

## 10 Must-Have Classroom Technologies for the New School Year

Tech managers and teachers share one major back-to-school wish this year: The “right” technology in the classroom.

The K-12 numbers come from a national survey conducted by PBS Learning Media ([pbslearningmedia.org](http://pbslearningmedia.org))- a free interactive teaching resource site for K-12 teachers. According to PBS, 91 percent of teachers surveyed have computers in their classroom, but only 21 percent believe that they have the “right technology.” Three-fourths want more tech in their classrooms as well.

PBS also found 93 percent of teachers believe that interactive whiteboards enrich classroom instruction, followed by 81 percent who said the same about tablet PCs. 77 percent said that classroom technology increase their students’ motivation to learn, while 63 percent of teachers surveyed blamed tight budget for blocking their access to classroom technology.

That’s not the picture for K-12. In colleges, smart classrooms are also becoming the rule, not the exception. So too are innovative; free information technology products such as Google Apps for Education. According to U.S. News and World Report, 66 of the top 100 U.S. universities are on Apps. Meanwhile, more than 16 million students, faculty, and staff worldwide are using Apps for Education.

Additionally, distance learning interest is skyrocketing. Distance learning is 46 percent of the \$913 billion dollar U.S. Education and Training Market, according to the United States Distance Learning Association ([usdla.org](http://usdla.org)). 55 percent of public schools districts reported having students enrolled in distance education courses in 2009-10. Among those districts, 96 percent reported having students enrolled in distance education courses at the high school level, 19 percent at the middle of junior high school level, six percent at the elementary school level, and four percent in combined or ungraded schools. The latter figures come from the National Center for Education Statistics and the Office of Educational Technology, U.S. Department of Education.

In line with this research, AV Technology magazine is proud to present an ed tech compendium. This article is just a sample of what is possible in classrooms, but the popularity of these innovations in the end-user community proves they have become integral to the learning process.

### **Tablet Computers & BYOD-Ready Schools**

With their ability to support word processing, graphics, and Web browsing, tablet computers have become a must-have tool for K-12 educators. They’re not alone: U.S. FCC chair Julius Genachowski is pushing for tablets to the place of paper textbooks. “Other nations like South Korea and Turkey are racing to seize the opportunities of digital textbooks,” Genachowski said during a public forum on the topic in March of 2012. “We need to step up our efforts to realize the promise of this new technology in the U.S.” Studies estimate that paper textbooks cost U.S. schools \$7 billion a year, and that moving to tablet computers could save \$250 a student, plus ensure that they are always using up-to-date content.

Meanwhile, tablets are also suited for college students, given these devices' size, price-point, functionality- and undeniable 'cool factor'.

When it comes to tablets, iPad rules ([apple.com](http://apple.com)). Other popular tablets to consider include the Google Nexus 7 ([google.com/nexus/#/7](http://google.com/nexus/#/7)) and the Amazon Kindle ([amazon.com/kindle](http://amazon.com/kindle)). Gamestop offers refurbished tablets that will save more than \$100 over buying a brand new one.

There are flies in the tablet ointment, however- security and network concerns. A host of problems can arise when students are encouraged to bring their own tablets to school. "Bring your own devices (BYOD) is raising havoc with wireless access," said Steven Thorburn, principal consultant with Thorburn Associates, an AV systems consultancy based in Castro Valley, CA. "When I walk around a campus and look at the Wi-Fi usage map on my 'smart device', there does not seem to be any open space." Indeed, tablets are convenient, but don't be fooled. Many end-users testify that tablets are not as functional as their laptop or desktop compatriots. The devices can be hooked up to a projector or VGA-equipped monitor for video mirroring via VGA adaptor, but not all apps will display. There are many limitations, so keep that in mind.

### **Google Apps for Education**

For many schools, Google Apps for Education ([google.com/apps/intl/en/edu/](http://google.com/apps/intl/en/edu/)) is a lifeline. This collection of free education applications provides colleges and K-12 schools with email, calendar, instant messaging, word processing and spreadsheets, Web page creation, discussion boards, SketchUp, and online storage- plus many more free programs.

"Now there is a collaboration software called TeamBox which integrates with Google Docs, Calendar, and Gmail to give you a great integrated project management tool," said Mary McDaniel, an AV manager at University of Colorado Boulder (CU Boulder; [colorado.edu](http://colorado.edu)). "As an end-user, I really love Google Sites- group discussions, postings [et cetera]. in one group, students were able to collaborate about job postings. Not only were they getting an education, but jobs too."

### **Lecture Capture: Portable & Hardwired**

Lecture capture is arguably one of the greatest advances in classroom education. It allows schools to record teachers in their classrooms, and stream the content immediately to other sites, record it for re-use on demand, or both. The ability to take such content out of the context of a single classroom and a single presentation is huge: It literally allows schools to do much more with the teachers they have, and reach new students in new demographics.

Distance learning is also a big player in U.S. education. According to the U.S. Department of Education's National Center for Education Statistics, about 4.3 million undergraduate students (20 percent of all undergraduates) took at least one distance education course in 2008. About 0.8 million (four percent of all undergraduates) took their entire program through long distance education. The annual figures keep growing. On the K-12 side of the equation, the same agency reports that 55 percent of public school districts had students enrolled in in dist