New Education Initiatives Drive Fiber Demand

SXSW EDU 2018 made clear that as education technology advances, the demand for fast, reliable broadband will continue to grow.

By Rollie Cole / *Sagamore Institute for Policy Research*

Each year, SXSW EDU brings together stakeholders from the worlds of business, government, nonprofits and education with a shared goal of influencing the future of teaching and learning. Like the larger SXSW conference – a hub of creativity for the interactive, film and music industries – SXSW EDU is all about "empowering its global community to connect, discover and impact." This was my fourth year attending the conference, and I left as inspired and hopeful about fiber broadband's promising role in shaping the future of education as I have in the past three years. AI and neuroscience are changing education, and strong fiber networks are key.

ARTIFICIAL INTELLIGENCE

In 2017 the conference's main focus was virtual reality (VR). For the broadband industry, VR holds promise because it requires large files to be served remotely, and therefore provides economic and political demand for high-quality broadband (almost always fiber) to schools and perhaps also to students' homes.

This year, a key focus was artificial intelligence (AI). Using AI still may require large files served remotely. However, some recent developments may mean powerful local devices can handle the user portion.

The speakers and vendors at SXSW EDU used the term AI to refer to two separate extensions to the if-then logic in software coding and in "programmed learning." The first extension referred to the way developers built if-then logic. Instead of asking smart programmers to construct the entire range of if-then possibilities in advance, the developers applied "machine learning" or "deep learning" to huge data sets of educational inputs and educational outputs. This enabled the program *itself* to develop the if-then scenarios.

I use the term "educational" rather than "learning" or "teaching" because some of the most developed apps at the conference addressed facility scheduling and operations or staff and student safety rather than teaching or learning.

The second extension was that many of the AI programs did not stop "learning" once developed. Instead, each use provided more data points to include more scenarios and refine existing ones. The goal was for the apps to improve over time as they gained more experience.

What are the implications of AI for broadband and fiber to the home? At first blush, they're much less significant than the implications of VR or its companion, augmented reality (AR), which will require large datasets

Artificial intelligence programs continue learning as they gain experience.

with lots of computation – almost all from remote servers or server farms. Once developed, many AI-enabled apps can operate with the computing power and storage capacity of a personal computer, tablet or smartphone.

The data to develop those apps, however, most likely needs to come from widely scattered data collection points (individual students, teachers, classrooms, buildings). That data collection is easiest and least expensive when data points connect to a central server via robust broadband. Also, though individual AI apps may have the capacity to upgrade themselves, they could benefit from the increased data collection, storage and computing power of a robust computer network.

NEW EDUCATION MATERIALS AND PROCESSES

SXSW EDU attendees were excited about advances in neuroscience that are driving innovation in the design and use of education materials. Publishers such as McGraw-Hill Education and Pearson are hiring brain experts to create new materials – beyond textbooks – and new processes for using them. Robust computer networks are not primary to this work, but they help gather and analyze the pre-design and during-use data that enables neuroscience-based products, whether including AI or not, to be developed and refined.

Many of the new materials will not be delivered in stand-alone form, whether traditional paper or electronically. Instead they will be served remotely. This minimizes the need for new devices and new expertise at the user end and facilitates the data-collection process that leads to refinement of existing materials and development of new ones.

Also, as learning can be tracked at very micro levels – by student, subject, topic and individual learning step – a variety of education stakeholders, including publishers, administrators, teachers and students, are considering the value of such tracking and its privacy challenges. Again, although stand-alone devices could be submitted for analysis occasionally, having people, places and devices connected via a robust computer network makes collecting and analyzing the data easier and cheaper.

So, though AI apps and neuroscience-based materials and processes will not have the same direct demand for robust networks as VR or AR apps (the big topics at SXSW EDU 2017), they will have an even more universal, indirect demand for the data to develop and refine them. ❖

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