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How To Teach Kids To Code Without Turning Them Into Hackers

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In the digital age, teaching kids to write computer code seems like a winning idea. But could these lessons do as much harm as good? In just under a year, the UK will begin to find out. This former industrial powerhouse is aiming to resurrect the old-fashioned Victorian spirit of innovation by teaching every five-year-old the basics of computer coding. From next September, school kids can expect to spend at least 11 years developing their “capability, creativity and knowledge in computer science, digital media and information technology”, hopefully to the point where many of them will be able to go on and develop professional careers.

If you buy the government’s [claims](https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study) (<https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study>), this will be no Mickey Mouse course. First-graders will start with lessons on the function of an algorithm and then progress to writing a simple program within a year. By sixteen, they will understand Boolean logic and be familiar with at least two programming languages, which isn’t bad for a country that is famously reluctant to learn foreign tongues. [The Telegraph](http://www.telegraph.co.uk/technology/news/10410036/Teaching-our-children-to-code-a-quiet-revolution.html) (<http://www.telegraph.co.uk/technology/news/10410036/Teaching-our-children-to-code-a-quiet-revolution.html>), one of Britain’s most respected broadsheets, has called the curriculum a “quiet revolution”, whilst [politicians](#)

(<http://www.theguardian.com/commentisfree/2013/sep/01/george-osborne-technology-make-britain-leader>) are hoping the new curriculum will create a new generation of tech tycoons primed and ready to knock Silicon Valley off its gilded perch.

However, [Carl Miller](http://www.demos.co.uk/people/carl-miller) (<http://www.demos.co.uk/people/carl-miller>), research director at the Centre for the Analysis of Social Networking within the London-based think-tank [Demos](http://www.demos.co.uk/) (<http://www.demos.co.uk/>), isn't sure the future is as rosy and straight-forward as Westminster is making out. "The course itself doesn't seem to deal with the rights and wrongs of the use of these new skills," he said. "These are all necessary skills for the digital workplace and we have a shortage of them in the UK at the moment. But they absolutely can be used both for right or wrong. These skills – technical prowess, an analytical ability and digital creativity – are exactly the ones needed for hacking."

His warning is chilling. It's all very well teaching kids how to write computer programs to a high level, but what happens when they reach adolescence and start wanting to cause trouble? The curriculum itself aims to teach children how to "use technology safely, respectfully, responsibly and securely", yet this relates to issues such as avoiding online predators or dealing with online bullying, Miller continued. It doesn't deal with the rights and wrongs of online life, let alone why it's probably not a good idea to infiltrate US military networks as did British hackers [Gary McKinnon](http://www.forbes.com/sites/parmyolson/2012/10/16/hacker-gary-mckinnon-avoids-extradition-to-united-states/) (<http://www.forbes.com/sites/parmyolson/2012/10/16/hacker-gary-mckinnon-avoids-extradition-to-united-states/>) or [Lauri Love](http://www.theguardian.com/world/2013/oct/28/us-briton-hacking-charges-nasa-lauri-love) (<http://www.theguardian.com/world/2013/oct/28/us-briton-hacking-charges-nasa-lauri-love>). Left to their own devices, it isn't difficult to imagine what sort of imaginative – and destructive – uses a disaffected 17-year-old will find for their new talents.

"These pupils are part of a society going through an incredibly tumultuous clash of online and offline norms," Miller continued. "There's no need to teach someone in woodwork not to hit someone over the head with a two-by-four, because the values of the real-life street are well understood and most people sign up to them."

"However, the reality is completely different on the digital street. Norms are in flux and if you spend too long in places like 4Chan, you might start thinking there are no norms at all... The internet, especially since the explosion of social media, has become the new public space. We need to learn that we have responsibilities to other inhabitants of it."

In the U.S., the risk of nurturing a new generation of super-skilled hackers is outweighed by the benefit of gaining more software engineers. America will have one million more software jobs than coders by 2020, according to [research](http://code.org/stats) (<http://code.org/stats>) by not-for-profit group Code.org. The charity found that just one in ten American schools offer computer programming classes, despite the fact that the number of jobs in the area is growing at twice the rate of the national average. Even though Code.org recognizes the need to follow the example countries like the UK or, more pertinently, China, where kids are also taught to code, the programming champion is clear that there needs to be a moral component to computer science.

"Anytime you teach anything, ethics should be part of it," Hadi Partovi, co-founder and CEO of Code.org. "The same is true about driving. Or writing. It just happens that computer programming is like a superpower, so the incidents of people doing bad things with it are more noticeable. However, in a world where healthcare, commerce, transportation, communication and entertainment are all run by computers, this is a foundational field to which every single student should have basic exposure."

It's hard enough teaching coding, let alone working out how to make sure kids don't go rogue using their new skill. How might we be able to make sure youngsters stay on track? One clue might come in an admission from Jake Davis, a hacktivist linked to the Lulzsec group, who recently told the [BBC](http://www.bbc.co.uk/news/technology-22526025) (<http://www.bbc.co.uk/news/technology-22526025>) that the internet was "devoid of empathy". Maybe encouraging techie folk to be a bit more

touchy-feely might make sure they don't use their new skills for nefarious purposes.

Roman Krznaric, author of the upcoming book (http://www.amazon.com/gp/product/1933346841/ref=s9_simh_gw_p14_do_i1?pf_rd_m=ATVPDKIKXoDER&pf_rd_s=center-2&pf_rd_r=1EQoSPJE8T2A3AYJFQ1J&pf_rd_t=101&pf_rd_p=1630083502&pf_rd_i=507846) *How Should We Live: Great Ideas From The Past On Everyday Life* and a founding faculty member at London's School of Life, (<http://www.theschooloflife.com>) is obsessed with getting us all to think a bit more about other people's well-being. His next book, *Empathy: A Handbook for Revolution*, will urge us humans to be a bit less indifferent to each other. His solution to making sure the next generation of digital natives don't tear down the internet around our ears is simple: we need to teach them to care about someone other than themselves.



"Online culture destroys empathy and brings out our dark side," he said. "It's been shown that the more [Facebook \(/companies/facebook/\)](/companies/facebook/) [FB +1.35% \(/companies/facebook/\)](#) interactions a person has, the more narcissistic they are. We need to be teaching empathy to kids and making them think about what it's like to be another person. That is the beginning of morality."

Krznaric even has an idea about how this might be achieved. He wants to see all elementary school pupils taught how to care about each other using a scheme called [Roots of Empathy. \(http://www.rootsofempathy.org/\)](http://www.rootsofempathy.org/) This involves bringing a baby into classrooms and encouraging kids to talk about how it's feeling, why it's laughing or crying and what they can do to change its mood.

"This is the perfect fit for the demographic who will be taught coding in the UK," he said. "It has amazing results, reducing bullying and even boosting academic achievement."

I would care to bet few technology teachers have spent as much time thinking about online behavior as they have the finer points of C++. Even fewer have probably considered bringing a baby into the tech lab. But new problems require fresh thinking – something young minds are adept at. If we want to keep up with them, it's time to keep an eye on how we teach kids and what they end up doing with their new skills after the school bell rings. Otherwise, it won't just be windows that end up broken.



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