

A Synopsis of the Final Research Report

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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The *21st Century Innovation Research Initiative (Round 3)* follows from both provincial and global investigations into how to equip schools for 21st Century teaching and learning. 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. Projects focussed 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.

In Round 3, there were 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. Data was collected from the projects using the comprehensive self-reporting template that was accompanied by a thorough guide and a supporting slide presentation. The research team included field researchers who interacted with the project leaders throughout all phases of implementation. They engaged in focussed conversations offering support and clarification, 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. Projects interacted through an e-network, established to promote broad sharing of information and insights among and across projects. Further, 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.

The quantitative data reported 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. 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. These areas of investigation ran through the projects with widely varying degrees of emphasis and purposeful actions. For some, it was a central focus. For others, it was a feature of implementation rather than a measurable outcome.

The data reported by the projects seemed to indicate that across the province 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.

Projects identified a number of challenges that re-directed or delayed their activities over the course of the implementation. 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 researchers. 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.

Projects described the focus of their inquiry and the impact on growth under the following headings: students, teachers, and system. 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.

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. An increase in student engagement was reported by a number of innovation projects. For example, teachers indicated that when implemented with effective instructional strategies, technology-enabled innovation projects highlighted aspects of intrinsic motivation in students that was revealed in the quality of and interest in their schoolwork. They took ownership of their own learning through independent research and 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. 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. 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.

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There is evidence that change is underway in the province to shift from content mastery to developing students' capacity to actively apply 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. Comments in the 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. Fullan & Langworthy (2013), write: "... 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.

The value of student voice as an integral component of system learning was reported as a key factor in understanding that students represent an undervalued resource for technology support. Student voice also echoed an increase in their confidence to collaborate and communicate as they learned together with peers and teachers.

Teachers

Fullan & Langworthy (2014) suggest 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.

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. 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.

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). 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.

Teacher comfort with technology and devices was an important aspect of new 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. Formal teacher collaborative inquiry was described as having the strongest impact on teacher learning, 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. 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.

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. The characteristics of deep learning noted by Fullan & Langworthy (2013) apply to teachers as well as students: 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. Teachers demonstrated that they are becoming life-long, enthusiastic learners – traits that they model for their students. These attributes seem to indicate that headway was being made in connecting deep learning for the 21st Century to pedagogy as they embraced increased technology use in the classroom, new ideas for program delivery, and consideration of alternative assessment methods.

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.

System Learning

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. The data on system learning from this study indicates that next steps need to be 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. A number of identifiers were expressed in the project reports: the importance of setting sights on sustainable practice and scalability; enabling technical changes and supporting adaptive change; embracing a system culture of continuous learning; building broader capacities that align with both the system vision and investment in tools and devices for learners; and purposeful and focused professional development and job-embedded professional learning aligned to system plans.

System structures address issues such as networks and hardware, while supporting services include human resources, professional development, and learning environments. 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, e.g., ease of access to wireless networks, expanded use of technology adding pressure on infrastructure, and concerns regarding security, slow speed, and inconsistent connections.

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.

Several projects said that evidence they gathered helped inform decisions for the allocation of human and financial resources. Many positive comments focusing on human resources supporting professional learning were visible in the data, e.g., system-wide coaches, system departments come together with IT departments, IT personal being proactive in growing relationships with educators.

In Conclusion

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. 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.

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. The fundamental shift in the culture of schooling is now being thought about on a deeper level, embraced by an increased number of educators from all levels of the system in order to find the next steps forward for further advancing innovative, technology-enabled teaching and learning practices that impact student engagement, learning, achievement, and acquisition of 21st Century competencies.