How Tech, Coronavirus Will Change K-12 Learning By 2025

By Catherine Gewertz

In 2015, Elliot Soloway and Cathie Norris made some predictions about what education technology would look like in 2020. Soloway and Norris have long worked as a team to research ed tech and help districts put it into practice. In early March, Education Week caught up with them by phone when they were in Paris to speak at an ed-tech conference. We asked them how their 2015 predictions had fared. Then, we talked again in late April, when the coronavirus had suddenly transformed K-12 education into a massive remote learning system. The interview has been edited for length and clarity.

ELLIOT SOLOWAY
is a professor of electrical engineering, computer science and education at the University of Michigan.

CATHIE NORRIS
is a professor of learning technologies at the University of North Texas.

In 2015, you two predicted that by 2020, hardware, software, and network technologies would mature so much that ed tech's "Holy Grail"–a mobile computing device for every child 24/7–would be realized. You were so confident that you said: "We guarantee you can take this to the bank." Can we go to the bank now?

SOLOWAY: [laughing] We were wrong. We were too optimistic about some of our predictions, and in others, we were spot-on. The hardware has been reduced in price, so almost 70 percent of children from the age of 12 have a smartphone in their hands. But schools aren't typically permitting students to use their smartphones during school, and only about 50 percent of U.S. classrooms are 1-to-1 desktops, laptops, etc. On the software, though, we were spot-on.

You predicted that developers would create apps that are truly device-agnostic. Did that happen?

SOLOWAY: That prediction is pretty much spot-on.

We are moving from native apps to web-based apps, and that means those apps are device-agnostic, so an iPad or Android or Chromebook can use all the same software. The [bring-your-own device] strategy is now much more viable than it was in 2015. In 2015, HTML 5 was adopted by the World Wide Web Consortium. That enabled the development of device-agnostic software. Now, it's really web- and browser-based apps that are driving ed tech.

NORRIS: An example of that is Kahoot!. Teachers use that regardless of whether they have desktops or laptops, Chromebooks; they can use Kahoot! on any, because it's web-based.

Five years ago, you said that even if kids have 24/7 access to mobile tech, they wouldn't fully realize its benefits unless instruction changed pretty dramatically, from the dominant mode of direct instruction to a project- or inquiry-based approach. Have we made any progress?

NORRIS: We have made some progress there. But the predominant mode of teaching, even now, is still direct instruction. The opportunities are incredible right now because of the technology. But if we've learned nothing else in the last 20 years, it's that the curriculum is missing. Teachers aren't given curriculum materials that support these different pedagogical methodologies. To put that burden on teachers, to take this curriculum and make it into projects or think up projects, is unrealistic.

You also predicted that ed tech would be fully "collabrified," allowing students to work at the same time, in the same app, on different devices and in different places. Are we living in that fully collabrified world yet?

NORRIS: We are not. For the same reason! Curriculum! Collaboration is not an easy thing to do, but if you give teachers lessons that are designed to be collaborative, then they will have the students do it.

What about the technical capacity to collaborate, though? Is the technology there to allow a fully "collabrified" world if teachers had the support of good curriculum?

SOLOWAY: The truth is, we were wrong about that prediction. The demand was missing. If the teachers had curriculum that required kids to collaborate, then teachers would demand that the software does it and would put pressure on software developers to develop that functionality. But the curriculum doesn't demand it, and thus, software developers are not including real collabrification in their software.

NORRIS: You've got to give teachers more help than just saying, "The technology can do this." Teachers say, "The computer can do it, but how do I do it?"

SOLOWAY: As a techie, I believe if you build it, they will come. I am very wrong. [laughing] But we are hopeful for the next five years.

Why?

SOLOWAY: We believe in the Wiki model and the open-education-resource model: You make the materials open and available, with free curriculum, and teachers will use it. But it's got to be a year's worth of curriculum. It's got to be well- defined, vetted, and aligned. We believe that teachers will use these digital resources when they see it as real curricula.

NORRIS: That is the goal we're working on. Last year, we started the Center for Digital Curricula, with funding from the college of engineering at the University of Michigan. We're building a fully digital open curriculum. Teachers are free to make any changes they want.

SOLOWAY: For the last six months, we've had a pilot project on it, with 12 teachers and about 600 students in grades 3-5. They're using science, math, social studies, and ELA materials, all digital, all collabrified, free and open.

Are those materials available, even as you pilot them?

SOLOWAY: The math and social studies are freely available. The science, not quite yet.

How will coronavirus school building shutdowns transform ed tech between now and 2025?

SOLOWAY: Digital transformation is being accelerated. Technology and 1-to-1 [computing] will be available faster because schools are seeing the need for it. They're going out and buying equipment for the have-nots, which is a wonderful thing. But there's still a tension between paper and technology, and paper is still winning.

NORRIS: Teachers are inundated because everyone is making their stuff available for free, and they're trying it. But they're quickly getting discouraged.
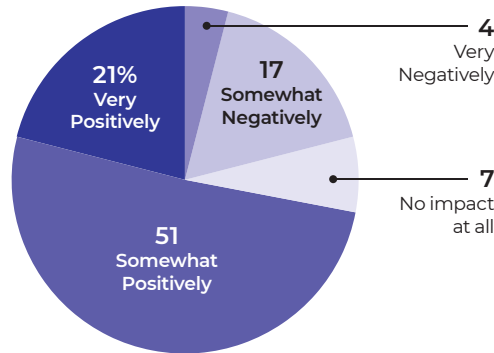
SOLOWAY: The ed-tech tools feel overwhelming because it's "ed-tech first." The stumbling block has been the marriage of curriculum and tech, delivered in a way that is accessible.

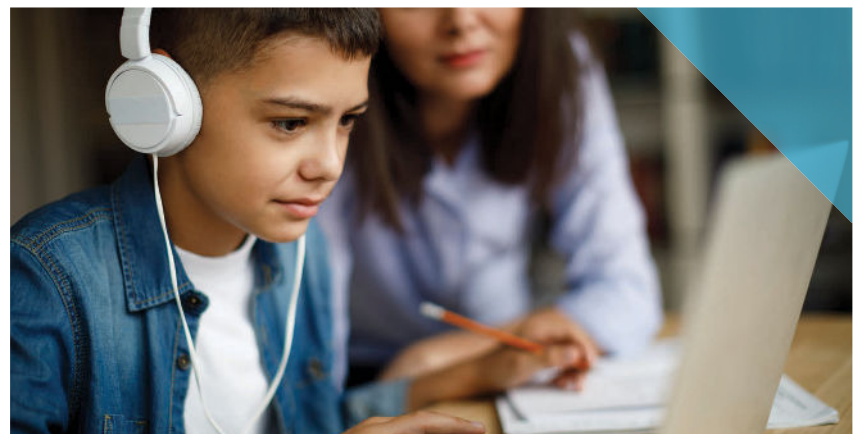**So how will this overload sort itself out?**

SOLOWAY: Right now, every [online tool] has its own ecology, its own sign-in. All these companies are doing their own thing, not playing with each other. I think most of these tools will go away, and a couple will figure out how to integrate and aggregate the various pieces to make access easy, and those are the few tools that will remain, and that's what schools will buy. ■

NATIONAL SURVEY DATA

How, if at all, do you expect the number or type of devices available in the classroom will affect your teaching or the teaching of the educators you supervise in the next five years?

- 21% Very Positively
- 17 Somewhat Negatively
- 4 Very Negatively
- 7 No impact at all
- 51 Somewhat Positively

*Results show responses from teachers and principals.
SOURCE: EdWeek Research Center survey, 2020

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