

Waterloo Catholic District School Board: 2015 - 2016

Project Title	Evolving Educational Practice Through 21st Century Communication & Collaboration
Description	<p>Through the professional learning opportunities provided via collaborative inquiry, teachers examine the changes in instruction that are required and the 21st Century tools that can be used in order to shift their teaching practice from substitution (where technology is a tool that involves no functional change) to modification and redefinition (where technology allows for the significant redesign of tasks that were previously inconceivable) using the SAMR model. Teachers use Chromebooks and the tools of the Google Apps for Education suite to facilitate their own learning as they design activities and collaborate digitally on projects with their students and colleagues (Google docs, slides, forms etc.). Participants examine research-based instructional strategies to inform the educational approaches they will be adopting. Part of their reflection involves an analysis of the physical and virtual environment for learning and how it shapes the nature and quality of teacher-student and student-student relationships. Educators use the artifacts of student learning they collect to evaluate the effect of their interventions and to determine what kinds of interactions had the greatest impact on student engagement and achievement.</p>
Context	<p><i>Number of students: 1,904</i>  <i>Number of teachers: 86</i>  <i>Number of schools: 44</i>  <i>Grades/Program: JK-8</i></p>
Impact on Students	<p>We have been able to collect both quantitative as well as qualitative evidence to measure improvement in student achievement.</p> <p>A project about a grade 6 math unit on measurement provides a good example of how this initiative has impacted student engagement, learning, and achievement. Students used digital media and other learning environments to communicate and become collaborative contributors – including at a distance, to support individual learning, and to contribute to the learning of others. Students also drew on critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</p> <p>Students used Chromebooks, and a variety of web-based apps to develop and demonstrate their thinking about the relationships among units and measurable attributes, including the area of a parallelogram and the area of a triangle. Google Maps were used to locate specific buildings and students were taught how to use the built-in distance measuring tool to measure sides, bases and heights as needed. Students were given the opportunity to use virtual manipulatives</p>

	<p>(Glencoe, Bennett or Geogebra) to assist with consolidating and proving their thinking.</p> <p>The teacher used Google forms to conduct diagnostic and summative evaluations for this unit and to analyze the area of difficulty for the students. Of the 4 questions related to rectangles, students scored on average 67%. In the summative, it was clear that the understanding of how to determine the area of rectangles increased - average correct = 78.7%. Diagnostic Test Average for the Class = 44.78% and Summative Test Average for the Class = 79.12%</p> <p>Teachers that participated in PD this year were asked: What was the impact of implementing your 21st Century learning project on student achievement, engagement &amp; accountability?</p> <p>No impact (2%), minimal impact (16.3%), moderate impact (34.7%), significant impact (46.9%). Comments included:</p> <p><i>“During this project, my students have shown that the use of technology is significant to their thinking and achievement. The opportunity to have technology allows my students to accomplish their learning tasks whereas they would not have even attempted the tasks before. With the availability of applications and extensions in this project my students who have learning difficulties have accessibility to tools that allow them to be successful in their learning. It also allows for students to learn at their own pace as they can develop their learning at home.”</i></p> <p><i>“Students were very engaged in the learning topics. They took teacher feedback (e.g., in the comments section) to bump up their learning. Many took initiative to extend their learning at home (e.g., write stories on Google Docs, make PowerPoints on Google Slides). Students were motivated to improve their own work when visually seeing the work of their peers. It allowed for unique opportunities for collaboration (e.g., document sharing, etc.).”</i></p>
<p><b>Impact on Instruction</b></p>	<p>One of the objectives of our multi-year strategic plan is that students are achieving at their highest potential in a 21st Century world. In order to support this goal, teachers need to be able to confidently assess learning skills and be able to articulate “look-fors” in relation to 21st Century competencies, in particular: critical thinking and problem solving, creativity and collaboration.</p> <p>Teachers that participated in PD were asked to complete a survey about the frequency of their teaching and assessment practices related to the development of 21st Century competencies. Two different groups were surveyed; our early adopter group from 2015 and our mainstream group from 2016. We were interested in conducting these surveys to determine the frequency of developing 21st Century competencies because in previous research studies, teachers who were strong on project-based learning (PBL) use reported more teaching and assessment of 21st Century skills than a comparison group.</p>

	<p>For our 2015 early adopter cohort, the 3 most frequent aspects of creativity and innovation that our students were engaged is recorded below.</p> <ul style="list-style-type: none"> <li>• Using idea creation techniques such as brainstorming or concept mapping. (1-3 times per week, 40%)</li> <li>• Generating their own ideas about how to confront a problem or question. (1-3 times per week, 38.8%)</li> <li>• Inventing a solution to a complex, open-ended question or problem. (1-3 times per week, 30%)</li> <li>• 68% of teachers indicated that they were able to effectively assess students' creativity and innovation skills to a moderate or minimal degree or not really.</li> </ul> <p>For our 2016 mainstream cohort, the 3 most frequent aspects of creativity and innovation that our students were engaged is recorded below.</p> <ul style="list-style-type: none"> <li>• Using idea creation techniques such as brainstorming or concept mapping. (1-3 times per week, 42.1%)</li> <li>• Generating their own ideas about how to confront a problem or question. (1-3 times per week, 42.1%)</li> <li>• Testing out different ideas and working to improve them. (1-3 times per month, 38.1%)</li> <li>• 72.3% of teachers indicated that they were able to effectively assess students' creativity and innovation skills to a moderate or minimal degree or not really.</li> </ul>
<p><b>Impact on System</b></p>	<p>In order to create a culture to optimize the conditions for instructional leadership in 21st Century teaching and learning, the Board hosted its first Education Innovation Conference. We used the open space conference format to permit the 100 participants to engage in hands-on, self-directed professional learning related to the use of 21st Century learning tools and approaches. By adopting a shared leadership model, we were able to leverage the expertise and experience of a large number of our teachers who are committed to transforming learning and teaching. The focus of these sessions was to facilitate the competencies in our 21st Century Teaching and Learning Blueprint (creativity, innovation, communication, collaboration, critical thinking, problem solving, digital stewardship, information fluency) and our Board Improvement Plan for Student Achievement (develop engaging tasks for learners, provide feedback to guide the learning process, communicate criteria to inform learners, and to differentiate instruction).</p> <p>Another example which illustrates the spread of this initiative and how our educators are taking ownership for building capacity with innovative instructional</p>

leadership was, the 30 independently led workshops that had a 21st Century learning theme related to Google Apps for Education or Chromebooks, on our association professional development day.

In our new BIPSA, under the strategies and actions section for building capacity, we have identified that teachers will participate in professional learning cycles through collaborative inquiry on how to use digital technologies to gather and analyze timely assessment information about student learning to guide their instructional approach.

This year, we continued with our professional learning cycle to provide opportunities for our teachers to design activities and collaborate on 21st Century learning projects with their students and colleagues. Through the professional learning opportunities provided via collaborative inquiry, teachers identified a problem of practice for their project and used the artefacts of student learning they collected to analyze the effect of their interventions and to determine what kinds of interactions had the greatest impact on student engagement and achievement. In order to measure the capacity of staff to sustain innovation in pedagogical practices for deeper learning, participants completed a PD impact survey.