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**Education**

# Technology opens up new worlds for children with autism

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Braeden Barr, 14, chortles to himself as he edits a video in his classroom at Chimo Elementary School in Smiths Falls, Ont.

“Braeden, do you want to keep working on the iPad?” asks his teacher, David Balfour. “Yes,” the boy responds, a simple, one-word answer he wouldn’t have been capable of four years ago. Braeden has autism. He couldn’t speak when he first met Mr. Balfour. He balked when asked to communicate with Velcro-backed symbols, sometimes becoming so frustrated he threw chairs around the room.

Braeden’s breakthrough came on an interactive whiteboard – essentially a large computer screen controlled by touch rather than a mouse or keyboard – that Mr. Balfour brought into the classroom as part of a pilot project at the Upper Canada District School Board.

Braeden was quick to figure it out and put together a PowerPoint presentation about the television show *Happy Days* that included sentences such as “Henry Winkler is Fonzi.” Mr. Balfour was thunderstruck. He had no idea how much language Braeden understood, let alone that he liked the Fonz.

Braeden’s speech developed slowly after he started using the whiteboard, which allows him to do exercises he finds entertaining. In one, he looks at slides of skinny, fat, tall and tiny snowmen while listening to short sentences describing each one. Then he hits the record button and says the same words. Afterwards, his own voice narrates the slide show.

The technology makes the repetition Braeden needs more interesting and engaging, Mr. Balfour says.

Braeden now creates his own videos on an iPad in the classroom. He can connect with his teacher and his parents, and they are able to get a sense of his powerful memory, his playful sense of humour, his interests and needs.

He has started speaking at home as well, usually short phrases like “Pepsi, please.”

A growing number of schools in Canada and the United States are using whiteboards and, more recently, iPads to help students with autism. Strong anecdotal evidence suggests that, in cases such as Braeden’s, the access to technology can be life-changing. Researchers have begun to explore whether it can help them learn.

Autism and related conditions, known as autism spectrum disorders, affect communication and social interaction. Between 10 and 25 per cent of autistics are thought to be “non-verbal.” Traditionally, three-quarters of people with autism have been classified, after testing, as having low intelligence.

While individuals with autism tend to fare poorly on standard IQ tests that require verbal instructions, some do better on non-verbal tests that measure reasoning and creative problem-solving.

Montreal scientist Isabelle Soulières is part of a team exploring the abilities of children with autism, including those who can't speak. She is hoping to build on their strengths – in pattern recognition, for example – to find new approaches to teaching them.

Technology like the iPad may prove to be useful, Dr. Soulières says. She has heard many reports of autistic children who love iPads when they can use them in ways they find interesting.

The University of Toronto's Rhonda McEwen says preliminary results from a study at Toronto's Beverley School suggest that using an iPod touch can improve the communication skills of children with autism. One or two quickly mastered it. The others made slower progress, over many months.

"Persistence is important. You've got to keep at it," Dr. McEwen says.

Braeden's mother, Sandra Barr, says she has no idea how much he was taking in when he played on the computer at home. He must have found YouTube videos of *Happy Days*.

"It has opened up a whole new world for him and gives us an idea of what he can do and what he wants to do. He mostly communicated by pinching, but you can't tell much from a pinch."

**EEG may show if autistic children understand what is said to them**

McMaster University's John Connolly is exploring a new way to assess children with autism who cannot speak and don't consistently respond to language.

He wants to know if the electrical activity of the brain, as measured by an electroencephalograph, or EEG, can show if they understand what is said to them.

Dr. Connolly pioneered the use of a modified EEG to assess whether patients in a vegetative state react to nonsense sentences like "The dog chased our cat up a coffee." Now, he is trying a similar approach in children with autism.

The children in his pilot study hear sentences – some of which do not make sense, he says. If the EEG shows they react to the error, then it is evidence they understand.

In one case, the EEG showed that a 12-year-old girl understood at least the basic meaning of the sentences in the test.

"She was tuning in and she was comprehending," Dr. Connolly said.

Knowing that a child understands language would encourage school boards, teachers and parents to find alternative ways for the children to communicate.

Braeden Barr speaks with his teacher Dave Balfour at Chimo Public School in Smith Falls, Ontario on Jan. 18, 2012.

Dave Chan for The Globe and Mail