



Stanford eCorner

Opening the Education R & D Pipeline

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Aneesh Chopra, Chief Technology Officer of the United States, shares the importance of igniting innovation to reform America's education system. Chopra says that while the American education sector is approximately the same size as the pharmaceutical sector, it invests almost nothing in research and development, by comparison. Chopra articulates the government's interest in spurring the development of education technology innovations that are as effective as the best tutors, while being as engaging as the most popular video games.



Transcript

I'd like to talk about our educational system. Now, how many of you know the size of the United States educational system? The K-12 market. It is roughly the size of the U.S. pharmaceutical sector. Now, anybody knows what percentage of revenues the pharmaceutical sector reinvests in research and development; anybody want to take a guess? It's about 17 percent of revenues are reinvested in research and development. Now, how many of you would like to guess, or could anybody please tell me what percentage of revenues in our K-12 system are reinvested in R&D? Does anybody know what the R&D engine is for our K-12 system? 0.1 percent. The K-12 system is largely the same as it was at the turn of the 20th, 19th, maybe 18th century. Teacher, construction, classroom; what are we going to do to move this system to a 21st century model that emphasizes mastery of the learning of the material over the seat time in the class? As we move from print to digital learning objects, we will start to see this shift from seat time to mastery. And what is that we're going to be doing in Washington? We're going to try to fix that research and development pipeline.

The President has called for an ARPA for education and has seeded it with \$90 million of the proposed fiscal 2012 budget to design breakthroughs in learning. The President gave a speech at Tech Boston Academy with Melinda Gates and he called for the following vision: a digital tutor that's as effective as your best personal tutor and as engaging as the best video game. Someone will build that digital tutor, that person will make a billion dollars, and they will solve the American educational system. Again, earning a lunch at the White House mess. We've seen this in action. DARPA, who believes in a high-quality workforce, invested in a program called, "Education Dominance". It's DARPA, it's the military. They can call it "Educational Dominance". And they studied the best teachers in United States, and what they found was you don't record the lecture and push play. It isn't about finding the best lecturer.

The best teacher has personalized the instruction based on the needs of the student. So what this meant was we need a whole new machine learning system that understands how the child learns and serves up the right learning object based on the style of the student's needs and the material that's relevant at the time. Now we have yet to invent this at scale, but educational dominance did a prototype. They took kids that were 17 years old into the navy, 16 weeks of training through this program at their pace, they outperformed veterans who've been on the job for seven years in IT networking skills. We're going to scale up the R&D engine. We're also trying to find ways to scale new ideas by introducing an innovation pipeline management program we called the, "investment innovation fund". Second year that program's coming up that allows entrepreneurial ideas to come forward, to close the achievement gap, test those new ideas, validate them through some kind of market assessment, and then

allow us to scale the best and brightest of those ideas throughout the country. Over 1,700 applications came in for 49 slots, but in the spirit of open government the President, which our program required a 20 percent match, the President called on the philanthropic community. Over 40 charities came together with a common application. In 30 days, when we listed the names of the 49 finalists and told them they had 30 days to get their 20 percent match, this single application and a web portal called the foundationregistry3.org surfaced \$63 million a majority of the match generated.

Now what's even more exciting about this; J.P. Morgan as a donor advised fund, high net worth individuals logged into the portal and many of them personally contributed their charitable dollars to support applications that came through the I3 fund programs that they never would have heard of before coming from every corner of the country available. And again, in the spirit of open government, data.ed.gov; you can download summaries of each and every one of the applicants in case you feel inspired to see what's out there in terms of new ideas that are worthy of your time and attention.