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Digital immersion is changing how kids think and learn

In today's world of gaming consoles, the Internet, text messaging and Facebook, York Professor Ron Owston believes digital technology is not only changing how children's brains develop, but will give rise to new kinds of learners and workers.

Owston, a professor in the Faculty of Education, was speaking at the University of Toronto's Massey College at the November meeting of Toronto's Monday Club – a group of prominent and influential Toronto leaders from the private and public sectors who meet several times a year to discuss topical issues.

"Whether you call them NGeners, New Millennial Learners or simply Millennials, people who graduated from high school at around the turn of the century are the first generation in history to know more about a central part of our society - the Internet and digital technologies - than their parents," said Owston.

When you look at the numbers, today's youth spend enormous amounts of time interacting with digital technologies, many of which didn't even exist when their parents were growing up, and that's bound to have an effect on learning.

Right: Ron Owston

"Game developer and author Mark Prensky estimates that by the time this group turns 21, they will have spent 20,000 hours watching TV, 15,000 hours surfing the Web, 10,000 hours playing video games and just under 5,000 hours reading print materials," said Owston. "The relatively low position of reading within those numbers is undoubtedly having an impact on how Millennials learn and work."

Owston is one of the world's leading researchers on the use of technology in education. He is director of York's [Institute for Research on Learning Technologies](#) and co-director of the York/Seneca Technology Enhanced Learning Institute. Owston believes constant interaction with digital technologies over an extended period of time will change the way a person's brain is organized.



"New research shows that the brain is plastic and can reorganize its structure by constantly generating new cells and connections based on input it receives," he said.

It takes time for the brain to change, but Owston says spending large amounts of time interacting with digital technologies over several months can affect the way it acquires and stores information.

"For example, Millennials can scan a Web page five times faster than the rest of us and absorb the same amount of information."

A high degree of exposure to digital technology will have an impact on the developing brains of children and that is something the school system will have to adapt to soon as the implications on learning could be enormous.

"Schools will have to fundamentally change the way learning is organized or risk alienating an entire generation of students," said Owston. "Classroom teachers know their students are different, but don't know how to address the Millennials' differences in the classroom."

Owston stressed the importance for teachers to adapt their teaching methods in the classroom to engage these new types of learners. This shift means that teachers need policies and programs to support their professional development and learning throughout their careers, allowing them to provide the kind of classroom learning Millennials need.

"A good teacher can make such a difference to a student's success or failure," said Owston. "A large-scale study in Tennessee found that between Grade 3 and Grade 5, students with effective teachers scored 50 percentile points higher in mathematics than those in the least effective teachers' classes. Teachers are one of the very best investments a country can make in ensuring an educated future population."

The onus is not only on teachers to adapt, but also on employers to change the workplace to accommodate today's youth.

"Beyond their penchant for collaboration, resourcefulness, innovative thinking and love of challenges, Millennials seek to make a difference and want to produce something worthwhile," said Owston. "Those who fail to recognize and anticipate these differences run the risk of seeing Millennials flock to their competitors, taking their willingness to quickly adapt to change with them."

Following Owston's presentation, the president of the Monday Club and a member of York's Board of Governors, Paul Cantor, who invited Owston to speak, said, "I thought the proposition that exposure to new technology would result in new ways of thinking was virtually self-evident, but I came away with the impression that this was not the view of at least some, if not many, in the room. Ron pushed the room to its limit, which is the measure of a great talk."

Submitted to YFile by Elizabeth Monier-Williams, research communications officer.