Technology transforming classroom of the future

As technology transforms education, what will classrooms and learning look like 10, 20 years from now? Teachers and researchers weigh in on the future of education.

The room is renovated; power cords dangle from the ceiling for students to plug in their laptops or tablets. Desks — gone, replaced by five large wooden work tables Grade 6 teacher Bob Gardner built with the help of a colleague at Brampton's Centennial Senior Public School.

Gardner’s classroom is a glimpse at what the future holds for education, with technology impacting everything from what kids learn to how they learn, to even where they learn. It means more collaboration, but less formal space — and, in the years to come, not even as much space, because with smartphones and tablets a part of the lesson, learning will happen just as much outside schools walls as inside.

“I see the lines blurring between what is school life, what is home life and the real world,” adds James Bambury, a Grade 6 teacher at Beryl Ford public school in Peel, who uses technology to track students’ learning as well as assessment.

“These are big changes.”

Two years ago, the Peel District School Board, where Bambury works, admits it was in the technological dark ages. Want to Google something? Good luck with that, said Patrick McQuade, the board's instructional co-ordinator of instructional technology.

“We blocked everything,” he added. “as a teacher, you could not say ‘let me pull this clip’ ” because there was no access to YouTube.

“Then the board freed up the Internet filter and let YouTube through. Teachers cheered,” he says with a laugh.
But seriously, he adds, “the board didn’t free up YouTube because it was good for teachers, (it) freed up YouTube because there’s great educational material there.”

Peel hired York University expert Jennifer Jenson to review its technology policies. She made suggestions to get the board on-board with 21st-century learning and since then, it has moved quickly to integrate technology, freeing up filters (while still keeping offensive material off-limits), increasing bandwidth — to three times more than any other board in Canada, it says — and making sure every school has Wi-Fi.

This fall, it is implementing a “bring your own device” policy, allowing kids to bring their smartphones or iPads to class, and recently announced a deal it had arranged for parents to buy basic tablets for $55.

In Jennifer Santori and Matthew Smith’s full-day kindergarten classroom at Brampton’s Queen Street Public School, the duo began tweeting student work and daily activities two years ago — without showing any student faces — to help parents see what was going on in a full-day classroom, and how play promotes learning and development.

“Parents can follow a classroom blog, follow a Twitter feed — there’s much more transparency,” says McQuade. “Parents like that. The grandparents might be in another country — the kids post their work, and they can see it, the kids can say ‘check out my blog, check out my work.’

“When it’s a real project, kids do better. And they do better when there’s a real audience — their family, the world.”

Jenson sees a future where students won’t necessarily be in the building every day, where lectures are few and far between and where subjects are combined and the school day is divvied up differently.

“They might come to school every day but not sit in classrooms every day like we’ve been making them,” she said.

“We need to change the way we look and go through subject areas — are they going to get collapsed, or will we have a math block that’s four hours ... in order to get in-depth in any one subject area, we need way more time and we need not to lecture. We need to give people time to go into those areas in some depth.”

With technology-driven assignments, things like writing a script or producing a video don’t have to be done in class. “That’s outside the boundaries of the school walls.”

Some of the more radical educational changes are happening in places like Africa, where countries are experimenting with delivering education via mobile phone — text messaging back and forth — meaning students don’t even need an Internet connection.

In the U.S., there’s a movement to add a fourth R to education — algorithmic knowledge. Simply put, it means teaching all students the basics of computer programming before they graduate.

Ron Owston, dean of the faculty of education at York University, said blended learning is another direction for today’s educators, who interact with students both online and face-to-face.

There are challenges; Jenson warns that teachers and students must discuss how to use technology responsibly, and be good digital citizens.

Equity is another big concern for students who have little or no access to computers, and may come to school with few computer skills.
At a recent Peel board conference on technology, attended by some 600 educators, U.S. education technology expert Ruben PuenteTura spelled out what education will look like in 2018, including “flipping the classroom,” where teachers produce video lectures for students to watch at home, and use in-class time for in-depth learning and student collaboration.

Technology also allows “running before walking” — meaning kids can experiment with concepts way beyond their years, say using an application to design a roller coaster that could actually work. It makes learning subjects like math much more relevant.

“Challenge-based learning” — where school projects are based on real-world problems and are hands-on — is also on the way, he said.

Rather that studying sustainability, students could create a local garden that contributes to sustainability; they’d have to learn about gardening, how and when to plant a garden, create a computer models of their garden, produce videos about harvesting, then actually plant a garden, create a business model and get their food to market.