Limestone District School Board: 2015 - 2016

Project Title	Going Deeper: Embedding Technology in Math and Literacy
Description	The purpose of this project is to enhance educators understanding of the 7 mathematical processes to assist with the development of conceptual understanding in mathematics, with the support of iPad technology. Teachers involved in this learning have received an iPad to learn from. Our experience tells us that teachers for the most part, need to be comfortable with the device in order to model its effective use and foster student use in classrooms. Each classroom was provided with 6 additional iPads tor student learning.
	Each teacher involved has been able to select from a menu of professional learning opportunities that includes large group learning, small group learning, co-plan and co-teach with the support of a Connected Technology Teacher and two mathematical consultants. As teachers become more comfortable in this learning or change grade levels, etc., they are able to modify the way they are learning.
	We are working with a relatively small group of educators in Grades 3 – 6 around efficacy in mathematics (mathematical processes) and building a deeper conceptual understanding of the math, as well as using technology to leverage, enhance and support learning. We are modelling the effective use and management of technology with the educators, including applications such as Explain Everything to ensure all students are able to demonstrate their learning in a variety of ways and that educators involved in the project are becoming more comfortable with the evidence through conversation and observation.
Context	*Number of students:* 1,500
	Number of teachers: 67
	Number of schools: 13
	Grades/Program: Gr.3-6, Mathematics
Impact on Students	Our 13 schools involved in this work have found that there has been a significant improvement in the area of intellectual engagement that has contributed to greater communication of the mathematical strategies to solve problems and the digital representation of those strategies. By working with educators and guiding them to design authentic learning tasks that explicitly integrate mathematical competencies, they were able to create a culture where students could make choices in how they demonstrated their learning.
	Using programs like Explain Everything has our students excited to engage in their work as it is being completed in a way that is more relevant and authentic to them. Problems that they are assigned are meaningful and complex and require them to transfer their learning from the traditional classroom setting, with pencil

	and paper tasks, to one where they need to communicate their thinking and apply taught strategies to real life problems on a presentation that will be presented to groups that need to learn new strategies for their own success. They use Explain Everything and Book Creator to support communication, problem solving and reasoning to develop a deeper understanding of mathematical concepts. One teacher noted that the use of the devices has "been most useful for our students who are exceptional. The differentiation using the iPads helps them feel more confident and be able to say to themselves 'I can do this math'. They don't see themselves as not being able to do it or not as smart as anybody else because they are able to use voice activated software and access visual supports. It has given [students] more freedom to show what they actually know, what they actually learned and what they actually understood which is much closer to grade level than with traditional pencil and paper tasks".
	We can see the transformation occurring between success within the classroom setting and overall student well-being when our students who were not typically identified as leaders are beginning to take on a leadership role as they are becoming more confident in their abilities to learn and share their knowledge.
Impact on Instruction	Providing opportunities for our educators to become comfortable with their technological devices and focus on how to teach mathematics through the processes while leveraging technology has created a culture of greater student ownership over their learning in our schools.
	Through well planned professional learning (in the form of workshops, co-plan/co-teach sessions and one-on-one mentoring) that modeled deep mathematical thinking leveraged with technology, our educators' instructional strategies and assessment practices are becoming more responsive to the needs of our students. Workshops were differentiated for the variety of needs of the educators involved, with less experienced sessions that focused on the accessibility features and more intermediate sessions that dug deeper into applying technology in ways that would redefine classroom teaching and educator pedagogy.
	We also provided individual and small group co-plan/co-teaching support based on feedback provided by educators. Educators found the one-on-one sessions "invaluable" when initially incorporating the devices into their classroom. One educator said "I always could see the benefit [of using technology in the classroom] but couldn't figure out how to work it into my curriculum, how to work it into my classroom. If I didn't have [the one-on-one support] I wouldn't have been able to figure out how to do it in my classroom."
	Educators involved in the co-plan/co-teach sessions worked in small groups which allowed for impactful shifts and advancements in practice, pedagogy and

	technology implementation. The partnerships between the educators and the students is something that has seen a tremendous shift in some of our classrooms – with the transition from the teacher being the sole provider of information in the class – to educators and students as co-learners. Our focus on enabling and encouraging the educator to be a co-learner with their student is a step towards achieving excellence. It has also allowed for significant transformation in the way educators are conducting assessments for, as and of learning in their classrooms. Educators have found that recording the communication and the stream of consciousness of their students has been invaluable in what their students know and are able to achieve. Educators can change their approaches and individualize representations that they are working on with their students better differentiating to support the needs of all of the learners in their classroom
Impact on System	Sharing authentic examples of deeper learning in mathematics, we are creating a transformational shift in classroom practice and teacher pedagogy. This project will easily integrate into the renewed math strategy that our board will be implementing next year as it is already focusing educators on deep thinking and use of the processes in mathematics instruction. Cross-school partnerships are being enhanced through our collaborative OneNote and education on the use of social media and Skype has allowed the walls of the classroom to expand and for meaningful collaboration to appear among educators and their students in different locations. This use of online discussions and communities has fostered critical thinking, communication and collaboration among our classrooms. [O]ur educators are recognizing the power of technology for connecting to other educators, classrooms and experts to collaborate and utilize as a source of professional learning. Our LDSB twitter chat engages educators in conversation about issues that are current and meaningful to today's classroom and connects all levels of stakeholders in our organization. Our afterschool learning series is facilitated by educators within our system as a way to promote leadership from the middle and promote growth of the other educators around us. Sessions focus on different technology or learning strategies and are connected to the best pedagogical practices encouraged by our BIPSA. Our system also includes a group of administrators who are passionate about learning current trends in technology and modelling technology in the support of pedagogy at all of our administration meetings. These administrators embed technology to model communication strategies so that leaders at all levels understand how we can utilize technology to differentiate and meet the needs of the students. We are currently experiencing a shift towards students bringing their own technology into the classroom (BringIT) for deeper learning purposes.