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New Pedagogies for Deep Learning: A Global Partnership

Toward District Wide Deep Learning

A CROSS CASE STUDY



New Pedagogies for
Deep Learning
A GLOBAL PARTNERSHIP

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Toward District Wide Deep Learning

A CROSS CASE STUDY

NEW PEDAGOGIES FOR DEEP LEARNING

Deep learning is becoming all the rage in education, but what is it in practice? In 2013, New Pedagogies for Deep Learning (NPDL, or DL)—a global living laboratory—was established by Greg Butler, and later led by Fullan, Quinn, and McEachen. For the past few years we have been working in partnership with school systems around the world to co-develop examples of deep learning in practice. This paper is one of several that will report on early findings and lessons.

NPDL consists of some 1,000 schools in seven countries: Australia, Canada, Finland, Netherlands, New Zealand, Uruguay, and United States (www.npdl.global). In Ontario there are 15 districts (out of a total of 72) that are members of DL. This paper is based on case studies of three of these districts: Hamilton Wentworth District School Board (HWDSB), Ottawa Catholic School Board (OCSB), and Simcoe County District School Board (SCDSB). These districts began NPDL in July 2014. Each district consists of some 100 schools. The model involves starting with a small number of schools (about 15% of the total) in each district and then spreading district-wide.

The Deep Learning outcomes consist of 6Cs (or Global Competencies): Pedagogies involve learning partnerships between and among students, teachers, and families. We have developed tools (rubrics and protocols) to support the implementation of the 6Cs, the pedagogies, and the support conditions at the school level, and at the local and state infrastructure levels. All entities that joined DL did so because they were already moving or wanting to move into deep learning in their schools and systems. The idea was to build DL together and learn from each other. We wanted to capture some of the early lessons. Hence the three case studies.

The innovations reported here are not necessarily brand new, but so far these types of ideas have appeared in lone-wolf schools, or wolf packs of a few schools. There are no examples that we know of where 'whole systems' have attempted to go to scale with deep learning. Our initiative is about regular schools in regular school systems changing the culture of the district and its schools in order to go deeper for all children.

In the rest of this paper we first present profiles of the three cases: who they are, what they did, and with what outcomes so far (for the full cases see Fullan, Rodway, and Rincón-Gallardo, 2016). For other background on the ideas see *Stratosphere* (Fullan, 2013), *Coherence* (Fullan and Quinn, 2016), and *A Rich Seam* (Fullan and Langworthy, 2013).



CASE STUDIES IN A NUTSHELL



Hamilton-Wentworth District School Board

Our first case study was based on the Hamilton-Wentworth District School board (HWDSB). Located just west of the Greater Toronto Area, HWDSB is a midsize school district serving approximately 49,000 students across its 88 elementary and 14 secondary schools. With an annual budget of over \$500 million dollars, the district employs more than 4,000 academic staff who deliver an educational program that is focused on seeing “each student reading, achieving, engaging and graduating in a 21st century learning environment.”¹ Since 2010, HWDSB has witnessed gains in reading and writing, but like many Ontario school districts, is experiencing challenges in numeracy.² Using data from standardized EQAO assessments alongside many other district data, HWDSB takes an evidence-informed approach to improving their policies and programming. Currently, the district is engaged in the second phase of *Reimagine HWDSB*—a districtwide initiative that includes school board trustees, district employees, students, parents, and community members in exploring the district’s past and imagining its future with the intention of launching a new board vision in May 2016.

Hamilton-Wentworth engaged New Pedagogies for Deep Learning (DL) in the 2014-15 academic year seeing it as a pathway towards continuing and deepening the district’s work with *Transforming Learning Everywhere* (TLE)—the district’s vision and improvement strategy, guided by the principles of learning for success, driven by instruction, and accelerated by technology.³ HWDSB’s senior leadership team agreed that all schools in the west cluster family of schools (14 elementary and 2 secondary schools commonly referred to as the ‘West Cluster’) would participate in DL. The Superintendent for Student Achievement for the West Cluster, Mag Gardner, put together an implementation team called the Nimble 6 (comprised of the superintendent, program consultants, an instructional coach and members of the research department) who, alongside assigned instructional coaches, provided on-demand coaching and professional learning supports to the principals and teachers engaging DL.

DISTRICT PROFILE Hamilton-Wentworth District School Board
<ul style="list-style-type: none">▪ Approx. 49,000 Students▪ 88 Elementary Schools▪ 14 Secondary Schools▪ 4000+ Academic Staff

All schools in the cluster were asked to participate; however, decisions about what the initiative would look like in each school were left to each school’s administrative team. The result was a variation of DL configurations across these schools, ranging from all classes participating to a select few (e.g., a particular grade level). Supports were differentiated for each school based on their own individual needs and circumstances. Yet, all schools shared a common expectation: everyone would be moving forward no matter how small the steps.

¹ See <http://www.hwdsb.on.ca/about/budget/> for more details.

² <http://www.hwdsb.on.ca/blog/hwdsb-strategies-yielding-long-term-gains-on-eqao-3/>

DL teachers chose one of the 6Cs to focus on, so they could build their knowledge and confidence in one particular area. Schools and teachers were encouraged to play with ideas, take risks and try new approaches to teaching and learning; in this district, there was constant messaging that it was “okay to play, okay to fail.” There were no outputs initially required in order to build trust in the system and belief in their freedom to learn from failure.

The district team was committed to the messaging that everyone “was in this together” as educators within the system. They emphasized that everyone came to the table with knowledge and expertise in addition to their own learning needs, deliberately flattening the district’s leadership structure. Educators were regularly prompted to think about what was happening in their classrooms and schools—what worked, what didn’t, next steps—creating a consistent feedback loop informing their own work as they moved through their individual learning cycles. The board provided funding for six full days of school-based release time enabling instructional coaches to work directly with teachers and principals in their schools. Sharing sessions were organized throughout the year, highlighting the importance of sharing the learning throughout the cluster. In their efforts to design deep learning environments for their students, HWDSB educators were involved in deep learning themselves, developing active professional learning communities.

“Classrooms were filled with a renewed energy and enthusiasm for learning, evidenced by a marked increase in student engagement as reported by teachers.”

Throughout the year, the West Cluster continuously strived for deep learning by differentiating supports for schools, flattening the leadership structure and engaging continuous cycles of action and reflection through ongoing professional learning and collaboration with a focus on building system coherence. These efforts yielded some initial impacts on practice across the West Cluster. First, the district saw important shifts at the level of the instructional core: that is, in students’ relationship with knowledge and with teachers, and with teachers’ relationship with knowledge. Classrooms were filled with a renewed energy and enthusiasm for learning, evidenced by a marked increase in student engagement as reported by teachers. Students who typically struggled in more conventional classroom settings (i.e., students with IEPs, underachieving students) often flourished in deep learning environments where they were able to pursue their own interests through inquiry-based learning. Conversely, teachers identified instances where typically high-performing students struggled with self-directed learning, experiencing difficulty in defining their own learning trajectories. Students were beginning to extend their learning outside the classroom, making connections between what they were doing at school and the world that they live in.

At the same time, teachers were more willing to let students’ voices shape and guide the learning in the classroom, shifting their relationship with students towards co-learning and co-construction. Despite the challenges of letting go of control and conventional views of the teaching and learning dynamic, in deep learning classrooms, teachers and students were co-creating knowledge and learning tasks together. Teachers began to see the role of the students in designing learning tasks and environments much differently than they had in the past. In the same way that the typically vertical relationship between teachers

and students was shifting, teachers' relationship with the curriculum was also changing. The most successful instances of deep learning classrooms witnessed teachers coming to view the provincial curriculum as a tool that they could leverage in their inquiry tasks rather than a barrier to this style of learning. Teachers reported 'covering' more curriculum expectations across multiple subject areas in classrooms that encouraged student voice, choice, and deeper learning. Most notably, teachers remarked that they felt that they were no longer expected to 'know everything' but rather, they could engage with their students through a co-learning stance.

Second, there was evidence of a shifting relationship between the district office and schools across the West Cluster. As a result of flattening the leadership structure and everyone coming to the table as co-learners, people became more aware of and gained access to expertise and skills that are often under-utilized in schools. There was a greater understanding and appreciation of the challenges and circumstances that influence people's daily work across the system. These interactions are not only beginning to make thinking visible, but also highlighted how to collaboratively design the most effective learning environments for and with learners. These ideas extended beyond students' learning to the design of effective professional learning as well. Deep learning was constantly being modeled across the district, from individual classrooms, schools and at the district level. Within this co-learning environment, teachers' sense of professionalism and self-efficacy enhanced. Through their work with and validation from the district office, teachers are beginning to see each other as experts and sources of knowledge that are available outside of formal district resources.

Schools are in the early stages of using DL's 'New Measures tools'. While they have been using the tools to design DL they are now working on how to describe and measure DL through the suite of tools. There is also the bigger question of how state systems assess global competencies—something that our DL group is working on with OECD and others. In the three cases qualitative indicators show that student and teacher engagement have increased (it would be valuable to have direct measures of engagement). We also expect that scores on literacy and numeracy will increase as a result of deep learning, but such data are not yet available from the provincial assessments. Learning on the 6Cs also seems to have deepened but we will need data from the larger NPDL data base to examine this aspect, as well as new measures of these global competencies. Clusters have recently submitted DL exemplars that we are currently analyzing with respect to implementing the 6Cs.

Last, deep learning cultivated the seeds of new learning partnerships among and between the Western Cluster schools and the community it serves. Although not yet common practice, there were some notable instances where teachers and schools started to bring in parents as community experts who would come into classrooms to share their learning with the students, particularly in elementary (i.e., primary) school classrooms. Teachers who did make these parent and community connections spoke highly of their experiences and shared them at the district sharing sessions. Many teachers and the district leadership team identified the continued development of these new learning partnerships as a priority area as they continue with their deep learning work.

Ottawa Catholic School Board



The Ottawa Catholic School Board (OCSB) is a publicly funded, separate school board in eastern Ontario serving approximately 38,000 students across 67 elementary and 17 intermediate/secondary schools located in the Greater Ottawa area. With an annual budget of more than \$450 million, the district employs approximately 4,000 employees (including, but not limited to, academic staff) who work together to design and deliver policies and programs that address the board's four pillars of success: the development of the whole child; academic excellence and achievement; reflection of Catholic values and principles; and, innovative approaches to teaching and learning. Although the OCSB has consistently scored higher than the provincial average across all of the EQAO provincial assessments (elementary and secondary levels), literacy and numeracy results continue to inform and shape the district and school improvement plans. OCSB leadership uses data from standardized assessments alongside local district data to guide their work on the district's priority areas—success for students, success for staff, and stewardship of resources.

Ottawa Catholic began its work with New Pedagogies for Deep Learning (DL) in the 2014-15 academic year. The district leadership team strategically selected seven schools to participate—five elementary and two secondary schools, one from each family of schools—ensuring that each superintendent had one DL school in his or her portfolio. These schools were specifically selected because of their histories of learning-oriented innovation. In year two of DL (the current academic year), each of these schools was paired up with a new DL school as its mentor, and the

district created a virtual school consisting of two teachers from each of the six middle schools (grades 7 and 8) in the district, bringing the total number of DL schools to fifteen.

Principals and teachers in each individual school were given the freedom to make decisions about the introduction and spread of DL within their schools. Small groups of teachers volunteered to be involved in some schools, while others opted for school-wide participation. Typically, each school selected one of the 6Cs to focus on, examining the corresponding rubrics and participating in related continuous cycles of inquiry, which covered topics such as task design, use of DL tools in classrooms, documenting student learning using artifacts, collective reflection on results and remaining challenges in addition to the refinement of tasks or design of new activities.

Each school was assigned two support staff members: a member of the district's interdepartmental team and a teacher from another DL school. The interdepartmental team member bridged the gap between the school and the district, co-planning with the schools (meeting every four to six weeks), tailoring supports to the needs of the school and capturing feedback on the school's DL experience for the board. The teacher support staff was a member of OCSB's learning connection network, a network of educators that

DISTRICT PROFILE Ottawa Catholic School Board

- Approx. 38,000 Students
- 67 Elementary Schools
- 17 Intermediate & Secondary schools
- 4000+ Employees

focused on leveraging digital technologies and sharing knowledge and innovative practices in the classroom. By engaging these two different types of support, the district was intentionally building relationships among and between the DL schools and the district office. Given the unique characteristics of each school's context and approach to DL, the district ensured the differentiation of supports attending the individual needs of each teacher and school.

Capacity building for deep learning took place through a variety of face-to-face sessions, where participants from all schools (elementary and secondary) would come together with district personnel (including superintendents) learning alongside one another. These sessions typically included work in small groups where educators would tackle challenges of practice in addition to whole group presentations that highlighted their progress and provided time to engage in critical reflection with colleagues. Learning and sharing also occurred formally and informally through virtual opportunities for professional development as well as through the board's Google Group dedicated to deep learning. In all cases, emphasis was placed on the process of learning, shifting away from focusing solely on learning outcomes. DL leaders also continued their own professional learning and development through their participation in both the Canadian Cluster of schools and by visiting and learning from other DL school districts. Overall, OCSB's strategy for Deep Learning included differentiating strategies for adoption and support; using a flat, interconnected leadership structure; and, supporting professional learning and collaboration across the DL network of schools where everyone (including people from the district office) were learning with and from each other.

Across all of our interviews, educators described students becoming more competent in explaining what they were doing and why, what they were learning as a result, and where they needed to go next in order to move their learning forward.

Although only entering its second year of Deep Learning, there are clear signs of progress within OCSB. First, there is qualitative evidence of enhanced student competence and engagement. As is the case in other districts, without direct measures of student engagement, it is difficult to precisely evaluate the extent of growth in student engagement. However, across all of our interviews, we heard educators describe how students as young as seven years old were becoming more competent in describing what they were doing and why, what they were learning as a result, and where they needed to go next in order to move their learning forward. Teachers spoke often about witnessing an increased ability to collaborate among their students (especially in schools that chose Collaboration as their area of focus). They also notably expressed that these skills continued into year two classrooms; students appeared to be retaining these skills, needing very little time to get back into productive collaborative routines. This in itself is evidence of impact.

Similarly, teachers were also showing signs of increased engagement and ownership of their professional practice. More and more often, teachers were beginning to meet with each other—inside and outside their home schools—to co-plan or co-design new learning tasks. Across all seven year one-schools, teachers expressed continuing their DL work regardless of the availability of resources. Enthusiasm for DL was spreading outside of

these initial schools as well. There were another nine or ten schools informally building capacity for deep learning as well, clearly showing signs that the district is readying itself to bring DL to scale over time. The excitement created around DL among teachers, parents, administrators, and Board members comes from seeing student learning and engagement in ways previously unseen. It was the visibility of student learning that's inspiring the adoption, support, and spread of DL, not the improvement of achievement targets.

Technology has been an important learning tool in classrooms at OCSB. For some years now, a multiplicity of digital devices and resources are available to both students and teachers. In many instances, technology provided the context for students to become teachers themselves, with many schools having student Genius Centres where students provided tutorials and one-on-one support to staff (and even the parent community) about the use of different digital applications. Teachers also reported using technology to flip their classrooms, allowing for classroom time to be used for digging deeper into and using the concepts introduced through their instructional videos. Technology also enabled teachers and students to make their learning more visible. By posting students' work on class blogs or other social networking platforms, teachers were making the learning in their classrooms more visible and accessible to a much larger audience. Teachers spoke about the students' desire to share work that was personally meaningful to them. By making their work public, students were taking much more ownership of their work, demonstrating degrees of persistence and constant refinement that teachers had not seen before.

New learning partnerships were another element that demonstrated the impact of DL. There were many ways in which co-learning was evidenced between teachers and students in classrooms across OCSB. Teachers reported often initiating a learning project, but the work was led by students' questions and curiosities from that point forward. Students became much more involved in co-planning learning tasks with their teachers and co-developed assessment criteria with more regularity. Teachers were observing increased buy-in and engagement among students as their voice and choice in learning tasks increased. They also became more active listeners, taking feedback and noting observations during small group and one-on-one interactions to shape their pedagogical practice. Teachers constantly modeled what it looks like to approach new phenomena from a learning stance.

DL schools also focused on developing new learning partnerships by bringing in parents and community members as sources of knowledge and expertise. Expert video game designers, the director of the Toronto zoo, seniors and volunteers in the community, were making their way into OCSB classrooms, in person or through Skype, to discuss with children topics they're exploring or to offer direct feedback to their work. We heard about powerful examples of important shifts in the role of parents and the community in children's learning. The message of all individuals coming together as co-learners became much more evident and represented an important cultural shift within OCSB relative to conventional approaches to schooling.

Data is not yet available to evaluate whether or not deep learning is having a positive impact on student performance on conventional measures of achievement. Nevertheless,

we know from prior research³ that the most effective teachers and school leaders create the conditions for others to learn alongside each other, collectively discovering what works and what doesn't in their contexts. This is exactly what is happening in OCSB. Further, we are finding that students are deeply engaged in DL activities, individually and in groups. Such focused engagement is well known to correlate with student success academically and socially.

Simcoe County District School Board



Located in south-central Ontario and covering a large geographical area just short of five thousand square kilometers, the Simcoe County District School Board (SCDSB) serves about 50,000 students from a mix of urban and rural communities in 85 elementary and 17 secondary schools. Guided by its vision “to inspire and empower learning for life,” the SCDSB budgets more than \$500 million annually to fund more than 6,000 employees (including but not limited to academic staff) in the implementation of policy and programming supporting the district’s vision. The district has performed consistently well over the past few years on EQAO standardized assessments, experiencing challenges in numeracy like many school districts across the province. Using data from provincial standardized assessments alongside data from within the district, SCDSB is committed to improving teaching and learning in support of its strategic plan, which is guided by four goals: relevant, purposeful learning supporting high achievement, well-being and learning for life; inclusive, equitable and safe learning and working environments; responsible stewardship of resources; and, confidence in public education.

DISTRICT PROFILE Simcoe County District School Board
▪ Approx. 50,000 Students
▪ 85 Elementary Schools
▪ 17 Secondary Schools
▪ 6,000+ Employees

Simcoe County began its work with New Pedagogies for Deep Learning (DL) in 2014-15. SCDSB’s strategy for initiating DL in schools was guided by its commitment to building a sustainable, system-wide deep learning strategy that would be brought to scale over time; providing space and time for all educators to take risks, play with new ideas, and try new approaches to teaching and learning without fear of negative consequence; and, engaging students, parents, and

the wider community in co-designing new learning environments. Fourteen schools—a mix of small, medium, large, urban and rural—were involved in deep learning during its first year. The senior team was deliberate in choosing ten elementary schools and three secondary schools to participate in DL, schools they felt had administrators and faculty who were ready to take on the challenge while also ensuring that every superintendent had at least one DL school in its portfolio. The board also created a fourteenth school, a virtual school that comprised 27 technology leaders coming from 25 schools across the

³ See Hattie, J. (2009) *Visible Learning: A Synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge or Robinson, V. et al. (2008). “The Impact of Leadership on Student Outcomes” *Education Administration Quarterly*, 44: 635-674, for examples.

⁴ See <https://www.scdsb.on.ca/About%20Us/Pages/About-Us.aspx> for more details.

district. The creation of this virtual school increased the system's exposure to Deep Learning. From the very beginning, SCDSB's approach to DL was to design an approach that would allow it to bring deep learning to scale across the system.

From the onset, district messaging around DL was that it was not a program to be implemented, but rather it represented a shift in mindset among educators. As such, everyone involved in the project was given "permission to just go and do." Educators were encouraged to experiment with DL, reducing fears of taking risks, stimulating teachers' curiosity, and encouraging them to try out and share new approaches to teaching and learning. Part of this exploration included involving students, parents, and the broader school community in the learning journey. From the beginning, community participation in building new learning environments was paramount; students and parents were "at the table learning with teachers." The feedback obtained throughout these initial discussions was important in shaping the district's approach to DL. Simcoe County had been working on building capacity for collaborative inquiry across the system for a number of years prior to engaging DL; Deep Learning was a natural extension to this work.

The importance of SCDSB's pre-existing work in collaboration, commitment to co-learning, and readiness for innovation should not be underestimated. As the Superintendent for Program and Innovation, Anita Simpson, indicated, "DL really was like pouring a whole bunch of flammable liquids on a fire that was already burning...It just exploded because it allowed us to really deepen the focus that we were already starting." Deep Learning has permeated all aspects of the district's work and there is consensus across all levels of the district that "there's no going back." After only one year, the initial impacts of DL are encouraging. DL has inspired new and innovative approaches to teaching and learning; empowered students to see themselves as agents of change within their classrooms, schools, and beyond; pushed teachers to re-negotiate curriculum and assessment practices, focusing on the whole child; and, it has initiated new learning partnerships with parents and local and global communities.

A key impact of DL has been the evolution of teacher practice; specifically, teachers are beginning to see themselves more and more as activators of learning. They are letting go of control and engaging in building learning environments that are not only responsive to students' needs and interests, but often led by the students themselves. Teachers are starting to view themselves as co-learners with students, where their role is to facilitate "what comes next" in each student's personal learning journey in order to propel that student's learning forward. Interdisciplinary work is becoming more common in DL classrooms; teachers are experimenting with the 6Cs through a variety of subject areas simultaneously. Teachers reported infusing literacy and numeracy instruction into student-led inquiries, which allowed students to develop these skills in ways that were more authentic and meaningful. Principals identified that building a culture of yes in their schools has resulted in more risk-taking among teachers, building excitement and creativity within the school. Teachers often described a renewed passion for their work as a result of having greater choice without a fear of failure or negative consequence. Many are opening the doors to their classrooms, de-privatizing their practice, and in the strongest cases of DL, inviting the community to join their class as co-learners.

Students (and their parents) spoke about learning in these settings in similar ways. The freedom to choose, to be involved in co-constructing assessment criteria, and to situate

their learning in contexts that were personally meaningful increased students' excitement and desire to learn. Students are beginning to take more ownership of their learning and to consider school as one of many settings where they can learn and apply new things. In the best cases of DL environments, students developed emotional connections to their work and were beginning to bring their learning to all aspects of their lives, within and outside the school. When students were given a choice about the content of their learning and a voice in how learning would be assessed, they reported feeling more cared about and connected to their teachers, saw more value in what they were doing at school, and felt that learning was a process they were a part of rather than something that was done to them. Students, parents, teachers, and principals all recounted instances where they witnessed students achieve beyond what they expected based on previous performance in conventional classrooms. Participating in inquiry-based activities that promoted deeper learning helped build students' self-esteem and feeling self-efficacy and well-being, empowering them to become change agents within their own communities. In the absence of direct measures of student engagement, these qualitative indicators suggest that deep learning classrooms are providing spaces where students are happier and more excited to learn.

“DL really was like pouring a whole bunch of flammable liquids on a fire that was already burning...It just exploded because it allowed us to really deepen the focus that we were already starting.” – Anita Simpson, Superintendent for Program and Innovation

In SCDSB, Deep Learning has been credited with re-focusing the system on the whole child. Teachers spoke about feeling better able to attend to students' needs outside of reading, writing, and mathematics. Similarly, students felt that they could follow their own interests while still developing these foundational skills. That said, educators acknowledged that the provincial curriculum and assessment (i.e., EQAO) must still be considered. Deep Learning's 6Cs were particularly appealing and useful to educators who had long been arguing for broader measures of student achievement, but who lacked a coherent and comprehensive framework. The precision and clarity of the DL tools and resources helped teachers to engage the 6Cs, pushing their own thinking and evolving their practice with the context of their day-to-day work (i.e., within the provincial framework), ensuring emphasis on both the learning process as well as the products of learning.

Lastly, building connections within and between classrooms, schools, and communities was a central focus of DL across Simcoe County. Deep Learning provided new avenues for school and community partnerships that extended beyond the typical School Community Council. Teachers and students provided many examples of connecting with local organizations, describing how Citizenship added to their learning and encouraged connections beyond the classroom. By doing so, learning also became more visible within the community. Community members and organizations who may not (or no longer) had connections to the local school began to imagine and define new ways in which they could contribute to these learning communities. Classes are often engaging digital tools such as Twitter, blogs, and other social media platforms to share their work and are receiving feedback from the broader community. Similarly, teachers are leveraging digital to improve communication with parents, providing a window into classroom activity on a daily basis.

As a result, schools are becoming learning hubs within the community, becoming central meeting spaces for everyone to come together to learn from and with each other.

CROSS CASE LESSONS

The lessons we derive are based on the three cases, but we have also taken a strategic orientation to projecting the implications for future action. Many other districts in Ontario, including 12 others directly in our group, are pursuing the DL agenda. These developments in DL are dynamic and happening in real time. New 'green shoots' of creativity are occurring such as students as agents of change. We have identified eight big lessons.

1. Ontario educators are ready for change.

We could add parenthetically, Ontario educators are ready for change (provided that it is not done to them)---purposeful partnerships work. Each of the three districts has a solid foundation in pedagogical practices that they have developed over the past five or more years. However, going deeper in altering learning practices relative to the 6Cs is a recent phenomenon. We believe that literacy and numeracy will thrive in DL systems, but at the present time teachers need to be free (in conjunction with our other seven lessons) to re-imagine their pedagogy in relation to the 6Cs. Ontario educators are ready for focused innovation.

We have one qualifier: these three districts had developed foundational capacity in pedagogy prior to DL. The question is what would a district have to do if it was not so well advanced down the pedagogical road. We believe that NPDL would help districts get started even if they were not so well positioned as these three cases. For one thing all districts in Ontario do have some strong capacity within their ranks. The Ontario Ministry could enable DL work including helping districts learn from each other (something that is currently happening spontaneously without Ministry involvement; for example, the three districts we studied welcome and regularly receive visitors from around the province, and beyond). Our point is that it would not take much for the whole system to be on the move in DL—all 72 districts and their 4,900 schools.

2. A culture of learning and innovation is the foundation for affecting deep, positive, and lasting change, along with intentional growth.

On the one hand, there is a certain 'messiness' that is essential to the DL process at the beginning as people try new things. When people are open to innovating, they take risks, accept and value mistakes as learning opportunities, and are prepared to innovate for the benefit of students. Cycles of "design, try, reflect, refine" are required in order to assess what is being learned and using this learning to continuously get better at deepening student learning. The process itself and other lessons stated here act to sort out what is working and what should be retained and strengthened. Intentional growth is also evident as differentiated entry points and levels of support are linked to the development of teachers. A climate for purposeful innovating is crucial to this process and is evidenced in all three districts.

3. Practice embedded collaborative inquiry, anchored by the DL suite of tools, processes and facilitators, is the cornerstone of deep professional learning.

Together the tools and processes are the glue that is propelling change in practice and relationships. The progressions, rubrics and protocols serve as the conceptual anchor and catalysts for the collaborative inquiry cycle. They build a common language among teachers, students, parents and administrators, and bring growing precision in pedagogy, and its impact on learning. Without this suite of tools and common focus we would continue to see ad hoc innovations that fail to reach a critical mass. All three districts are beginning to paint what professional collaboration and interdisciplinary learning looks like, and point to the promise that such work holds. Teachers need to come to the table with questions of their own about their practice based on student need, and their own curiosity about what works. When educators co-plan, co-assess, share their experiences, and work on solutions together, their learning is deepened and more effective. Good collaboration like this reduces 'bad variation' (ineffective practices), and increases 'good variation' (innovations that have promise). Job embedded professional learning day after day is the key. Collaborative inquiry is not an end in itself; rather it is integrated with the other lessons and the deep learning agenda. It is only when it is centered on teaching and learning with increasing precision, and linked to measurable learning outcomes that it has an impact.

4. New leadership and ongoing support and challenge are needed.

The new leadership required is very different compared to what traditional leaders do. Leaders must be co-learners, participating with others in what we call 'learn and lead in equal measure'. They must ask questions, feedback what they are seeing, help draw conclusions, and assess impact. They must also develop leadership in others for both the short-term collective impact, and to cultivate the next generation of leaders—today for tomorrow, so to speak. Support and challenge from leaders at both the school and district levels are essential for evolving practice. Skilled enablers make a powerful difference in the collaborative learning environments we studied. Three things stood out in these cases with respect to leadership: i) co-leading from many quarters was evident, ii) school and system leaders working together as learners—supporting and probing—played a crucial role, and iii) networking within and among schools created an excitement and shared purpose, and resulted in a critical mass that is influencing what is happening district-wide.

5. Students as agents of change.

One of the big surprises in this work is the emergence of students as 'agents of change'. As students get more engaged, and as educators are receptive (and sometimes even if they are not) students push for a) changes in teacher pedagogy—role of students, use of groups, topics selected, and so on; b) changes in learning environment in the classroom and community; and, c) changes in society (what we call the 'helping humanity theme'—something we have seen in other NPD schools—(<http://nationswell.com/students-help-humanity-core-learning/>). This finding has huge potential for student learning, and changing the system. By differentiating and personalizing what is learned, how it is learned, and why it is being learned students learn individually and together. They become better prepared to live in and to contribute to changing education and the world.

This lesson is consistent with the Ontario Ministry's developing emphasis on community connected experiential learning. Our case study says 'beware of silos' even if each is good in its own right. Now is the time to partner with districts to link new initiatives in experiential learning with deep learning. The two have a natural affinity. Districts and the Ministry together could rapidly develop some powerful integrated examples that combine the goals of DL, and the expansion of experiential learning.

6. Leveraging digital.

The role of technology or digital as a driving force for change has largely failed over the past decade. In one sense you need a certain level of digital infrastructure (wireless access, all students having 24/7 access to personal devices), but the real breakthrough comes when pedagogy is the driver, and digital is the accelerator. The role of technology enabled learning is evident in all three cases. The Ontario government will have invested \$151 million from 2013-2017, much of which, we would venture to say, has resulted in low yield because it has not been focused on the use of digital for learning. When driven by pedagogy as is the case in these three districts technology is enabling learning opportunities around the corner, and around the world that enables districts to engage in new pedagogies, document the process of learning, and to create products or evidence of learning that were previously unimaginable. Leveraging digital also makes practice public (transparent) which is essential for assessment and dissemination.

7. New learning partnerships are extending to parents, families, and the community.

Parents have not been close partners in learning in most traditional schools. Many appear to have doubts about the role of technology, modern teaching methods and the like. The new pedagogies in many instances start by engaging and exciting students, who in turn excite their parents. Additionally, we see parents and community increasingly involved in helping learning. One of the most powerful ways we can shape the change is by bringing the community into the partnership so that they can contribute, ask challenging questions, and help grow a shared understanding about the changes we are making to education for the 21st century. Adding parents to the pedagogical equation is a recent phenomenon that is growing in the three cases we have studied.

Let's be a bit 'pushy' here. Community and family engagement has long been a goal in Ontario and in other places, but has mostly received lip service with little real progress in making it a reality. We think this is because neither parents nor schools knew what this would look like in practice, or how to go about it. Our cases show that schools, students and families have common, specific, and exciting ground when it comes to the DL agenda. The 'family path' related to student learning, as our colleague Ken Leithwood calls it, is powerful (for better or worse), and neglected. Our findings point to how we might unlock this high yield strategy. Indeed, lesson five (students as change agents) and lesson seven (engaged parents and community) in partnership with schools would represent an unbeatable combination.

8. We are beginning to see 'system change' bubbling up with large districts, and beyond districts.

First, within the three districts—and a direct result of the previous seven lessons—we see the development of a common focus and shared language. In addition to the subset of

schools that began with NPDL, the districts have deliberately spread the ideas and practices to other schools. Hamilton Wentworth recently decided to extend NPDL to all 102 of its schools. Ottawa Catholic and Simcoe County are considering similar moves. In the broader work in Ontario concerning the success in literacy, and high school innovation across the whole province we came to appreciate a phenomenon that we came to call the capacity to ‘talk the walk’. What we observed was that teachers and administrators, within and across schools, could point to what they were doing, why, and with what impact. They used similar language, were precise, clear and consistent in referring to their own and each other’s practice. ‘Talking the walk’ reinforced, extended and deepened the work. Now, this capacity—to do and talk the walk—must be developed for deep learning across the province. Clarity and precision around deep learning, the practices that produce it, and the related learning outcomes, is key to ensure a close link between ambitious goals, and actual practice in classrooms and schools.

Second, the DL framework and tools provide a common focus without constraining local context. People said they needed a common framework because 21st century skills movement was such a vague phenomenon. Applying the framework to their own situation partly liberated them toward the 6Cs future, allowed them to develop their own particular version, and provided flexibility for co-learning, and co-constructing. In essence, the case studies leverage the district improvement knowledge, and build in a focus on deep learning that deepens impact and reaches students, who previously could not find their own entry points to learning, the curriculum, and well being. DL could be an upward leveler for higher achievement, and equity.

Third, ‘leadership from the middle’ (LftM) as we call it, flourishes as districts—the middle—learn from each other, not only these three districts, but many of the 15 districts currently in DL. Within districts, the middle is schools, where again we saw the substantial development of leadership within, and across schools.

Fourth, and unfinished business, these case studies point to how the province (the Ministry of Education) could relate to districts in order to increase achievement and excellence across the province. The \$151 million ‘teaching and learning’ fund over the last three years has been somewhat useful for adding digital capability, but not a good strategy for unlocking pedagogy and enabling deep system change. The province can learn from these three cases for shaping its next phase of policy and practice for the province that should be designed through partnerships with the sector.

CONCLUSION

These are early findings involving a dynamic, large-scale innovation. It is a moving target, and thus the findings should be interpreted with caution. But they also promise much more to come, not only from these three districts, but also from the wider net of more than 1,000 schools in the seven countries. We will continue to help develop and trace the emergence of deep learning in whole systems.

It is crucial to treat the eight lessons as a set. We are talking about *system change*. The suite of tools combined with the collaborative inquiry and change processes serve to accelerate the development of knowledge and skills essential for 21st century competencies such as the 6Cs. Time and again the research team was told that the tools provided focus that was not there before, without stifling creativity.

There is much more work to be done, not the least of which is that these three districts will go deeper still, and more and more of the 72 districts will become engaged. It is also the case that there are fewer secondary school examples (although they are building in numbers), and we plan to focus on grades 7-12 in our next series of case studies.

We must get more precise in identifying how pedagogies change, and with what outcomes. Certainly, current Professional Development approaches are grossly ineffective for the deep and specific improvements we are witnessing. With these districts we are discovering how to embed professional learning into daily practice. Educators will need much better and immediate access to information and feedback on their teaching if things are to improve rapidly and on scale. This will in turn require digital platforms with ease of use capacities.

We will need new assessments and measurements, relative to the 6Cs for example. We see this need not so much for accountability (although it can serve that purpose), but more importantly for clarity of practice and its link to learning outcomes. We need it more for precision than for prescription. This itself would be a great motivator for all concerned. Our assumption, which we can test, is that if students become accomplished in all 6Cs they will achieve wellbeing, and the entrepreneurial capacity to engage in, and help improve the complex world that we live in.

These are exciting times. For the first time we see the real possibility for transforming education because Deep Learning, if done well, excites students, parents, teachers and leaders at all levels. We end on a bold, and we think realistic note. System change in Ontario is a distinct possibility right now. These case studies are proving that there is a way forward to establishing new forms of accelerated and engaging learning. Learning for all in the broadest and deepest definition of the term could be within our grasp.



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