

10 Must-Have Classroom Technologies for the New School Year

Tech manager 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 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 white boards enrich classroom instruction, followed by 81 percent who said the same about tablet PCs. 77 percent say that classroom technology increase their students’ motivation to learn, while 60 percent of teachers surveyed blamed tight budgets 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 school districts reported having students enrolled in distance education courses in 2009-10. Among courses at the high school level, 19 percent at the middle or junior high level, six percent at the elementary school level, and four percent on 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 a 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 that they have become the 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 take the place of paper or 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 of March 2012. “We need to step up our effort 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 the 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 than buying a new one.

There are flies in tablet ointment, however- security and network concerns. A host of a problem 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 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. The collections of free educational applications provides colleges and K-12 schools with email, calendar, instant messaging, word processing and spread sheets, 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 discussion, 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 classroom, and stream the content immediately to other sites, record it for re-use 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 they have, and reach 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 the entire program through distance education. The annual figure keeps growing. On the K-12 side of the equation, the same agency reports that 55 percent of public school districts had student enrolled in distance education courses in 2009-2010. 96 percent of these districts reported having enrolled in distance education courses in high school, 19 percent at the middle or junior high school level, 6 percent in the 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 solutions providers such as Sonic Foundry (sonicfoundry.com) and Echo360 (echo360.com). “Our automated camera tracking system works by following an instructorworn lanyard studded with LEDs they 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’s Boulder’s Mary McDaniel recommended the Sonic Foundry Mediasite. “It is are choice for both hardwire and portable lecture capture,” she said. “Very customizable and your catalog provides a lot of versatility to the end-user. We deployed four units in our large lecture halls and our 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 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-effective capture system 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 White Boards

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

It’s no wonder that college and K-12 instructors favor them highly; interactive white boards 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-us.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 communication to help instructors teach their students more effectively. Most colleges in Learning Management System (LMS), or a Virtual Learning Environment (VLE).

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 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 between student and the instructor," McDaniel's noted. "I've logged into the student portal and the interface is awesome. Very intuitive."

Document Cameras

The successor to the clunky overhead projectors of old, document cameras make it easy for educators to display text precisely on the big screen. And that's just the beginning: New, compact document cameras like the SDP-760 and the SDP-860 Samsung Digital Presenter (samsung.com) can capture not just text, but still images and movies with audio. The SDP-860's specs include 1.39 megapixels of resolution, 48x Combined Zoom (6X Optical and 8X Digital); the ability to capture and play out content from SD cards and user scalable display outputs from XGA to full HDTV. Because some limitations apply with VGA adaptors and tablets, document cameras are still an important player.

Free Solutions

In today's budget-conscious educational spheres, free is good. The thousands of interactive courses provided by PBS LearningMedia are definitely free. The content includes videos, interactive content for interactive whiteboards, and even in-depth lesson plans. Content is vetted; it comes from PBS and WNET, plus the National Archives, the Library of Congress, and NPR, as well as content funded by NASA, the National Science Foundation, the National