

Near North DSB

Transformations: An Exploration of Pedagogical Change and Innovation in Technology-Enabled Classrooms

The Research project is closely aligned with the Near North: 21 Vision – including the development, implementation and scaling-up of pedagogically-driven and technology-enabled practices. Specifically, the NNDSB *TLF 21st Century Innovation Research Initiative* has established a goal to engage teachers in collaborative inquiry focused on teacher-student learning partnerships, assessment practices that reflect deep learning pedagogy and learning partnerships among educators, enabled by technology – to improve conditions for learning.

Participating teachers have contributed to the development and implementation of capacity building resources, online professional learning communities and research instruments including the “Evolution of Thought and Practice” (ETAP) survey (a systemic measure of teacher capacity and practice) and the Quartet Synthesis (an in depth analysis of digitally-enabled classroom activities). Our research project enables teachers to explore the **conditions required to optimize learning in a digitally enabled classroom, drawing a focus on the learning environment, pedagogy, technology and learning partnerships as they contribute to the transformation of instructional and assessment practices.**

The Quartet Synthesis is intended to guide teacher critical analysis and self-reflection of key components of technology-enabled teaching and learning. As teachers observe and reflect upon new pedagogies for deeper learning, they consider each of the "quadrants" and sub-criteria of the Quartet and identify the appropriate stage of implementation, provide anecdotal descriptive feedback and document evidence/artifacts (images, videos, digital files) to support their responses.

During the past several years the NNDSB has worked to develop and implement the Near North: 21 Vision. Key initiatives including Tech-4-Teachers, Tech-4-Learning and investments in wireless infrastructure and cloud services have introduced new opportunities to transform teaching and learning.

Our systemic challenges have moved beyond simply providing adequate access to technology toward developing a precise focus on building teacher capacity to leverage technology, engage in meaningful learning partnerships and inspire students with innovative pedagogies that foster deep learning. In order to support teachers, we must develop a greater understanding of the conditions (culture, learning environments, partnerships, etc.) that enable teachers to develop pedagogy-driven, technology-enabled practices that optimize learning.

In June 2012 and again in June 2013, the Near North District School Board commissioned a diagnostic survey to determine teacher attitudes, access, usage and competencies using digital technology. The resulting data shaped inquiry questions that inspired the 2013 CODE innovation project and subsequent 2014 initiative. The ETAP study has helped to identify gaps in our educational technology planning and implementation and reflects the notion of ‘pockets’ of excellence.

The 2015 project continues to focus on creating and monitoring conditions for optimal learning by developing teacher capacity; **measuring and documenting changes/innovations in teacher practice, learning partnerships, learning environments and technology use.**

The 2015 innovation and research initiative builds in the theory of action that in order for students to benefit from new pedagogies for deep learning, teachers must have access to digital technology and have multiple, varied and collaborative opportunities to observe, develop and share new pedagogies. ***IF we expect teachers to see themselves as “pioneers” or innovators, THEN they need to be comfortable and confident exploring new pedagogies and technologies – this places culture at the forefront of systemic transformation.*** We need to build a culture of inquiry – “a digital age culture of learning”. We strive to enable people to think differently about what they think they already know...

Leveraging the “Technology for Teachers” and “Technology for Learning” initiatives, and the School Technology Planning Framework, the 2015 Research and Innovation Project will use the ETAP survey and Quartet Synthesis to **better understand the conditions that enable teachers to optimize technology-enabled teaching and learning.**

IF schools are unique - THEN we must adopt a differentiated process for deploying technology and building teacher capacity that recognizes the unique culture and conditions of each school.

Within our schools, there exists a wide diversity of student learning needs, abilities and preferences, teacher and administrator capacity to engage in digitally enabled learning and socio-economic factors that contribute to student access to technology and the Internet at home. As such, the NNDSB has adopted a responsive and differentiated approach to deploying new technologies and building teacher capacity. In place of a “top-down” model, where the board determines the type and quantity of technology for student and teacher use - school teams, in consultation with central staff engaged in an “enabling process” (technology for learning planning framework) that responded to student, staff, school and community conditions.

IF we expect teachers to develop technology enabled pedagogies, THEN we must provide each teacher with a device and ensure they have access to sustained, tired and differentiated professional learning opportunities.

The Technology for Teachers (T4T) initiative enables teachers to choose a device (either, iPad, Windows laptop or MacBook) for personal and instructional use, and engage in ongoing professional learning activities at the classroom, school and district level. In each of the last three years, annual cohorts representing 25% of NNDSB teachers have participated in the T4T program. The 2015-16 year will complete the initial roll-out of devices and begin a process of renewal.

IF we expect that teaching and learning in the 21st Century will be technology-enabled, collaborative, innovative and creative, THEN we must ensure students have access to a diverse selection of appropriate technologies.

Therefore, learning spaces should reflect a range of platforms, configurations, and devices (both student and board owned). A singular platform or configuration may limit “opportunities for students to assume leadership roles when working on authentic problems/projects and incorporate the use of relevant data, tools and experts in and beyond the classroom” (SEF 4.3, 2013).

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Having leveraged culture building and enabling processes/activities such as the School Technology Planning Framework and Capacity Building Action Plan, the Near North District School Board has been able to “situate the energy of educators and students as the central driving force” (Fullan, 2011) behind the implementation of the NN:21 Vision.

Ongoing board and school improvement planning processes are now aligned and reflect the overarching ideas of technology enabled pedagogies for deep learning. School plans are documented in the online Office 365 Research and Innovation portal. Collaborative and responsive technology planning and deployment processes are intended to promote and share evidence and research-informed decision making that is focused on the instructional core. New opportunities for school and system leaders, teachers and students to promote local innovation and leadership for 21st century (next generation) teaching and learning are sustained and intentional.

The T4L Planning Framework was designed help schools align new technologies with student learning needs, redefine learning environments and partnerships, develop teacher capacity and pedagogy, and ultimately leverage technology to improve outcomes for students. School teams, including teaching staff, administrators (and in some instances students) collaborated to develop the framework and multi-year “Technology for Learning” school plan. The information/data was collected in Office 365 Innovation and Research Portal. The NNDSB responded to the school proposals, supporting investments in technology, teacher capacity building and the development and/or provision of learning resources. The plan, completed in September 2014, is reviewed and updated annually by the school.

In response to the school developed **Technology Planning Framework**, the Near North District School Board has made significant investments in technology for learning (instructional devices). The **School Level - Capacity Building Action Plan is intended to align 21C capacity building (technology enabled, deep learning pedagogies) with existing professional learning CIs, PLCs and/or emerging teacher professional learning needs.**

School teams were asked to consider how they may use Board provided resources (teacher devices, software, etc.) and release time to build teacher capacity related technology enabled, deep learning pedagogies and tools (Office 365, iOS, OSX, LMS, etc). eTech Coaches (lead-teachers) worked in consultation with their school administration/team to develop a plan to support and encourage staff access to - and use of - new learning resources and tools. To support this initiative each school was assigned release days based on the FTE staffing allocation - of .34 days per teacher. *This does not mean that all teachers were required to access capacity building activities - the FTE was used as a means to equitably distribute the release funds.* For example, a school plan may have focused on building several lead teachers to support future collaborative learning.

The data/information collected for the School Level Research and Innovation Action Plan is used to determine appropriate central support for schools and monitor project implementation and teacher capacity building.

The Technology for Learning Framework, and Research and Innovation Action Plan have provided a narrative account of school level activities.

While Board and School level improvement plans provide the narrative of system change, **the 2015 TLF Research and Innovation project has enabled the NNDSB to monitor system implementation, teacher attitude and capacity, and changes in teacher practice and learning conditions – using multiple data collection instruments and processes.**

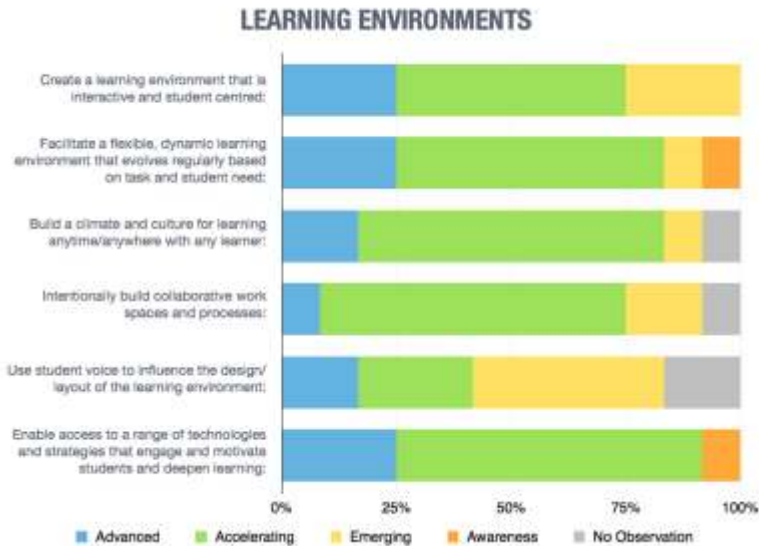
The Quartet Synthesis (QS):

Adapted from the New Pedagogies for Deep Learning (NPDL) Global Partnership initiative (2014) the Quartet Synthesis is intended to facilitate reflective teacher self-assessment of practice across four domains (Learning Environments, Pedagogy, Learning Partnerships and Leveraging Digital). The adapted instrument is hosted in the Office 365 Innovation Research Portal and represents a fusion of the NPDL “Teacher Self-Assessment” tool, the Quartet Synthesis “Activity Template B” and the Ontario-School Effectiveness Framework indicator 4.3, *“Teaching and learning in the 21st Century is collaborative, innovative and creative within a global context.”* As teachers observe and reflect upon new pedagogies for deeper learning, they consider each of the “quadrants” and sub-criteria of the QS and identify the appropriate stage of implementation (quantitative), provide anecdotal descriptive feedback (qualitative) and document evidence/artifacts (images, videos, digital files) to support their responses. The data collected from the QS will offer precise indication of changes in classroom/learning conditions - across the four domains, **Learning Environments, Pedagogical Practice, Learning Partnerships and Leveraging Digital.**

Initially, our project had intended to observe 20+ classrooms across 5+ schools, using the QS instrument, documenting teaching and learning across the four domains. As a result of the labour sanctions of May and June, all elementary teachers have withdrawn from the research initiative – The QS data has been limited to 12 observations completed at the secondary level.

Learning Environments:

- Create a learning environment that is interactive and student centered;
- Facilitate a flexible, dynamic learning environment that evolves regularly based on task and student need;
- Build a climate and culture for learning anytime/anywhere with any learner;
- Intentionally build collaborative work spaces and processes;
- Use student voice to influence the design/layout of the learning environment;
- Enable access to a range of technologies and strategies that engage and motivate students and deepen learning.



The 2015 QS also provided evidence to suggest that static classrooms and independent learning are being replaced by dynamic flexible learning spaces conducive to student/teacher collaboration. Most of the QS contributing teachers suggested that they are adapting and refining flexible, dynamic learning environments that evolve regularly based on student need and/or task. Furthermore, learning is now breaking through the limitations of time and space as more teachers leverage the LMS and Office 365 tools to engage students in anywhere, anytime learning. Teacher anecdotal reflections included:

“Making all of my courses blended or fully online has allowed students to access content and communicate with me outside of the time in class. We are no longer limited by the four walls of the classroom.” (AHSS Teacher Response, Math – QS, 2015)

“Classes have become more flexible in their learning environments, as students are able to use different forms of technology to access information, create work and explore knowledge. The Tech Squad has utilized this as technology has enabled them to be connected the learning through the LMS but also provide the opportunity to explore leadership and technological prospects throughout the school.” (AHSS Teacher Response, Peer Tutoring - QS, 2015)

Secondary Schools are increasingly capitalizing on opportunities to develop flexible learning spaces - designed to enable new pedagogies for deep learning, facilitate student/teacher collaboration and leverage diverse technologies. Libraries, LGIs and Resource Centres are commonly being reconfigured to fulfil a broader, more dynamic purpose.

Teacher anecdotal reflections included:

A massive shift to mobile technology... ..[as a result] the tech is no longer an 'event', rather a tool to support sustained, engaging and authentic student inspired inquiry.” (CSS Teacher Response - QS, 2015)

One example of an evolving learning environment is the Chippewa Secondary School Library, in North Bay. Administrators, teachers and students contributed to a new vision for the “Learning Commons”. Rows of desktop computers were replaced by a small number of high-powered work stations and a cart of iPad Minis. “The iPad Mini was actually selected because they were preferred by students” the Chippewa librarian stated during a video interview to accompany the QS, reinforcing the importance of *student voice* as a driving force in the initiative.

New furniture, light and movable, was introduced to the space - with the expectation that teachers and students would frequently reconfigure the layout to accommodate differentiated learning tasks.



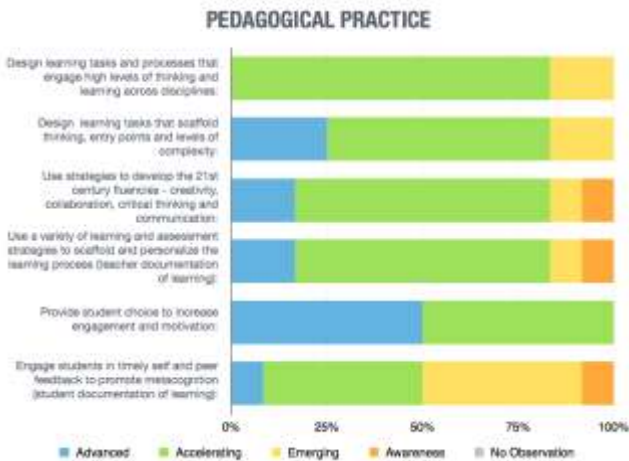
Book rooms were converted into breakout spaces for small groups of students.



“Because the space is opened up more and we don’t have our rows of books and computers, we can move things around to suit different purposes. Now we can host multi-grade, whole school activities like the “Invention Convention” (CSS Librarian, QS Video Interview, 2015)

Pedagogical Practice:

- Design learning tasks and processes that engage high levels of thinking and learning across disciplines;
- Design learning tasks that scaffold thinking, entry points and levels of complexity;
- Use strategies to develop the 21st century fluencies - creativity, collaboration, critical thinking and communication;
- Use a variety of learning and assessment strategies to scaffold and personalize the learning process (teacher documentation of learning);
- Provide student choice to increase engagement and motivation;
- Engage students in timely self and peer feedback to promote metacognition (student documentation of learning).



The QS data suggests that teachers are moving toward coherent, intentional, on-going technology-enabled practices. Teachers are actively engaged in designing learning tasks that engage students in deep thinking and foster 21st century competencies. All contributing teachers are accelerating toward advance or refining advanced practice related to using choice as a means to increase student engagement and motivation

Anecdotal reflections about pedagogical practice:

Authentic Contexts - “Monthly rich task projects allow students to apply their skills to authentic situations such as travel and online shopping. They track and report where and how they use their reading, writing, speaking, and listening skills, as well as, showing off their intercultural awareness, Internet safety, healthy relationship building, and financial literacy skills, all while celebrating their tech savvy.” (AHSS Teacher Response, FSL - QS, 2015)

Mindset and Feedback - “Providing students with choice as well as the required technology and resources creates a classroom where students can be successful regardless of their learning style. Frequent feedback allows students to develop skills at their own pace. Some students may need more feedback, but in time, they'll reach the learning goal. My biggest challenge has been to setup a class that allows for students to work at different paces.” (WSS Teacher Response, Science - QS, 2015)

Anywhere, Anytime Learning - “Technology has informed the teaching process as it has allowed students to engage with the learning through the LMS, each other through online discussion boards and reflections through face to face meetings.” (AHSS Teacher Response, Tech Squad - QS, 2015)

Technology-Enabled, Flexible Learning Spaces – “Availability of multi-platform hardware and learning software plus the flexible space in which to teach and learn = more authentic engagement, because it is real!” (CSS Teacher Response, Media Arts - QS, 2015)

The NNSDB hosted four regional sessions involving 135 teachers, focusing on effective pedagogy driven, technology-enabled learning. The hands on face-2-face workshops were designed to support teachers that received devices during the 2014-15 school year. Sessions were held regionally and *offered* but not *mandated* ... providing a deeper connection to pedagogy driven, technology enabled domains for learning, *Leveraging Digital, Learning Partnerships, Learning Environments, and Pedagogical Practice*. Workshops were tiered to ensure a range of entry points. Participants registered online using the Office 365 Innovation and Research portal.

NNSDB - AMPLIFY: 2015 Symposium – A Pedagogy Driven, Technology Enabled, Teacher Inspired Conference, hosted at Nipissing University on April 21st, 2015. This symposium was planned to provide opportunities for teachers to collaborate, share innovative practice and learn from each other. 120 teacher and administrators attended. Students from across the district helped to facilitate and differentiate the learning. Participants engaged in classroom driven “collaboratories” led by eTech teachers, central staff and Apple Distinguished Educators. AMPLIFY focused on a range of exemplary instructional practices, emerging ideas and learning partnerships. Initial invitations were extended to DLRTs and TLCs. Classroom Inspired workshops represented evidence of innovative, technology enabled practice.

Revisions to the School Technology Planning Framework have aligned 21C more closely with the School Improvement Planning (SIP) process – *now completed online in the Office 365 Research and Innovation portal*. Further, schools have been asked to complete their school improvement plans in May and June of 2015. This change will enable central resources to be allocated more efficiently and effectively in September, including the deployment of the “Technology for Learning” (instructional technology) requests. The SIP process now elaborates on school narratives – providing a qualitative lens to monitor instructional practice and technology-enabled learning. The excerpt below demonstrates the depth to which schools are aligning 21st century teaching and learning with school planning and capacity building:

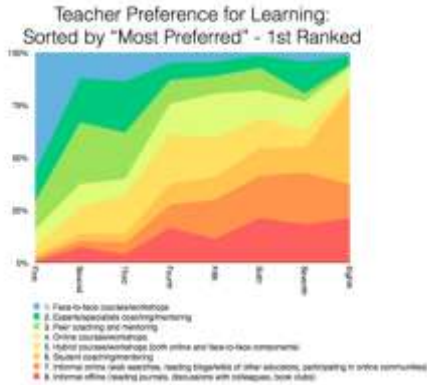
“We have successfully transformed our former computer lab into a flexible learning space, complete with a stage and a green screen backdrop, a flat screen TV and apple TV, as well as flexible seating arrangements for group and individual workspace. This space was utilized by all grades and all staff members this past school year. The MacBooks are housed in this space, and the iPads are easily brought into this space. Staff has effectively embraced 21st century pedagogy supported by diverse technologies.

Our key belief for the NBL Community, Culture and Caring pillar states we will meet the interests and skill sets of our learners, meaning many of our learners are highly engaged by 21st century technology based learning, and we will continue to develop their skill set around this.

Under our Numeracy pillar, we are committed to using technology to apply and practice critical math skills. This was also a focus of the current school year's CI, gamification and student engagement in math, and will continue into the 2015-2016 school year. Having just been through the SEF process, we have identified Indicator 4.3, Teaching and Learning in the 21st Century is collaborative, innovative and creative within a global context. We have identified focus areas within this Indicator to support our teaching and learning.

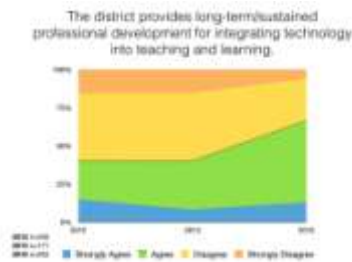
Our eTech teacher has been working heavily with our identified students to find individual programs and strategies with regard to technology to support our learners, and development of independence and confidence. Technology is embedded, and growing in functional use in ever area of the curriculum at NBL.

As we continue to work towards our CI, SEF, and SIP goals highlighted in the School Commitment, and recognizing that we received a generous grant for this past school year, we are requesting 4 MacBooks. We will purchase 3 MacBooks so we are able to accommodate our largest class of 27 with a 1:1 student to technology ratio. This will complete our junior/intermediate technology needs. In the future, we will need to start considering replacing older iPads.” (NBL, TPF, May 2015)



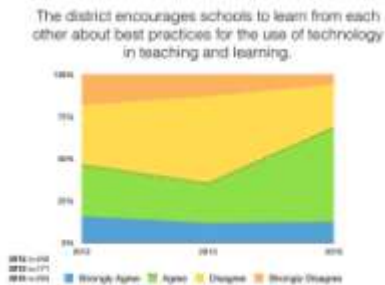
The 2015 ETAP survey asked teachers to rank their preference for a variety of professional learning scenarios. Overwhelmingly, teachers identified face-to-face learning as their 1st choice for professional learning. Expert coaching and mentoring and peer coaching and mentoring rounded out the top three selections.

The QS data suggests that teachers are moving toward coherent, intentional, on-going technology-enabled practices. Teachers are actively engaged in designing learning tasks that engage students in deep thinking and foster 21st century competencies. All contributing teachers are accelerating toward advance or refining advanced practice related to using choice as a means to increase student engagement and motivation.



The NN:21 Vision and TLF initiatives have resulted in improved teachers attitudes related to professional learning, access to technology and a clearly articulated vision for 21st century learning.

The continued support for the eTech Coach has been instrumental in moving teacher practice forward. As indicated in the 2015 teacher Evolution of Thought and Practice (ETAP) survey – teachers indicated eTech coaches were their most valued support and influence. A continued focus on developing teacher leadership and learning will be augmented by more frequent and differentiated opportunities for classroom teachers to engage in professional learning, within and beyond their school. Developing a deeper understanding of the NNDSB professional learning framework adapted from ACOT, SAMR and to self-assess and think deeply about technology enabled pedagogies.



Regional and district capacity building workshops, including the T4T and AMPLIFY 2015 enabled teachers to learn from one another and share best practices. Furthermore, more teachers are accessing and contributing to online professional learning communities via Office 365 – mobilising knowledge across schools. The 2015 ETAP data suggests that teachers are responding positively to opportunities to learn from each other, within and across schools

The NNDSB School Technology Planning Framework was designed to help schools align new technologies with student learning.

“Ours is a school that has seen a rapid integration of 21st century teaching and learning in a remarkably short time frame. Over the last two years, our staff has moved from a ‘chalk and paper’ mentality to embrace the notion that effective 21st century pedagogy is supported by diverse technologies. Increasingly, we are able to offer personalized learning activities to address the diversity of learning preferences, interests, and readiness to learn concepts. We have become much more focused on teaching students to think critically, solve problems, and collaborate- as mentors and facilitators that are modelling the learning process alongside our students. For us, the integration of technology into our school environment has allowed us move away from a culture of “I don’t know, can you tell me” toward “I know how to find out on my own.” (NBL, TPF, September 2014)

Learning Partnerships:

- Enable students to take the role of activator of learning - assume leadership roles when working on authentic problems/projects;
- Create transparent learning goals and expectations in partnership with students;
- Use collaborative processes, tools and measures to engage families with student learning and communicate progress;
- Use strategies to build learning partnerships across classrooms, grades and/or subjects;
- Leverage opportunities to engage in learning partnerships across schools;
- Develop opportunities for students to engage in learning partnerships beyond our community.



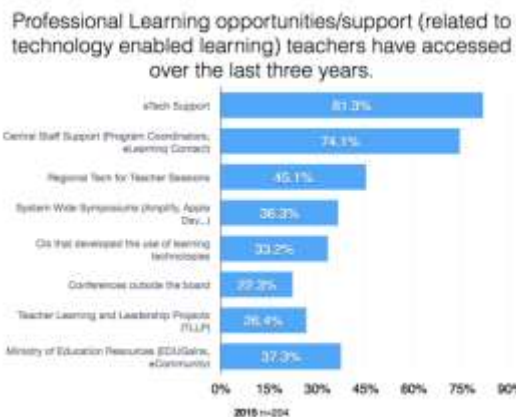
Teacher self-assessment for the **Learning Partnerships** domain:

Most of the contributing teachers demonstrated a comfort level with student led inquiry and the creation of transparent learning goals and expectation in partnership with students. However, the QS data also suggested that teachers have not yet implemented activities designed to engage in partnerships across schools or beyond our community. Furthermore, teachers indicated that they are either developing awareness or have an emerging practice related to using collaborative processes, tools and measures to engage families and communicate student progress. In 2015-16, teachers will

have access to a new online assessment suite (Trillium Via) designed to enable greater communication between administrators, teachers, students and parents. Teacher assessment of this domain may improve with access to these new tools.

One example of evolving learning partnerships between students and teachers is a project entitled “Tech Squad” – initiated by Almaguin Highlands Secondary School in South River. *Tech Squad* is a credit bearing experience that engages students as leaders, providing capacity building support for teachers. Aligned with the GPP30 course (peer tutoring), *Tech Squad* students work across classrooms providing support to teachers and students as they integrate technology for learning. On several occasions, *Tech Squad* members provided support to teachers and students in elementary “feeder” schools, expanding the learning partnership regionally. Using the QS, the teacher assigned to Tech Squad acknowledged:

“Technology has enabled students and teachers to reach out and partner with groups outside of our community. Through the Tech Squad, we have been able to connect with elementary schools and work using and exploring technology with them.” (AHSS Teacher Response, Peer Tutoring - QS, 2015)



Beyond providing teachers with technology, the T4T program also provides differentiated and tiered capacity building and professional learning at the **classroom, school, family of schools (regional) and district level.**

In 2011, each NNDSB school was asked to identify an Educational Technology Coach. The eTech Coach is a voluntary teacher position. The eTech Coach has been equipped with the hardware, resources and time required to support technology related initiatives and job-embedded teacher capacity

building at the classroom level. eTech coaches have been the primary source of teacher support related to technology-enabled learning – 81% of teachers have benefited from the eTech role. (ETAP 2015)

The value teachers hold for teacher-to-teacher learning partnerships is echoed in the 2012 and 2015 ETAP data – with the vast majority of teachers agreeing that there is a culture of support among peers.

Central support, including Program Coordinators and the provincially funded e-Learning Contact (eLC) have also been frequently accessed with 74% of teachers acknowledging they have accessed central personnel for professional learning and/or provide support at the classroom level. needs, redefine learning environments and partnerships, develop teacher capacity and pedagogy, and ultimately leverage technology to improve outcomes for students. The framework has provided a narrative account of school level professional learning activities and aligned the acquisition of technology with growing teacher capacity.

Leveraging Digital:

- Use digital to increase engagement and motivation:
- Foster opportunities for students to select and apply digital solutions in innovative ways:
- Differentiate learning processes using digital-providing multiple access points for learners:
- Enable connecting and collaborating locally and globally:
- Enable authentic and rich contexts for learning-making connections to real-world applications:
- Foster student access to digital that enables assessment "for" and "as" (teacher and peer feedback) learning



Teachers are using technology to engage and motivate students. Furthermore, teachers allow students to select from a range of technologies in order to solve authentic real-world problems.

"The Tech Squad has used the experiential process of learning technology to teach the technology in order to amplify their learning. They have used and explored iPads, MacBook, LMS (e-portfolio), Apple TV, projector and a variety of apps (including assistive technology) to further and enhance their learning." (AHSS Teacher Response, Tech Squad - QS, 2015)

"I employ a blended learning model in my classroom, leveraging such resources as the "D2L" Learning Management System, mobile devices for learning and media recording devices to document student achievement in the form of images, videos, audio recordings, and written feedback (uploadable to virtual storehouses)." (WSS Teacher Response, Math - QS, 2015)

"The Tech Squad, as a hybrid learning course (e-learning and experiential) is an example of how technology has supported the learning (through LMS etc.) and also has driven the learning. The Tech Squad provided tech support and developed leadership opportunities through many different endeavors both within the school, through local elementary schools and in the Amplify conference (as seen in photos). The squad explored the existing technology, as well as looked towards future potential opportunities. This combination of using technology in a course to further explore technology use and enhance learning has been an exciting and unique experience for both teacher and students." (AHSS Teacher Response, Tech Squad - QS, 2015)

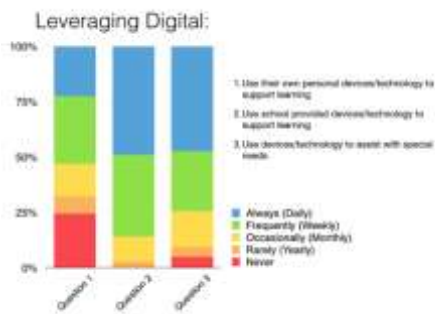
The School Technology Planning Framework also has provided some insight as to how administrators, teachers and students are leveraging technology.

"...learning utilizing the LMS, students are using iPads and Apps like: Explain Everything, Inspiration, Poptets, IMovie, Pic-Collage, Siri, Minecraft in Math, Students are familiar with the iPads and accessing a variety of Applications to do their work. Students are starting to develop their skills within the Office 365 framework. Students are starting to become familiar with the 6 Cs and they have created a 21st Century Pledge poster around this idea" (LOL, TPF-2014)

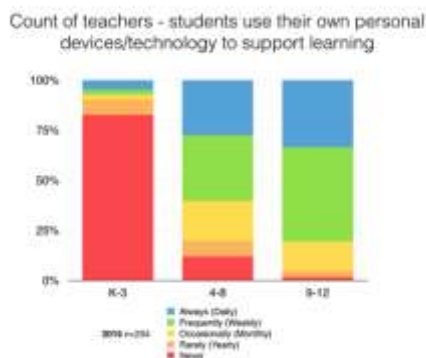
“Technology is used to provide students with “real life” experiences, such as virtual field trips and videos. Teachers use the LMS site to communicate with parents as an online sharing tool (post photos, upcoming events, newsletters, assignments, etc). Administration use LMS to communicate regularly with staff (e.g., weekly memos, agendas, posting documents). Some teachers are beginning to learn and employ ePortfolio.” (SIB, TPF-2014)

The NNDSB School Technology Planning Framework was designed to help schools align new technologies with student learning

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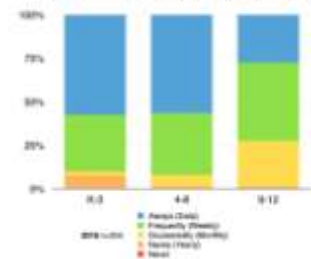


NNDSB classrooms are increasingly “technology-enabled”. 2015 ETAP data resulted in 53% of teachers responding their students in k-12 are using personally owned devices frequently - weekly or daily. This would suggest that enhancements to “open” Wi-Fi access and increased bandwidth are enabling students to use personally owned devices to support learning. 86% of teachers responded that their students use school provided devices/technology to support learning always or frequently - weekly or daily - suggesting that investments in technology for learning (instructional devices) are being used frequently.



Cloud services and ‘take-home’ licenses for Office 365 apps (Word, Excel and PowerPoint) may have empowered a greater number of students to leverage personally owned devices to support learning. As expected, students in the intermediate and senior division are most likely to have access to personally owned technology. 81% of grade 9-12 teachers observed students using personally owned devices to support learning on a “weekly” or “daily” basis.

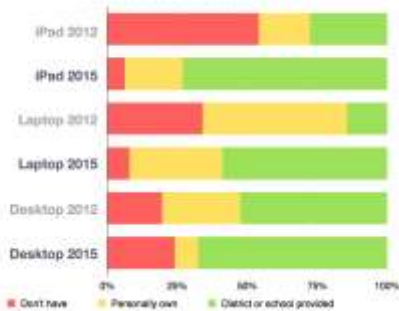
Count of teachers - students use school provided devices/technology to support learning



Teachers in the primary division enable students to access school provided technology - almost exclusively. Likewise, teachers of grades 4-8 are also very reliant on board provided technology. A significant majority of teachers in the primary and junior divisions enable students to leverage school provided technology at a “daily” or “weekly” frequency.

Although there has been an upward trend from 2012-2015, teachers are also demonstrating the opinion that schools require more technology for student use. With over 5000 devices (comprised of Windows computers, OSX and iOS devices) available for student use – this evidence is challenging the NN:21 goal of providing student devices at a ratio of 1:2 (based on a board-wide FTE of 10 000).

TECHNOLOGY FOR TEACHERS

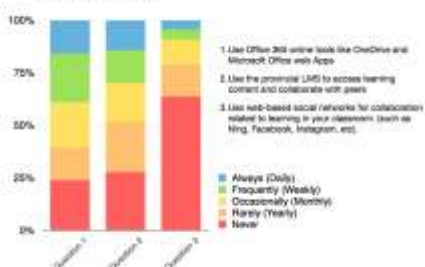


The Technology for Teachers (T4T) initiative enables teachers to choose a device (either, iPad, Windows laptop or MacBook) for personal and instructional use, and engage in ongoing professional learning activities at the classroom, school and district level.

In each of the last three years, annual cohorts representing 25% of NNDSB teachers have participated in the T4T program. The 2015-16 year will complete the initial roll-out of devices and begin a process of renewal. The number of teachers with access to board provided technology has increased significantly over the past three years. (ETAP 2015) The percentage of teachers accessing iPad has increased from 27% to 73%. This also represents a change in the type of technology teachers are using – the significant increase in both tablets and laptops would suggest teachers value mobility.

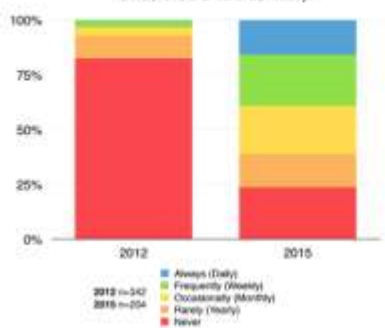
In 2015, Office 365 surpassed the Provincial LMS as the most frequently observed online collaboration tool used by students. (ETAP 2015)

Collaboration:



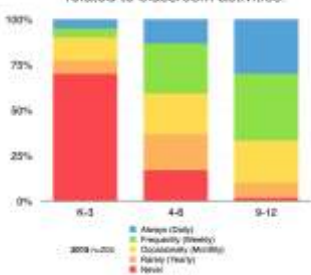
Teachers have observed a significant increase in the number of students accessing online “cloud” tools to work collaboratively – locally and regionally. In 2012, 82% of k-12 teachers acknowledged that students “never” collaborated using online tools – that number was reduced to just 24% three years later (ETAP 2015)

Work collaboratively with students from other regions or nations via online tools and sites (such as Office 365, cloud tools, etc.).



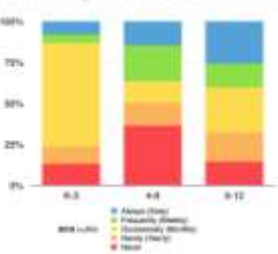
Student use scales across divisions as expected – with usage increasing as students enter higher grade levels. Teachers have indicated (ETAP 2015) that collaboration and productivity apps – such as Office 365 and One Drive are most frequently accessed by student in grades 4-8 closely followed by students in grade 9-12.

Count of teachers - students use email to communicate with peers, teachers, experts, or others for purposes related to classroom activities.



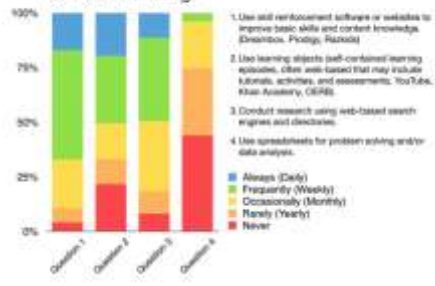
Teachers have observed email as a significant tool for students in grade 9-12. Active directory (AD) class groups and teacher capacity building activities related to Office 365 may have contributed to an increased awareness and usage of the board provided email service. From 2012 – 2015, NNDSB teachers have noted an 18% increase in the number of k-12 students using email on a monthly, weekly and/or daily basis.

Count of teachers - students use the provincial LMS to access learning content and collaborate with peers



There does appear to be significant “occasional” use of the provincial Learning Management System (LMS), Desire2Learn “Brightspace”. This may be a result of teacher capacity building efforts that have focused on using the LMS to develop class documentation sites – through which parents and students may access pedagogical documentation (learning stories), learning resources, and class calendars and news.

Critical Thinking:



Teachers are observing significant use of skill reinforcement software (ETAP 2015). Board investment in online resources such as Dreambox Math and Razkids has resulted in more primary and junior classrooms having access to this type of software.

Teacher feedback indicated that students are making connections between Dreambox and other modes of learning/class lessons:

“In my grade 1-2 class, many students are making connections between the tools that we use every day in the math classroom, and the tools that DreamBox provides. They have learned 100s chart strategies from DreamBox, or in the classroom, and applied them while problem solving. Students have demonstrated and explained what something “looks like” on DreamBox, while trying to explain their 100s chart counting strategy to the class. In my grade 4/5 class, I have had some students make connections (specifically, the student with the decimal unit); however, other students seem to be working on addition and subtraction concepts that we worked on in the fall. We just finished a Data Management unit, so there weren’t as many connections being made at that time. I’m really excited to get into multiplication and division, and use some of the DreamBox teacher tools as guided teaching.” (Dreambox Pilot, Teacher Survey, 2015)

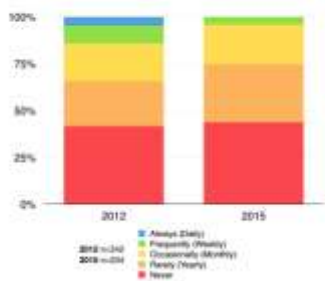
Teachers have also indicated that Dreambox Math tools have increased student engagement and enthusiasm for learning:

“Students [are] excited about math; quantitative data shows students working post school hours! Use the Teacher Dashboard Data Graphs to motivate and inspire students to keep playing and developing skills.” (Dreambox Pilot, Teacher Survey, 2015)

Teachers have suggested “gamification” of learning may also be attributed to this skill development software:

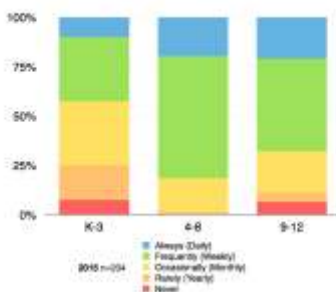
“Students are extremely excited when they know that they will be accessing Dreambox. They are proud of their accomplishments (number of lessons completed, badges, coins earned) and often share them with others. Students are always asking me to access the Teacher Dashboard to tell them how many lessons they have completed. Dreambox allows all students to feel confident and successful.” (Dreambox Pilot, Teacher Survey, 2015)

Use spreadsheets for problem solving and/or data analysis.



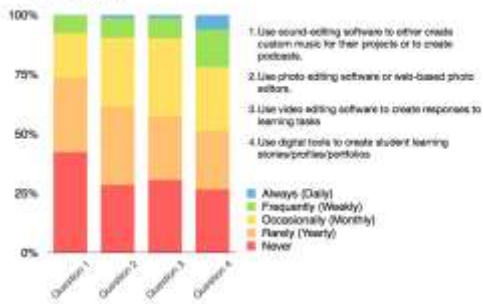
Despite increased access to appropriate cloud software (Microsoft Excel) and intuitive cloud survey tools (Excel Survey), teachers are not observing significant use of spreadsheets for problem solving and/or data analysis. This may present an opportunity moving forward – to develop an understanding (in teachers and students) of how to leverage Excel Survey to collect authentic data and use the Excel web app to analyse, develop understanding and make connections.

Count of teachers - students conduct research using web-based search engines and directories.



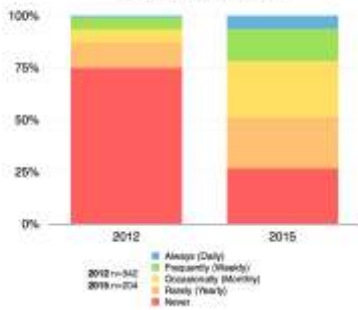
Although 2012-2015 has not seen a significant increase in the number of teachers who observe students conducting research using web-based search engines and directories (ETAP 2015), the majority of students in grades 4-12 do so weekly or daily. 82% of students in grade 4-8 conduct research using the internet weekly or daily.

Creativity:



Teachers have not observed an increase in the frequency that students are leveraging “creative” applications for sound, photo, or video editing purposes. Of the three, video is the most commonly observed means for students to digitally and creatively respond to learning challenges.

Create original digital content to demonstrate what they have learned (student blogs/learning stories/profiles/portfolios).



From 2012 to 2015 teachers have observed a large increase in the number of students that are creating original digital content to demonstrate what they have learned (i.e. student blogs/learning stories/profiles/portfolios). The number of students who have “never” created original digital content to demonstrate what they have learned has fallen from 74% in 2012 to 26% in 2015.