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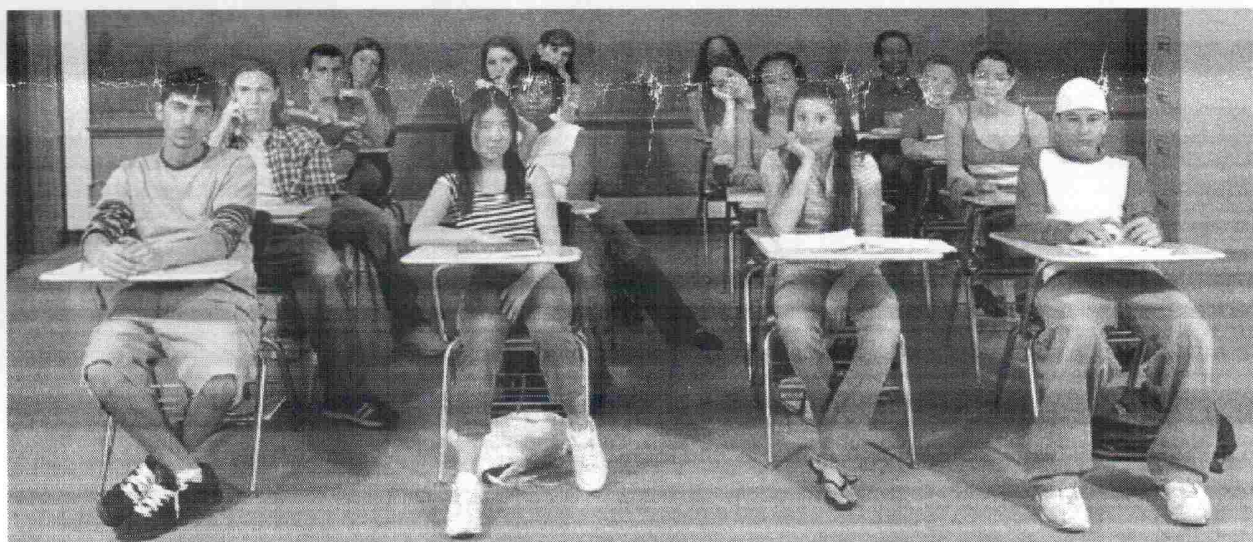
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Featured Health, Health - *Written by Lianne George on Friday, November 7, 2008 1:00 - 7 Comments*

Dumbed down

The troubling science of how technology is rewiring kids' brains

Tags: children, Digital Natives, learning disabilities, school, teaching



For almost three decades, the Arrowsmith School, a small Toronto private school housed in a converted mansion on the edge of Forest Hill, has been treating kids with learning disabilities. When its founder, Barbara Arrowsmith Young, developed the school's patented program in the late '70s, it was with a first-hand knowledge of the frustration and stigma of living with cognitive deficits. Growing up, Young struggled with dyslexia. She had difficulties with problem-solving and visual and auditory memory. Finding connections between things and ideas was a challenge, and telling time was impossible—she couldn't grasp the relationship between the big hand and the little hand. Traditional learning programs taught her tricks to compensate for her deficits, but they never improved her ability to think. "I walked around in a fog," she says. But as a young psychology graduate, Young came across the brain maps created by the Russian neuropsychologist Alexander Luria, who studied soldiers who had suffered head wounds. Using these maps, she identified 19 unique learning dysfunctions and the brain regions that control them. Her theory was that a person can transform weak areas of the brain through repetitive and targeted cognitive exercises, and she was right. Today, this notion of brain plasticity—which she intuited three decades ago—is established wisdom in neuroscience.

Over the past decade, the Arrowsmith program has been proven so effective that schools throughout Canada and the U.S. have adopted it. In 2003, a report commissioned by the Toronto Catholic District School Board found that students' rate of learning on specific tasks like math and reading comprehension increased by 1½ to three times.

These days, though, Young has noticed a new development: increasingly, she's seeing a great many young people having difficulties with executive function, which involves thinking, problem-solving and task completion. "It looks like an attention deficit disorder," she says. "The person has a job or a task and they start doing it but they can't stay oriented to it. They get distracted and they can't get reoriented. When I started using the programs, I really didn't see a lot of this. I would say now, 50 per cent of students walking through the door have difficulty in that area." The second thing she's noticing is more frequent trouble with non-verbal thinking skills. These kids struggle to read facial expressions and body language—which can make dating and friendships, and indeed, most social situations, tricky. *

Both of these skill sets relate to areas of the prefrontal cortex, or what Young calls "mental initiative." It's the area of the brain that drives us to go out and investigate the world, she says. When a person has deficits there, it's hard to participate in the world. When they try, a wall comes up.

Young's students face more extreme problems than the average teen, but her observations mirror what neurologists and educators are seeing in the general youth population—those in their 20s and younger, often called Digital Natives. The first to be born into and come of age in the digital age, they use their brains differently than any generation in history. At any given moment—or so the cliché goes—they're wielding an iPod and a cellphone; they're IMing a friend, downloading a Rihanna video from iTunes, and playing Resident Evil 4 with their thoughts. And that cartoonish caricature isn't that far off: a study from the California-based Kaiser Family Foundation found that young people absorb an average of 8½ hours of digital and video sensory stimulation a day. By the age of 20, the average teen has probably spent more than 20,000 hours on the Web, and over 10,000 playing video games, according to Toronto-based business strategist Don Tapscott's new book *Grown Up Digital: How the Net Generation is Changing Your World*.

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7 Comments

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John Hayes
Nov 6, 2008 17:22

My niche is visual dyslexia so I try to keep up with brain research as it pertains to different aspects of learning and life and of course dyslexia.

As per your discussion, sort of, I tend to believe some creative research that studied infants long term and found a correlation between hours of television watched and autism. Increased time watching TV increased the degree of autism.

The proposed mechanism was indeed brain structure changes induced by the increased rate of information and topic change exposed to from TV and as compared to the slower normal baby talk of mother child communication. ? *

Another study relevant to dyslexia, at least in my mind as no one else has published this, was investigating why elders seemed to make wiser decisions. The conclusion was as we age brain connections tend to fail and mental processes were forced to take longer paths where other relevant facts were considered V's the faster decisions of youth that were processed in a more straight lined manner without involving other not closely related information.

While not being a fan of the "dyslexia is a gift" model as I don't think that most dyslexics experience the benefit of the gift, I did think that the mechanism in the age & wisdom study might indeed be similar to the idea that some dyslexics think outside the box.

In some cases I suspect that the result of having a different brain structure may result in more non linear thinking where other factors become involved in making both wiser or out of the box conclusions.

Personally I am not impressed with the idea that the brain is plastic and can be rewired. That was always true and the fact that learning changes the brain as new connections are made was always implied by learning tasks that become second nature to the person.

The brain of the novice playing outfield is certainly different from the same experienced player. Learning and rewiring the brain are the same thing. People who suggest that they are involved in rewiring the dyslexics brain are doing no more than at best focused teaching.

Ti-Guy

Nov 7, 2008 11:08

In Grown Up Digital, Tapscott writes: "It's not what you know that counts anymore; it's what you can learn." Until now, he says, "the educational model was to cram as much knowledge into your head as possible to build up your inventory of knowledge before you entered the world of work where you could retrieve that information when needed." Now, information becomes obsolete quickly—and because it's always retrievable at the click of a mouse, a well-educated person is not necessarily one who stores great amounts of knowledge, but rather one who knows where to find what he needs when he needs it.

Stopped reading here. Figures the business guru and technocrat Don Tapscott won't/can't distinguish between knowledge and information. Information is data in context and knowledge is the appreciation of the consequences when information has been applied, which is gained through experience and is related to wisdom.

And that is what concerns me about this "digital generation." Information without wisdom is a very dangerous thing.

janet Waring

Nov 7, 2008 17:08

Information is very valuable and students are being taught now more than ever to use their judgement to sift through information to see what is valuable and what is not. Students with high IQ's are smarter than they have ever been before, but students with disabilities are still struggling to read as no breakthroughs have been made to help them with the printed page ie. letters and words becoming information to them. The breakthrough has come from other forms of media to get their info, in audio and pictorial that was never available to them before the touch of google.

Warrenandrew

Nov 7, 2008 17:40

Interesting that whether you agree with the pessimists or the optimists (and I heard Don Tapscott being interviewed on CBC Halifax the other day - he's very interested in getting high profile consulting jobs as opposed to debating the issues) you get a deeper sense of how McLuhan was right. We shape our tools and they shape us.

Adam Daniel Mezei

Nov 9, 2008 15:24

@janet Waring,

I couldn't agree with you more...and, moreover, what exactly happens if the entire Eastern Seaboard suffers yet another one of those extended blackouts as we had around five years ago during the summer...and — horror of horrors — someone is required to speed read through an old paper-bound manual which weighs about a kilo in a matter of minutes, in order to save the world — or something similarly vital.

I know, I know — the stuff of screenplay fantasy and claptrap-y...but still, it's not such a far-fetched scenario, given the findings of this piece. No?

Well done.

Martin Jorgensen
Nov 9, 2008 17:07

'We shape our tools and they shape us.'

Perhaps it's not simply a matter of how information is explored and adopted, but how young adults use the information they gain online, and how the digital resources they use shape that interaction. They are often treated as an audience to be directed by content providers and online edutainment facilitators.

The problem with much of the interaction that occurs online is that its use is limited by the provider. There are of course numerous cases where the intended use of an online resource is surprisingly reshaped by its users. For the most part however, Myspace users for example, use the website as its producers intend it to be used, they shape the interaction. Similarly with video games, they often sport linear narratives that offer only limited creative exploration.

Young adults need to be encouraged to engage in more unfettered, creative exploration of the information that is available to them. Only then will they be more likely to engage with and learn from what they find.

In my experience, helping young adults use online tools to explore their creativity, the results are encouraging. I work with young adults to write stories using web tools that are often intended for quite a different purpose. (writing stories online using online mind maps for example - <http://www.thedigitalnarrative.com/teachign%20method%20lessons/bubblus.htm>)

Students in my experience, become driven, determined, fascinated when they see that they can go beyond the perceived boundaries of their experience online... and blend real world experience with online experience in interesting and exciting ways.

Most importantly, nothing inspires empathy in these young adults more than creating real, vivid characters and using them to tell their stories.

Martin Jorgensen

<http://www.thedigitalnarrative.com>
<http://www.lightningbug.com>

Martin Jorgensen
Nov 9, 2008 17:48

For some reason, the web address in my signature was truncated! <http://www.lightningbug.com.au>

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