21st Century Teaching and Learning
Student engagement in mathematics

[ TEACHERS AND STUDENTS IN CLASSROOMS USING COMPUTERS AND TABLETS. TEACHER IN LIBRARY.]

[MUSIC]

TEXT ON SCREEN: 21st Century Teaching and Learning… Innovation in Ontario

TEXT ON SCREEN: Grade 8 - Student engagement in mathematics
Rainbow District School Board

NARRATOR: Darren Foy’s practices have changed since he started teaching more than 20 years ago. Now he likes to blend traditional methods with 21st century practices in his grade 8 math class, which keeps the students engaged.

For example, today’s learning goal was to take what the students knew about order of operations and to tackle problems that included integers.

Before starting the day’s problem-solving session, he makes a question available through an app called Socrative. He then watches the live results to gauge where students are at.

DARREN FOY: If they’re green, they’ve answered the question correctly. If they’re red, they haven’t and so what that means is... I look for the ones with the most red - they'll require the most support during this activity.

NARRATOR: Then the students work through a problem to apply their learning. At the same time, the tech coach provides additional support.

CRAIG O'NEIL: If you use the green one it won’t evaluate it for you. (Student) Oh OK (Craig O'Neil, Technology Coach) But it might be easier for you to do the different steps...

NARRATOR: But what Craig O'Neill is doing today is not necessarily the only duty he has as a tech coach.

CRAIG O'NEIL: There's not a really defined role in a day to day basis. You have to be really flexible. The idea being, to be the main elbow and add the elbow support for teachers and students and administrators, whoever needs the help, to kind of bridge that technology with the pedagogy in the classroom.
DARREN FOY: He can explain things to me in a manner that I get it. And once I've practiced it a few times it becomes part of my program. With the students, it literally takes a very short conversation before they say 'thank you, I get it' and off they go.

NARRATOR: When the students have completed the problem, they take turns demonstrating how they solved it.

STUDENT: So then I did 6 divided by negative three, which gave me negative two...
(Female Narrator) Darren says it's important that the students learn from each

DARREN FOY: When we took it up to the front and had the band show - which is when you show different ways of solving things... at that point, a lot of them had the ahaa moment.

NARRATOR: He also encourages students to take pictures of the work at the front.

DARREN FOY: Now I want to point out something to the class: you're preparing for EQAO next year and of course, it does count for your marks. They're going to be looking for a solution that is organized in that manner, where you literally progress with the equal signs on the left showing what you've done at each stage. So I strongly recommend you screenshotting that solution.

NARRATOR: These images are housed in their e portfolio on an online blended learning environment which is available to them right up until grade 12.

DARREN FOY: They have unlimited storage and they can start storing materials in their e-portfolio much like you would in any portfolio that you would carry around with you, it’s just electronic. It can be pictures, it can be videos...

NARRATOR: Both Darren and Craig find that the students are passionate about using apps and finding new ways to share their thinking, which in turn, encourages deeper learning.

CRAIG O'NEIL: If the students are the ones figuring out, making the plan on what they're going to use, of course they're going to be more into it and more engaged, which ultimately, we found based on the data we've collected, is going to lead to increased achievement.

STUDENT: I just kind of labeled it... the steps I did 1,2,3,4,5,6 and like the order of them and I got 65 as my answer.

DARREN FOY: When students are working purposely through the materials, when they're thinking about it, when they're interacting with it, when they're discussing with
each other when they're clarifying their thinking... it deepens the process, it assists with consolidation, it takes the same problem and has the student apply different mental processes to it, which again, strengthens the consolidation in the end.

[MUSIC]

TEXT ON SCREEN: This was a glimpse into an Ontario classroom that is part of a province-wide collaborative research study on effective technology-enables teaching and learning practices.