

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)- 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). 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). Other popular tablets to consider include the Google Nexus 7 (google.com/nexus/#/7) and the Amazon Kindle (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/) 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). "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 distance education courses in 2009-2010. 96 percent of these districts reported having students enrolled in distance education in high school, 19 percent at the middle school or junior high school level, 6 percent in elementary school, and four percent in combined or ungraded schools.

There are a variety of companies providing lecture capture technology and solutions. Vaddio (vaddio.com), for instance, makes the AutoTrak automatic camera systems used by lecture capture solution providers such as Sonic Foundry (sonicfoundry.com) and an instructorworn lanyard studded with LEDs that can be seen by our IR detector," said Rob Sheeley, Vaddio's CEO. "This ensures that the robotic camera stays on the instructor, even when they are moving around."

University of Colorado Boulder's Mary McDaniel recommended the Sonic Foundry Mediasite. "It is our choice for both hardwired and portable lecture capture," she said. "Very customizable and your catalog provides a lot of versatility to the end-user. We manage our servers through our networking group, and our instructors love it. We've deployed four units in our large lecture halls and are now creating service models around our systems. I personally like the video editing tool; [you can] replace slides and edit the video. Pretty cool stuff. You do have to have dedicated staffing around the service if deploying large scale."

Adobe Connect (adobe.com), Qumu (qumu.com), Haivision (haivision.com), and Tegrity (tegrity.com) also support lecture/video capture and streaming. Qumu says that the Qumu Capture Studio makes it simple for users to record, edit, and publish engaging video presentations. It's portable, so you can take it anywhere. And it's so easy, anyone can use it. The New Jersey-based manufacturer Creston (creston.com) also offers a lecture capture solution. "I am a big fan of the new Creston Capture HD," said Scott Tiner, assistant director for digital media and event support at Bates College in Lewiston, Maine. "For under \$5,000 you can have a room outfitted with a capture box, camera, and microphone. This is the first cost-efficient capture system that I have seen. There is no need for a big infrastructure behind the box. You can simply plug in a USB stick and take it with you when you go."

Interactive Whiteboards

Part computer monitor, part multimedia display, and part touch-screen: The interactive whiteboard offers all of these capabilities, and more.

It's no wonder that college and K-12 instructors favor them highly; interactive whiteboards allow web- and PC-based content to be seen by everyone in the class. Their touchscreen functionality also allows teachers and students to interact instantly with the content. There are more than a dozen whiteboard manufacturers, the more popular providers in the U.S. include Advanced Education (advanced-education.com), Dell (dell.com), eInstruction (einstruction.com), Hitachi (hitachisolutions.com), Mimio (mimio.com), PolyVision (polyvision.com), Promethean (prometheanworld.com), and SMART Technologies, (smarttech.com).

Certain manufacturers offer more fully integrated classroom solutions while others offer standalone boards, so review SKU specs carefully to find the product that best meets your needs.

Content Management Software (CMS)

At the end of the day, education is about content- the educational content that teachers share with students, the assignments that students complete, and the interactive journey along the way. . Content Management Software (CMS) integrates these various elements with course planning, mark tracking, gradebooks, calendars, and communication to help instructors teach their students more effectively. Most colleges in the U.S. share some sort of course management system (CMS), also known as a Desire2Learn (desire-2learn.com), Moodle (moodle.org), and Blackboard (blackboard.com) are major CMS players in the higher ed category. They are all customizable platforms with diverse offerings. Moodle is both free and open source, used by more than 50,000 different institutions in 200 countries. The Sakai Project (sakaiproject.org) is another free CMS/LMS that is growing in popularity; more than 350 educational organizations currently utilize it.

What is Mary McDaniel's CMS of choice? It's definitely Desire2Learn. "With features such as ePortfolio, Learning Repository, and Learning Environment, Desire2Learn fosters true communication and real-time tracking between student and instructor," McDaniel's noted. "I've logged into the student portal and the interface is awesome. Very intuitive."