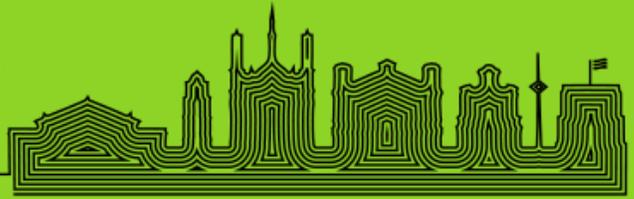




Constructionism 2018

Constructionism, computational thinking
and educational innovation

Vilnius, Lithuania, August 21 to 25



Paulo Blikstein

Stanford University
USA

Constructionism won, now what? The role of constructionist research in the age of ubiquitous computing

Logo was created almost exactly 50 years ago. It might be the right time to take stock on the accomplishments of the last five decades, and the possible directions for the future. The Constructionist community, having rebelliousness in its DNA, has grown used to say that “the revolution has not come yet.” We are still far from realizing Papert’s vision, but in the last 20 years there has been impressive change in schools and in the discourse around educational innovation.

The first change is on computing itself. Several high-profile initiatives have brought coding into the mainstream of education, with several cities and countries advocating and implementing programming as a mandatory topic in pre-college education. The scale of these initiatives is impressive, and even though they are still in early stages, they represent a clear recognition that coding has finally been accepted as a school topic at the highest levels of policy making.

Makerspaces and fab labs are a second phenomenon that has reached surprising popularity in schools in just a few years. Thousands of schools already have well-equipped makerspaces, and even though access is not equitable in many of them, their mere presence in schools point to a crucial recognition of the value of constructionist pedagogies, creativity, student agency, and construction.

Third, even traditional disciplines and national standards are being “infected” by the constructionist virus: many science and math curricula around the world now employ constructionist-inspired pedagogies and principles, and some go as far as incorporating tools such as computational modeling and sensing to science classes. And this is also happening at the national level: for example, in the United States, the Next Generation Science Standards made engineering and design mandatory in basic education. And finally, Constructionist tools such as Scratch, NetLogo, Lego Robotics, GoGo Boards, and the Lilypad, have become much more robust and been use by millions of children worldwide.

Given all the good news, what is the right reaction from this community? Claim “mission accomplished” or double down our efforts? It seems that the main challenge for the next 50 years will not anymore convincing schools that many of these technologies and approaches are useful and effective but will be concentrated in two clusters: (a) Making sure that those new learning opportunities are offered to

students with equity, and (b) Battling the forces of trivialization, that for economic or ideological reasons, often try to overly simplify the technologies and methods of Constructionism. To overcome these challenges in the next 50 years, we will have to find innovative forms of doing research in learning, new avenues for public advocacy, and novel ways to reach students.

Keywords:

Logo; constructionism; computing education; maker education.

About speaker

Paulo Blikstein is an assistant professor at Stanford University School of Education and (by courtesy) Computer Science Department, where he directs the Transformative Learning Technologies Lab (ttl.stanford.edu). Blikstein's academic research focuses on how new technologies can deeply transform the learning of science, engineering, and mathematics. He creates and researches cutting-edge educational technologies, such as computer modeling, robotics, and digital fabrication, creating hands-on learning environments in which children learn science and mathematics by building sophisticated projects and devices. In 2010, Paulo created the FabLearn program, the first academic initiative to bring digital fabrication and maker education to schools, now present in more than ten countries. Paulo also co-founded and directs the Lemann Center for Entrepreneurship and Educational Innovation in Brazil, a 10-year initiative at Stanford University dedicated to the transformation of Brazilian public education. A recipient of the AERA Jan Hawkins Early Career Award and the National Science Foundation Early Career Award, Blikstein holds a PhD. from Northwestern University and an MSc. from the MIT Media Lab.