

Simcoe County District School Board: 2015 - 2016

Project Title	Transforming Learning: STEAM; Assessment; Leveraging Digital Tools; Visible Learning
Description	<p>Our TLF theories of action for 2015-16 are focused on STEAM and leveraging digital tools to enhance student learning.</p> <p>Our first system-wide inquiry, Transforming Assessment through Technology, educators and students will authentically leverage digital tools (more specifically, iPads) to support the collection and analysis of triangulated assessment data.</p> <p><i>If educators and students authentically leverage digital tools to support the collection and analysis of triangulated assessment data then;</i></p> <ul style="list-style-type: none"> <li>• <i>Teachers will have valid and reliable evidence to support individual learners with customized pathways and to provide meaningful feedback to students and their families;</i></li> <li>• <i>Students will become more autonomous learners and make their learning visible beyond the school walls;</i></li> <li>• <i>Parents will have improved access to their child's daily learning and become true partners in the learning process.</i></li> </ul> <p>Our second system-wide inquiry, Leveraging Digital Tools for Deep Learning, will investigate the use of digital tools and resources in helping students develop 21st Century learning skills including; collaboration, creativity, critical thinking, citizenship, character and communication.</p> <p><i>If educators and students authentically leverage digital tools and resources to engage in deep learning experiences then;</i></p> <ul style="list-style-type: none"> <li>• <i>Teachers will develop cross-curricular links and connections to the local and global communities;</i></li> <li>• <i>Teachers will integrate curricula into meaningful, hands-on activities for students;</i></li> <li>• <i>Students will develop 21st Century learning skills including; collaboration, creativity, critical thinking, citizenship, character and communication;</i></li> <li>• <i>Parents, students and educators will become active partners in promoting and supporting digital and global citizenship.</i></li> </ul> <p>In our third system inquiry, staff elementary and secondary are participating in our STEAM (Science, Technology, Engineering, Arts, Mathematics) – Integrated Learning Inquiry. Each elementary school team is comprised of the Teacher Librarian and two Grade 7 or 8 teachers. In secondary schools, the team is comprised of the Teacher Librarian and three teachers from Science, Technology, Arts and/or Mathematics. Our goal in STEAM education is to give students opportunities to build skills, including problem-solving, as well as conceptual</p>

	<p>understandings across subject areas while applying those skills to authentic tasks. As a result of students and staff participating in STEAM learning, we expect them to develop their communication, creativity, critical thinking, collaboration, character and citizenship skills. , STEAM supports inquiry-based, hands-on learning that builds students' competence and confidence in the creative process, technological problem-solving, and scientific inquiry. Participants have opportunities to explore STEAM based on a theory of action that addresses urgent staff and student learning needs, connections to makerspaces, tech renewal, Science Fair, and community partners [and] strategies for assessing the creative process through conversations, observations and products.</p> <p>Evidence of learning is being captured in our Digital Learning Stories which are open and transparent documents: Each learning story is accessible to the system to view and comment. All SCDSB employees can view these learning stories and can engage in the learning by making comments, asking questions, offering support or suggesting strategies and/or resources.</p>
<p><b>Context</b></p>	<p><i>Number of students:</i> 10,500  <i>Number of teachers:</i> 450  <i>Number of schools:</i> 103  <i>Grades/Program:</i> K-12</p>
<p><b>Impact on Students</b></p>	<p>Our work in STEAM provides opportunities for students and teachers to develop and demonstrate 21st Century competencies. Results of student surveys found that there were small, but non-significant differences between STEAM classrooms and regular classrooms. However, these results may be a direct result of student identified classroom type and no baseline data to measure direct student level improvements within STEAM classrooms. The vast majority (91%) of teachers either Strongly Agreed or Agreed that their students are more engaged when they use technology in the classroom.</p> <p>The STEAM initiatives have provided students with opportunities to go beyond engagement to empowerment. Many of the STEAM challenges called upon students to discover their own questions, then look for tools, strategies and resources to solve them.</p> <p>Our work in STEAM, assessment and leveraging digital tools has complimented and supported our learning with NPDL which has refocused our attention on the importance of connecting to our local and global community in a meaningful way. For example, students participated in an inquiry that involved using skills from Math, Science, and the Arts to design and build a structure to help someone living in a refugee camp. Students started this inquiry after having conferenced digitally with a UN support worker, and their ability to use a primary source to collect this information engaged them in the inquiry in a way that a text alone could not have done.</p>

	<p>Reflection plays an important role in the context of hands-on, integrated learning. Students participating in STEAM inquiries shared their personalized learning journeys through blogs, journals and teacher conferences. Having a genuine purpose and authentic audiences gave meaning to their work, motivating students to perform at a high level. Students are building an understanding that their learning process is iterative, and that the path to success is paved with risk-taking, failure, and feedback.</p> <p>Our STEAM training sessions introduced teachers to the engineering design process as a framework for collaborative problem solving, and teachers worked through design challenges with curriculum connections. These challenges encourage students to think in a divergent manner as they look for solutions to unique problems. Collaborative problem solving and continuous feedback from peers and teachers are an inherent part of the design process. Students are asked to provide honest, meaningful feedback to one another throughout the learning process. This creates a culture of knowledge-building in the classroom. Students who were in STEAM classes more often reported that they were at or above a Level 3, with 73% of STEAM students reporting versus 71% of regular classroom students reporting. This difference was not found to be significant. Improved critical thinking and problem solving was identified as an area of focus in 77% of the STEAM inquiries.</p>
<p><b>Impact on Instruction</b></p>	<p><i>Technology-enabled Instruction:</i> The vast majority (91%) of teachers either Strongly Agreed or Agreed they were confident in their ability to learn how to use new digital technologies. Over the course of the year we observed an increase in the number of teachers in our inquiries using technology to collect evidence of student learning (80% do this weekly or several times per week), support student learning, and inform their instruction (88% at least several times each week).</p> <p><i>Learning partnerships (teacher-to-teacher, teacher-to-student):</i> Through collaborative work including co-planning, co-teaching and reflection, teachers developed their own emerging knowledge of STEAM, 21st Century competencies and enhancing learning through the integration of technology. A contributing factor to the success of their inquiries was the opportunity for educators to differentiate their focus by selecting one or more goals that was the most appropriate fit for implementation of curriculum expectations and the learning needs of their students. [P]articipants were able to learn from each other’s experiences while developing a precise plan for advancing student learning.</p> <p>The integration of technology further supported the development of new learning partnerships between and amongst students and teachers that focused on the process of learning. In addition to face-to-face professional learning, Teacher-to-teacher relationships were enhanced through the use of cloud based</p>

	<p>collaboration tools such as Google Docs, Google Classroom and Google Hangouts. Our STEAM collaborative learning was embedded in the classroom. As students and teachers worked together as co-learners, they became engaged in collaborative problem solving. Students gave an average rating of 3.8 out of 5 stating that they agree with the statement, “When I’m stuck on something at school, my teacher works with me to get unstuck”; however, students in regular classrooms reported similar results. The vast majority of teachers (89%) felt their students were more engaged when they integrated concepts from other subject areas in their lessons, and only 26% felt that their students engage in deeper learning when they focused on only one subject area at a time.</p>
<p><b>Impact on System</b></p>	<p>Although the bulk of new educator learning happens in classrooms alongside our students, our shift in culture has been focused on whole system learning rather than limiting new learning to classroom teachers. The idea of learning and modeling from the classroom to the boardroom has helped us deepen our new learning.</p> <p>As with all of our collaborative inquiry work this year, our <i>Learning Stories</i>, which document the learning achieved through our TLF work, are digital, co-authored, transparent and visible/accessible to all staff. This visible learning allows everyone to benefit from the learning of others.</p> <p>The connected nature of our inclusive Board Learning Plan for Student Achievement and Well-Being (BLPSA-WB) provides sustainability but, it also provides agility. Our model of the professional learning and the opportunities available allow for collaborative inquiries to meet the diverse and changing needs of students and educators. This “sustain-agility” keeps us relevant and responsive. We continue to shift our new learning model (students and staff) away from isolated or disconnected learning to purposeful, learner chosen and authentic learning experiences that take place on site. Teachers have choice and voice with regards to professional learning opportunities. Staff from the Program and Innovation, Special Education, First Nations, Metis and Inuit Education and Student Success departments facilitate these inquiries.</p>