Durham District School Board: 2015 - 2016

Project Title	Cloud Learning through Mobile Technology
Description	The C21 Shift Document defines and lists the following 21st Century Competencies: Creativity, Innovation, Entrepreneurship; Critical thinking; Collaboration; Communication; Character, Culture and Ethical Citizenship; and Computer and Digital Technologies. Our project impacted student achievement and engagement within the competencies of Creativity and Innovation; Critical thinking, Collaboration; Communication; and Digital Technologies. The project focused on embedding technology into classroom learning, with a focus of mathematics and technology integration. The focus of this multi-year project has been to provide charging carts of small form factor wireless laptops into grades 5 and 8 classrooms in year 1 (2014-2015); and into grades 6 and 7 classrooms in year 2 (2015-2016). At the same time the project has been working with a third-party application design and creation group to co-create a mobile collaborative sharing site for all students in these classrooms to allow them to interact with one another and their teachers. This site (DDSB Campus) was created using the Microsoft O365/SharePoint technology. The project focused on embedding technology into classroom learning, but always had an added focus of mathematics and technology integration.
Context	*Number of students:* 16,000 *Number of teachers:* 320 *Number of schools:* 110 *Grades/Program:* Gr.5-8, Mathematics
Impact on Students	Our project impacted student achievement and engagement within the competencies of Creativity and Innovation; Critical thinking, Collaboration; Communication; and Digital Technologies. The project focused on embedding technology into classroom learning, with a focus of mathematics and technology integration. Student impact was measured through a survey of all teachers participating in the project which contained both open ended and Likert scaled responses. In the DDSB, we use the term "Technology at the Point of Learning" when referring to students specifically using technology within a learning context. This is unlike the "Technology at the Point of Instruction" label which describes a more traditional teacher-led and technology in the hands of a teacher approach. 96% of teachers have responded that the frequency of student use of technology has increased because of the project. This is an important statistic for our district

	as past observations of most junior and intermediate classrooms would describe student use as occasional and periodic and based on access to a central lab or mobile cart signed out for a "tech. session" rather than regular or frequently. Most teachers have tended to favour "Technology at the Point of Instruction." The impact of increasing the student use of technology at the point of learning is a benefit as it could be argued that it provides the student with the potential of a learning environment which is more personalized, collaborative and differentiated. Teachers were asked to report on "how" students were using the technology in this project. The most frequently reported uses of the technology by students were for Inquiry (96%), Word processing (95%), and the creation of Multi-media presentations (91%). Though word processing and multimedia presentations results are traditional use for computers in the classroom, Inquiry (91%) and as well Library Learning Commons (51%) have been an important focus of project training in the past year to complement curriculum initiatives. It was heartening to see this use which clearly is related to the 21st Century Competency of Critical Thinking. Also significant was the report that 55% of students use the technology for collaboration within the DDSB Campus and 24% using the technology to interact with the district LMS (D2L/Moodle). Both of these components linked directly to the 21st Century Competency of Collaboration and Communication. The open ended prompts with respect to "how" students used technology specifically in the area of numeracy indicated that students were using technologies such as using mathematics websites for remedial work and game play. These two areas suggest a greater personalization and differentiation occurring with the use of technology in the math classroom. 61% of teachers reported that students were using personal devices to supplement school provided technology and 63% of teachers reported they were using this technology either regularly or frequently. All students in our sample classroom survey reported a desire to see a greater number than the allotted laptops. Teachers were asked to rate their perception of student achievement with respect to the project both in terms of everyday classroom subjects as well as specifically considering numeracy. 79% of respondent teachers report that student achievement increased or significantly increased with the project's allotment of technology and cloud links for the classroom. Most teachers highlighted the greater access that was made available to students by placing the pods of laptops in the classroom as well as the greater engagement of their students for everyday learning as the major impacts on student learning. Also significant were the reported ability of students to use the devices for the

	purposes of inquiry and for the student to differentiate the inquiry or content. In terms of an impact specifically in the area of numeracy, 59% of responding teachers perceived that student achievement either increased or significantly increased. 40% reported that achievement was not affected by the presence of the devices. Though we are optimistic that these results reflect a "first year implementation" focus of math and technology and the complexity of some online math software applications, and a desire to focus on hands-on manipulatives rather than virtual and a lack of resources online to engage students.
Impact on Instruction	90% of teachers responding to our survey report that they use the project equipment and training "at the point of instruction" either frequently or regularly. Furthermore 86% of respondents report that the frequency of their technology use in classroom as increased. Though these are very positive data, it is of interest to see 90% of teachers reporting that they are using technology at the point of learning and 95% of them reporting that this is an increase before the project was initiated. One theme noted in the open text comments was that of using technology as an "assessment for" tool in the classroom. Besides being an engaging way for students to assess their learning with their teacher, it is a positive note regarding personalized approach to assessment in the junior and intermediate grades and may speak to a growing emphasis on assisting students to hone their ability to self-regulate their learning. Themes emerging from open responses include a preponderance of teachers reporting that the technology in the classroom aids and supports guided grouped learning in their classroom practice. Teachers report that the technology allows for a more engaged approach to grouping the class as well as providing a personalized learning experience for students.
Impact on System	This project is aligned with our district teacher technology allotment program in the elementary panel. This initiative, because of its impact and size, is linked directly to the Board's annual System Improvement Plan and provides a technology solution for all affected teachers and students. More specifically, within the district Board Improvement Plan, curriculum and program delivery will "Embed technology to assist students in developing skills within a global context where teaching and learning is collaborative, innovative and creative." The plan further demands that "Teachers will: employ 21st Century technologies, at home or in the community, as responsible digital citizens." Collaborating with application design experts from Unlimited Viz and our own Technical and Information Services department, our initiative provides a one stop and easily accessible online portal for all mobile devices both in the classroom and at home. Online classrooms are automatically created and updated as

	necessary for students and teacher access and secure and safe online collaboration is provided through the Office365 environment. The DDSB Campus was created as an online portal for all students which provides a direct link to resources offered by the provincial Ontario Educational Resource Bank through the provincial VLE D2L as well as to our own LMS (Moodle) and collaborative space through O365. All students have the ability to enter this student portal using mobile devices within the classroom and collaborate together on inquiry projects, lessons and assignments. The use of an allotment model for technology pods of laptops in grades 5-8 which was developed by representative Superintendents of all municipalities in the district and principal associations ensures that the technology hardware that is used across the district is standardized and proportionate to the number of classes in each school. This policy ensures an equitable allotment of opportunity for technology use for all schools. One of the most important organizational outcomes of this initiative was the reframing of the decision making and planning structures for educational technology. In the past 5 years (and very key to this multi-year project), a consolidation of interdepartmental cooperation has been created. The Technical and Information Service department staff managers regularly meet with Program Services department personnel to ensure that applications, networks, student portal access requirements, hardware and software purchases etc. meet both the needs of the district's infrastructure, but also meet the needs of teachers and students. This project has focused the decision making and responsibilities for training, support and acquisition and now allows are district to quickly make decisions on a scaled level for 71,000 students and 5000 staff in an efficient and much more collaborative manner.