Elementary) / Exposing all students to online learning (Secondary)
Brief Description	These projects have two main focuses, first to provide educators with the skills to infuse 21st Century learning and skills into their practice and secondly to engage students in learning through DI and online learning with technology. The online content is infused with 21st Century Skill development for students.
Context	<i>Number of schools:</i> not reported <i>Number of teachers:</i> not reported <i>Number of students:</i> not reported <i>Grades/Program:</i> not reported
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Additional details needed for final report.
Goals & Priorities	<i>System Learning:</i> All these activities are designed to scale the projects to either full system scale or much closer to full system capabilities.
Role of Technology	Technology will be used extensively in all of these projects from accessing online digital resources and online blended and e-Learning content to online play-based applications.
Inquiry Question	Libraries to Learning Commons: <ul style="list-style-type: none"> • Can infusing Learning Commons staff with 21st Century Skills and knowledge, transform them into digital change agents within a school? Using data based applications in literacy and math: <ul style="list-style-type: none"> • Will preparing teachers to use data based on Assessment As and For Learning provide them with the tools to better differentiate learning? Exposing all students to online learning: <ul style="list-style-type: none"> • Can we successfully expose ALL Grade 10 students to an online learning experience through Careers and Civics?
Indicators of Success	Indicators for each of the three elements are identified.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Ottawa Catholic DSB)

We looked at the data, especially in elementary math. It is very difficult to determine, with the resource tools that we use, if they have a direct effect on Student Achievement. You have to track particular students in a cohort over a number of years to try to determine, realistically, if there is an impact and one that you might want to measure like EQAO scores.

In programs like the online blended learning for Careers and Civics in Grade 10, student data is reporting that devices allow them to do more, and access more relevant content. Students are also reporting that they are getting new skills. We expect the skill development to decrease soon as the skills will be developed before Grade 10.

By creating shared course content and going through improvement cycles we can offer teachers better content, which is especially important in courses where we find more transitional staffing. This we know can have a direct impact on student learning but not necessarily achievement.

Successes, Challenges, and Unexpected Results

We have been using Raz Kids and Dreambox Math in elementary for a couple years but have expanded the PD with the CODE grants. The elementary schools have largely shifted to inquiry based learning and fluid use of technology in the classroom. This shift has not happened to the same extent in Grade 7 where students in our Board move to High School. A plan was worked out to introduce transitional tools.

We have used funding to support PD at related conferences like GAFE and ECOO. The teachers have provided very strong feedback about their learning and the opportunity to share at their schools.

In Grade 10 we are running a 1-1 Chromebook program. This is an expensive program to run as the devices are also sold at the end of the semester. It was initially decided to not repeat the program this year, but we flipped the decision at the last minute.

Sustainability

We have expanded the Learning Commons with online resources.

The elementary resources continue to expand in the number of students accessing the tools, for example we went from 7,000 student/classroom requests to over 11,000 seats this year.

We also introduced Mathletics as the first transitional tools, targeted for that purpose. We will evaluate and determine next steps later in the year.

Teachers require knowledge of a dashboard and reporting features that allow them to modify their practices and focus in on specific student learning needs. The teachers are getting PD for this. PD for eLearning and blended online learning have been key to moving teachers in the online learning space.

[We are] exposing teachers to learning opportunities outside our Board. We had the most teachers ever exposed at about 350 so far.

iSTEP:

Peel District
School Board

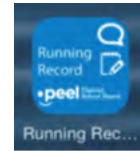
Using the iPad as an Effective Tool for Organizing and Collecting *Steps to English Proficiency (STEP)* Assessment Data

The advent of mobile technologies in our classrooms has changed the teaching and learning within our schools. We believe that modern technologies can be used to support our teachers' assessment and placement practices. To that end, we have created several apps (e.g., iAssess and iRecord) iAssess supports teachers in triangulating and recording evidence of learning. Using iRecord, teachers can track students' language development.

We learned from the challenges we had in the development process for previous apps. Our first attempt at internal app development was slower than expected. We had several unexpected considerations (e.g., cross platform usage and multi-device needs as teachers could be using tablets or phones).

We spend considerable time working on aligning the existing systems to facilitate and support the needs of our teachers and in turn, the needs of our students. We are partnering with Apple Canada to help design the interface and modular components as we work towards fully leveraging mobile technologies in the hands of teachers.

We are working on an iSTEP app to support *Steps to English Proficiency (STEP)*, the current assessment framework designed to monitor and track language proficiency of English language learners (ELL). We plan on having this app used by 9 teachers in 3 schools (3 teachers per school). These teachers will give input on the creation of the app and then feedback and suggestions for improvement after piloting the app in their classrooms. We are involving the Learning Technology Support Services department to help create and refine the app as well as our central support staff who work with teachers to improve assessment practice.



iRecord app for tracking language development

Peel DSB

Project Title	iSTEP - Using the iPad as an Effective Tool for Organizing and Collecting Steps to English Proficiency (STEP) Assessment Data
Brief Description	iSTEP is an app to support 'Steps to English Proficiency' (STEP) which is the current assessment framework designed to monitor and track the English language proficiency of ELLS. The goal is to have this app used by 9 teachers in 3 schools (3 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). In addition to involving classroom teachers the project would include support from our Learning Technology Support Services department as they will help us to create and refine the app and from our central support staff who would work with teachers to improve assessment of, for and as learning capabilities. Once the app is finalized and working properly it will be made available to all teachers.
Context	<i>Number of schools: 3 Number of teachers: 9 Number of students: Not Applicable Grades/Program: NA</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Our current project partners with Apple Canada who are advising on the modularization and we are upgrading our servers to account for memory needs.
Goals & Priorities	<i>System Learning:</i> We want to have teachers understand and be better supported in the collection of student achievement evidence. <i>Student Learning:</i> We want to impact instructional practices to better incorporate student assessment data and support our ELL population.
Role of Technology	Within Peel our focus has been on mobile technologies including tablets. This project will require the extensive use of tablets Apple, Windows and Android. The project requires digital memory, an Oracle server and consistent WiFi access for true success.
Inquiry Question	How can the iPad be used to support teachers as they implement and utilize Steps to English Proficiency (STEP) to monitor and track the English language proficiency of ELLs? How can this information be leveraged to improve program considerations for and the success of ELLs?
Indicators of Success	Our position/location and movement through the 'stages of development' is a useful form of evidence on progress and has certainly helped to inform our process towards finalizing the app.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Peel DSB)

Currently (for app development) we are working with focus groups, the Peel District School Board (PDSB) ESL/ELL Coordinator and Resource Teacher, Apple Canada representative and Learning Technology Support Services staff – these individuals are helping to guide the PDSB regarding app development and modularization. Our position/location and movement through the ‘stages of development’ is a useful form of evidence on progress and has certainly helped to inform our process towards finalizing the app.

Successes, Challenges, and Unexpected Results

Consistency of teacher assessment. This has been a focus for the Board for several years. STEP has helped to focus our efforts.

[There is] improved relationships between ELL/ELD teachers and others at both the Board and school levels.

Projects of this nature involve several individuals and departments. Miscommunication between departments, typically between academic and business staff members, was not uncommon. This highlighted the need for clear communication including summarizing what will happen, what was expected and why/why not certain decisions have been made.

Sustainability

We continue to work with our technical department and focus groups to improve our data collection.

Non-teaching staff are participating in focus groups and meetings with Apple Canada. They are instrumental in the process as they are programming (building) the prototype, dealing with memory allocation issues and ensuring a seamless connection between our app and data warehouse.

Additionally, the app learning has been immense. We continue to struggle with connecting the app (cloud based functionality) with our on-prem servers. Once finalized, the app will be rolled out to the system either through a conference style opportunity or via our Instructional Coaches, ESL/ELL Coordinator and ESL/ELL Resource Teacher. The method of rollout will be dependent on the completion date (the date when our prototype has been fully tested and approved).

The modularization of app components, though in its infancy, will, we expect, serve us well as we continue in app development.

Impact of Technology on Student Inquiry in a Kindergarten Classroom

Penetanguishene
Protestant
Separate
School Board

For our project, we decided to explore how technology uncovers student thinking. Two of the guiding principles we chose to focus on are play-based and inquiry-based learning. Our questions evolved into how can technology support our understanding of our students' thinking and how can this be shared within the school community. We chose a class where full-day Kindergarten had just been implemented for our work. Staff selected marker students to measure the impact of the learning, as both staff and students engaged with the technology.



Student made words on the light table and took pictures to record her work

Observing Kindergarten students and documenting these observations are key elements of communicating learning to educators, parents, and the students themselves. As our students engage in the learning within the classroom and as educator teams respond to their questions and wonderings about this engagement, we are documenting new student learning, using tablets. We are finding that as our view of the learner changes, our view of learning is also evolving. Our educator teams are seeing connections among student observation, student conversation, and the realization of the program expectations.

"I used to think that I would stick to a specific structure and schedule in the early years. Now I'm more open to the thought of switching it up to suit needs of kids."

Teacher

It was surprising to us just how many layers of our daily classroom practice within our Kindergarten program have been impacted by this project. A natural progression of our project is the expansion of the program to observation of learning in Grades 1 and 2 and consistent, collaborative planning time. Areas that we might include are the development language and numeracy trajectories, student engagement, and higher order thinking skills.

"... I see that a very simple student-initiated activity can show us much more about the child's learning than "planning" for a large group. I now know that slowing down, observing students and talking with them will produce just as effective results."

Teacher



Observation becomes a part of class culture: a student plays school and creates a class chart to record information

Penetanguishene Protestant Separate SB

Project Title	Impact of Technology on Student Inquiry in a Kindergarten Classroom
Brief Description	The focus will be on observation and documentation of children during a play-based program while they are using an iPad to investigate information, support or confirm previous learning, engage in new learning. The educator teams will also use the iPads to document student wonderings and thinking as the student inquiry unfolds.
Context	<i>Number of schools: 1</i> <i>Number of teachers: 2</i> <i>Number of students: 6</i> <i>Grades/Program: Students in JK/SK classes who may be deemed as 'students of mystery'</i>
Area(s) of Impact	Students Teachers
Phase of Change	<i>New project. Not involved in previous years.</i>
Goals & Priorities	<i>System Learning:</i> This project will form Step One of a multi-year plan to provide Early Years teachers. <i>Student Learning:</i> By the end of the inquiry there should be evidence that supports how the technology and the impact of using pedagogical documentation as a tool has advanced teacher professional learning.
Role of Technology	It is intended that six Samsung Galaxy tablets be purchased for each classroom (2 for educator team use and 4 for student use) with appropriate apps to be purchased to support curriculum implementation.
Inquiry Question	If we provide our students with technology, does student learning become more visible for the child, the teacher, and the parent?
Indicators of Success	It is intended that the triangulation of data through observation, conversation and product as sources of evidence, during student learning/inquiry sessions using technology, will provide a more reliable and valid indication of the students' achievement of the related curriculum expectations.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Penetanguishene Protestant Separate SB)

By the end of the project, students were more actively engaged; they were beginning to connect their play to learning and starting to articulate this learning; the student-to-student voice increased and greater collaboration of learning occurred.

The use of the pedagogical documentation via the tablets allowed for greater collaboration between teacher and ECE in discussing students' strengths needs and next steps. It also allowed for further discussion because the kindergarten teams were able to look at the data more than once to gain further understanding around student thinking.

The kindergarten teams were able to share students' learning more visibly with parents, but because of the timing of the project did not receive much parental feedback regarding the documentation

Successes, Challenges, and Unexpected Results

The kindergarten teams responded to student voice and their enthusiasm for using the tablets and added their own tablets into student centres so that more students were able to use them at the same time. Students quickly became adept at using touch screen tablets but were less capable of using a mouse on desktop computers.

Students were enthusiastic to use tablets and sometimes had disagreements as there were only four available for student use at the beginning of the project. This was partially addressed by allowing students to use the educators' tablets when possible. Another challenge was created as then the educator teams were not able to use the tablets for recording their own observations at the same time.

Sustainability

An integrated approach is the focus for our entire school plan. Also, we are scaling-up the inquiry based learning into the early primary grades and have purchased 17 additional tablets to be integrated into the early primary grades.

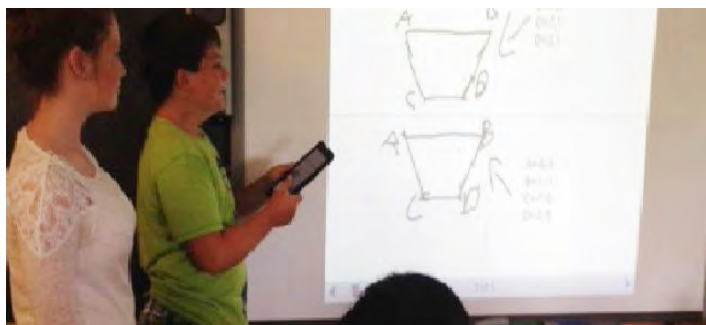
“ICT-Math:”

Interpret, Create, and Talk about Math

Peterborough
Victoria
Northumberland
and Clarington
Catholic District
School Board

An identified focus of our Board Improvement Plan is to improve teaching and learning in mathematics within our schools. This led us to develop a Theory of Action: “If we increase teacher confidence in math by supporting professional learning in teaching through problem solving, and by providing technology tools to enhance differentiated instruction in math, then student engagement, self-efficacy, and ability to communicate when problem solving will increase.”

The overarching vision for the ICT Math project is, to paraphrase Michael Fullan, to combine technology and pedagogy to make for irresistibly engaging classroom experiences. Building on our work in previous projects, as well as district supported technology tools for collaboration (e.g., Google Apps for Education), teachers are using technology to broaden their repertoire of mathematics instructional strategies along with the 3-Part Lesson as the main vehicle to deliver math instruction.



Students using technology to share thinking during problem solving

School teams participated in professional development and participating classrooms received 3 iPads, access to various math applications, and a means to wirelessly stream iPad content to screens for classroom sharing and discussion. Participating teachers chose a unit of study in which to use the devices regularly with their students, and were asked to collect assessment data before and after the unit of study. Centrally-assigned staff facilitated co-planning and co-teaching sessions with participating teachers to support the use of technology that enabled students to show their thinking as they worked together to solve problems and share their solutions.

“I have found that the use of technology can give students a chance to problem solve and ‘troubleshoot,’ in doing so create an atmosphere that is conducive to sharing ideas and thinking about math.”

Teacher

We are now in the process of analyzing the qualitative and quantitative data collected to determine the impact of the project. Our early results indicate that our efforts have been successful.

“This helps me communicate my math thinking when I use iPads for recording my math. We use it while working out problems and write it down on the Smartboard and it records our voices while we work so you can follow people’s train of thought. It also helps seeing and hearing ways others went about the same question.”

Student

Peterborough Victoria Northumberland and Clarington Catholic DSB

Project Title	"ICT-Math" - Interpret, Create, and Talk about Math
Brief Description	The focus of the project is to improve the participating teacher's ability to execute a three part math lesson which in turn will increase student ability and confidence in applying problem solving strategies. We will be expanding the scope of the project from last year's 15 classes to this year's total of 40 classes. All project participants (Principals, Classroom Teachers and Special Education Resource Teachers) will attend an initial "boot camp" to familiarize the participants with the technology and software. They will then participate in their Collaborative Inquiries under the direction of our Student Achievement Consultants.
Context	<i>Number of schools:</i> 13 <i>Number of teachers:</i> 40 <i>Number of students:</i> 1150 <i>Grades/Program:</i> Grades 3 – 12 Mathematics
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In our previous project we provided iPod Touch devices. The drawback we noted with the iPod Touch device was that the small size was not conducive to group work or manipulation of virtual manipulatives available in apps. We are switching to a slightly larger device (iPad Mini) that we will see even better results.
Goals & Priorities	<i>System Learning:</i> Teachers will broaden their repertoire of mathematics teaching to include the 3-Part Lesson as the main vehicle to deliver math instruction. This is a key part of our Board Improvement Plan. <i>Student Learning:</i> We will be leveraging work underway in the area of Collaborative Inquiry with a focus in Mathematics and weaving technology throughout to ensure that students have the opportunity to create, communicate and especially collaborate.
Role of Technology	The board will provide the classrooms involved (and who do not have existing tablet/iPod technology) with 3 iPad mini tablets and a cadre of math applications identified in last year's project.
Inquiry Question	If we increase teacher confidence in Math by supporting professional learning in teaching through problem solving and providing technology tools to enhance differentiated instruction in Math, then student engagement, self-efficacy and ability to communicate when problem solving will increase.
Indicators of Success	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. Teacher will use open math tasks in mathematics and be able to describe the benefits of using such tasks with their students. Create professional learning communities with a focus on math.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(PVNC CDSB)

- iPads being used as a tool, not just for playing games: students worked collaboratively to visualize, plan, represent, and communicate math thinking, demonstrating application of mathematical processes.
- iPad recordings provided teachers with data to demonstrate student understanding.
- [There is] movement towards augmenting and modifying (SAMR model) how teachers and students develop, discuss, and reflect in their math learning and development of more collaborative Math Talk communities.
- Students developed a more positive attitude towards solving math problems. Students felt more engaged, and were more willing to participate in the learning. Student engagement increased. Students were “doing math - not realizing they were doing math.” [There is] improvement in the student use of math vocabulary as well as an increase in communication between peers and with teacher.
- iPads provided documentation of student thinking throughout the problem solving process.
- Over 50% of students demonstrated growth in communication on the written ONAP Performance Tasks when comparing Pre and Post results.
- About 20% of students demonstrated little or no change in communication; the majority of these students achieved level 1 or 2 indicating that they may have required time beyond that given in the inquiry to process and communicate; we were unable to note growth for students achieving level 4.
- About 20% of students demonstrated a decrease in communication on the Performance Tasks - use of iPads combined with teaching through problem solving allowed for differentiated ways of demonstrating student understanding and fostering communication in math.

Successes, Challenges, and Unexpected Results

Sharing of learning across multiple schools and across panels; inspired further exploration and experimenting with the technology in other subject areas.

Some teachers very enthusiastic to continue exploring use of iPads and Apple TV in their math classes next year with the purpose of increasing student achievement.

The iPads were at first being used as a substitution for math activities and worksheets in delivering lessons (SAMR model), for example skill-building, activity-based and game-based apps were used extensively. Teacher comfort level with technology was low in many cases, so it was easier to go straight to these types of apps. About midway through the project we provided optional professional development. At these sessions, we focused on apps that could provide another avenue to help students demonstrate and communicate their understanding. The sessions in turn helped to provide teachers with the skills and comfort level to use these types of apps in their classrooms.

Sustainability*(PVNC CDSB)*

Work in collaboration with Computer Services Department in their implementation of 21C Library Project which is also utilizing iPad technology. Use of iPads rather than iPad minis to allow for easier collaboration (screen size is significant). This will be made possible by leveraging investment in 21st Century Library by Computer Services

In terms of scaling this project we will need to leverage other funding sources to make sure that the technology is available for all participating teachers. Involving K-12 teachers and administrators previously or currently involved in cross panel discussions on technology driven pedagogy.

Blending Engagement and Assessment in Mathematics Classrooms

Rainbow
District
School Board

Last year we researched how the use of tablets in secondary mathematics classrooms could increase student engagement and consequently increase student achievement. There was a particular focus on increasing the engagement of male students in applied mathematics classrooms. The results were overwhelmingly positive, so this year we are expanding the project at a system-wide level.

Rainbow DSB brings teachers of Grades 7 through 10 together in Family of Schools teams. These teams recognize the importance of mathematics learning in Grades 7 and 8 as a link to a student's success in secondary school. This year technology is being provided for Grade 7 and Grade 8 mathematics learning environments with the purpose of increasing student engagement and improving achievement at both the intermediate and secondary levels.

Word of mouth and the success of last year's project resulted in a large number of schools and teachers coming forward wanting to be involved this year. We were able to launch the project in 6 different schools, with 11 excited teachers, and over 300 enthusiastic students.

"It is exciting to see students who were previously very uncomfortable and lacked self confidence, now proud of their work, eager to share and seek out apps that will specifically help them achieve success."

Teacher

There was a perceived benefit of having used one specific kind of technology in the previous year. After careful comparison, the project leads selected the Apple iPad Mini, provided at a 1:1 student ratio. The classrooms also received supporting technology including items such as charging carts, Apple TVs, and Meraki management devices.



Students at work with iPads

We allocated funding to 'Network Days,' with expert facilitators working with teachers to ensure that the technology was used to best effect. Teachers had in-class ongoing technology support from a full-time Technology Coach who was involved in the project the previous year. As well, project participants were trained on how to use E-Portfolio as a tool to share ideas, ask questions, post artefacts, and to reflect on their thoughts and feelings throughout the project.

Preliminary data collected through visits to classrooms, E-Portfolio, and surveys conducted with students and teachers indicate that we are making progress in increasing student engagement and achievement. The project is very exciting for all involved and is changing the way many students view mathematics.

"Using the iPads was really fun in mathematics. It made me want to participate in classroom activities."

Student

Rainbow DSB

Project Title	Blending Engagement and Assessment: Addressing Needs in Intermediate Mathematics Classrooms
Brief Description	In 2012-2013, Rainbow's 21st Century Learning Project focused on the use of technology to engage mathematics learners and support an increase in achievement, specifically around students in Grade 9 Applied and Grade 10 Applied math courses. Paying attention to mathematics learning is a system-wide focus, as is fostering 21st Century Learning Skills in students. This project will align the work being done on those fronts. Last year's project put tablet technology into high school mathematics classrooms, technology that is being used with enthusiasm this year. In expanding our project into Grade 7 and 8, we hope to enrich more schools with the kinds of benefits, complete with the sustainability.
Context	<i>Number of schools: 6 Number of teachers: 11 Number of students: 300 Grades/Program: Grades 7-8 Math</i>
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s) Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> Paying attention to mathematics learning is a system-wide focus, as is fostering 21st Century Learning Skills in students. This project will align the work being done on those fronts.
Role of Technology	Tablet technology is being integrated into the teaching and learning with Grade 7 and 8 students, in the mathematics blocks specifically; the identified need was to support struggling learners with more engaging activities in learning mathematics, and to target the grades that are formative in preparing for the Grade 9 EQAO Mathematics assessment.
Inquiry Question	How might the use of technology in a mathematics classroom better engage boys whose achievement is at risk? How might the broad range of student interests and abilities in a Grade 7 or Grade 8 mathematics classroom be addressed through the use of technology in a manner that better differentiates for individual learners?
Indicators of Success	Achievement on the Grade 9 EQAO Assessment of Mathematics will improve through the use of technology to support the practice of fact fluency and the differentiation of assessment tasks in mathematics learning in Grades 7 and 8.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Rainbow DSB)

Students were administered a pre- and post- project survey in which attitudinal data was collected.

Student engagement will be measurable through Assessment AS Learning data as well as through anecdotal feedback from teachers, and analysis of student engagement time data (for example using the Progress Tool, LMS).

- Intermediate Rainbow DSB students are experienced with tablet technology and feel it is very important to them to be able to use tablet technology in the mathematics classroom on a very frequent basis.
- The use of tablets in the mathematics classroom increases the engagement level of intermediate Rainbow DSB students. The biggest increases in engagement were achieved by 'at-risk' students, with their teachers reporting improvement in learning for those students.
- Given the opportunity for ample training, support, and collaboration, Rainbow DSB intermediate teachers effectively integrated tablet technology into their teaching practices for the purpose of gathering evidence of student achievement and moving students toward higher order thinking and learning.
- The closer attention given to implementation supports in this project – as compared with its predecessor project the year before - has had a marked impact on the teachers' desire for ongoing collaboration; there is greater evidence of sustainability of the gains that have been made.
- Teachers involved in the project found a marked increase in opportunities to gather Assessment FOR Learning evidence of student learning through the chosen technologies.

Successes, Challenges, and Unexpected Results

Challenges included file sharing which is now being further studied by the District. The most common complaint throughout the project was the speed of the wireless internet connections. Part of the problem was the distance of the iPads from the original Meraki installation location. In a few instances, connections were improved by reinstalling the devices closer to the classroom where iPads were being used.

Another challenge was tablet usage management. Issues often arise when students are using devices such as tablets such as having them use the devices for unintended purposes and not staying on task.

Although technical integration facilitators had previously been used in Rainbow DSB, the tech model is very new and the roles and responsibilities of a tech coach continued to evolve over the course of the project. With an increase in the level of support from the board's IT department, the Tech Coach was able to have more of a pedagogical focus in 2013-14. Teacher satisfaction with the Tech Coach was high.

Sustainability

(Rainbow DSB)

Senior Rainbow DSB administration were part of the team that attended the recent 21C Round Table, October 23, 2014, in Toronto. It was an opportunity for the Director to learn more about some of the projects in other boards that have been part of the province-wide 21C initiative.

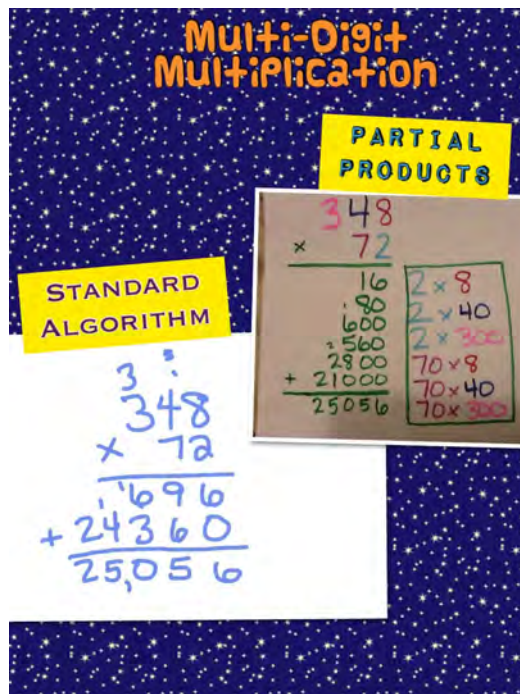
As a result, it is evident that there will be further discussions taking place within the Board in order to set and prioritize next steps, both for the project in its 'Sustain Mode', and for future project off-shoots.

- Allocate funding for the purpose of purchasing additional hardware.
- Use our findings about the need for teacher supports and PD, and allocate funds toward this type of support (release dollars, coaching, etc.) in future.
- Continue working with teachers who wish to develop their technology skills in order to use classroom technologies to engage students and increase student achievement.
- Continue the development of resources for teachers to use including the possibility of creating an iTunes-U course for Rainbow DSB.
- Continue to cultivate the relationship with Rainbow DSB IT services for the purpose of supporting and sustaining current tablet technologies and any future projects.
- Continue to support teachers in testing, researching, and integrating engaging tablet usage in their classrooms.
- Explore the possibility of targeting students at risk i.e. those who may not be engaged by traditional learning, by integrating engaging technology into student success modules.

Teaching and Learning in a Digital World

Rainy River
District
School Board

Our 21st Century Innovation Project focuses on building teacher efficacy with the use of technology. As part of the project, eleven Grade 5 and Grade 10 teachers were provided with technology to use in their classrooms (7 iPads for Grade 5 classes; 20 Chromebooks for Grade 10 classes). All teachers involved in the project were provided professional development, as well as having co-teaching opportunities with technology coaches.



Using iPad apps to showcase and share learning

Students used a variety of web-based tools and iPad apps to deepen their understanding of concepts. For example, students recorded their work on iPads, then documented and explained their learning using collage-making apps. These collages could be done independently by students, or could be completed as a whole-class activity.

A key factor for the success of the project is that the technology supports students in collaborating on projects and in sharing their learning with peers. Students share their work with web-based programs in real time with classmates and family members and post work samples for other students to analyze and critique. Students also submit assignments to the teacher in this digital “hand-in bin.”

“Having technology readily available in my classroom was a huge asset....my students loved that they could share their work with each other in real time.”

Teacher

Teachers participating in this project report growth in several areas. They realize a significant increase in their ability to support student learning, have greater competency in implementing alternative instructional strategies, and in providing appropriate challenges and supports for students, as needed.

Overall, the participants learned how technology can be used to enhance pedagogy and deepen students’ learning. Their willingness to try new technologies and learn alongside their students is foundational to the success being achieved. Through the use of the new technologies, teachers demonstrate that they are lifelong, enthusiastic learners – traits that they pass on to their students.

Rainy River DSB

Project Title	Teaching and Learning in a Digital World
Brief Description	In order to build on teacher efficacy with the use of technology, specific Professional Development will be provided in order to integrate technology into curriculum areas. Teachers involved in the project will be encouraged to build capacity within their schools through school-based PLCs and co-teaching opportunities that will be provided within the project.
Context	<i>Number of schools: 10</i> <i>Number of teachers: 16</i> <i>Number of students: 280</i> <i>Grades/Program: Grades 5 (literacy and numeracy) and Grade 10 (English)</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The technology tools that were presented in 2012-2013 (as well as new tools) will be utilized to enhance regular curriculum programming and increase students' engagement in literacy and mathematics.
Goals & Priorities	<i>System Learning:</i> This project will contribute to system learning as teacher participants represent schools from across the district. <i>Student Learning:</i> Due to the condensed time frame of this project, impact on student learning and achievement will be measured indirectly.
Role of Technology	At the secondary level, Chromebooks will be introduced as a means to further support access to digital resources in the classroom. Within Grade 5 classrooms across the district, iPads will be provided to support small group instruction and to enhance engagement in a variety of curriculum areas.
Inquiry Question	If additional technology and supports are provided for classroom teachers, will teachers' assessment and instructional strategies improve?
Indicators of Success	Baseline data will be collected and correlated regarding student engagement with respect to technology implementation/integration in the 2013-2014 school year. In addition, baseline data will be collected regarding teacher efficacy in technology instruction.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Rainy River DSB)

The two technology coaches utilized a support log to track teacher training, job-embedded modeling, professional development sessions, and anecdotal evidence of student engagement/success.

In addition, teachers and students completed pre- and post- surveys which helped gauge the effectiveness of the project and inform future board-level professional development projects.

The most significant finding from the RRDSB's 21st Century Learning Project was the positive impact that technology integration and training had on teachers' sense of self-efficacy. Teacher participants reported growth in 9 out of 15 key areas of effectiveness, including the ability to foster student creativity and adjust lessons to meet the needs of all learners.

Students involved in the 21st Century Learning Project reported an increase in their willingness to get involved in class activities (56% of students indicated an increase; no students indicated a decrease), and that they felt less "bored" in class (33% of students indicated feeling less bored; no students indicated an increase in boredom).

Teacher participants reported significant growth in areas such as using technology to support student learning, ability to get through to the most difficult students, foster student creativity, and provide appropriate challenges for very capable students.

Teachers were able to provide a variety of differentiated teaching and assessment strategies to increase student engagement and improve conceptual understanding. The fact that 56% of student participants reported an increase in their classroom involvement attests to the impact that the 21st Century Learning Project had on student engagement.

Successes, Challenges, and Unexpected Results

At the beginning of the project, many teachers reported that students were using the technology (i.e., iPads) inappropriately. Teachers expressed concern that some students would play games on the devices rather than complete their assignments. To remedy the problem of "off-task" behaviour, teachers were shown how to use "Guided Access" on the iPads.

Sustainability

The 21st Century Learning Project enabled teachers to learn how enhance their lesson delivery and add variety to their assessments through the use of technology. Teacher participants were purposefully selected to represent schools across the district. In this way, each school had at least one teacher with specific training in the area of 21st Century technology-enabled practices. The expectation that these teachers share their newly acquired knowledge and successes with other teachers in their schools was expressed prior to the teacher participants agreeing to become a part of the project. Teachers

(Rainy River DSB)

throughout the board continue to receive technology training through in-class co-teaching experiences, modeled lessons, and professional development sessions facilitated by technology coaches.

The fact that additional technology was available in the schools allowed teachers the opportunity to immediately implement strategies that they learned during the training sessions. Ready access to technology was identified by many teachers as being advantageous to the implementation of 21st Century technology-enabled practices.

Using a Professional Learning Community to Create 21st Century Teaching and Learning in Our Classrooms

Renfrew County
Catholic District
School Board

We are exploring teachers' level of engagement with technology, using these questions to focus our efforts: How would the use of technology change the teacher's role? How would it help teachers to plan more inquiry-based, project-focused instruction? We developed a plan around this line of thinking. We selected 17 teachers from our elementary panel and built in for them having a "partner" or two from their own grade level. Since we have a number of multi-grade classrooms, it was important to include some of these teachers.

We provided technology for the classroom and for individual teacher use. The tools varied based on the grade level. Technology included iPads, Chromebooks, and various streaming and projection hardware.

At four professional learning sessions, teachers worked together to explore the technology, and to collectively plan and discuss ways to integrate the technology into the classroom. The process was one of self-discovery. At each stage, teachers were responsible for thinking of ways they can use the technology in the classroom effectively. During a trial-and-error process between sessions, teachers implemented their new ideas and strategies in their classrooms, and reported their progress at the next session.

For the last two sessions, teachers invited a fellow teacher from the school or from the system to join them as a way of spreading the knowledge base. As a result, the group of participating teachers expanded from the original 17 to a total of 42 teachers who are involved to some degree. All participants are included in an online collaborative space where they engage in regular input and sharing.

The process was one of self-discovery. At each stage, teachers were responsible for thinking of ways they can use the technology in the classroom effectively.

Participants will continue to work collaboratively with additional embedded classroom support from the Learning Technologies Special assignment teacher.

Renfrew County Catholic DSB

Project Title	Using a Professional Learning Community to Create 21st Century Teaching and Learning in Our Classrooms
Brief Description	Our prime focus is the creation of a Professional Learning Community (PLC), which would consist of teachers from every family of schools in our school board. Within each division, we will have potential partner teachers that can connect with each other in regards to curriculum and grade specific learning. We will create a balance within the group and include some teachers from across the board that have already shown leadership and "trailblazing" qualities to share their experiences and also explore their next steps with 21st Century teaching and integrating technology into their teaching practice.
Context	<i>Number of schools: 15 Number of teachers: 21 Number of students: 425 Grades/Program: K-8 classrooms</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Round 2 was focused on the integration of technology in the Grade 8 math classroom. Students were asking to utilize technology in all subject areas. As a result of this, Round 3 focuses on the role of the teacher in the tech rich classroom.
Goals & Priorities	<i>System Learning:</i> By creating a Professional Learning Community (PLC) it will allow the learning from the project to spread throughout the school board. <i>Student Learning:</i> As teachers understand the role of technology, and its impact on the inquiry model of instruction, teachers can then begin to focus more attention to essential questioning to guide learning.
Role of Technology	The technology will be used for students to dive deeper into real-life relevant problems and explore inquiry based projects that are more meaningful.
Inquiry Question	How can new and innovative models for teaching and learning technologies be effectively used to drive the development and delivery of inquiry and project-based curriculum across all grade levels?
Indicators of Success	None identified in report

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Renfrew County Catholic DSB)

- With the strong focus on teacher training, we found that we were successful in creating a network of individuals all across the school board that were comfortable and capable to share their understanding of education technology with their peers.
- One component of the research project was the establishment of a digital space where participants could share resources and ideas and discuss issues around education technology and pedagogy. Once the project had officially “finished” we found that participants were asking to be re-enrolled into the digital “classroom”. They were continuing to use and share resources and ideas from the digital space.
- We found that the conversation at the classroom level had shifted from technology and more towards the integration of technology effectively.
- We found that with the increased use of technology by the teachers they were finding ways to be able to share classroom/student work with the parents.
- School administrators have also begun to embrace the new technology, and as a result have been driving the school culture towards more positive engagement. We feel that this will have a continued impact on student learning as the culture of schools themselves shift towards more technology/pedagogy integration.
- Teachers invited teachers into their classroom for observation of how the technology could be used with students. We found this to be a very effective model for demonstrating and will continue to be a focal point in ongoing professional development.
- Since teachers were better utilizing technology in the classrooms, we have noted an increased use of technology by students utilizing the tools in effective manners. We are noting that we have more online collaboration happening with students, across the classroom and across the school board, school to school.

Successes, Challenges, and Unexpected Results

Teachers began to engage their fellow peers at the school level by offering in school PD sessions to their fellow staff members. We wanted this to be a key piece to the study but what we found was that the level of participation exceeded what we felt would occur. ...the demand from the staff themselves for more Education technology training was higher than expected. The peer to peer effect at the school was beyond what we expected.

After hours PD sessions: We did not expect the huge demand for after work hours PD sessions, such as weekend events, and evening and after school hosted events. Demand has exceeded our capacity and we are finding that we have waiting lists to attend many of these school board sponsored events.

Sustainability

(Renfrew County Catholic DSB)

Development and use of online digital learning spaces for educators. It is our plan to build upon the experience we had in using the online digital space as part of the CODE project. We are now in the process of building out “learning modules” across a variety of curriculum areas, including effective technology use. These learning modules will be part of our larger whole system ongoing PD for educators. We will offer a combined “blended learning” PD model for teachers participating in staff enrichment.

We will continue to focus on the whole system. Our ongoing technology/pedagogy training and workshops focus on all educators, not just teachers. All educators include Educational Assistants, Principals, Early Childhood.

iPossibilities:

Supporting Inclusion, Engagement, and Achievement for Students with Special Needs

Renfrew County
District
School Board

Our project connects with our Board Improvement Plan for Student Achievement (BIPSA) goals that addressed student engagement, inquiry based learning, and the use of assessment for learning to match instruction with the learning needs of our students. We recognize that supportive technologies are “necessary for some, good for all” and chose emerging technologies, specifically iPads and Chromebooks, for use by our students with special needs.

From a previous project conducted at the elementary level, we determined that the use of the technology had a positive impact on student engagement, achievement, and inclusion. We expanded our efforts to the secondary level to develop teacher capacity with the use of tablets, Internet-based laptops, and cloud computing in support of students with special needs. Our current project involves 3 secondary schools, approximately 18 teachers, and support staff.

Students embrace the use of the technology as an opportunity to collaborate with their teachers and fellow students. Some students do additional work at home and request that teachers use the technology to post their assignments. With increased, and often immediate, feedback from the teacher, students revise their work more frequently and accurately than without the devices.

Students are more independent in their learning – one even continued working while in the hospital. Students who experience communication challenges use voice-to-text and text-to-voice technology that helps boost their productivity, quality of work, and organizational skills.

Student voices are heard that often would be missed without the technology. Some students take on leadership roles and develop communication and social skills with their peers. Students’ competency in using the mobile devices gives those who are very shy or reserved the self-confidence to independently offer their support to others who have more challenges.

Access to student-specific information provided by the use of the technology helps teachers view themselves as integral players in supporting the learning needs of the special education students in their classrooms.

Teacher professional learning communities will continue to investigate more specific uses for the devices including: blogging, creating electronic portfolios, and use of social networking as tools in the development of students’ critical thinking skills.

Renfrew County DSB

Project Title	iPossibilities: Supporting Inclusion, Engagement, and Achievement for Students with Special Needs
Brief Description	This project is directly connected with our BIPSA goal “if we support teachers with the use of assessment for learning then we will be able to target instruction to meet the learning needs of our students”, “students will confidently engage in the learning process” and “use job embedded and inquiry based professional learning to build capacity and information instructional practice”. The initial project was conducted at the elementary level. The current project will be expanded to the secondary level in order to develop teacher capacity around the use of iDevices in supporting students with special needs.
Context	<i>Number of schools: 3 Number of teachers: 18 Number of students: 180 Grades/Program: Secondary students, Grades 9-12, primarily with an LD profile</i>
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> Reflections with the remaining secondary schools can continue to build staff capacity and knowledge in using technology to support student learning needs. <i>Student Learning:</i> Through the triangulation of evidence we anticipate seeing proof of increased engagement/ inclusion, increased work completion and increased participation in class activities.
Role of Technology	Historically, there have been high rates of abandonment in the use of supportive technologies for students with special needs due to portability, lack of nimbleness in user application, and peer influences. iPads and Chromebooks 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.
Inquiry Question	To what extent and in what ways will the use of iDevices and Chromebooks as supportive technology impact student learning (engagement, inclusion, and achievement)?
Indicators of Success	We will monitor students for their engagement by looking for time on task and willingness to participate. The evidence of increased achievement (student outcomes) may be reflected through increased quantity of productive output, increased quality of work (observations/conversations/ product), and improved student achievement.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Renfrew County DSB)

Site #1: The students embraced the opportunity to collaborate with their teachers, and also the fellow students. This potential to collaborate was not necessarily maximized, but continues to represent an area of growth/interest for the teachers involved.

Students that experience some communication struggles were introduced to some use of technology to assist them. These applications included: voice to text (voice notes) and text to voice. The ability to communicate was significantly enhanced through the use of technology and resulted in achievement increases estimated to be of one full level.

The use of a text to voice app allowed students to hear their responses being read to them and allowed them to self-edit creating a more accurate and better communicated response. The use of collaboration through a shared document (particularly during an assessment) enhanced the opportunity for students to seek clarification from the teacher (that they would otherwise avoid) thereby increasing achievement. The collaboration also increased student engagement in the task as each had an equal opportunity to contribute. The students appreciated the ease of access to the documents whether at home, or at school. The use of voice to text helped student increase the amount of information provided in an explanation (to a level that was not attainable through word prediction software).

Site #2: The subject specific apps that we used that were effective were - algetiles, color tiles, myscript calculator, desmos, and TVM solver. Students were engaged and looked forward to using the device in class. Students became reliant on the technology therefore it would be important to be able to use the technology for the entire unit to help facilitate the learning goals.

Site#3: The productivity of students increased significantly (students' written compositions became longer in length) and the quality of written work improved. Reading strategies improved (e.g. using the text-to-speech function, students monitored their own comprehension and independently re-read the text when applicable, a strategy they would not likely have enacted if they were reading without the technology).

Certain students took on leadership roles and developed communication and social skills with their peers. Some of these students were traditionally very timid but their competency in using the mobile devices gave them the self-confidence to independently offer their support to others who had more challenges with the technology.

The use of Google Drive enabled staff and students share work and submit assignments which led to improved organizational skills, which in turn led to increased work completion. With increased, and often immediate, feedback by the teacher (Google Drive), students revised their work more frequently and accurately than without the devices.

Identified students often do not want to be treated as 'special'. The use of technology was a benefit in that it was able to provide support to the identified students without having them singled out.

Successes, Challenges, and Unexpected Results

(Renfrew County DSB)

One challenge that was experienced was the ability to submit incomplete work to the teacher. When documents were being shared with the teacher, it was not obviously apparent that the work might be incomplete (compared to when a paper copy is submitted). This challenge will continue to require further attention.

At one site, access to the devices was limited due to the numbers of classes using them and the limited number of devices to go around. Rather than a sign-out system, teachers were given regular time slots (usually once or twice a week) when they could access their devices for their particular class. This system worked reasonably well (considering the constraints) but all teachers felt it was difficult to plan around this access and daily access to the devices would be an ideal situation

Sustainability

Each school identified planned strategies and methods to scale and sustain their initiative for the current school year.

It is the intention to continue to develop/enhance the use of voice to text and text to voice software with students, both identified and non-identified. It is also the intention to develop methods of providing authentic feedback to students (either typed or through voice recordings) for both assessment for learning activities and assessment of learning activities using software such as Kaizena.

The increase in technology in the school as a learning tool ... has also prompted other departments in the school to apply for technology funding in our board. More teachers are requesting support on the integration of technology into their curriculum.

The PLC will investigate more specific uses for the devices including: blogging (with classroom, school, board and global communities), creating electronic portfolios to support self-reflection/metacognition, and the development of students' critical thinking skills, in conjunction with the use of social platforms that engage students in drawing attention to and impacting issues that concern them. These same goals will be explored with teachers from other curriculum areas (e.g. Social Sciences and French within the school) and possibly with teachers from other schools within the board.

21st Century Fluency Project

Saganaska
Demonstration
School
(Provincial
School)

Our staff and students have developed strong skills and confidence in the use of personal technology. We have the technology in place but our focus has been the use of “headwear” or critical thinking skills, following a theme of making the best use of the technology.

This year Saganaska School is focussing on three areas. The first is embedding opportunities for the use of “transformational technology,” allowing our teachers and students to access knowledge and experiences that would not be possible without the use of our digital technologies (e.g., speaking with Chris Hatfield in space or communicating with classrooms in other countries). The second area of focus is the creation and use of “key” questions to drive and inform our inquiries. The third area of focus is related to our inquiries, the building of connections and relationships through the use of technology, and moving from being consumers to creators of digital content.

“Technology gives you a more creative option. You can only do so much with paper and pencil, but with technology the options are endless.”

Student

The next stage is to move toward sharing our thinking and learning with the world. Students and staff will be exploring the creation and cultivation of our “digital footprint.” Sharing our creations with the world will help us to better understand our power and responsibility as 21st Century learners.

“By allowing the students the freedom of choice, they were able to stay focussed on the task, took ownership of their learning and ideas, and gained a sense of independence with their learning that some may have not had previously.”

Teacher

Saganaska Demonstration School

Project Title	21st Century Fluency Project
Brief Description	Last year's project was designed to help teachers 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. Our project goals this year include: strengthening our students and teachers understanding of how personal technology (iPads, iPhones, etc.) can support student learning, allow classrooms to better connect to the world to improve our student's understanding of global citizenship, and for teachers to become more comfortable using personal technology as an instructional tool.
Context	<i>Number of schools: 1</i> <i>Number of teachers: 8</i> <i>Number of students: 40</i> <i>Grades/Program: Gr 6-8 homeroom and Gr 9-10 secondary classes. We have also used "Learning Through the Arts" opportunities to compliment this project.</i>
Area(s) of Impact	Teachers Students, Leaders
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> We have the personal technology in place for both students and staff, and have been focusing on the use of "head ware" instead of "software". This year our focus will be on the use of "Transformational Technology" in the classroom (using technology to do things that would not be possible without the technology).
Goals & Priorities	<i>System Learning:</i> Our research will contribute to system learning as we share our knowledge and new skills though workshops, meetings with school personnel as students transition back to home boards. <i>Student Learning:</i> Building connections and relationships through the use of technology and moving from the notion of being consumers of digital content to creators of digital content.
Role of Technology	All staff and student have personal devices (iPods, iPads, iPhones, tablets, etc.) and the wireless network is in place. We have access to a good video conferencing facility. We are looking into upgrading our classroom SMART boards and ensuring that all devices are current and functioning properly.
Inquiry Question	If we intentionally plan for the use of "transformational technology" in our classrooms (accessing learning and learning opportunities that could not be accessed without technology), then our staff and students will be more engaged and make more meaningful use of their personal technology to support learning inside and outside of the classroom.
Indicators of Success	Teachers will capture and share their successes and challenges embedding "transformational" use of technology in the classroom. A collection of artifacts demonstrating the digital creativity of our students. Student and teacher use of devices during class time and for homework use can be measured and data can be collected. Measure the change in teacher's confidence and skills.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Saganaska Demonstration School)

- Students are more motivated to learn and engaged.
- We have established technology use as a habit, not a special event, and it is now embedded in our practice.
- Parents are engaged because they have more access to their child's work (e.g., they can look at it on the blog or through Edmodo).
- Students were motivated to demonstrate their learning when they choose the process (for example, using Minecraft to build a human cell, creating a music video to explain photosynthesis).
- Students are creating higher quality products because they know they are being shared with a wider audience.
- Learning is authentic and more meaningful to the students – they know that the skills they are development will transcend and help them outside of school.

Successes, Challenges, and Unexpected Results

Time is a challenge, especially for staff to familiarize themselves with the technology and keep up-to-date (e.g., blogging, Twitter).

The fast pace of change – our students grew up in the digital age and many are more comfortable than the teachers – keeping current with what is out there is vital.

Sustainability

Our school plays a key role in the Provincial School Board – we are the lead for 21st Century Learning.

We have presented at the School Council for PSB and shared what we have done so far with the project.

We host workshops for other schools/school boards in our catchment area demonstrated our use of technology. Our current work and understandings are built into these workshops. Students from our school are also presenting workshops related to this initiative to students in regular schools in our local school boards.

Other provincial schools will be invited to come to our site for an opportunity to see how we are using the technology to support learning.

Teachers as Leaders in the 21st Century

Simcoe County
District
School Board

This year we embarked on an innovative “tight-loose” model of professional learning using a system level inquiry model that fosters enhanced professional growth and sustains implementation of best practices. The question we chose as a focus for our work is: “If we put learning first, how do we build capacity around the use of technology in our schools?”

Our Technology Hub Project story is an exciting tale of engagement, grassroots inquiry, collaborative networking, and inspired learning! In fact, our journey details three ripples of inquiry: system, teachers, and students.



Typical Tech Hub meeting: technology

In order to ‘ripple out,’ the challenge to our Hub members was to pursue an inquiry honouring the intersection of technology, content, and pedagogy while connecting with teachers not currently represented in the Tech Hub. Teachers populated their inquiries on a collaborative electronic platform so that others could share the learning and join in on topics of interest.

Of the 33 Hubbers who initiated inquiries, 130 other teachers became connected and inspired. Inquiry topics ranged from exploring alternative ways to provide timely digital feedback to using technology to improve consolidation strategies to Genius Hour. By the end of the school year, 95 of 105 schools were connected through our Tech Hubs; that’s a 90% ripple effect! To highlight an example from one classroom, Genius Hour was redefined to include opportunities for students to self-direct their own learning in addressing the question: “What do you want to learn?” One student mobilized her inquiry as: “Can I get a book I wrote published?” She documented her journey and now concludes: “Now I don’t even care if I don’t get it published or if I never go on to do writing in life because the journey through Genius Hour was better than I could’ve ever imagined. I learned so much about writing and I learned more about who I want to be.”

Both teachers and students have benefitted from opportunities to collaborate through technology and a shift toward the implementation of high yield strategies with a focus on 21st Century learning skills has impacted the culture of professional learning in SCDSB!

“My excitement began to ripple through the classroom. [Students] didn’t just want to participate in my learning they wanted to design their own learning and build their own inquiries.”

Teacher

Simcoe County DSB

Project Title	Teachers as Leaders in the 21st Century
Brief Description	The research is intended to ignite a core belief in teachers that they possess the creativity and innovation needed to learn alongside their students as they develop the 21st Century critical thinking, creativity, communication, and collaboration skills. The SCDSB inquiry will examine the impact of large scale technology learning using such devices as document cameras, iPads and projectors. Tech Hubs will examine the impact on student engagement and achievement. All SCDSB schools will have the opportunity to participate in this work.
Context	<i>Number of schools: 95 Number of teachers: 172 Number of students: 5000 Grades/Program: K-12</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Phase 1: Minds on Learning Phase 2: Minds on Action Phase 3: Tech Hubs
Goals & Priorities	<i>System Learning:</i> This research will contribute to a system shared understanding of the role technology plays in evolving classroom practice. The Principals of Program and Innovation along with the Superintendent of Program and Innovation will bring this data to the System Implementation and Monitoring Team, Central Principals and Senior Administration so it can impact both school and board improvement planning initiatives.
Role of Technology	Fullan talks about the importance of ensuring that technology makes the learning irresistibly engaging to teachers and students, is simple to use, always available and purposeful, and is steeped in real world application. The Tech Hubs use these drivers to focus their work.
Inquiry Question	What are the ways in which technology enabled learning changes teacher practice to support student achievement and well-being?
Indicators of Success	Evidence to be collected to determine the impact on instructional strategies, student achievement, and well-being.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Simcoe County DSB)

As part of the Tech Hub process, the facilitators gathered evidence from its members, meetings, sharing sessions, and classroom observations. Tech Hub facilitators then come together to collate and analyze the data to look for common; themes, new learnings, and remaining/new questions.

Earlier Innovation projects, Phase 1: Minds on Learning and Phase 2: Minds on Action were more 'awareness' type initiatives. We did not get the level of energy and momentum out of Phases 1 and 2 that we did with Phase 3. Although they may have included the same teachers, these projects had not impacted their classroom practices. It wasn't until we engaged them in a self-directed, iterative inquiry that they had the 'A-Ha' that translated into a shift in practice. Teacher choice and autonomy, much like student choice and autonomy, leads to deeper learning.

From the original 55 participants in Tech HUBs, 35 initiated networked inquiry projects involving 117 other teachers. 100% of those who completed the Feedback and Next Steps survey indicated that they would want to continue in the TechHub another year.

[There was] increased number of teachers interested in pursuing inquiry in 2014-15 Innovation and Technology Inquiry Projects. In 2013-14, 35 teachers initiated self-directed inquiries with a connection to at least one other school. In 2014-15, without even hosting the initial overview meeting, 65 teacher-initiated inquiry proposals were submitted by October 13, 2014.

Based on observations and conversations, teachers summarized the impact on student learning as follows:

- Increased levels of productivity, prolonged on-task behavior, enthusiasm, and work quality by students across the entire student cohort.
- An increase in the amount of 'pride' and accountability that students took in their work when provided with authentic audiences and real world experiences.

Based on the type of requests for central staff support involvement, there is evidence of a shift in how technology was being used to support student learning and engage learners. (Substitution to Redefinition).

Formerly, Technology IRTs were being requested to support 'how to', button pushing in-service whereas now there are more requests for classroom integration with technology. For example we offered after-school GAFE cafes in September/October 2014 - although only 200 teachers signed up, we met almost 900 teachers in both the 13 elementary sessions and 17 secondary Lunch 'n Learns that were offered throughout the County.

Successes, Challenges, and Unexpected Results

Upon reflection, as we take a step back from the Teachers as Leaders in the 21st Century project, we may not have had sufficient metrics in place to monitor the impact on student learning for our 2013-14 Tech Hubs. When initiating a new model for professional learning it is difficult to anticipate what should

be measured as success indicators. Moreover, we must ask ourselves, are we measuring what really matters?

The excitement and general energy levels that resulted from empowering teachers to engage in this type of transformative professional learning gave us the gut feeling that we were on the right track. The momentum this year is a testament that we are on that *right path* and when we asked Hubbers to problem solve metrics with us to provide 'proof', the support and creativity has been overwhelmingly positive!

Sustainability

Our process for engaging teachers in professional learning was so powerful that Innovation and Technology Hub Inquiry Projects became an option on our system-wide PD opportunities offered to schools to sign up. 65 out of 105 schools have selected an Innovation and Technology Hub Inquiry Project as one of their four choices for the 2014-15 school year. Administrators involved their teachers in the prioritization of these professional learning choices since it was the teachers who would be doing the inquiry. This has contributed to more staff involvement in the co-construction of the SIPSA and better alignment with the SIPSA and school PD.

[There is] closer connection to SIPSA in all schools with this teacher voice. We have implemented an online SIPSA tool that is accessible by all. This technology allows us to be more transparent and 'ups everyone's game'. Our program department has expanded and changed names to Program and Innovation including additional IRTs and Central Principal.

Learning in the Cloud

Simcoe Muskoka
Catholic District
School Board

Our project involved a family of schools in the Barrie-East region. Teachers in one secondary and five elementary schools were given a set of ten Chromebooks to use with their classes. They planned inquiry-based learning that would require students to use Cloud technology, namely Google Apps, as a means to support learning, collaboration, and assessment for learning.

These teachers gradually transformed the learning environments into student-based learning centres. They observed that students actively participated in the inquiry-based projects when using Cloud technology at different points in their work. Students were inspired to seek information, innovate, and solve problems. A Grade 10 student commented: “It improved my understanding of what I was learning because I had instant access, through research tools and the Internet, to the information that I needed.”

With cloud technology, teachers were more successful in implementing a triangulated approach to assessment. They had ready access to student work and were able to monitor progress and provide ongoing constructive feedback to support learning. Also, it was easier to involve students in peer and self-assessment during the project.

Grade 7 students found that “learning with Google Apps is different because everyone is working harder” and “when your teacher is working with someone else you can help yourself.” Meanwhile, a teacher of Learning Strategies: Skills for Success in Secondary School (GLE) observed, “Students were motivated to get work done that they normally would not do. I was getting completed work from 100% of my GLE students.”

“With Google, I was able to collaborate on student projects and planning with colleagues any time, anywhere. It changed the way I approached my planning and teaching.”

Teacher

With the use of cloud technology in inquiry-based learning environments, teachers recognized significant improvement in students’ ability to self-regulate their learning and to work in collaboration with others. As well, they found it easier to plan and to innovate in collaboration with colleagues.

Simcoe Muskoka Catholic DSB

Project Title	Learning in the Cloud
Brief Description	Access to technology, at the point of instruction, was amongst the recommendations made in the systematic report prepared during last year's project. This year will allow us to focus on the recommendations of the report, synergize, and focus on a multi-year approach to integrating cloud technology in every classroom to support student learning and change in teacher practice.
Context	<i>Number of schools: 6</i> <i>Number of teachers: 8</i> <i>Number of students: 191</i> <i>Grades/Program: Elementary schools: social studies curriculum. For our secondary school: English Curriculum.</i>
Area(s) of Impact	Teachers Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i>
Goals & Priorities	<i>System Learning:</i> <i>Student Learning:</i>
Role of Technology	Cloud technology, specifically Google Docs. Chromebooks, as well as other tools that allow students to connect to the "cloud". eBooks, eTextbooks and eReaders.
Inquiry Question	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 (devices) in the classroom all day every day transform the way we teach and the way students learn?
Indicators of Success	Improved student writing through descriptive feedback by peers, instructor. Improved student engagement and self-regulation. Change in teacher practice, in the areas of lesson design and assessment.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Simcoe Muskoka Catholic DSB)

Qualitative data was gathered by the instructor in a variety of ways. The teacher recorded anecdotal notes of students' comments that were made in the class when Google Docs was being used and when using technology to support their learning. Students were interviewed on their experiences with the use of cloud technologies. Each Teacher focused observations and conversations with two students as a way to manage the task of data collection.

Quantitative methods included the use of a survey tool which gathers data on student perceptions of achievement and engagement, student comfort, etc. Analysis of formative and summative assessment was included.

- Evidence of a change in teacher practice – from teacher centred to student centred
- Remarkable improvement in the submission of student tasks / projects
- Improved focus on formative assessment
- Improved peer to peer constructive feedback and self-assessment

All participating teachers reported a marked improvement in the submission and quality of student work. In some cases a teacher reported 100% completion of all tasks. Student achievement and confidence improved dramatically.

Successes, Challenges, and Unexpected Results

Our Learning in the cloud project was not, and has not been, supported by our IT department. As a result, our consultant staff spent a good deal of time managing and troubleshooting our Google Apps for Education domain.

Sustainability

We have been able to access local (remaining) PDT funds in partnership with both the elementary and secondary units. The success of the project has helped attract the use of these funds to support teacher professional development. This year the fund will help to support 3 central GAFE sessions that will involve approximately 75 teachers.

Although the introductory sessions mentioned above are an important starting point, they do not allow for the depth of support that is necessary to enrich and sustain the learning for both our teachers and students.

The project has now completed its 3rd phase. We now have participating teachers in about half of our schools (elementary and secondary). This allows the program and excitement to grow organically in those schools. We hope that central support can be provided to help support the use of 21st Century teaching and the use of technology to support student learning. We hope that the continuance of this project, into phase four and beyond, will allow us to reach our remaining school communities.

Blended Learning for Teachers

St. Clair Catholic
District
School Board



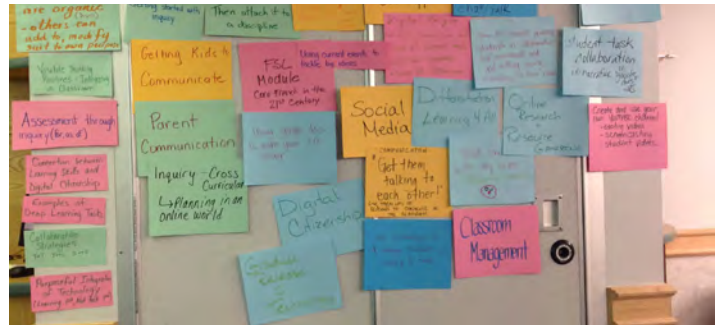
Creating online learning modules in a blended format

St. Clair Catholic has experienced many successes and barriers when it comes to innovation and the integration of technology. In the past, our efforts have included hosting a 21st Century Forum to hear the voices of stakeholders in our system, upgrading our bandwidth and school equipment, hiring a 21st Century Student Achievement Teacher to support teachers in their efforts to integrate technology, introducing BYOD, and revising our Responsible Use Policy. The results were not well matched to the efforts. A few innovative teachers were trying new methods, but the learning did not spread widely beyond their classrooms. Technology use in classrooms was spotty and in many cases, used merely for presentation and word processing tasks. Many schools did not embrace Blended Learning and were reluctant to move beyond a computer lab model. Teachers expressed concern about safe use of social media tools and personal devices and so avoided their use.

We needed a 21st Century learning framework that set out goals and targets with monitoring steps to guide our work. We modelled 21st Century skills for our teachers, in the way we learned, communicated, shared resources, and collaborated with our schools.

We are currently developing a Framework for 21st Century Learning for our school board that will encompass all of our efforts in the past to integrate effective use of technology for all students. This project will involve the creation of online learning modules that will be available to all teachers. The project will include professional learning modules for teachers in a blended format – a combination of face-to-face and online learning – on topics such as 21st Century skills that students need, addressing the learning needs of students with IEPs, and how to use the technology effectively in the design of instruction, tasks, and assessments.

We will meet the goals of our 21st Century Learning Plan with an increase in the effective use of technology for learning and with increased achievement of students as they use technology tools more consistently to support their learning.



Designing a framework for 21st Century Learning

St. Clair Catholic DSB

Project Title	Blended Learning for Teachers
Brief Description	We are currently developing a framework for 21st Century Learning for our board that will encompass all of our efforts in the past to integrate effective use of technology for all students. This project will be involved in the creation of online learning modules that will be available to all teachers in the future. This project will include professional learning modules for teachers in a blended format - a combination of face-to-face and online learning - on topics such as 21st Century skills that students need, addressing the learning needs of students with IEPs, how to use the technology effectively in instructional, task and assessment design.
Context	<i>Number of schools: 15</i> <i>Number of teachers: 42</i> <i>Number of students: 0</i> <i>Grades/Program: K - 12</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> This year, knowing what we have learned from the previous years, we intend to incorporate the benefits of blended learning for teachers and include professional learning opportunities for addressing the learning needs of their students through technology use and the development of the skills needed for the 21st Century.
Goals & Priorities	<i>System Learning:</i> By including a large number of our teachers and making every effort to include all of our schools, we hope to "seed" the school staffs with groups of educators who become more comfortable with using digital tools. <i>Student Learning:</i> Through communication of our results to our stakeholders, we hope that the evidence will help us move forward in our goals to become a 21st Century learning organization, which will directly benefit our students.
Role of Technology	Using an adult learning model, we are providing online learning modules to complete at their own pace, on their own time, with some choice in topics (while some are mandatory).
Inquiry Question	Will a blended learning model of professional learning that includes online D2L modules, and based on the goals of our board's 21st Century Learning framework, result in a more scaled up, sustainable change in teaching practices that addresses student learning needs?
Indicators of Success	We will be monitoring an increase in the confidence of the teachers (through feedback in their surveys) in using the digital tools and resources, and an increase in the use of the tools by students. We will be looking for an increase in teacher collaboration (our initial survey indicated a lower level of collaboration taking place).

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(St. Clair Catholic DSB)

- Teachers have a great willingness to learn more about 21st Century learning pedagogies and integration of technology. There are a number of technology innovators already in our system who are eager to share their expertise.
- Once the barriers are removed (inadequate infrastructure, aging equipment), teachers are very interested in increasing their use of technology.
- Once teachers were comfortable (and actually enthusiastic) using D2L while creating the modules, it was an easy transition for them to include Blended Learning in their own classrooms.
- Tools such as Twitter, Padlet, Google docs, Google forms, Google groups, Thinglink, Voki, and Animoto, were used throughout the modules. Writers commented frequently on how useful these same tools would be in their own classrooms to engage students in greater creativity, collaboration, and communication.
- Teachers recognize that their students have devices and are ready to use them more extensively in the classroom once allowed.

Successes, Challenges, and Unexpected Results

We did not expect the response from teachers who wanted to be writers – this was a very long, difficult learning curve for many of them and none were discouraged. The teachers truly understood that good pedagogy comes first, before technology. We worried that the modules would be all about the bells and whistles of the tools, but on the contrary, they focused on the pedagogy and technology became the enabler only, not the focus.

D2L was not always compatible with some of the third party tools until the latest upgrade took place in August. It was frustrating at times, but eventually this was solved.

Sustainability

The modules will be available on an ongoing basis. We have other teachers who have offered to write additional modules but not requesting any release time or incentive. So we expect that this learning opportunity will be easily maintained and even expanded.

The position of 21st Century Learning support teacher will continue as this focus is a priority in our Board Strategic Plan. We will continue to use the modules in our other PD opportunities as a resource for teachers' learning.

This initiative is supported by our Board Strategic Plan (through the priority of 21st Century learning for our students) and so our monitoring plan ensures that we will be keeping pedagogy-driven technology practices in our schools. The School Improvement plans were to include student engagement in their goals through the use of technology. In our roll-out of the modules, we will be looking for even distribution of the acceptances across all of our schools to ensure that each school has a few innovators within the staff.

Technology and Early Learning

Sudbury Catholic
District
School Board



Efficiently documenting and supporting learning

In previous years, our focus has been on teachers becoming comfortable with technology. This year, we shifted the focus towards using technology to document and communicate learning.

By deepening the skills of the original Full Day Kindergarten (FDK) teams, who are now leading much of the professional development, they are able to share, mentor, and build capacity in the new FDK teams. Teams use the technology to record their own personal reflections to share with their teaching partner, creating a richer dialogue and building deeper pedagogical awareness.

Using a whole team approach to documentation positively impacts student learning and well-being. The initiative enables educator teams to be “far more efficient in our documentation.” “We are able to have the student in front of us long after he/she has left the building. We are better able to plan for student learning and discuss next steps.” As well, teachers are using video documentation to provide students with a unique perspective of their own learning.

“Capturing video is an essential component of documentation... our students are becoming reflective in their learning.”

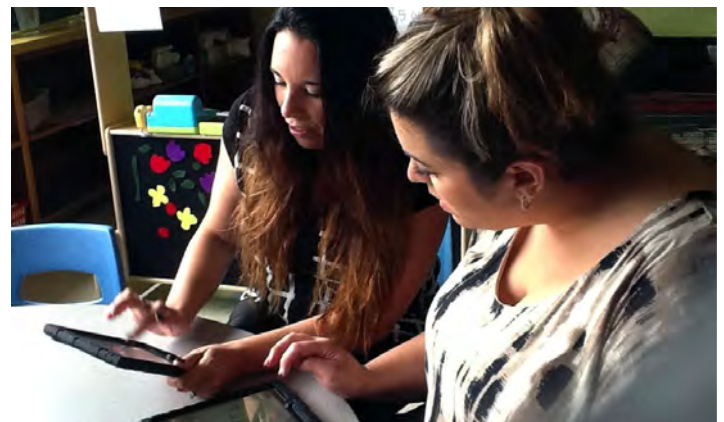
Teacher

Administrators can help review student progress and can embed the 3 R Framework into enriched discussions with the FDK team. Learning support teachers are able to better support the FDK educator teams by reviewing the video documentation and suggesting appropriate support. The educator teams use the videos, audio clips, and pictures to keep parents better informed of their child’s learning journey.

Technology is proving to be a powerful tool in FDK for building a strong community of learners.

“We can use technology to discuss our students... together or in different settings... communication is the key to great partnership.”

Teacher



Building understanding and effective practice using technology

Sudbury Catholic DSB

Project Title	Technology and Early Learning
Brief Description	Use of technology to document and communicate student learning by both student and the teaching team. This project is an extension of our already existing project. We intend to work with the original 3 FDH schools. These teachers have been using electronic means of communicating and documenting and upgraded software will allow them to deepen and extend their skills.
Context	<i>Number of schools: 3</i> <i>Number of teachers: 15</i> <i>Number of students: 200</i> <i>Grades/Program: FDK teachers</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In the first 2 rounds, the focus was teaching teams becoming comfortable with technology. This year the focus will shift towards teaching teams using the technology to record reflections about their practice or student learning.
Goals & Priorities	<i>System Learning:</i> By deepening the skills of the original FDK teams, who are now leading much of the professional development, they will be able to share, mentor, and build capacity of the new FDK teams. <i>Student Learning:</i> Viewing/ listening to the reflections generated will provide evidence of growth in relation to the integration of technology within teaching practice.
Role of Technology	Technology will facilitate the documentation of educator learning.
Inquiry Question	Will using updated technology to document reflections about teaching practice, increase communication and collaboration between teaching teams?
Indicators of Success	The outcomes will be measures by a pre and post survey on the facility of use, the frequency of use, the teams overall knowledge of the use of specific apps in using the iPads to facilitate the documentation.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Sudbury Catholic DSB)

Results from our post-survey completed by the FDK teams:

- Increase in engagement.
- Insight into child's thinking.
- Increase in accountability for both teachers and students to stakeholders.
- Increase in oral language and communication between students. Students were excited to show their peers using the Apple TV. These successes were particularly evident for students learning a second language.

Successes, Challenges, and Unexpected Results

Many FDK teams created websites to facilitate communication with the parents and other major stakeholders.

We provided the opportunity for every FDK team to attend a full day technology PD session. Teams were invited to present their websites and apps that they found useful in documenting student learning. Due to time constraints, professional development provided was limited because of a lack of availability of supply teachers and the time of the year (May-June). Most of our other PD opportunities are scheduled at the beginning of the year. Without knowing about the CODE project we were unable to schedule PD appropriately.

Sustainability

FDK teams have become the technology pioneers for several of our schools. Many other educators have become interested in the integration of technology because of the amazing things the FDK teams are showcasing at their schools.

Fanning the Flames:

Building and Supporting vLE Capacity Among Teachers in an Online Environment

Superior-
Greenstone
District
School Board

Our story reflects the dedication of our educators' commitment to life-long learning and to their students, recognizing our unique geographic issues and that 21st Century skills must be an inherent part of our SGDSB classes.

Initially, we focused on the building of vLE capacity, and on establishing pedagogical capacity across our school board through the work of champion teachers. We are now supporting the continued growth and sustainability of the vLE by targeting schools in the "northern" part of our district that have expressed commitment to integrating the vLE into their classrooms but have made limited progress due to technological barriers.

"Students were engaged. They took ownership of their learning through independent research and learning. They controlled their learning experience and this helped them to be more independent."

Teacher

In their reflections, teachers and students reveal that the technologies are having a positive and direct impact on learning. Students feel they and their education are being "invested in," and that they are being prepared for a world outside of their small, northern communities. Teachers are learning with and from each other and our students.

"Technology in the classroom is so beneficial. To have a computer right at your fingertips whenever needed is a key success in learning. It has helped me with many assigned tasks."

Student



Building skills together using technology

We are inspired by the enthusiasm and the ingenuity of our colleagues. They are using technology to enrich our students' learning, and to go beyond the physical confines of our classrooms and geographical challenges. We are providing opportunities for personalized learning and for sharing our stories with both our local and global school communities.

"What inspires me? The dream to have my students engaged in authentic digital learning that was not just within their school walls."

Teacher

Superior-Greenstone DSB

Project Title	Fanning the Flames: Building and Supporting vLE Capacity Among Teachers in an Online Environment
Brief Description	This phase of the CODE project supports the continued growth and sustainability of the vLE within SGDSB while moving forward on the project continuum by enriching the vLE through its tools. This phase of the project will target specific schools within the “Northern” part of the Board who have expressed interest in the integration of the vLE into their classrooms but have been limited in progress due to technology barriers. Teachers have opportunities for capacity growth from the eLC, and other experts in the vLE, and will have the opportunity to learn from each other.
Context	<i>Number of schools: 4 Number of teachers: 7 Number of students: 180 Grades/Program: K-12</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The 2013-2014 CODE Project is based on the feedback received from the previous project and has put technology into the hands of teachers interested in using online tools in their classrooms. We are also moving forward with shifting awareness of online/blended learning to creating capacity in this area.
Goals & Priorities	<i>System Learning:</i> Blended Learning has grown significantly in SGDSB. However, there are limitations to our continued sustainability and growth that are being explored in this project. <i>Student Learning:</i> Teachers will leverage the vLE tools to support student acquisition of 21st Century skills (critical thinking, collaboration, communication, creativity, and digital citizenship in an online environment).
Role of Technology	Consistent access to functioning technology will allow teachers to incorporate blended learning and online tools in their classrooms.
Inquiry Question	If we provide technology support and vLE capacity training and growth opportunities, educators in target schools will support the development and growth of online learning and capacity within their schools?
Indicators of Success	<u>Quantifiable Data:</u> Number of teachers in project completing vLE PD Number of new Blended Learning courses created Number of students accessing the vLE Teacher and Student survey

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Superior-Greenstone DSB)

The SGDSB Code project has a course forum that all participating teachers have a teacher role in. They each have a unit within the forum in which they can upload resources, student exemplars, and other information that may be helpful to the other participants.

Teachers communicate their learning via the SGDSB Code Forum discussion tool. Guided questions promote a rich discussion and provide feedback as to the progress of the project.

Student learning is directly impacted by the skills and knowledge gained by educators. Phase 3 of the CODE project put 157 laptops directly into the hands of SGDSB staff and students. CODE funding provided opportunities for networking, interest based PD, both in Board and out of Board, and in-classroom support. By providing these opportunities, stronger pockets of online teaching capacity have been established, thus making the momentum and growth of online learning less dependent upon one individual (the e-Learning Contact). As well, the CODE project provided teachers with the face-to-face learning opportunities that encourage vLE capacity growth as well as the opportunity to share and discuss best practices with other educators.

Accessing reliable technology and being exposed to a variety of digital resources prepares our students to be lead learners in their schools. We have an increased number of students accessing the virtual learning environment, digital resources and Google Apps to access content, communicate their understanding and collaborate with their peers. Students with 21st Century thinking skills have moved beyond learning content. They are able to work creatively with others to apply their understanding to problem solve for a greater purpose. Providing technology to educators and students allows educators to help model and promote digital citizenship in our students.

Successes, Challenges, and Unexpected Results

Despite efforts by the e-Learning Contact to engage teachers in the use of the vLE, there are schools in the Board that do not access online learning. As educators in these schools became aware of the benefits of the CODE project (technology acquisition, PD) they began to openly wonder why and how they could become a part of the CODE project. As well, purposeful conversations began to occur at all levels of the Board about the rights of students to have equitable access to online learning and CODE funds provided the means to provide PD to target areas that were not initially a part of the CODE project (i.e. Grade 8 teachers). The project has increased awareness of online learning across the Board and this will hopefully support continued momentum.

Sustainability

(Superior-Greenstone DSB)

All board leads and administration have received professional development and ongoing support, and as a result all initiatives and Board projects utilize the vLE to organize and house resources, to communicate and share learning with team members and to make our learning transparent and visible.

By accessing the same platform for all initiatives, an increased number of educators are accessing the vLE and becoming familiar with the platform, its tools and the e-Learning Ontario blended learning courses. GAFE PD will continue to support collaboration across our geographically large Board. vLE capacity PD was extended to teachers not directly involved in the CODE project.

Participants selected new blended learning courses to use for this current semester, providing opportunities for more students to expand their learning with online learning. They will also continue to model the use of technology to support student engagement and Board and school goals with their colleagues.

Exploring Google Apps for Education: Building Awareness and Supporting Collaboration

Superior North
Catholic
District
School Board

Our project is focused on increasing communication and collaboration among teachers, principals, and students through the use of Google Apps for Education (GAFE). We became a GAFE school board in September 2013; however, teachers were not using the tools due to lack of awareness. Our goal is to build awareness and encourage teacher use, as well as pilot student access.

"I like the fact you can work on it on any type of computer so I can get my work done even when I'm not at school."

Student

Participation was completely voluntary and began in May. We hosted a Google Apps full day session for interested teachers and principals. Teachers and principals left with some practical ideas on how to use Google Drive, Calendar, and Gmail. Some teachers decided to create Google forms as a tool for assessment. Some principals decided to share memos and calendars with staff members through their drive.

"I will begin using Google to create, manage, store and share my documents with colleagues both in the school and the board."

Teacher

Classroom teachers who attended the one-day session could volunteer to have Google Drive accounts set up for their students. Five classrooms were part of the pilot: one Grade 3 class and four Grades 7 and 8 classes. Students learned how to create and share Google documents, presentations, and forms. Teachers encouraged them to share files with peers through their Google Drive when completing group work or peer editing. The feedback from both students and teachers was positive, and we will be continuing the project into the fall.

"Google Drive has changed the way I communicate with my teacher and classmates, because instead of shouting across the room or having to take turns working on a project, we can work on it at the same time and comment when we correct each other."

Student

Perhaps the most exciting aspect is the Google Student Summit that we will host in October. Approximately ten students from each school in the school board will be invited to attend the one-day event. Google-certified educators will provide keynote addresses and facilitate breakout sessions. Our intent is that the students become the leaders in their classrooms; they can show their teachers and peers how to use Google Drive.

Superior North Catholic DSB

Project Title	Exploring Google Apps for Education: Building Awareness and Supporting Collaboration
Brief Description	The focus for SNCDSB in Round 2 was Building Capacity in Blended Learning. Our new focus, GAFE, is not mutually exclusive from what we did in Round 2. All staff members have access to GAFE, but these resources are being under-utilized due to lack of awareness. Our intent is to have staff see the value in collaboration through Google. We are beginning our project by creating awareness for all staff, and using GAFE to promote collaboration amongst staff members. From there, we project that we will have teacher volunteers who would like to use GAFE with their students.
Context	<i>Number of schools: 9 Number of teachers: 9 Number of students: 60 Grades/Program: K -8, mainly principals and teachers on a volunteer basis</i>
Area(s) of Impact	Teachers Students
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i>
Goals & Priorities	<i>System Learning:</i> We are creating a multi-year plan that will be included in the BIPSA and SIPSAS. <i>Student Learning:</i> The main focus of this research is to see whether or not Google Drive will promote collaboration among students. We would like to see students collaborating using Google Docs and Google Presentations.
Role of Technology	Students will require access to devices to use Google Drive, teachers will require interactive white boards to model how to use the various Google Apps, and both teachers and students will require high speed internet access.
Inquiry Question	If we provide training, then the educators' awareness and self-efficacy with respect to Google Apps for Education will increase. If teachers are made aware of Google Apps, then teachers will begin using GAFE to help meet the needs of their students. If students have access to Google Drive, then there will be an increase in collaboration between students.
Indicators of Success	We will use a diagnostic survey and summative survey to answer inquiry questions.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Superior North Catholic DSB)

The survey was used to gauge educator awareness and self-efficacy with respect to Google Apps occurred during the Training Day. All participating educators completed the diagnostic survey before the training began and the summative survey after the training ended.

One of the key findings from this project is that if technology is easy to use, then more people will be willing to use it. Since Google Drive is such an intuitive suite of tools, teachers and students were able to quickly understand how to navigate the tools.

Second, if the technology meets a need that is of interest to the students/teachers, then the technology will be used. For example, a teacher was looking for a way to collect anecdotal observations. She came up with the idea of using a Google form and accessing it from her iPad throughout the day.

The third key finding is that teachers do not want to be out of the classroom. This finding led to the idea of hosting a Student Summit in the Fall. Rather than hosting Professional Development for just teachers, we invited 10 students from each school to attend a full day Student Summit featuring Google Apps for Education. The feedback from the Student Summit shows evidence of how students were highly engaged and motivated. For example, one Grade 5 student commented that he/she told his parents what he had learned. Other students went back to their schools and taught their class what they learned. This evidence also shows how the innovation project helped build on students' leadership and communication skills.

Successes, Challenges, and Unexpected Results

In an attempt to consider the needs of the teachers and the desires of the students, we changed our focus from training the teachers to training the students. In the end, we wanted the students to be using the Google tools to foster both collaboration and communication. Rather than waiting for their teachers to learn how to use Google Drive and then incorporate it into their classroom, we decided to train the students during a full day Student Summit featuring Google Apps for Education. Students from each of our schools were invited to attend the Summit. Three presenters provided a keynote speech and three sets of three different breakout sessions. The participating students were then encouraged to teach their peers (and their teachers) in their home schools. This model satisfied both the students' desire to learn about Google Drive and the teachers' desire to be in their classrooms.

A challenge that we face in our board is the limited bandwidth. Students are encouraged to use their Google Drive, but at times the Internet is so slow that it becomes risky to depend on it.

Sustainability***(Superior North Catholic DSB)***

In order to ensure that there is consistent and clear communication regarding digital learning in our schools, we have established Digital Learning Volunteers in all of our schools. Each school has one teacher volunteer who meets with the eLearning Contact and a Digital Literacy Special Assignment teacher over Adobe Connect for ½ day each month. The goal of establishing the Digital Learning Volunteers is to help build capacity and share information and resources in a systematic way.

As part of the project, we are sending 11 educators to the upcoming Google Summit in Montreal. Four of the ten teachers who are attending this Summit are Digital Learning Volunteers. Their task is to learn innovative ways we can move forward with this project.

Cloud-Based Collaboration and Inquiry

Thames Valley
District
School Board

Our investigation centres on the question: “How do Desire 2 Learn (D2L) and Google Applications for Education (GAFE) facilitate collaborative inquiry?” A team of thirty teachers from ten different schools, two teacher mentors, nine instructional coaches, and several learning coordinators are exploring Cloud-based applications as a way to support collaborative inquiry in the classroom. The results are amazing!

On day one, teachers reported they were overwhelmed with the technology and possibilities. Some were a bit skeptical of shifting away from a one-to-one technology ratio and moving towards Cloud-based learning that would have students working together and exploring pathways they had chosen. As the project progressed, teachers pointed out that they needed to “push their own boundaries” and “allow themselves the chance to be a student first.”

Through collected and observed data, many teachers indicate that with Self Organized Learning Environments (SOLES) and/or collaborative inquiry they are changing their teaching philosophy and instructional practices. They understand that there must be a solution they could apply to their classrooms that would make technology and collaborative inquiry fit together.

Our mentors had the solution. From extensive experience with SOLE centres in their own classrooms, the mentors could model collaborative inquiry using D2L and GAFE as part of a SOLE classroom design. They invited teachers to their classrooms to view collaborative inquiry in action, using this SOLE design. They designed collaborative inquiry demonstration lessons that they took to some of the classrooms. As the mentors worked in these schools, they re-organized the classrooms to create the SOLE environment and the teachers involved have not looked back.

“The SOLE model has increased student discussion. Most math questions are distributed using Google Docs. Using their groups, students are talking, discussing, and checking their work with their peers not only within their groups but with other students in other groups. If disagreements occur, students will often use the Internet to help check their understanding (who is right and why). Students have also used GAFE to create and post their own questions for their peers to solve.”

Teacher



Students use technology to investigate an idea

As teachers become more comfortable with the technology and the pedagogy of an inquiry-based classroom, they report that finding a high-interest topic or question to ‘hook’ students results in buy-in. There is general consensus and surprise at the increased level of student engagement overall. Teachers share statements indicating that students are excited and ready for this; that students challenge themselves and one another; and that there is a shared responsibility for accountability.

“I was quite reluctant to try inquiry, thinking that it wouldn’t lead to the results I wanted with my class. I have since changed my mind completely. I changed my classroom into a SOLE setup and my students have become much more engaged. I love how GAFE facilitates the conversations among different groups of students, making the whole class collaborative.”

Teacher

Thames Valley DSB

Project Title	Cloud-Based Collaboration and Inquiry
Brief Description	TVDSB has created a cloud-based collaborative infrastructure through Google Apps For Education (GAFE) to support learning. Our board is currently using D2L and Google Apps for Education (GAFE) in some schools. This project will introduce more schools to this cloud-based collaboration tool. This is the beginning of a larger conversation of the proliferation of mobile devices that can take advantage of this cloud-based collaborative solution. The project will assist teachers who are implementing new curriculum with collaborative inquiry expectations, and will offer a support network for other teachers and students in the schools who wish to engage in cloud-based collaborative learning opportunities.
Context	<i>Number of schools: 11</i> <i>Number of teachers: 32</i> <i>Number of students: 750</i> <i>Grades/Program: Grades 1 - 8</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Round 3 builds on the idea of the sustained professional learning model both in a large group setting and within smaller school-based teams.
Goals & Priorities	<i>System Learning:</i> Our Board is currently using D2L and Google Apps for Education (GAFE) in many schools. This project will help us to determine future directions as we introduce more schools to these cloud-based collaboration tools and will create increased awareness of Board initiatives related to them. <i>Student Learning:</i> Each teacher will choose one student to monitor throughout the project. They will be observing engagement and student growth in skills and learning.
Role of Technology	Technology is an essential element because our focus question is based on the role of cloud-based tools (D2L and GAFE) to facilitate collaborative inquiry.
Inquiry Question	How do D2L and GAFE facilitate collaborative inquiry?
Indicators of Success	Extensive list of quantitative and qualitative indicators are identified to monitor change in teacher practice.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Thames Valley DSB)

Teachers perceived an increased level of engagement of their students throughout the project. This was evident through the weekly D2L discussion board posts, teacher surveys (pre, mid, post), and teacher observation of one marker student.

In the weekly D2L discussion board posts, participants often referred to the engagement of their students. In the first two weeks, it was noted that students sometimes didn't want to collaborate because everyone wanted to use the technology. As teachers became more comfortable with the technology and with the pedagogy of an inquiry-based classroom, they were reporting in weeks 3 and 4 that finding a high-interest topic/question to 'hook' students, resulted in buy-in. By the end of the project, teachers were sharing student stories.

Partnering with subject learning coordinators on the extended project has raised awareness regarding the potential ways that technology can be integrated with inquiry-based learning in all subjects.

The addition of mentors in our project who use the SOLE Model provided additional support and opportunities for participants to experience authentic collaborative learning in classrooms.

The integral role of instructional coaches helped with facets of this project, including support for co-planning and co-teaching.

Successes, Challenges, and Unexpected Results

Collaborative Inquiry was applied more broadly than we originally anticipated. We were surprised to see it applied to a wide variety of subject areas.

Participants expressed the need to address the concept of digital citizenship upfront as a key learning from their classroom experience. There were several requests for more primary-level application strategies and implementation methods regarding digital citizenship, and supporting the experience for learners with limited technology skills.

Many teachers expressed concerns with the slow wireless and inability of some of the devices to function at full capacity (tech issues, imaging, tool glitches, etc.). Again, this was due to the limited time in which we had to purchase and set up these devices.

The mentors found they had more requests than they could handle. They also had to do extensive travelling across the vast geographic area of our Board, and as a result spent much more time away from their classrooms and students than had originally been intended.

Sustainability

(Thames Valley DSB)

The Technology-Enabled Funds we have received from CODE and the Ministry have allowed us to scale up to a larger number of schools in the board. Through the project funding, release coverage and ongoing support has been provided for 16 additional schools. We added two additional mentor pairs to this project as well, keeping the original mentor pair from the spring to help build capacity with the new mentors. The mentor pairs are from three different areas of the Board in order to better scale the mentorship capacity of these teams and build knowledge and capacity among Board regions. Teacher Librarians and Instructional Coaches will continue to provide opportunities for scaling-up both within and across schools.

TVDSB is looking at new ways of working with computer technology in schools. This involves a decision to begin a gradual movement away from isolated computer labs towards the increased use of mobile technology and SOLEs within the classroom with the idea that this will foster authentic 'in the moment' learning.

Chromebooks provide a functional and effective way to support this learning. We have started pilots this fall, with the anticipated release of the availability of Chromebooks to all schools. To help with the distribution and use of these mobile devices (Chromebooks) in schools, a Mobile wireless network, designed specifically for Chromebooks and iPad access is currently being developed by IT and piloted in schools.

A new IT Strategic Plan was developed by our IT department and Learning Technologies Coordinators for the 2015-2018 school years.

Educating for the Future:

Intelligent Adaptive Learning in Mathematics

Thunder Bay
Catholic
District
School Board

Last year, we investigated exemplary mathematics resources to support work in the classroom. Based on that work, the team decided that the Dreambox learning software would bear further investigation. We are piloting this software in our school board to identify and build a common understanding of the key supporting conditions and successful practices that link technology, pedagogy, and 21st Century learning competencies, with a particular focus on mathematics.

This type of software is intended to create an ‘intelligent, adaptive learning environment’ that is designed to serve as a personal tutor to students, individualize the pace of their learning, and engage students in learning through games. Students will give evidence of learning through a scaffolded math continuum, working within the zone of proximal development, and being provided with ongoing affirmation of their new learning. Integrating this type of software into the instructional program is intended to promote the use of effective technology-enabled pedagogical practices that focus on key higher-order skills. Through the built-in data-gathering capabilities, teachers can use learning analytics to inform classroom instruction and individual needs.

Two volunteer schools are piloting the software so that we can make an informed judgment on a more wide-scale adoption. We are conducting extensive data collection at the pilot schools using structured interviews. We anticipate that the learning analytics will provide a rich data source at the classroom, school, and system level to inform planning at multiple levels in our district.

Integrating this type of software into the instructional program is intended to promote the use of effective technology-enabled pedagogical practices that focus on key higher-order skills and teachers will use learning analytics to inform instruction.

Thunder Bay Catholic DSB

Project Title	Educating for the Future: Intelligent Adaptive Learning in Mathematics
Brief Description	The team last year investigated exemplary mathematics resources to support their work in the classroom. This year we will pilot <i>Dreambox</i> software to explore ways to support teachers in developing innovative, pedagogy driven, technology- enabled teaching practices to impact on student engagement, learning and achievement in Mathematics.
Context	<i>Number of schools: 15</i> <i>Number of teachers: 30</i> <i>Number of students: 2800</i> <i>Grades/Program: Classroom teachers, Grades 2 – 6</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The team last year investigated exemplary mathematics resources to support their work in the classroom. The team decided that <i>Dreambox</i> Learning Software would bear further investigation.
Goals & Priorities	<i>System Learning:</i> The project will enable TBCDSB to identify and build a common understanding of key supporting conditions and successful practices that link technology, pedagogy and 21st Century learning competencies, with a particular focus on Mathematics. <i>Student Learning:</i> Students access an innovative, technology-enabled learning environment, where teaching and learning incorporates 21st Century content, resources, and technologies.
Role of Technology	<i>Dreambox</i> is an ‘intelligent adaptive learning environment’.
Inquiry Question	How can teachers be supported in developing innovative, pedagogy driven, technology- enabled teaching practices to impact on student engagement, learning, and achievement in Mathematics?
Indicators of Success	Teachers understand new models for teaching and learning; the models integrate technology and result in changes in teaching practice – increased proficiency, comfort and understanding of ICT-enabled teaching strategies complemented by enhanced understanding of the assessment cycle.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Thunder Bay Catholic DSB)

- Teachers have grown in their pedagogical capabilities to use data (Dreambox analytics) to drive instruction and assessment.
- Teachers reported increased school and divisional collaboration, with ongoing conversations focused on Mathematics and Dreambox Learning.
- Teachers moved from being unsure of the benefit of access to an adaptive analytic learning environment to being increasingly more confident.
- Teachers are beginning to see themselves as co-learners and activators of learning.
- Our experience is that a combination of facilitated professional learning sessions and embedded classroom support enables teachers to explore innovative pedagogies leading to meaningful changes in practice.

Successes, Challenges, and Unexpected Results

The adaptive analytic environment challenged students and allowed for the development of persistence and tenacity in Mathematical problem solving.

We encountered and adapted to challenges relating to program procurement, and network access. We worked closely with the IT department to address challenges.

Sustainability

All Grade 2-6 students have access to Dreambox, 24/7. Dreambox supports the Mathematics focus in the board.

This project introduced teachers and students to an adaptive, analytic learning environment. Teachers are supported in their use of the analytics on an individual basis as well as through PD sessions. Discursive practices have been used to transform and advance knowledge, address problems, and build new understandings.

At present, teacher demand for professional learning sessions is greater than our ability to schedule sessions. We will continue to co-learn with teachers.

Exploring the Application of 21st Century Learning Competencies in the Mathematics Classroom

Toronto Catholic
District
School Board

To help increase student engagement and achievement with a focus on mathematics, our 21st Century Department provided 16 teachers with iPads for each student in their classes. The teachers selected a variety of apps for their classes, including interactive games and student response systems. They found that the simplest app helped increase students' ability to focus on a math task. This encouraged the Grade 6 and Grade 9 Applied Math teachers to continue to experiment with the iPad during their lessons.

"The iPad helped students visualize and understand concepts that are usually difficult for them to grasp with just paper and pencil."

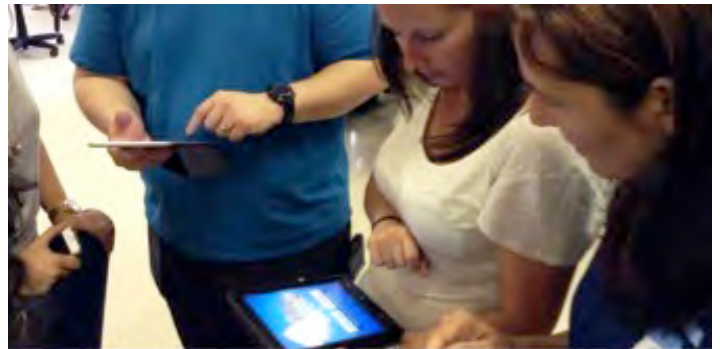
Teacher

To encourage the students to express themselves, the teachers used group discussion tools to get students talking about math. The positive student responses in math class led to increased use of technology as problem solving tools.

"... making the students' thinking visible is important in order to identify where the misconceptions are taking place. ... through the use of Apple TV, apps and web tools, students felt more at ease about sharing their learning with the rest of the class. That helped me identify where they were struggling and impacted my math lesson planning."

Teacher

At a 3-day workshop, teachers discussed how to use iPads in the classroom to promote student engagement. They explored apps for math and identified different ways of using the apps to help students achieve math curriculum expectations. During the sessions, teachers engaged in various collaborative activities, as they learned from one another, sharing artefacts and their observations within small and large groups. The resource teachers' role transitioned from being content deliverers to discussion facilitators.



Teachers exploring the iPads and sharing their ideas

Toronto Catholic DSB

Project Title	Exploring the Application of 21st Century Learning Competencies in the Mathematics Classroom
Brief Description	Based on the work that we completed last year, we recognized that there is significant demand among teachers to learn more about 21st Century Learning and the NeXt Lesson. We are particularly interested in whether or not the introduction of technology will increase student engagement, and ultimately achievement scores. The TCDSB21C Team and Mathematics Department will work jointly to support teachers through professional development related to the NeXt Lesson, Mathematics and the use of the iPad for Learning and documentation.
Context	<i>Number of schools:</i> 16 <i>Number of teachers:</i> 24 <i>Number of students:</i> 800 <i>Grades/Program:</i> Grade 6 or Grade 9 (Applied) students in mathematics
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In our previous round we developed the NeXt Lesson as the TCDSB framework for 21st Century Learning. This project extends the work by focusing directly on the teacher, the student, and the use ICT for Learning in the teaching of Mathematics.
Goals & Priorities	<i>System Learning:</i> We currently have a large rollout of technology planned for next year. We will use this inquiry to inform how we will invest in this technology and the professional development that will accompany this rollout. <i>Student Learning:</i> The results of this project will help us to better understand how the NeXt Lesson competency of the Use of ICT for Learning can be applied to help improve student engagement and achievement in Mathematics.
Role of Technology	The use of ICT for Learning will be one of the focus competencies. Teachers will learn to use iPads, relevant Apps for the teaching and learning of Mathematics and the documenting of student learning.
Inquiry Question	How will student engagement and achievement in mathematic be affected through the introduction of the competencies of the NeXt Lesson, with a specific focus on the Use of ICT for Learning, supported by the iPad?
Indicators of Success	We will conduct a pre-assessment to estimate expected outcomes on EQAO in June. We will survey students at the start of the process determine their feelings towards mathematics, and their level of engagement. Teachers will be asked to document their learning using the iPads.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Toronto Catholic DSB)

Overall, the data gathered was encouraging and indicated positive experiences for both students and teacher in using iPads, supported by professional development on the NeXt Lesson competency of the Use of ICT for Learning, for learning math. However, given the short time span between pre- and post-survey, noticeable changes in student perceptions were not evident.

In both the pre- and post-survey, elementary students indicated positive engagement in math (in particular, their feelings about math, interest in math, perceived importance of math and self-efficacy). There is some room for growth with regards to student feelings about math being fun and not feeling bored in class. Many students agreed that they want to learn more about how to use an iPad and overall indicated that they liked the idea of using iPads for learning math. Overall, secondary students expressed that using iPads was useful, fun, enjoyable and made the work easier. However, while this emerging trend is encouraging, it does not allow making a reliable generalization, as only two of the 7 secondary schools in the project participated in post-surveys.

Both elementary and secondary teachers saw some benefits to student engagement in math as a result of being part of the iPad project. Secondary teacher reports were however more positive: their own level of comfort with technology increased *to a great extent*, the use of iPads had an impact on student engagement in math *to a great extent*, their participation in this project has changed the way they teach *to a great extent*.

Both elementary and secondary teachers valued the support that they received as part of the project. Elementary teachers recognized the key strength in the teacher support received was becoming familiar with the iPad and incorporating its use in math lessons; secondary teachers felt it was the collaborative support received and the shared experience among teachers.

Taken together, the feedback received from students and teachers demonstrates that the use of iPads for learning math may have a positive impact on student engagement; however, more follow-up is needed to determine the long-term impact of participation in the iPad project on student outcomes.

Successes, Challenges, and Unexpected Results

As a result of this project we developed an understanding that when deploying iPads there is a need to do so with a Mobile Device Management (MDM) solution in place. The iPad is a consumer device, and on its own cannot be easily secured and managed on a large scale. Deploying a large number of iPads, as we are planning to do this year, without an MDM solution in place would make the management of these devices at the local schools difficult and it would be an impediment to teachers and students learning.

In addition, in our work with the teachers in this research project, we grew to realize that teachers need to have control of how they use the iPad and the selection of Apps that they use in the classroom. The flexibility for a teacher to choose which apps to use and how they are used in the classroom is key for

(Toronto Catholic DSB)

effective instruction. This research project also helped the TCDSB21C department develop a closer relationship to our central Mathematics Department and to understand the work it is doing to improve math scores.

The timelines for this project were challenging. After the initial announcement of the funding, and given the size of our board, it took time to determine teacher participants, consult with federations, secure necessary technical and academic support staff, purchase and configure the iPads, setup meetings with our industry partner, schedule mutually convenient days for professional development, and gather research data. Although we are confident that we met the initial project goal of determining how student engagement in math would be impacted by the introduction of the iPad, we did not feel we could measure the impact of the iPad on student achievement on the EQAO test with any efficacy.

Sustainability

The TCDSB is currently in the third year of our 5 year plan for 21st Century Learning. This plan, with the NeXt Lesson at its core, recognizes that students require proficiency in the following competencies to succeed in today's world: Collaboration, Knowledge Construction, Real-World Problem Solving and Innovation, Skilled Communication, Self-Regulation, and the Use of ICT for Learning. Our focus has not been on technology, but rather how appropriate technology can be infused into lessons to support these competencies.

The TCDSB is currently rolling out 4000 iPads and 4000 laptops into our elementary schools. In the second term we will be providing all teachers of Grade 6 with professional development that will focus on the use of the iPad and the NeXt Lesson competency of ICT for Learning as a way of increasing student engagement and achievement in math. The professional development used in this research project will be used as a framework for the work we do with teachers in the second term.

The feedback provided through the teacher and student questionnaire, as well as the process of creating the professional development that was delivered during this initiative, has provided us with valuable information that will contribute to our continuing efforts to assist teachers to incorporate pedagogy-driven, technology enabled practices that support the 21st Century competencies of the NeXt Lesson.

Going Deeper, Reaching Further:

Teachers as Designers of Problem-based Learning with Technology

Toronto District
School Board

We, in partnership with Taking IT Global (TIG), developed a model for learning that would integrate opportunities for online and face-to-face educator learning, translating directly to impact on teaching and learning in the classroom.

Educators from two families of schools representing 29 schools, 57 classrooms, and 1770 students from K-12 were involved in the project that created a blended professional learning environment. What is unique and innovative about this project is while educators are engaged as a professional learning community in designing rich problem-based learning to increase student engagement, they are at the same time learning to use technology as tools for learning, thinking, and collaborating.

In February, 2014, participants at the project kickoff event engaged in large plenary sessions and breakout sessions for three areas of inquiry: Global Citizenship, Environmental Stewardship, and Student Voice. Course instructors conducted sessions from various international locations including Nicaragua, England, and the United States. Teachers selected one of three areas of inquiry to translate their learning to their classrooms. Their focus was the thinking and pedagogy essential for learning and teaching in a global context. Back in their classrooms, students created projects in the area of inquiry selected by the teacher.

"It was such an incredible experience for myself as well as for the students. These project-based learning opportunities truly allowed the students to express themselves and to grow their creativity! Innovative methods and strategies were uniquely explored. Like any novel project, there were a ton of challenges due to the lack of experience, but there definitely was no lack of ingenuity and problem solving."

Teacher



Teachers and students celebrate their learning during the Innovation Fair

We held a mid-course check in April and then in May, a culminating Innovation Fair, where both the teachers and the students celebrated their learning. For two weeks in July, an "Invent the Future Camp" took place at OCAD University Inclusive Design Institute. Participants had the opportunity to create an app that could change the world. Students worked in small teams with a teacher mentor and the support of industry experts who coached them on everything from game development to graphic design.

Using surveys and focused group discussions, we collected perception data from participating teachers at the beginning and end of their experience. The surveys focused on teachers gaining of new knowledge and skills, changes in attitudes and beliefs, changes in teaching practice, and changes in organizational support structures.

"I had an amazing time listening to new and creative ideas from other students at the innovation fair. It was super fun and I was happy that I could be a part of this before I graduated."

Student

Toronto DSB

Project Title	Going Deeper, Reaching Further – Teachers as Designers of Problem-based Learning with Technology
Brief Description	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 learning to use technology as tools for learning, thinking, and working among themselves. A new component was the development of a summer camp as a pilot in engaging students working called the Sprouts Ideas Camp. This component is a joint partnership: TDSB, TakingItGlobal, and Ontario College of Arts & Design (OCAD).
Context	<i>Number of schools:</i> 29 K-12, schools in two families of schools <i>Number of teachers:</i> 61 <i>Number of students:</i> 1770
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Teacher feedback from last year played a critical role in the shaping of the instructional pathway design during the sessions last year and in creation of the instructional pathway for this year.
Goals & Priorities	<i>System Learning:</i> The design of this research project addresses scaling vertically and laterally through a measured approach. The former is to go deep in the learning, and the latter is to increase the number of participating schools. Going deep in learning requires improving and building leadership. Reaching further is to scale the work to another Family of Schools within financial, human and material resources available. <i>Student Learning:</i> The effectiveness of this teacher professional learning will be assessed by measuring teachers' changes in attitudes/beliefs, gains of new skills, changes in teaching practice, changes in organizational structure, and improved student academic achievement and school engagement.
Role of Technology	Mobile devices and desktop computers were provided to teachers to participate in the online courses. Students will have access to these same tools in their classrooms.
Inquiry Question	If educators form a professional community to learn to use technology as tools to connect students learning inside and outside school then students will learn to use technology creatively, ethically and culturally sensitively? If educators are engaged in blended learning that includes synchronous, asynchronous, and face-to-face learning, then it would accelerate teachers' confidence and competence in implementing blended learning for students?
Indicators of Success	How effective is this teacher professional learning? Have teachers changed their attitudes and beliefs towards teaching? Have they applied the new knowledge and skills in their teaching practice? What is the impact of this teacher professional learning on students' academic achievement and school engagement, when controlling other factors such as students' socio-economic status and prior attainment? What are the students' perceptions on learning?

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Toronto DSB)

Perception data from participating teachers was collected twice (at the beginning and the end of the teacher professional learning) in various formats such as surveys and focus-group discussions. Teacher surveys focused on teachers gaining new knowledge and skills, changes in attitudes and beliefs, changes in teaching practice, and changes in organizational supporting structures. Qualitative and quantitative data at student level, such as provincial assessments, provincial report cards, learning skills, credit accumulation, and school attendance and discipline data (i.e., incidents and suspensions), as well as school-level contextual data such as socio-economic status of school communities was collected throughout the school year and beyond to examine the effects of this teacher professional learning on student academic achievement and school engagement.

Guided by TDSB generic framework for evaluating the effectiveness of teacher professional learning, the research study found that after the professional learning, the proportion of participants who 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. After the professional learning, participants improved the level of proficiency in their teaching practice for generic classroom teaching and significantly for inquiry-based classroom teaching and student learning.

When comparing their perceptions before and after the professional learning, the most positive changes occurred at the support teachers received from their administrators and at teacher collaboration from different schools. Overall, the majority of participants felt this professional learning activity was a successful learning experience.

Data from the provincial EQAO assessments for the two Families of Schools (WR3 and ER19) shows improved student achievement in Grade 3 Reading, Writing and Mathematics in the 2013-14 school year, when compared with the previous school year: 5-6% more students in WR3 schools achieved at or above the provincial standard, and up to 4% more students in ER19 schools. Improved student achievement results were also observed on some of the subjects in the Grade 6 provincial assessments, especially in Reading (3% increase) and Writing (2% increase) for WR3 schools.

Although we cannot conclude that all these improved student achievement and school engagement have been the direct results of the improved levels of knowledge, skills, and teaching practice of the educators who participated in this professional learning initiative, we are certain that the professional learning has provided participating educators an opportunity to collaborate within their learning communities, share best practices, and actively engage their students in their daily learning.

Successes, Challenges, and Unexpected Results*(Toronto DSB)*

We were able to build on the success achieved through the year with a summer offering for students in Grades 4-12 participating in the creation of apps for social innovation. Parents and staff were quite impressed with the resulting outcomes and sophistication of the apps created.

Sustainability

We continue to develop our capacity to go deeper and further within the two Family of Schools this current year. Our teacher leaders and principal leads have continued to develop a system wide understanding of leadership for implementation across the two FOSs relative to their two positions.

We continue to grow our teacher leaders through the Sprout Teacher Leaders initiative developing their instructional leadership and facilitation capacities as course leaders, demonstration classrooms and as co-designers of the new course being offered this year titled Education for Social Innovation.

As a result of this initiative we have developed a strong relationship with our partner. As we continue to learn and develop our own deep understandings we rely less on our partner to support our teachers and school leaders. We are now in the process of co-designing and re-visioning the course work that we are offering to our teachers and school leaders in the new year.

Innovation and Inquiry Using Technology

Trillium
Lakelands
District
School Board

If teachers were given an opportunity to apply for up to \$10,000 to support the use of technology in K–12 classrooms to enhance student engagement and achievement, what would they ask for? We didn't know the answer to the question but we were intrigued by the possibilities that such an opportunity could provide for our many creative and innovative teachers.

In anticipation that many proposals would require wireless technology, we made sure that all of our schools had a wireless guest network in place. Staff and students were able to bring in their own devices for use at their school.

In the past several years, we were overwhelmed by the number of applications we received from classroom teachers throughout the district. The requests for technology varied greatly and inquiry questions submitted by staff were amazing! We were excited to learn with them and we witnessed the positive impact on the students, staff, schools, and the district.

"I am getting used to having less control and my students are becoming more knowledgeable about the possibilities for what they might do to demonstrate what they know."

Teacher

We learned how to better support our teachers by providing tools for the data collection and report writing aspect of the projects. We learned that some types of technology work better on our network than others. We found that the teachers needed an environment to share their struggles and successes as the year progressed, so we created a blog site. Teachers post a minimum of one post per month on what was happening with their project.

We are leveraging the use and deployment of technology for innovative change across our district. This year, our projects are impacting on 1800 students, 19 schools, 61 classrooms, and 30 teachers. Each year we see shifts in both teachers' pedagogy and the way students are learning. With the integration of technology, teachers step back and let the students communicate, collaborate, and use their critical thinking skills to achieve success in their understanding of the curriculum.

"I stopped being the 'relayer' of content knowledge and engaged kids in thinking about how to access sources of information and to think critically about their authenticity and accuracy."

Teacher



Two students focused on a task

Trillium Lakelands DSB

Project Title	Innovation and Inquiry Using Technology
Brief Description	This project will examine how the use of technology in K - 12 classrooms can support innovation and inquiry and enhance student engagement and achievement. It aims at determining if the use of technology to enhance learning is fiscally sustainable and replicable. Teachers were invited to submit an application for financial support for the purchase and use of technology in their classroom. Preference was given to projects which enhanced student engagement and achievement; incorporated the use of technology to enhance learning; were sustainable and replicable.
Context	<i>Number of schools: 19 Number of teachers: 30 Number of students: 1800 Grades/Program: K-12</i>
Area(s) of Impact	Students
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> As a board we approached this project in a similar fashion to our 2012-2013 project. This year however, we grouped our projects in learning pods so that groups were brought in for PD based on similarities in their areas of focus.
Goals & Priorities	This is an opportunity for outstanding educators to be supported in a specific area of innovation and inquiry. We specifically left the project broad enough to allow for schools to submit a project that best addressed an area of need or an area of interest for the school.
Role of Technology	The technology is a tool to support the learning. Each project has a different list of technologies.
Inquiry Question	Each of the 21 projects identified a distinct inquiry question.
Indicators of Success	Each innovation and inquiry project has separate data that is being collected. There will also be district level data (qualitative) collected. Individual reports for each project will be attached to the final report.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Trillium Lakelands DSB)

Each of the 21 innovation and inquiry projects collected separate data on the inquiry questions identified for the research. (These questions focused on the impact on student learning using an inquiry approach supported by technology.)

On a system level, summarized survey data shows a marked increase in student engagement, students' collaboration skills, students' communication skills, and students' critical thinking skills before and after involvement in the projects. This speaks to the impact that the projects had on the classroom and the system.

The ability for individual teachers to engage in innovation and inquiry at the classroom level is invaluable. This ability to support school level innovation has had an impact not only on each school involved but on the district as a whole.

With the many projects over the years that have permeated the three geographic areas of the board and across the elementary and secondary panels, we now see classrooms embracing learning and teaching in these programs which have had tremendous uptake within the system, with approximately 50% of the permanent teachers (0.5 or greater FTE) taking part in the program.

Successes, Challenges, and Unexpected Results

The challenge was definitely the monitoring of each individual project by a system staff that is small in size. We addressed this challenge with additional meetings to bring together the project participants. In fact, we would want the applicants to apply for funding as "learning pods". We would hope that we would see individuals across the district apply for funding as a team rather than as individuals. This would also support the problem that I have in terms of supply and demand for consultant time. "Learning pods" would provide for a better support system and this would allow the consultants to meet with the entire "learning pod" for monitoring and professional development rather than meeting each individual teacher who has been awarded a project.

Momentum of change in the district was definitely the unintended result in this project. The work on these projects has also caused us to rethink our "Earn a Laptop" program and this fall we have revised the program and launched a new "Earn a Device" program.

Sustainability

This project allowed schools and the system the opportunity to share innovative and best practises using technology throughout the board. Without the funds provided, and the ability to support school level innovation, we would not be where we are in terms of promoting a progressive culture. We have started to use Twitter (#TLDSB learns) to make our learning more visible. This hashtag is being used more and more by all departments throughout the board to make our learning more visible.

(Trillium Lakelands DSB)

We have now supported four years of projects within our system. This has created a culture of individuals who embrace technology and who embrace learning and teaching in a digital age. When students are nurtured in one of these technology rich classrooms they become better digital citizens and they demonstrate personal responsibility for their learning. These students move on to the next classroom and somewhat almost demand that their teacher move forward with their use of technology.

Many of the classrooms become Google classrooms and then the students almost insist that their next teacher use Google drive, etc. in their classroom. These classrooms also promote teachers and students learning together. The teacher does not have to be the resident expert but instead the teacher is a co-learner with the students.

We have decided that if we are able to continue this type of support for innovation that we would want the individuals to create "learning pods". This way, the momentum and the monitoring would be done more on a peer to peer level and our consultants would oversee different "learning pods". This team approach would further our efforts in permeating the system.

Exploring Blended Learning and ePortfolio Pilots

Upper Canada
District
School Board

Our project is motivated by the desire to create pedagogically sound, inquiry-based, online learning environments for all. “Exploring Blended Learning” opportunities is intentionally very broad in scope but implements much of the learning from previous rounds of our initiative. The focus of “ePortfolio Pilots” is purposely narrow in scope but responds to a system identified need to encourage and document student voice.

The work we are undertaking involves all online and blended learning teachers and students across 23 secondary schools and multiple elementary schools, and is supported by multiple branches of our school board.

We hosted eight “Exploring Blended Learning Playshops” in which 200 educator teams participated. The term “Playshop” was coined to reflect the need for participants to discover the ‘why’ behind blended learning; to allow time to explore the platform used in our school board; and to provide needed support and modeling of the tools. The sessions were hosted by region and designed to have a mix of administrators and elementary and secondary educators, including ELL teachers, Early Learning educators and representation from Learning Commons in attendance to add a wide range of perspectives and experiences to the discussions.



Exploring Blended Learning

Throughout the sessions, we created a blended learning environment where all educators could log on and contribute to the growing conversation about 21st Century learning. By the end of the Playshops, we had 200 educators logged on and contributing to the discussion. Our sessions modelled the different ways in which a blended learning environment could foster 21st Century skills and the need to change the way we approach learning today.

Upper Canada DSB

Project Title	Exploring Blended Learning and ePortfolio Pilot
Brief Description	Focus will be on creating pedagogically sound, inquiry based, and online learning environments for all. The work will include all online and blended learning teachers/students across 23 high schools and multiple elementary schools. The work will also include collaboration with multiple branches of our school board.
Context	<i>Number of schools: 86</i> <i>Number of teachers: 50</i> <i>Number of students: 1000</i> <i>Grades/Program: K-12</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The focus of the “Exploring Blended Learning” opportunities is very broad in scope but implements much of the information and strategies that were discovered through round 1. The focus of “ePortfolio Pilots” are narrow in scope but builds on knowledge (from the system) that there is a need for a way to document student voice and uses knowledge during round 1.
Goals & Priorities	<i>System Learning:</i> Data collected on teacher confidence with blended learning tools will be used at a system level to help inform how we target and explore blended learning next year. <i>Student Learning:</i> This research project is for teachers to feel confident in using blended learning tools that create learning spaces which enable students to think critically, be self-directed, and engaged in learning that is purposeful.
Role of Technology	Integrated Learning Platform, Desire2Learn iPads, Laptops, personal devices: our board promotes it’s BYOD policy
Inquiry Question	How can we create inquiry based, online environment that promotes learning for all? How can we increase teacher confidence in using blended learning tools to increase student engagement?
Indicators of Success	Teacher qualitative and quantitative data (reflection on their practice, perceived challenges/barriers and successes, suggestions moving forward). Student qualitative and quantitative data (success rates and student testimony with online learning and suggestions on improving their learning experience).

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Upper Canada DSB)

Teacher participants completed an electronic pre-survey about their comfort level with technology, and their current implementation practices with technology upon the completion of their “exploring blended learning” opportunities. Students (when applicable) were surveyed on how their experience was in a blended learning environment/use of blended eLearning tools such as ePortfolio.

- Post “Exploring Blended Learning” sessions and ePortfolio Pilots number of teachers and students accessing a “blended learning” environment increased.
- Demand for support in creating a “blended learning” environment has increased.
- ePortfolio Pilots have led to an increased number of discussions surrounding what it means to “document” student learning, should technology be placed in the hands of the teachers or the students (teacher comments).
- eLearning courses have increased.
- Students have reported that they enjoy the “flexibility” and personalized approach to eLearning/blended learning courses.
- Teachers can collaborate with each other in an online environment to share and access resources thus allowing them to better engage their students.
- Students have been able to collaborate with peers from across our district and the province in eLearning and blended learning environments.

Successes, Challenges, and Unexpected Results

We did not anticipate the rate of adoption for blended learning. Our numbers rose by 1000 users partly due to the ePortfolio initiatives and the Exploring Blended Learning “playshops”.

[There were] questions around “purposeful” use of technology in the classroom. Many educators felt that they were reluctant to start using technology due to the fact that they weren’t using it “well enough”— this led to a conversation around the SAMR model that it isn’t necessarily “hierarchical” in nature. Everyone must start somewhere and as system leaders it is our job to pinpoint some these “barriers” and find a way to meet reluctant educators where they are.

Sustainability

Our board walked away from this project with more questions than answers, which is a good thing. The one thing we know for certain is that there is an increasing demand for blended learning. We are still curious about the direct impact that blended learning is having on student achievement. We would like to study two specific classes next semester to see student achievement going in and then after the use of a blended learning environment. We have teacher and student testimony that says that they student

(Upper Canada DSB)

engagement increased and they thought that the blended learning environment impacted the student achievement but we would like to gather hard evidence.

This initiative focused on building capacity and collaboration within schools and across our district. We encourage schools to send teams to all of the training sessions where they engaging in conversations (both online and face to face) about 21st Century learning and technology. We feel that this is a healthy model to set for the system. This year the conversation spread from teacher to administrator. Some administrators have started using a blended learning environment to house a collaboration space for their staff. We also have Coordinating Administrative Principals who are responsible for families of schools using a blended learning environment for their families of schools.

Expanding the Cloud: Reaching All Classrooms and Students

Upper Grand
District
School Board



Students collaborating during a project

The objectives of our technology-enabled learning project includes helping teachers leverage technology for personalized student learning; promoting various ways students could demonstrate their learning with the use of technology; highlighting the technology available such as the Provincial Virtual Learning Environment (VLE) and Google Apps for Education (GAPE); and sharing the digital content available in the Ontario Educational Resource Bank (OERB).

Teachers participated in professional development activities on the use of the UGCloud (our VLE); Bring Your Own Device (BYOD); digital content with students in primary grades and in Applied courses in Grades 9 and 10; Cloud computing; Desire2Learn Learning Management System in elementary schools; and the use of tablets in seven primary and junior classrooms. We also focus on increasing the technical expertise of our support team and on developing a communication strategy for parents to promote BYOD and digital resources at our school board.

"I was able to structure my unit on the human body so that the children had independent access to a collection of videos, tasks that supported these videos, and several electronic texts. With the children having access to these resources, I was able to "shrink" my classroom and do focused teaching with smaller groups knowing that the children who were not with me were engaged in a task, and that, again using Google tools, I was able to monitor their progress on this assignment."

Teacher

Teachers involved in the training and co-planning of the project activities share their reflections on the challenges and successes associated with student learning and teaching practices. Challenges include student access to devices, consistent operational technology, ongoing support for teachers, and strategies to monitor the impact of the use of technology on student learning.

Successes are students' active role in their own learning, eagerness to share learning with others, increased independence from the teacher due to the VLE's interactive agenda, and confidence to participate in asynchronous, online discussions related to the work of peers. Where tablets are used, teachers also note that students complete assignments at their own pace and respond well to the ongoing feedback and constructive support teachers provide online.



A student learning to use technology

Students demonstrate their knowledge in a variety of forms and present their ideas in different ways by accessing the multi-media functions built into the tablets.

"Recording information (either as video or audio) definitely encouraged the children to trust their own interpretation of the information that they had gathered."

Teacher

Classrooms become more transparent to parents who were able to work with children at home, using online content.

"One of the apps allowed students to weave text, visuals, audio and video into a single document. They could then export all of these elements into an eBook that could be taken home."

Teacher

Upper Grand DSB

Project Title	Expanding the Cloud - Reaching All Classrooms and Students
Brief Description	We will continue to develop a rich and safe virtual learning environment (vLE), known as “UGCloud”. This project will focus on developing professional development modules, PD to support and prepare staff for the introduction of personal devices in all classrooms, supporting access for all students to rich digital content from any device and from anywhere, and address equity of access issues.
Context	<i>Number of schools: 75</i> <i>Number of teachers: 350</i> <i>Number of students: 35 000</i> <i>Grades/Program: One of the projects directly affect all schools and every classroom (BYOD), while other projects impact only on a few classrooms.</i>
Area(s) of Impact	Teachers Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In rounds 1 & 2 the Upper Grand DSB focussed on two primary areas: cloud computing and safe, secure access to high-quality digital content from anywhere at any time. Findings from last year’s research indicated areas of improvement for our professional development. A major focus for the third round will be training of staff and communication with parents to support the effective use of technology in all classrooms.
Goals & Priorities	<i>System Learning:</i> Building on the lessons learned through last year’s research this project will investigate ways to enhance the adoption of mobile and personal technology as a system level.
Role of Technology	This third round of work will be comprised of multiple projects: BYOD, Digital Content, cloud computing and staff capacity, Digital Portfolios, SEA Computers & Chrome, and supporting elementary usage of D2L and cloud computing.
Inquiry Question	Can a philosophy and infrastructure that supports the use of personal devices (BYOD) benefit all learners? What is the impact of cloud computing on students with SEA claims? Can a blended learning model provide successful PD? How will concerns about equitable access be addressed in a cloud?
Indicators of Success	A number of metrics will be used to identify usage and participation. <ul style="list-style-type: none"> • Measurement of usage of cloud computing over time will indicate adoption. • Reports from D2L platform will indicate teacher participation in professional development. • Teacher surveys of PD effectiveness. • Measurement of usage of UG2GO digital resources over time will indicate usage.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Upper Grand DSB)

A variety of surveys were administered, data collected, and reviewed to inform our next steps.

Some of the findings in each of the six elements of the initiative are highlighted below.

- Development of PD to support staff for the use of personal devices in all classrooms (BYOD):
 - Blended learning approach to PD for our BYOD initiative was an effective method for PD.
 - Teachers appreciated learning at their own pace.
 - Blended solution allowed staff that weren't part of the team to access on-line resources.
 - Support from Director and senior admin gave this initiative high visibility and support.
 - Clarity of message has reduced confusion at schools but not yet with parent and larger community.
 - Despite support and workshops many staff remain highly resistant to implementing BYOD
 - Board purchased online training - Synergise - to provide "just-in-time" training.
- Supporting access for all students to digital content from any device and from anywhere:
 - Ease of access through our Single Sign On portal (UGCloud) has resulted in significant growth in use over the past year.
 - Average daily sign-in September to November, 2013 - 10,000
 - Average daily sign-in September to November 2014 - 16,000
 - In the past year UGCloud has had 3,737,000 page views. Access to UG2GO the Board's rich digital content portal has increased.
 - September - November 2013 - 90,000
 - September - November 2014 - 131,000
- Address equity of access issues for low SES schools:
 - Many students in low SES have access to personal devices but no connectivity at home.
 - Schools have not yet embraced the Board's take home policy allowing students to take board technology home.
- Examination of 1 to 1 mobile devices in the primary and junior division:
 - Students and staff were extremely pleased with 1:1.
 - Students continued to work in groups, not in isolation as was feared.
- All About Digital Portfolio – 2500:
 - Technology worked well allowing staff and students access to the digital portfolios.
- SEA computers & Chrome – 100:
 - Significant cost savings realized with utilization of Chromebooks.
 - Students more willing to use SEA equipment as it is indistinguishable from other equipment in the school i.e. device does not identify student as different.

Successes, Challenges, and Unexpected Results

The level of interest from parents in the use of cloud computing was unexpected. As a consequence of feedback we are continuing to hold Digital Saturday outreach sessions.

(Upper Grand DSB)

One to one tablet deployment worked well in both primary and junior classrooms, however, junior students were better able to share and work collaboratively with fewer devices.

Chrome browser provides enormous opportunities to provide a range of assistive technologies and specific apps to both school and personal equipment. Students and staff can access not only our digital resources from anywhere and any device, we can now make available a number of applications such as Read&Write for Google (Text to Speech and Word Prediction) and the new OSAPAC licensed graphic organizing software, Mindomo available on any computer at anytime from anywhere.

The Upper Grand DSB is leveraging the power of Google Apps to create digital portfolios for all students as part of the provincial All About Me initiative. The growing demand for access to wireless has required the IT Dept. to respond by creating a Wireless Task Force to address concerns.

Success of Google Hangouts as a communication tool to support this project has led to the use of Google Hangouts by staff to reduce travel times and costs. Principals and staff can join meetings remotely from their school sites instead of having to travel and away from their schools.

Technical expertise in cloud computing is limited in Canada. We consulted regularly with staff at Google and with consultants in the US. Our board has invested in training for our IT staff. We have established a provincial cooperative for IT staff to ensure training is available for all IT staff engaged in Google Apps for Education.

Sustainability

Support for these initiatives would not be possible without the continued leadership and support of our Director and the senior administrative team.

- Different departments are continuing to develop closer working relations to support pedagogy-driven, technology enabled practices in our classrooms. Staff from the Curriculum, Special Education Departments and IT Departments are now working together to coordinate resources and strategies. This collaboration brings together itinerant Special Ed Resource teachers (ITRT) together with itinerant technology coaches, our eLearning Contact and the IT Liaison to build resources and professional development opportunities for staff.
- Support for staff and administrators is continuing this year. We have are currently providing in-services for school administrators to ensure they are familiar with cloud computing and are comfortable users of our Google Apps for Education suite of tools.

This spring the Board reviewed and updated its Acceptable Use Policy to better reflect the new realities of technology in our schools.

Our board will be hosting another Digital Saturday, January 24th in Orangeville. This is another outreach to the larger community to inform parents about the resources in our school system.

21st Century Professional Learning Cycle on the Use of Chromebooks and Google Apps for Education

Waterloo
Catholic
District
School Board

This year, we began our exploration of Chromebooks and Google Apps for Education (GAFE) as a means for empowering students to complete the 21st Century learning outcomes defined in our Blueprint. Our main focus is providing greater access to technology to enable learning to take place anywhere, at any time, and on virtually any device. Over 225 educators participated in professional development sessions that focused on using technology to help attain the primary goals of our Improvement Plan for Student Achievement: develop engaging tasks for learners; provide feedback to guide the learning process; communicate criteria to inform learners; and differentiate instruction to support learning.

“Student engagement has increased dramatically. ... Accountability has increased for students who are absent or not in school on deadline dates as they can still share their work from home.”

Teacher

We provided every educator with individual GAFE accounts for themselves and their students, a Chromebook, and two days of release time to facilitate their exploration of these tools. During the professional learning cycle, educators identified teaching strategies and tools they would implement for addressing instructional practice or an area of student need. Throughout the sessions, educators had practical experience using these tools as well as 21st Century learning approaches to inform their own practice. They gained a better understanding of how to leverage the technology in a meaningful way in order to achieve outcomes that were previously not possible.

One of our major successes to date is the many different methods that our educators discovered to empower and model 21st Century learning for their students and colleagues. Our educators collaborated and shared planning templates, resources, best practices, challenges, and insights in our WCDSB Online Community.

“It is helpful to have other teachers at my school also using Chromebooks so that we can share ideas and concerns with each other on a daily basis.”

Teacher

3D Shape Hunt (Home Connections): Student B

At home I went on a **3D shape** hunt.

I found out that:

- **1** of my **Legos** is a **sphere**, and **1** is a **cone**
- my **bed** is a **rectangular prism**.



Presentation of 3D shape inquiry

“I’m continually amazed at how students are able to use the GAFE tools to construct knowledge together. It has changed our learning environment into a place where students collaborate, share, connect, and reflect in ways that were not possible before.”

Teacher

The feedback from the first stage of this project is overwhelmingly positive and our educators and students are looking forward to applying everything they have learned when we continue to embrace 21st Century learning in the fall.

Waterloo Catholic DSB

Project Title	21st Century Professional Learning Cycle on the Use of Chromebooks and Google Apps for Education
Brief Description	Focus for 2013-2014 is on the implementation and use of Chromebooks and Google Apps for Education (GAFE) in our schools in order to realize the outcomes and vision outlined in our 21st Century Learning and Teaching Blueprint and our BIPSA. To support this project our Board currently provides training & release time for teachers in each of our schools, to participate in a professional learning cycle that follows the collaborative inquiry model. Teachers need the time to reflect and examine the ways that these tools can be used effectively. The focus of this PD is to use these tools to develop engaging tasks for learners, provide feedback to guide the learning process, communicate criteria to inform learners, and to differentiate instruction to support the learning.
Context	<i>Number of schools: 50 Number of teachers: 220 Number of students: 5500 Grades/Program: K - 12</i>
Area(s) of Impact	Teachers
Phase of Change	<i>Investigates new area of focus based on learning from previous project(s)</i> Moving forward we would like to focus our PD sessions on having teachers use 21st Century tools to empower their own professional learning so they can better understand how these tools can be used to create engaging tasks for learners that achieve outcomes that were previously not possible.
Goals & Priorities	<i>System Learning:</i> Our main goal is to increase access to technology for our students and educators so that learning can take place anytime, anyplace, and from virtually any device. <i>Student Learning:</i> The ultimate goal of the research project is to have students transition from consumers of information to creative producers and owners of knowledge.
Role of Technology	Teachers will receive a Chromebook and use the tools of the Google Apps for Education suite to facilitate their own learning as they design activities and collaborate on projects with their students and colleagues.
Inquiry Question	How and in what ways will our educators embrace and model 21st Century learning in order to foster greater student collaboration, creativity, engagement, and achievement as a result of participating in the Chromebook & GAFE professional development sessions?
Indicators of Success	The measurable outcomes will be based upon teachers' documentation of observational records and artifacts (video, sample work) that demonstrate students using 21st Century skills to learn and create new knowledge.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Waterloo Catholic DSB)

As part of this project, we wanted to focus on the meaningful uses of technology that made a difference in learning. In order to measure this, we use the SAMR observation instrument. Teachers record their observations and reflections on the level of technology integration for their projects in their planning template and completed a survey.

- Connection to Practice: Identify the areas in which your knowledge and application of these strategies and tools was enhanced.
 - Develop engaging tasks for learners, 94%.
 - Provide feedback to guide the learning process, 78%.
- Inquiry-Based learning: Identify the areas that apply to your use of the professional learning cycle.
 - Engage in professional learning (e.g., co-teaching, peer observation, lesson study, coaching/mentoring) to build a collective understanding of the instructional approach and tools, 83%.
 - Access professional learning resources (e.g., release time, learning materials - WCDSB GAFE support page, subject-specific support or another knowledgeable educator), 78%.
- Community Building: Identify the areas that apply to your participation in the community building activities.
 - Share instructional practices, resources, strategies or project insights & experiences to find solutions to challenges, 79%.
 - Share the planning template & collaborate with one or more teachers while planning lessons, 75%.
- Technology Utilization: During the PD sessions I have improved my understanding of how technology can be used to support the achievement of 21st Century learning outcomes.
 - Moderate Impact, 45%.
 - Significant Impact, 45%.
- 21st Century Learning Approaches: Identify the areas that apply to your use of 21st Century approaches during the implementation of this project.
 - Embracing technology to achieve outcomes that were previously not possible (SAMR model), 75%.
 - Connecting with other educators to share best practices, insights & experiences, 83%.

This project has impacted us by helping us build capacity around innovation, creativity, collaboration, and sharing. We learned how to use the collaborative inquiry model and the professional learning cycle to help educators document, design, and implement activities using Chromebooks and Google apps for education to use with their students.

Successes, Challenges, and Unexpected Results

It was very encouraging to see the high level of enthusiasm that our educators expressed once they discovered the different ways they could use these tools to engage students, provide descriptive feedback on learning, and to differentiate instruction. Many of them had wonderful anecdotal quotes and stories to share about the level of student engagement, particularly those students that typically were less motivated to take an active role in learning.

(Waterloo Catholic DSB)

We encountered some significant issues due to our inability to consistently connect to our WiFi network with the Chromebooks. A collaborative team approach with IT was adopted to troubleshoot the specific issues we were experiencing and eventually we were able to optimize the performance of the WiFi network so that it was a seamless experience for our teachers and students.

Another challenge we encountered was the level of differentiation in the PD sessions that were delivered and the desire by educators to have more opportunities to collaborate with other educators in their panel. To address this challenge we will be creating divisional teams (primary, junior, intermediate, senior, special education, itinerant) consisting of exemplary 21st Century educators that will engage in a collaborative inquiry.

Sustainability

Our school board has committed to expanding the use of Google Apps for Education (GAFE) and the use of Chromebooks to engage in the 21st Century learning outcomes identified in our Blueprint. We have created GAFE accounts for all staff and students and have deployed 1500 Chromebooks. Based on the positive results we received for our PD evaluation, we are continuing with the 2nd iteration of the 21st Century PLCs with teachers.

Training on the use of these tools has expanded to senior administrators, principals, consultants, library technicians, etc. so they can model the use of these tools and collaborate with various stakeholders. An external IT company specializing in GAFE implementations performed an audit of our services and provided specific recommendations on how we can increase the adoption and effectiveness of using these tools.

We continue to increase the number of wireless access points in each of our schools as well as doubling the capacity of our bandwidth in order to support 21st Century learning.

We learned that there must be a combination of strategies to facilitate collaboration (both face to face and online). Educators still appreciate the opportunity to exchange ideas in person as well as connect with others through social media.

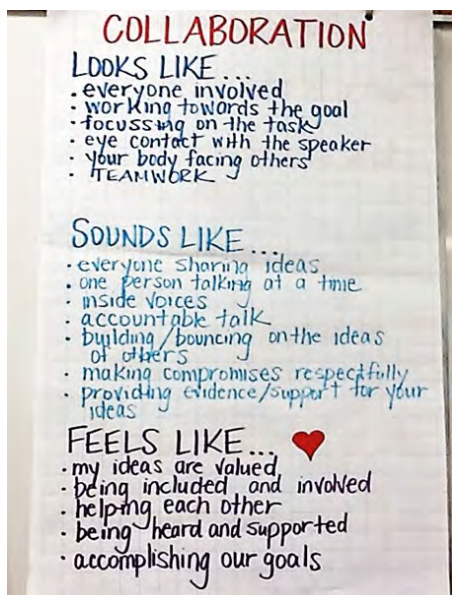
We provided a specific PD session for our instructional leaders so they could co-create training resources, co-teach, and share ideas on how to facilitate training in each of their own schools. We plan on sending a number of our instructional leaders to the GAFE summit in Waterloo in April 2015 so they can continue to enhance their skills and share their learning with the colleagues at their schools.

The Change Process:

Scaling and Refining a Digital Learning Strategy

Waterloo Region
District
School Board

The Waterloo Region District Board (WRDSB) is committed to improving learning and instruction through the use of existing and emerging technologies with the goal of optimizing learning and achievement for all students. Our Digital Learning Strategy (DLS) involves system thinking and learning with a focus on four projects that examine the change process and the conditions required so our teachers can better utilize technology to improve learning and instruction and achieve the overall Board Improvement Plan for Student Achievement goals (BIPSA). As we implement our DLS our focus question is, “Are we adequately preparing all our students for the world they are entering?”



A co-created anchor chart describing collaboration

There are four projects in the DLS. The Futures Forum Project involves a cohort of students, connected with other similar classes, exploring Grade 10 English, Careers, and Civics in a setting enriched with technology, focused on student voice, choice, inquiry, and collaboration. The Apps4Learning Project introduces collaboration across panels, with teams of elementary students working with teams of secondary students; the secondary students are creating apps envisioned by the elementary students. The Integrated Inquiry Project builds on work undertaken through the Student Work Study Initiative. It involves a focus group of classroom teachers and consultants who gather to talk, discuss, reflect, and assess actions that make a difference for student and educator learning. The Special Education Project identified opportunities for student voice and choice in both learning and activities.

The intent of our DLS is to learn about the change process by investigating the conditions necessary to reproduce and to scale up improved practice. Collaboration between students, between students and teachers, and between staff throughout the organization is a key attribute in achieving the goal of the BIPSA.

The principles of a collaborative learning cycle within the DLS guide us in being more purposeful in planning, acting, assessing, and reflecting on our efforts to improve and implement change. Part of the learning is the importance of demonstrating what effective instruction and learning looks, sounds, and feels like. It involves offering opportunities for educators to share improving practice publicly in schools, across schools, and at system-wide events.

Waterloo Region DSB

Project Title	The Change Process: Scaling and Refining a Digital Learning Strategy to Support Achievement of the BIPSA
Brief Description	The research is part of broadening the emerging Digital Learning Strategy which has the potential to inform the entire system improvement planning process, school improvement planning process and the Board strategic plan. The Digital Learning Strategy is a system initiative that is informing system learning and scaling of initiatives across the Board. This project is focussed on analyzing the change process, developing a learning organization that can respond to change, and identifying the factors and conditions to support scalability and sustainability.
Context	<i>Number of schools: 27 Number of teachers: 89 Number of students: 2785 Grades/Program: K-12</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> The current Futures Forum Project (FFP) is a continuation from Round 1 and 2; however, it has grown in scope (e.g., more classes, added Grades 9 and 11 English courses) and precision (e.g., vision of student more clearly defined). Based on our learning from Round 1 and 2 of the projects we have continued to improve our data collection process and metrics. We are incorporating more videotaping and interviews to capture the thinking, reactions, and feelings of the students and teachers involved.
Goals & Priorities	<i>System Learning:</i> The Digital Learning Strategy is a system initiative that is informing system learning and the scaling of initiatives across the Board. This project is focused on analyzing the change process, developing a learning organization that can respond to change, and identifying the factors and conditions to support scalability and sustainability. <i>Student Learning:</i> The Digital Learning Strategy aligns with the Board Improvement Plan for Student Achievement that explicitly identifies the "Vision of Student" that includes the contemporary higher order skills and habits of mind such as collaboration, creative thinking, communication skills, critical thinking, and becoming a contributing citizen.
Role of Technology	Technology is critical in "disrupting" the teachers' instructional practices, providing the impetus to be innovative, and supporting cross-school collaboration.
Inquiry Question	If we refine and implement a Digital Learning Strategy that provides a systemic methodology to improve learning and instruction, will we better understand the change process and the conditions for improved learning and instruction so that more staff can better utilize technology to improve learning and instruction and achieve the overall BIPSA goal of optimizing learning and achievement for all?
Indicators of Success	Indicators include: Improved or high levels of achievement, Improved or high levels of engagement and student sense of efficacy, Improved or high levels of engagement and teacher sense of efficacy, system capacity to scale project.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Waterloo Region DSB)

We collected data formally and informally throughout the year. More formally, towards the end of the year, we worked with Pearson Canada to collate data from formal interviews and student surveys as well as examine hard data such as pass rates, lates and absences, and learning skills and work habits. More informally we monitored feedback from teachers, parents, students, and school administrators to discuss with the implementation team and share with the system.

The Board has developed a greater system focus on collaboration... Collaboration between and among students, educators, including central staff (e.g., superintendents, support staff) has expanded and improved as a result of the 21st Century Innovation Research initiative work. Evidence from anecdotal responses, observations, and surveys were collected to support the findings. For example:

- The students cited the fact that they got to collaborate face to face and online with classmates and students in other schools as an important aspect regarding their high engagement levels.
- The teachers demonstrated collaborative skills at meetings, online, and during their own, self-initiated gatherings. They spoke often of desiring more time to collaborate and learn together.
- The teachers also modelled collaboration for the students by working with them using social media tools to answer questions and provide resources outside of class time.

The English Digital Learning Projects was built upon the work of FFP which focused on collaboration as a key component and the use of technology as a disrupter. Over-all collaboration, between schools and within a classroom, seemed to be the driver for better quality student work and increased achievement.

Findings included:

- Innovative teachings (changed instructional practices) occurred as a result of technology enabled learning environment and promoting student voice and choice.
- Technology enabled students to develop the contemporary learning skills.
- Collaboration (between students and between teachers) was an essential element to improved 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.
- Students reported higher levels of engagement in English courses.
- Student achievement increased in English courses.
- The level of collaboration between teachers was high.
- Technology was utilized in the participating classrooms to enable learning.

In the Apps4Learning project, technology was the catalyst for the collaboration that took place between elementary and secondary students and teachers. Interviews with participants in the project provided feedback that the collaboration was effective because it was initiated with a specific purpose or target in mind that was “authentic” in nature. Students themselves reported an increase in use of problem solving, collaboration, and critical thinking skills as well as learning skills such as team work and perseverance in the face of difficulties.

For the Integrated Inquiry Project, teachers reported increased student engagement when they were provided with opportunities to exercise 'voice and choice' in their learning through a collaborative inquiry approach.

Successes, Challenges, and Unexpected Results

An unintended success from the English Digital Learning Project was the level of community the teachers reached as a result of the collaborative structure. The willingness to share ideas, volunteer solutions, discuss challenges, and work together is not often seen when teachers from different secondary schools come together.

One challenge was with the use of hardware that did not connect with WiFi in its current configuration. As the school year began the schools started to report problems connecting devices to the wireless network. A summer update caused configuration problems and connections were inconsistent at best and non-existent in most cases.

A challenge faced by the English Digital Learning Project is that teachers want to be involved in the project but are reluctant to change their practices significantly. Some desired to be involved to obtain access to the technology but reluctant to collaboratively engage with other teachers to change their instructional practices.

Sustainability

The research initiative was part of broadening the emerging Digital Learning Strategy which has informed the entire system improvement planning process, school improvement planning process, and the Board strategic plan. The work from the research project informed the Board's planning process and resulted in identifying the 2014-15 Board Improvement Plan for Student Achievement's (BIPSA).

The focus on collaboration and the utilization of technology to disrupt instructional practices were significant factors in contributing to the ability to scale practices from the innovation across the system.

The FFP and English Digital Learning Projects both contribute to scaling-up and sustaining pedagogy-driven, technology-enabled practices in the system. From past experiences it has been determined that change in practice comes from a disruption from normal practice.

FFP and English Digital Learning Project models provide a lens to analyze what instructional change looks like and sounds like. The system is using this information to craft a framework for organizational change.

The Apps4Learning project has introduced an "untapped" resource of utilizing Secondary students as collaborators with Elementary students. This cross-panel collaboration can be replicated given the optimum conditions for success.

Bridging the Gap

Wellington
Catholic
District School
Board

The focus for our work is the inquiry question: “How can we support the continued use of assistive technology through the Grades 8-9 transition and throughout secondary school?”

We are studying the impact of technology on special education students as well as its impact on learning for all students. During the previous projects, we improved the use of technology at the elementary level but are challenged with translating this success to the secondary panel.

“[The new computers] are really helping me with all my work. It is making me a better person. I can type, I can do all my work, I can go on the Internet and I can do anything everybody else can do now. I feel better about myself ...”

Student

We recognize that students’ use of technology is dependent on teacher capacity and engagement. One of our goals is to inspire teacher practice to involve all students in using technology as a learning tool and, for teachers, to use as a teaching tool. To accomplish this goal, we are focusing on the cross-panel use of Google and iPad technologies. Our efforts currently are to develop further the role of the Assistive Technology Coach in supporting a wider and deeper understanding of differentiated instruction and universal design. Our Assistive Technology Coach is working within targeted classrooms to engage teachers and transform individual classroom use of technology to a tool for all students. Each classroom is provided with Chromebooks and iPads with selected apps pre-loaded.

Teachers from both elementary and secondary panels receive direct coaching and cross-panel visits. They explore universal design of lesson plans, differentiated instruction, and how different technologies/apps work in the classroom to engage student learning. The Assistive Technology Coach works regularly with the teachers and students on a rotating basis in team teaching, small group instruction, differentiated instruction, lesson planning, and one-to-one support for students.



Building capacity for using technology to support all students

“Technology is something that I have been trying to incorporate into my classes and the more I know the better.”

Teacher



Engaging students in learning using technology

Our teachers are excited about collaborating, sharing, and learning with colleagues from both panels. Our students are excited about using technology to support their learning.

Wellington Catholic DSB

Project Title	Bridging the Gap
Brief Description	The focus is to continue working with both elementary and secondary panels to transform the use of Assistive Technology from individual special education student need to a regular classroom tool used in Universal Design and differentiated instruction.
Context	<i>Number of schools: 8 Number of teachers: 10 Number of students: 300 Grades/Program: 7 - 12</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Our innovation projects in rounds 1 and 2 had a focus on the current technology available within targeted classrooms. The focus now is to work with both elementary and secondary panels to transform the use of Assistive Technology from individual special education student need to a regular classroom tool. We want to focus on the transition from Grade 8 to Grade 9.
Goals & Priorities	<i>System Learning:</i> This project will contribute to our future planning with regards to Special Education Amount funds and moving away from the concept of Assistive Technology solely for Special Education Students to a model to support ALL students in their learning. <i>Student Learning:</i> We will see a direct increase in Student Achievement and student engagement within the regular classroom.
Role of Technology	Each classroom will be provided with 5 Chromebooks and 5 iPad's.
Inquiry Question	What specific types of technology (iPad, Chromebook, tablet, etc.) can remove the stigma associated with the use of Assistive technology in our classrooms that is also already being used within some of our schools?
Indicators of Success	Increased knowledge of which pieces of technology are available and most useful to teachers and students in the classroom. Increased knowledge of apps that will aid in student success and engage student learning.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Wellington Catholic DSB)

- Student engagement increases with the introduction of Google Apps for Education.
- Students use a variety of devices based on preference and learning goals to access curriculum.
- Students use a variety of accessibility tools based on student profile and learning needs.
- Learning skills such as responsibility, initiative, and organization should increase with the introduction of Google Apps for Education and the variety of devices and tools available to students.
- Teacher engagement regarding the use of technology in the classroom as a teaching and learning tool increased with time and personal comfort level with the technology.
- Teacher comfort with technology and devices grew steadily throughout the project with the assistance of regular visits from the Digital Learning Coach.

Successes, Challenges, and Unexpected Results

Teacher “buy-in” from within and outside of the CODE project has been unexpected.

With the initial purchase of devices, there was a greater expectation that iPads would offer more accessibility; however, it appears that Chromebooks have been the more preferred tool, especially for students with learning disabilities.

Training of Google Apps for Education has expanded very broadly throughout the board quickly.

Equipment delivery to participants had a slower roll-out than expected due to logistical limitations.

WiFi accessibility (particularly in Secondary Schools) was limited until wireless access points were installed in the classroom (approx. 3 week delay).

Sustainability

After school cafes are being offered with the assistance of our E-Learning Coordinator to share the benefits of Google Apps for Education and how it integrates within the D2L environment to teachers who are not directly involved in the project.

GAFE training is being offered to all Program Coordinators and Principals within our board to showcase the potential that his platform has for enhancing student engagement, assessment, differentiated instruction, critical literacy, flexible groupings, and inquiry based learning. The purpose of sharing this information with administrators and coordinators is to ensure that 21st Century Learning Goals and Student Achievement Goals are aligned and don't “stand apart” from one another.

Formation of a 21st Century Learning Committee which includes classroom teachers, program coordinators, principals, IT representatives, and the Digital Learning coach. The purpose of this committee is to “forward plan”, ensuring all stakeholders are familiar and able to clearly articulate and communicate our 21st Century Learning Goals.

Equal Access, Any Time, Anywhere:

Redefined Learning-MyTools2Go

Windsor-Essex
Catholic District
School Board

Our project focuses on the questions: “What would happen if teachers and staff were equipped with all of the tools needed to effectively implement educational technology in their classrooms?” and “If educators were provided with the essential technology, infrastructure, and training, how would this ultimately affect student engagement and achievement?”

For our investigation, a team of staff ‘experts’ worked closely with the teachers, administration, and support staff in two elementary schools. Our plan was to equip staff with the tools as part of a strategic effort that included six half-day professional development sessions. Each of the staff received a Chromebook that quickly became their tool of choice to create and share. Of crucial importance in our process was the invitation for teachers to collaborate by establishing a community of learners.

During professional development sessions, teachers built their capacity with the use of Google Apps for Education (GAFE) and Google+ Communities as the primary means of communication. An example of this collaboration was the development and refinement of a Google forum to collect evidence of achievement of learning skills. This forum was originally created by a secondary school teacher, and modified to meet the needs of primary and junior teachers. In the true spirit of collaboration, the forum is being accessed by several teachers from these two schools and staff from other schools in our school board.

Teachers are embracing the idea of providing entry points into investigation and critical thinking opportunities, and then leveraging technology to let the students take the learning to places we can only imagine. From staff who have created their first presentation to teachers who are redefining the way they instruct and assess, our work has re-ignited a passion for learning. Most importantly, this energy is being shared in a collaborative community of learners.

There is much excitement among our staff as they look forward to implementing their new learning with their students again in the next school year.

“After 19 years of teaching, I have been renewed and refreshed because these tools have let me give the learning back to the students.”

Teacher

Windsor-Essex Catholic DSB

Project Title	Equal Access, Any Time, Anywhere, Redefined Learning - MyTools2Go
Brief Description	An extension to our work in 2012-2013 will be the introduction of the SAMR model to assist with pedagogical change. The model will also be used as a way to measure overall effectiveness. In part of our plan, we would like to continue to build capacity throughout the system moving the work that was accomplished last year to a wider audience. This will be done primarily through job embedded professional development. Our innovative research project is intended to help each student become a competent, productive and self-directed young adult through the pursuit of learning. Our project aims to assist staff and students to collaborate on new initiatives; foster critical thinking skills when faced with a challenge; and enhance individual creativity in the learning process.
Context	<i>Number of schools: 2 Number of teachers: 40 Number of students: 800 Grades/Program: K-8</i>
Area(s) of Impact	Organizational Practices Teachers
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In round 1, we focussed on developing a support network for staff to access regarding cloud computing. We are now leveraging this robust network to support new initiatives and expanding the project.
Goals & Priorities	<i>System Learning:</i> We believe that our focus this year will further move the system along a continuum that embraces technology as an important tool to advance student achievement and redefine learning. <i>Student Learning:</i> The goal is for staff and students to become curators of knowledge who effectively communicate responsibly in the digital world.
Role of Technology	MyTools2Go, and the use of Chromebooks as the primary delivery device, offer staff and students anytime, anywhere access to create and collaborate.
Inquiry Question	How will teacher practice change when they are equipped with the tools needed to expand their digital presence in both their professional learning communities as well as in their daily practice?
Indicators of Success	We will be able to measure staff and student use of the MyTools2Go platform and LMS use throughout the process. Through the implementation of the SAMR model we will be able to get a better understanding of where staff and students are on their technological journey.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(Windsor-Essex Catholic DSB)

We endeavoured to determine if equipping staff with all of the tools they need to effectively use technology in their classrooms would affect positive change in their practice. Specifically, we hoped to inspire more collaboration and thus, help staff and students redefine the way they learned. Through surveys, data was collected regarding both the amount and quality of redesigned tasks developed during the final sharing session amongst staff from both schools.

- There was an increase in staff creating digital content.
- From the outset, staff were encouraged, and given the tools, to start using more cloud-based computing options in their practice. The highlights are the 43% of staff regularly saving digital content using their Google Drive and only 3% using a USB Drive. Both of these numbers are dramatic changes from the pre-survey.
- There was increased comfort with the technology.
- There was marked increase in collaboration teacher to teacher and student to student.
- With increased collaboration came more efficient workflows - such as Student Success teams in the school who work with identified students.

Successes, Challenges, and Unexpected Results

One of the unexpected successes of this project was the inclusion of all staff in the learning.

One of the project goals was to build the leadership capacity of the staff. What we did not expect was the mentoring that happened without our direction. As September rolled around this year, staff who were directly involved in the project shared their knowledge with staff from other schools and at our Integrated Technology Summit in August, as presenters and participants.

Our biggest challenge through this process was balancing the training to meet the needs of teachers where they were along the SAMR continuum. Redefinition of their practice and student learning was not going to take place overnight. We assured them that wherever they placed themselves on the continuum was valid and the only goal was to move.

Sustainability

Throughout this project, our major goal was to create local champions and experts who would quickly become a valuable resource. Both staffs had many leaders emerge who, since June, have been transferred to different schools and have embraced their roles as leaders in the Board. A secondary goal was to establish a community of learners by leveraging the Google+ communities created for each school and a larger community for the Board. All of these communities are very active and have become a hub of knowledge and sharing within our Board and beyond.

(Windsor-Essex Catholic DSB)

The number of requests for similar access to technology and training has been incredible. MyTools2Go has become a known entity that is much sought after by all. To support this growth, the IT team has integrated our Student Information System with MyTools2Go, School and Board Administration use MyTools2Go as their primary communication and creation tool, and the infrastructure is capable of supporting this expanded use of cloud-based computing.

All of the Curriculum Consultants, along with the e-Learning contact, are firmly embedded with staff and students using MyTools2Go, developing and sharing strategies.

21st Century Learning Teams

York Catholic
District
School Board

Our story began in January 2013, when a system-wide committee investigated the current state of 21st Century learning and technology. We investigated various technologies in terms of professional learning, integrating technology into classroom learning, equitable access, technical support, infrastructure, and budget.

Our vision for 21st Century learning is captured in the pedagogy of the 6 Cs, namely, critical thinking, communication, collaboration, creativity, Catholic character, and citizenship. We decided that technology should enhance 21st Century learning in the classroom, seamlessly and invisibly. Students should have equity of access and opportunities to learn.

During the process of defining this vision, we identified areas where change was needed. For example, in order to provide equity of access to technology for all students, we needed a central plan to begin funding purchases and to provide professional learning.

Teachers needed professional learning in both the technical skills to use technology and the pedagogy of 21st Century teaching and learning. Following the guiding principle of equity, we established a four member 21st Century Learning Team, called 21C, in every school. We provided team members with iPads on a cost sharing basis between the school and the school board. We provided release time for team members to attend a series of workshops. We also formed a small central team of school board personnel.

“Grades 2 and 3 teachers, who are on the 21C team for their schools, have taken the lead with technology. They have shared apps and ways to document and assess student learning using the camera, video clips, and iMovie.”

Program Resource Teacher

We held a number of workshops, always including both technology training in areas such as iPad apps, Google Apps, Desire 2 Learn (D2L), and interactive whiteboard; and in pedagogy for 21st Century learning skills including topics such as Digital Citizenship and Bring Your Own Device (BYOD).

The uptake on our efforts is tremendous with many successes to celebrate. For example, we provided more hardware (iPads and Chromebooks) to the schools and we delivered D2L workshops in 25 elementary schools to date along with other sessions held after school and on weekends.

“I wanted to send a little note to say a big thank you for the D2L inservice that has been provided to our staff. ... The staff has learned a great deal and everyone is eager to implement this in the fall.”

Principal

Our plans for the 2014-15 school year include adding two additional teachers to the school 21C teams and to continue focussed professional learning sessions. In addition, each school will select two students who will lead a Student Tech Team for supporting the teachers and students in the implementation of technology-enhanced teaching and learning. We continue to address the challenges of infrastructure and wireless access, equitable access to technology and timely, focussed professional learning.

York Catholic DSB

Project Title	21st Century Learning Teams
Brief Description	Our experience with Destination Reading reinforces the desire to use new technologies and digital resources and has prompted discussion on a more robust expansion of technologies and digital resources in general. While work is being done at the school level to build these 21st Century skills in students without using technology, the focus is to use new and existing technology, seamlessly, to enhance the teaching of curriculum expectations while building on the 6Cs. Our focus is also to ensure that all students can demonstrate their learning in a variety of ways, with and without technology.
Context	<i>Number of schools: 104</i> <i>Number of teachers: 300</i> <i>Number of students: 12 000</i> <i>Grades/Program: K-12</i>
Area(s) of Impact	Teachers Leaders, Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> In 2011-2012 and in 2012-2013, YCDSB's project focussed upon a web-based application to support early reading, called Destination Reading. In the 2013-2014 project, every school in the board, both elementary and secondary, was invited to participate.
Goals & Priorities	<i>System Learning:</i> This Innovative Research Project fosters capacity building and knowledge mobilization to scale-up pedagogy-driven, technology-enabled practices that optimize engagement, achievement, and well-being. <i>Student Learning:</i> In the context of teaching and learning in the 21st Century, our belief is that technology in education is one of many tools to support students as they inquire, create, share, research, collaborate, and demonstrate their understanding of the curriculum.
Role of Technology	Each 21st Century Learning Team will be provided with a set of 4 iPads to support this project – 2 provided centrally and 2 provided by the school.
Inquiry Question	If every elementary and secondary school has a 4-person 21st Century Learning Team, then teachers will be engaged in 21st Century pedagogies with greater frequency and use new and appropriate technologies to enhance the teaching/learning experience.
Indicators of Success	Improvements in student engagement, achievement, well-being, and faith development

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(York Catholic DSB)

Pre, medial and post surveys asked teachers and administrators how comfortable they are using iPads, Google Apps for Education, Desire2Learn and Interactive Whiteboards, and specific applications for each.

Purchases were tracked to see if there are increases in the acquisition of technology and/or applications, through school funding and what types of purchases are being made.

Principal interviews gathered anecdotal data regarding any cultural shifts that are evident in the school (e.g., more group work, conversation, use of technology to enhance instruction).

- Most measurable impact has been noted in relation to the proximal goal of changed teacher awareness, attitudes and confidence on the topic of technology enhanced education.
- Increases in the number of active accounts (D2L) confirms increased teacher awareness, content knowledge, and confidence to use blended learning formats.
- Many school 21C Teams have expanded beyond their original numbers, with schools absorbing additional release costs from school budgets. This expansion is the manifestation of growing interest and practice.
- Surveys of self-assessed learning by teachers on the 21C teams in January, 2014, confirmed that technological training needed to be differentiated for diverse learners. It needed to be repeated, in some cases more than once, in order for all teachers on the teams to gain basic knowledge to use the EcoSystem tools.
- 21C teachers, for whom technology enhanced learning was common practice, came forward to lead workshops, building their own capacity as presenters and building the capacity of all teachers in attendance.
- Most measurable impact on student achievement has been noted in relation to the proximal goal of changed teacher awareness, attitudes, and confidence on the topic of technology enhanced education.

Successes, Challenges, and Unexpected Results

High parent interest led to the planning team making presentations to Catholic School Councils, and whole school parent groups.

The initiative generated more support from the board of trustees than anticipated.

Infrastructure and wireless connectivity require upgrades to manage the steadily increasing volume of technology usage. This challenge is being addressed by a newly created Information System and Curriculum Committee that meets regularly to best apply the board's funding to this issue. Additional funding will be required if all students are to have equitable access to technology enhanced learning.

Sustainability

(York Catholic DSB)

The 21C Teams have been expanded to include two additional classroom teachers, who are the D2L contacts for the school. The teacher release that would have been funded for the three classroom teachers for two additional workshops, will be available to the school to use to consolidate learning for the team or expand the learning to other teachers in the school.

Workshops 2 and 3 will be differentiated with each topic offering pedagogical knowledge, at various levels of technological competence. Each team member can advance their own learning at a level and pace that supports consolidated practice.

We have an in-house mechanism to support teacher collaboration; that is, teachers can request release time to work on a problem of practice via a Student Learning Proposal (SLP). Increasingly, SLPs are focussing on the use of technology to enhance learning.

Central meetings for the Curriculum and the Special Education staff will include technology training and pedagogical knowledge to support these teams to apply technology enhanced learning in their work in Collaborative Inquiries and Network Learning sessions, with teachers.

Each school will have a Student Educational Tech Team, made up of 4 members at secondary and 2 members at elementary. These students will be trained in the operation of the devices in the EcoSystem and in Digital Citizenship expectations.

Eight lead principals in the elementary panel and three of their teachers will work on Digital Citizenship expectations for K to Gr. 8, for the system.

“What’s in a Cloud?”

Inquiry-Based Learning in a Digital Classroom – A Study in Digital Communications and Collaboration

York Region
District
School Board

York Region DSB has been involved in the implementation of Cloud computing tools for three years, conducting research and starting implementation on a limited basis. This year we are expanding and enhancing the implementation, including investigating the use of Chromebooks and Samsung Nexus tablet devices for both teachers and students.

Our research from last year provides the background for this year’s focus and the report’s recommendations formed the basis for our continued work. For each of the recommendations, we are taking action.

Recommendation 1: “Build a small nucleus of a few experienced Cloud users in a school before implementing school-wide.”

Action: We created a network of school cloud leaders to enhance the development of local leadership practices.

Recommendation 2: “Cloud professional learning sessions need to be active and interactive.”

Action: Our leaders and learners are using Google Plus to enable 1:1 as well as group discussions and collaboration across schools and panels.

Recommendation 3: “Create online communities in each district specifically addressing Cloud use.”

Action: We created a PD Leaders and Learners Community to support teachers.

Recommendation 4: “Provide professional learning opportunities for more experienced Cloud users.”

Action: We are using Google Hangouts as another tool to support differentiated professional learning. This tool, coupled with the online community and select school teacher-leaders allow for advanced learning opportunities for those who are ready.

Recommendation 5: “Provide in-class support as a follow-up to professional development sessions.”

Action: Digital literacy resource teachers and trained school leadership teams are supporting teachers individually and with their students.



Leaders introduce teachers and students to the benefits of file sharing and collaborative work and feedback

Recommendation 6: “Districts acquiring new devices for Cloud classroom access should purchase Chromebooks.”

Action: We are providing each teacher-leader with a classroom kit on long-term loan until the end of the formal project. We will provide strategies for continued use of the Chromebook technology that include YRDSB specific strategies such as school board cost sharing and the “Blueprints for Change” program.

As we move forward, our teacher-leader community continues to connect and enhance the communications and collaborative learning, planning, and teaching environments for themselves, their students, other staff, and school/system administrators.

York Region DSB

Project Title	"What's in a Cloud"? Inquiry Based Learning in a Digital Classroom - A Study in Digital Communications and Collaboration
Brief Description	The goal of this project is to more fully implement cloud computing in all York Region schools. 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. We will continue to explore and share best practices of ICT integration into traditional and non-traditional classroom learning environments.
Context	<i>Number of schools: 34 Number of teachers: 34 Number of students: 4000 Grades/Program: K-12 cross curricular</i>
Area(s) of Impact	Organizational Practices
Phase of Change	<i>Extends the reach and broadens the scope of the 2012-2013 project(s)</i> Research results from previous year's report and recommendations have formed the basis of this year's implementation. The current project implements the recommendations by going to a larger scale in more schools.
Goals & Priorities	<i>System Learning:</i> The integration of teachers from different departments and from Special Education focus in schools will provide a system level implementation in line with board goals. The scaling of this model to all schools will be maintainable within current board budget lines over 4 years, or in 2 years with continued CODE funding. <i>Student Learning:</i> The impact on the students will emerge from changes in teacher practice as each classroom learning environment will expand in terms of the use of cloud tools, the ability of teachers to integrate these tools into their instructional practice and on the students ability to collaborate in these learning spaces in ways that have not been available to them previously.
Role of Technology	Cloud based tools (Google Apps for Education) used for collaboration and increased communication. Chromebooks will be explored as an inexpensive model of hardware deployment. BYOD (Bring Your Own Device) provides an opportunity to explore the use of cloud tools on any device in line with the Board direction.
Inquiry Question	How will continued blended learning impact the scope of implementation across a large school district? What are the most important considerations in using cloud tools to develop communication and collaboration strategies?
Indicators of Success	The evidence of increased teacher and student use of cloud tools is a continuing measure that will be used. The impact on student learning may be measured through some qualitative analysis of online content developed in the cloud environment. Comparisons to previous work both online and offline can be completed with support from YRDSB Research Services.

NOTE: Information in the summary is taken directly from the data contained in the final project report.

Evidence of Impact

(York Region DSB)

The purpose of our project, building from the 2012-2013 experience, is to increase in scale and create more collaborative partnerships with teachers and schools in the region. The focus is on collaborating and learning professionally using “cloud” tools, in particular Google Applications for Education (GAFE) tools.

Evidenced via postings and conversations in the Google+ communities, conversations, observations and feedback comments there is:

- Increase in communication and collaboration between teachers - as instructors, as learners.
- Increase in communication and collaboration between teachers and learners.
- Increase in communication and collaboration between learners.
- Our data indicated an increase in users of Google Drive from ~ 10K to 16K between January and June 2014.

There is a positive change in the nature of communication and an increase in collaboration between teachers and learners which impacted in:

- Increase flexibility and ease in collaboration, problem solving, sharing learning, supporting learning, lateral learning as well as expert-learner teacher to teacher.
- Increase accessibility of teacher by student (and vice versa), “invisible” presence of the teacher, more immediate assessment of, for, and as learning.
- Increase opportunity to collaborate and learn together student to student.

From interviews, observations and conversations, learners reported:

- More personalized learning environment.
- Increased sharing between each other - facilitates group work, increase accessibility.
- Increased flexibility (in teachers) to different ideas - in completing work, different platforms to share.
- Increased access to resources (online), anywhere, anyplace - answers are available and easy to find..... instantaneous.
- Increased immediacy in support (assessment as learning, formatively).
- Increased feedback (descriptive feedback), progress and assessment.
- Streamline and simplify organization of learner work, e.g., work is stored on the cloud, learners can find the work, it helps them being organized, learners do not lose work easily, there is “anywhere” access, students are able to collaborate with each other (virtual group work).

Successes, Challenges, and Unexpected Results

Teachers demonstrate a “want” to learn - neighbouring school staff invited and attended PD - positive change in intent and mindset.

Teachers minimize boundaries (eliminate the “silo-s” by learning together), e.g., elementary and secondary teachers sharing ideas and working collaboratively - non-panel specific learning.

Teachers expand and extend networks, e.g., for addition learning in Google+ communities.

Teachers collaborate in unexpected venues, e.g., use of common school Google calendar, Phys. Ed. or increase use of class websites to help with parent and student communication – engagement, increase use of forms to collect data to support student success, e.g., Special Education progress reports submitted electronically, student voice surveys etc.

Sustainability

We will continue the project with a focus on shifting the mindset of all staff, as well as augmenting our/their skills and knowledge as we move towards *Modern Learning*. We hope to achieve this by the following activities:

- Continue to run professional learning sessions, e.g., Digital Leadership Day for administrators and managers to shift mindset and garner support in the movement.
- Create opportunities for collaboration - teachers and learners - creating the culture of collaboration.
- Expand project to include more schools through initial cohort of Teacher Leaders to support schools.
- Continue the project for the new school year with current Teacher Leaders.

To create a culture of collaboration and sharing between all staff (teaching and non-teaching), we are creating more opportunities and building the infrastructure to promote collaboration in a *Modern Learning* sense. We are hoping to include students and parents, community partners and other stakeholders in changing how we operate as a school system. Our next step is to (first) ensure universal access to technology for staff - the ITS department is currently working on this initiative.

To shift the mindset to that of *Modern Learning* where teachers are facilitators of learning we are creating learning opportunities and networks where participants are co-learners, e.g., collaborative inquiry based learning, 4C model, Ed Tech Camps, Digital Leadership Day for administrators etc., thus shifting our stance of professional development into professional learning/coaching.