



eInstruction Dramatically Increased Student Performance in ESL Secondary School

November 2011

eInstruction Dramatically Increased Student Performance in ESL Secondary School

Snapshot: Westminster Secondary School, London, Ontario, Canada

School Type: ESL magnet secondary school

Location: Urban

Student population: 826

Grades: 9-12

Student Characteristics: 38.9% speak another language within their home; 31% were born outside Canada; 12.5% ESL students; 21 different languages spoken; 12.5% IEP students ; high percentage of students bussed in

Raising the Bar on Test Performance Goals

At Westminster, Driscoll teaches the grade 9 applied math course, which targets mid-level proficient ninth-grade students slated for a higher education track emphasizing applied knowledge over the traditional theoretical university curriculum. Like the academic 9s, the applied 9s take the annual Education Quality and Accountability Office (EQAO) provincial exams, a year-end summative assessment. It has been Driscoll's ongoing challenge to increase EQAO pass rates. He also wants to improve his students' general performance on the "nuts and bolts" areas of the curriculum called Knowledge/Understanding (KU) and their ability to apply what they have learned. In the fall of 2010, Driscoll and a colleague set out to improve EQAO performance for grade 9 applied students over past results.

Enter eInstruction

Driscoll, who has integrated wireless technology into his classroom for over 10 years, is committed to a data-driven instructional model which can customize learning for students and create a "richer" classroom experience. With this in mind, he partnered with eInstruction, whose student response system and Mobi mobile interactive whiteboard, would allow him to monitor student understanding and performance in an ongoing way. The database within the CPS™ software tied with use of specific pedagogy proved key to Driscoll's research year.

Student-Driven Instruction

The 2010-2011 research project included four applied 9s math classes of 15 to 25 students each, taught by Driscoll and his colleague in the math department at Westminster. In addition to determining how the eInstruction solution with specific pedagogy would aid in improving student performance, Driscoll was interested in how his math colleague, who was new to technology and the data-driven instruction model, would fare with his classes.

During the summer of 2010, Driscoll integrated into eInstruction's Workspace software a database of pre- and post-tests that could be shared with all teachers in the school. The database was a pivotal tool for driving department-wide consistency in lessons and assessment. Driscoll termed it, "one stop shopping for math instruction."

The first step in Driscoll's research instructional model was to administer a pre-test on all the math 9 concepts included in the year's teaching syllabus. In the fall of 2010, students took the pre-test, reading questions on a printed sheet and responding via eInstruction student response system. The teacher's Instructor Feedback Screen within the CPS™ software kept Driscoll abreast in real time on the rate of student progress during these tests.

Bringing students into the loop at every level is one of the primary advantages of the eInstruction solution, says Driscoll, and the product's visual representations of data offer students a quick read on results.

"After the pre-test, we then projected onto the LCD screen a bar graph of the class responses for each question. We do this so they can score their own work, see where they are strong or weak and create a starting place for their own personal journey," he says.

The immediate feedback for teachers also facilitates targeted instruction by identifying areas in most need of review, with student understanding dictating the pace and direction of instruction. Driscoll's remediation plan begins with a focus on the concept / question which most students got incorrect, with a discussion about why they may have missed it, followed by a class-wide review and lesson using the mobile interactive whiteboard.

Driscoll says lessons are more dynamic with the eInstruction technology. "It's more tactile and interactive. Kids are doing a lot more math. It's not like they can just sit there and tune me out. There's a lot more going on because they're always on the hook." Driscoll also says the technology fills the student need for immediate feedback, which they come to "crave."

A 21st Century Teaching Model

At first, Driscoll encountered some skepticism about the effectiveness of using a pre- and post-test model. "There was a belief that students would not do the assessments because they weren't going to count for anything towards their grade. In fact, the opposite has been true. They are extremely motivated by the immediate feedback on their performance."

This innovative model of teaching is something educators have to get used to as it's very different from traditional instructional methods, says Driscoll. "It requires teachers to be more patient and flexible," he says. "Some concepts you have to spend more time on and others less." Also, he says it's not just about teaching but about monitoring understanding during the lesson review phase. The response system lets instructors take the pulse of student understanding, as they can stop to ask questions during the review and gauge how many students are following their explanations.

"Just because you teach a concept doesn't mean students are learning it," says Driscoll. "In many ways, we are using student

performance to judge our own effectiveness, too.”

Engaging and Data-Driven

Driscoll dubbed the first semester of his research year the “transition semester” which allowed students and his research partner to get comfortable with an unfamiliar technology and pedagogy.

“We used the Mobi™ device to instruct students and to conduct the lessons,” says Driscoll, who particularly appreciates the ability to write, draw, insert images, highlight, generally interact with projected instructional content from anywhere in the room. “I got rid of my other interactive whiteboard,” he says.

Instituting eInstruction streamlined the process of gathering whole-class and individual student data. The ongoing formative assessment on math concepts worked as diagnostic tool to drive instruction by gathering baseline data on specific concept areas, such as converting fractions to decimals and percentages or solving equations. Throughout the year, Driscoll and his colleague administered more than 100 pre- and post-tests.

Dramatic Results

When the applied 9s involved in the research study took the EQAO in the spring of 2011, Driscoll saw results he describes as “amazing,” and “phenomenal.”

For those students who wrote the grade 9 applied EQAO exam, 47 percent scored 70 percent or higher. Additionally, Driscoll’s goal to best the school board, or district, average was achieved. The school board average for students achieving 70 percent was 42 percent against Westminster’s 47 percent. Driscoll is particularly pleased by student results in the Knowledge/ Understanding category which was higher than the school board’s average by 14 percent. Performance in the Measurement and Geometry section was 16 percent higher and performance in Number Sense and Algebra area was 12 percent higher than the school board’s.

“The KU category comprises 35 percent of the student’s grade, and increases here improve our pass rates,” says Driscoll. Finding that his research colleague’s summative test scores matched those of his own demonstrated that his own results were not an anomaly. But the ‘holy grail’ of findings was having Westminster’s own data corroborated by EQAO. “The results were directly connected to the use of classroom clickers and the pre-/post-test pedagogy used with our students,” he says.

Ancillary benefits to the research project and use of the eInstruction solution include increased communication among teachers and a stronger sense of professional community, Driscoll notes. Another result has been to increase the expectations of students, whose experience with a higher level of engagement and instant feedback has left them with a desire to continue using technology in the classroom.

“They come back and tell you they miss the class. This says a lot. I think they assume that all math will be taught this way in high school,” says Driscoll.

Tips for Replicating Success

For other schools considering implementation of eInstruction’s technology-based solution, Driscoll has advice to offer.

Construction of a content-rich database ahead of time is key to saving time and ensuring a consistent data-driven instructional experience across all classrooms, he says. “The easier you can make it for teachers new to technology, the better chance they

have of experiencing success first time out. This is critical, as success fuels the process. "

Being collegial and supportive is also important to driving change. Sharing lessons, assessment content, observations and tips can assist in getting other instructors up to speed and help them overcome the challenges of working in isolation.

Driscoll also stresses that a successful, 21st century teaching model includes listening more, and by that he means looking at data. "There is no need to wait until the end of a semester to extract understanding of performance. This should be happening in real time and can."

"If you're trying to be a catalyst for change," says Driscoll, "you need to be an ambassador for change. It isn't always easy but somehow you can come together as a department and find a way. Adopting a pre/posttest pedagogy can be greatly enhanced if you integrate a solution such as eInstruction. It has led to incredible gains."