**‘Our Technology Is Our Ideology’: George Siemens on the Future of Digital Learning**



[George Siemens](https://www.edsurge.com/news/2016-08-11-our-technology-is-our-ideology-george-siemens-on-the-future-of-digital-learning)

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What does it mean to be human in a digital age? Some people researching education technology might not spend their days wondering how their work fits into this existential question—but George Siemens isn’t "some people."

“Maybe my mama hugged me extra when I was a baby.” That’s his explanation for how he thinks about the role of education in the 21st century. A researcher, theorist, educator, Siemens is the digital learning guy. He’s credited with co-teaching [the first MOOC](http://cck11.mooc.ca/" \t "_blank) in 2008, introduced the theory of “connectivism”—the idea that knowledge is distributed across digital networks—and spearheaded research projects about the role of data and analytics in education.

Siemens’ work is on the cutting edge of what’s possible in digital learning, but he doesn’t want to discuss the latest fads in education technology. Instead he wants to talk about humanity. He’s optimistic that technology can help people achieve a higher quality of life in a future where work is increasingly automated and distributed across the globe. He just doesn’t think our current university systems and edtech solutions will get us there.

“Our technology is our ideology,” Siemens says. He’s worried that, rather than advancing our human potential, many edtech companies and universities are perpetuating the status quo. While machine learning and automation are obviating the need for learners to memorize content and develop routine skills, current edtech solutions still focus on helping learners develop these capabilities, he says. Instead, they should drive students to hone their uniquely human traits—the ones that will help them thrive in an increasingly automated world.

**Rise of the robots**

Siemens has both an academic and an industry perspective on digital learning. He’s a researcher and strategist with the Technology Enhanced Knowledge Research Institute at Athabasca University in Alberta. He also leads the the Learning Innovation and Networked Knowledge ([LINK](http://linkresearchlab.org/" \t "_blank)) Research Lab at the University of Texas at Arlington. The LINK Lab is a hub for international scholars exploring the digitization of knowledge and learning, and how this process impacts education.

Siemens also serves on the advisory board of learning analytics company Civitas Learning and is a mentor to startups in Intel’s Education Accelerator. He’s currently working with adaptive technology platform [Smart Sparrow](https://www.edsurge.com/product-reviews/inspark-smart-courses" \t "_blank) as part of a research grant from the Bill & Melinda Gates Foundation. Throughout his various projects, of which there are too many to track, he focuses on education’s potential to develop the capabilities that make humans unique. Affect, self-awareness and networking abilities are all traits that separate mankind from machines and will be important for work and life in an increasingly automated world.

The kind of knowledge that humans need to function in society looks different than it did during the Industrial Revolution. Apple supplier Foxconn [recently replaced 60,000 workers](http://www.marketwatch.com/story/foxconn-replaces-60000-humans-with-robots-in-china-2016-05-25" \t "_blank) with automated technology, a move that’s becoming increasingly common as machines master more routine tasks. Now that robots are [flipping burgers](http://www.eater.com/2016/7/1/12077990/robot-burgers-san-francisco-momentum-machines" \t "_blank) and reading X-rays—for a fraction of the cost of human labor—learners need to prepare for careers that employ uniquely human traits like self-regulation and communication. Creativity, complex problem-solving and coordinating with others are among skills that will become increasingly important for workers to develop by 2020, [according to the World Economic Forum](https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/" \t "_blank).

**From adaptive learning to adaptive learners**

Siemens worries that current education systems aren’t adjusting to this new reality. Even the latest edtech trends are still preparing students for a concept of work and life that’s quickly becoming outdated, he says.

He points to the learning management system as an example. It’s controlled, top-down, by the institution that bought it; it’s closed to anyone without a login. The LMS reflects a content-driven concept of education that encourages learners to master what the university thinks they should know. Blogs, wikis and social media, on the other hand, are distributed across networks. These technologies encourage more self-driven, open-ended exploration—skills that Siemens says are increasingly important for humans to function in their careers and society. [On his blog](http://www.elearnspace.org/blog/2016/07/20/adaptive-learners-not-adaptive-learning/" \t "_blank), he’s opined that most adaptive software focuses on knowledge acquisition instead of helping students in learning to think and function in modern society.

Colleges are increasingly using adaptive technology in large online or blended courses to help students learn at their own pace. But while these solutions make learning more efficient, they’re perpetuating an outdated form of learning, Siemens says.

“You’ve made a process efficient that would make an awesome, productive employee in the 1960s, but you haven’t developed the mindsets, the networking capabilities and so on that you need for an individual—not just an employee, but a member of society—in 2020. To make a process more efficient that shouldn’t be done at all is a waste of time.”

To some, that kind of thinking equates to putting the cart before the horse. “You can’t be an adaptive learner if you don’t know anything,” says Rory McGreal, a professor in the Centre for Digital Learning at Athabasca University. He says learners need to master content and skills before they can move on to “higher-order” functions like creative thinking.

“In order to be creative, you have to have skills behind that. I think you teach creativity by giving facts and showing how to do things.”

McGreal, who’s worked alongside Siemens at Athabasca, cautions against putting the learner at the center of education conversations. “This focus on the learner is a big mistake. We should look at the whole learning system and how it works—the learner, teacher, technologist, administration, community.”

**The path forward**

Our ability to look at the “learning system” and see how it works is getting better by the day. Learning analytics tools now track the digital breadcrumbs that students leave everywhere from signing up for meal plans to completing online homework assignments.

Siemens says rich data about students is a game changer for higher education. “One of the most important developments for the education system of today—over the last 100 years—has been the development of data-centric models to understand learner performance and teacher activity.”

Most universities have yet to use this data in meaningful ways though, he adds. Institutional leaders might be excited about the potential for data solutions like early warning systems that indicate whether students are at risk of dropping out of a course. But most of them need to do a better job of understanding how these systems work and what kinds of data they’re capturing.

University staff who are buying data-driven technology should demand transparency from the companies that sell them these tools, Siemens says. That’s the only way they’ll be able to study the tools and understand how they’re impacting student outcomes. Say a company promises its solution reduces the dropout rate among first-generation students by 15 percent; Siemens argues that the university should be able to look at the company’s data—and algorithms that use the information—to understand how this happens, and to make sure the product does what it claims. Otherwise, there’s an “imbalance of power” that leaves universities—and researchers like himself—in the dark, he says.

Siemens is optimistic about the future of higher education, if data remains open as colleges work with more and more companies. He says right now, universities are experiencing an “enormous unbundling.” The value of a traditional bachelor’s degree has come under fire, as students are supplementing and customizing their education with alternative options like MOOCs, programming bootcamps and nanodegree programs. As Napster “unbundled” music albums, edtech startups are unpacking the degree.

But that’s not what Siemens is excited about. He’s interested in the rebundling of higher education.

“If we do things right, we could fix many of the things that are really very wrong with the university system, in that it treats people like objects, not human beings. It pushes us through like an assembly-line model rather than encouraging us to be self-motivated, self-regulated, self-monitoring human beings.”

The rebundling, which according to Siemens hasn’t happened yet, will upend the university’s role as a gatekeeper of knowledge. Instead, he’s hopeful that putting the pieces of higher ed back together and rearranging them will create new networks of learning that encourage students to think beyond any one discipline or career path.

“It just gives us this terrific opportunity to make a system that is more humane, more reflective of the needs of individuals, and that legitimately helps this current generation of student realize that broader goals of being part of something that matters rather than something that pays.”