CENTER FOR DIGITAL EDUCATION'S

# converge

## Special Report

VOL2
ISSUE1






# Digital Teaching and Professional Development

CENTER FOR DIGITAL EDUCATION

# from the publisher

In this Special Report, we're discussing something new: *digital teaching*. I like to describe this as the new "high art" of teaching with digital technologies. Digital teachers use myriad methods to ensure students are as engaged and excited to learn as much as possible. They instruct using various digital tools, adapt lessons using content that is purely digital, and use the Internet to spur collaboration between and among students who may be half a world away from each other. These are only a few examples of the novel ways in which teachers are evolving their methods.

Instructors are now wearing multiple 'hats.' They are actors, coaches, technologists, communicators and evaluators. They elevate each class — whether in a brick and mortar building, online, or both — to its most engaging form. Every lesson is its own sort of 'show' where students are engrossed in discussions that are made easier with interactive technologies. I imagine a future where teachers are revered for their artistic abilities as curriculum designers.

Being an effective digital teacher does not simply mean providing digital content through new technologies. Digital teachers are highly skilled in how they present concepts and structure their classrooms. They take full advantage of the tools available to them and seamlessly integrate them into the education environment.

This elevation of the teaching profession, I believe, is made possible with outstanding new models of professional development (PD). The new PD can be delivered online, or by instructor-artists who show others how to fully leverage technology for engaging learning. I have even heard remarkable success stories from schools that simply dedicate 20 minutes of time to professional development each day before classes begin.

We hope you enjoy this report — here's to our teachers and a digital future!

**Leilani Cauthen**
Publisher, Converge Special Reports
*Converge*/Center for Digital Education

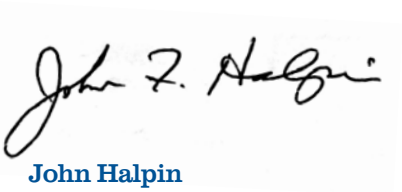
Educators have been searching for pedagogical answers to questions that have plagued our schools for decades. They have looked for ways to bring engaging content to the classroom and provide students with meaningful experiences through apt delivery mechanisms. They have also searched for ways to prepare teachers to instruct students at all learning levels so they can each reach their potential.

There have been successes over the years. We have developed a number of technologies that can deliver meaningful and engaging experiences to help students learn in exciting ways. We are learning how to utilize consumer devices that our students use in their personal lives to enhance learning in the classroom. We are also taking a page out of the business handbook to restructure learning activities and use these delivery technologies to enable more project-based, real world and collaborative learning activities.

So if the delivery technology is there, what are we missing? School leaders are working to improve digital teaching of content and professional development. These are very important areas of inquiry because they strike at the heart of the teaching profession. At a time when national core standards are evolving and a greater focus is placed on assessments, content must be closely aligned and vetted to produce results. Likewise, teachers may need to learn anew how to organize their classes to best leverage the benefits digital content and delivery systems provide.

In this Special Report we explore current options available to schools and institutions. We address what they are, what they can do and what might be expected from their adoption. Since much of this is new, best practices are evolving, but we point out where lessons have been learned as well.

As education must become more cost effective and meaningful for all students, serious educators understand that the future for education is digital. We hope this Special Report adds clarity to that discussion.



**John Halpin**
Vice President, Strategy and Programs
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## INTRODUCTION: SETTING THE STAGE

Technology's potential to transform education has become a mantra of the 21st century. Much has been said about the tools and solutions that can provide opportunities for enhanced student learning. Frequent discussions have focused on the need for schools to have a robust infrastructure that supports continually evolving educational models. However, not as much has been written about the teacher's role in this dynamic environment and the fundamentally new and different functions teachers may have.

The days of teachers covering a defined number of pages in a textbook and assigning work at the end of a chapter are quickly disappearing. Instructors are leveraging technologies that give students access to interactive content from myriad sources. In this digital classroom, the teacher is more than a static oracle of information who delivers lectures. Instead, he or she is an active participant and facilitator in each student's path of discovery and exploration.

This Special Report examines the teaching practices that will help K-12 and higher education leaders effectively harness the technological tools of today and the near future. Teachers need to explore innovative ways to deliver content and continually transform their techniques to keep pace with rapidly changing technologies.

However, teachers cannot succeed without ample support from educational leaders. The second part of this report will discuss the importance of professional development in evolving K-12 and higher education environments. There has always been a positive correlation between the efficacy of instructors and the amount of high-quality professional development they receive. Education institutions must consistently provide teachers with opportunities to improve their skills. Schools will not be successful in implementing broad technology and digital content initiatives without ensuring that ongoing training is available for teachers.

## FROM DIGITAL TOOLS TO DIGITAL TEACHING

In the modern classroom, interactive whiteboards are replacing chalkboards, laptops and netbooks are supplanting textbooks, and tablet computers are displacing the teacher's clipboard. Wireless capabilities are replacing constraining wires and untethering teachers to move


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freely around a classroom that is mobile, content-rich and connected. In short, this classroom has the potential to be more engaging, interactive and collaborative.

Realizing this transformative potential depends upon prepared teachers who can bring it to life. Intuitively, we know that access to technology, by itself, does not transform an ineffective teacher into one who gets results. Technology does not drive teaching, but rather creates a learning environment that offers more exciting student-centered learning opportunities. Students are embracing these technologies in a way that requires teaching methodologies to keep pace.

Technology is creating a 24/7 learning environment for students that puts new demands on teachers and instructors. Students can revisit content and explore more after the typical school day. Learning communities of students, teachers and entire classes extend beyond the constraints of a physical building.

Technology isn't just an additional tool that teachers can use to enhance learning in the classroom; it has the potential to completely transform the traditional role of the teacher.

## WHAT DOES DIGITAL TEACHING MEAN?

What does it mean to teach digitally? It's not only using digital technologies to present the same content. Instead, digital teaching takes advantage of technology and connectivity to reach into cyberspace, acquire newly developed content on an as-needed basis, and deliver it in novel ways. What makes digital content special? Done well, digital content makes the learning process much more active, mobile and tailored to the individual needs of students in a diverse classroom environment.

Students are engaged in an interactive combination of information presentation, content synthesis and collaborative learning. Assessment, evaluation and feedback to the student are integrated into learning, occurring in small steps throughout the lesson. In some of the best programs, real-life simulations and carefully prepared games make problem solving fun, playing upon the competitive spirit within us all.

The digital teacher utilizes project-based learning, with students collaborating in real time with classmates or even students in other classrooms over the Internet. Learning becomes more personalized. The instructor's role is to introduce material and projects for students to undertake, not simply to present content at the front of the classroom. The teacher can allocate more of his or her time on assisting individual students who encounter roadblocks.

Wireless technologies and Internet access allow teachers and instructors to be mobile within the classroom. This freedom of movement allows teachers to be more flexible and responsive to individual student needs, changing the classroom dynamic. Mobile teachers eliminate the unspoken hierarchy that puts "A" students in the front row, "B" in the second row, and the students with the poorest grades in the back. In college classrooms, professors can roam the aisles in the lecture halls, stopping and posing questions to students in a talk-show style. Hiding in the back row, trying not to make eye contact with the instructor, and avoiding engagement is quickly becoming a thing of the past. Regardless of location in the classroom or lecture hall, every student can be the center of attention.

The old saying, "be the guide on the side versus the sage on the stage" really does take on new meaning with technology. Internet access has dramatically reduced the cost of access to digital content. But access to

"WITHIN ANY CLASSROOM ENVIRONMENT, IT IS NOT A MATTER OF SIMPLY USING INFORMATION AND COMMUNICATION TECHNOLOGIES, BUT EMBEDDING THEM WITH COURSE OUTCOMES AND INTEGRATING THEM WITH THE NEEDS OF DIVERSE LEARNERS IN A PEDAGOGICALLY SOUND WAY."

DR. GLENN COCKERLINE AND MIKE NANTAIS, BRANDON UNIVERSITY

content doesn't guarantee best use by students. Teacher resources must be utilized effectively to make sure that students are at the center of the learning activity. The value proposition lies in allocating teacher time to better facilitate student understanding through the manipulation and exploration of digital content.

Digital teaching also creates a new approach to classroom management. Technology can help teachers and instructors better monitor and manage the classroom environment to allocate more time for instruction. For instance, as more K-12 students go online for content during the day there is a greater need to monitor websites and search histories to ensure time is well spent. This has led to a number of solutions that assist teachers in viewing all student screens at once and getting a high-level view of who is looking at what.

## TYPES OF DIGITAL CONTENT

Where does digital content originate? It's out there in cyberspace, but who is writing it, who is publishing it, and how does it get into the classroom? No doubt the first generation of digital content on the Web was not much more than the same coursebook content published on the Internet in PDF format. The traditional publishers were the primary source for comprehensive materials. However, the Web 2.0 generation is decentralizing content development, making it more active and interactive. Publishers are disaggregating material into smaller modules. Teachers are finding that they can pick and choose, cafeteria style, to build custom curricula.

Educational publishers are rapidly making the transition to online curriculum distribution. It is not uncommon now for textbook purchases to be augmented by online materials, such as additional problems, quizzes, tests and review materials, and special projects and lab work. These proprietary materials bring new


When we asked key players in the education technology market what the future looked like for digital teaching, the answer was clear. Content delivery tools will have greater functionality and flexibility, requiring mastery of fewer device types to access more content.

and exciting elements to traditional textbooks and are consistent with policy directives that promote greater access to digital works.

Because of the proliferation of online materials, it is easy to forget that curriculum publishers are adding material to their websites almost daily. Particularly in K-12 education, it is hard for individual teachers to keep up with content for multiple subject areas. But with some creative teaming among teachers (such as rotating the "website research" function from teacher to teacher throughout the year), many schools are digging deeper into the available curriculum websites.

Publishers know that the key to a successful and long-lasting relationship with the K-12 market is giving schools and teachers as much bang for their buck as possible — and avoiding wasting dollars or valuable teacher time. There is no time for busywork. Top vendors in the market, as well as up-and-coming niche companies, are focusing on providing coordinated, wrap-around services. A significant benefit of this is that teachers can be sure that all additional exercises, homework problems, in-depth interviews and videos are directly linked to the curriculum purchased. Sticking to the board-approved materials can save multiple headaches down the line.

## Funding Tip:


Indianapolis Public Schools applied for — and was awarded — the E-rate discount to help fund the cell cards for Internet access in its netbook rollout.

For more ideas on how to fund digital teaching tools, read the Q1 2011 Converge Funding Report at www.convergemag.com.

Schools and higher education institutions also have the option of leveraging open source material. Higher education institutions like the Massachusetts Institute of Technology are providing educators with large amounts of content — for free. MIT boasts over 2,000 online courses and has a consortium of education partners. The university has established a community through a consortium of content developers who have built on each other's curriculum advances. (For more on winning strategies for open source digital content development, see the "Success: Open Source at MIT" sidebar.)

The most popular course — linear algebra by Professor Gilbert Strang — has been viewed 3.7 million times. One of the newest developments on the site is a high school section, where staff teams and undergraduate students have culled every file in their massive database and broken down everything relevant to several AP high school courses.

Open courseware content development has skyrocketed and examples such as the collaborative consortium at MIT prove that digital learning can be accomplished on a dime.

## LEVERAGING TEACHING TOOLS TO SUPPORT LEARNING

A discussion on digital teaching must address the tools and technologies that make it possible to effectively deliver digital content. The Q2 2010 Converge Special Report on *Classroom Technologies* discussed the myriad technologies now available for use in pre-K through higher education, including computers, handheld technologies, audio visual hardware and software, assessment technologies, lab technologies and collaboration tools.

"(IN A CLASSROOM) KIDS ARE ALL DOING SOMETHING DIFFERENT. SOME ARE ON COMPUTERS, SOME ARE DOING EXPERIMENTS, SOME ARE GETTING INDIVIDUAL HELP. IT'S VERY DIFFERENT FROM THE WAY I USED TO TEACH WHERE I STOOD IN FRONT OF THE CLASSROOM … WE WALK AROUND AND HELP THEM. KIDS ARE WORKING AT THEIR OWN PACE AT DIFFERENT PLACES."

JONATHAN BERGMANN, SCIENCE TEACHER, WOODLAND PARK HIGH SCHOOL, WOODLAND PARK, COLO.

We'll do a brief review of these technologies here to illustrate how they can assist instructors in teaching digitally. For more information, visit the Converge website at www.convergemag.com and download the *Classroom Technologies* report.

## COMPUTER TECHNOLOGIES

### DESKTOPS, LAPTOPS, TABLETS AND NETBOOKS

Desktops and laptops have been used by teachers as an everyday tool to connect to the Internet and deliver content. Newer computer iterations include tablets, which allow teachers to more easily move about the classroom, and netbooks, which help ensure every child — and adult student — has access to a computer with their smaller price tag. These compact devices can also be more attractive for college students who are taking notes in class or for elementary teachers that have crowded classrooms and tabletop constraints.

Whether it is a netbook or tablet, the ability to swivel and rotate the screen is impacting teaching and the presentation of materials. The ability for students to easily see each other's work makes group exercises and editing easier. Students can pass around computers just as easily as they used to exchange papers.

Indianapolis Public Schools in Indianapolis, Ind., is rolling out 12,000 netbooks to students after recently completing a pilot with 2,700 netbooks. The district — which

has a free and reduced lunch rate of 85 percent — was looking for ways to ensure students were always connected. Academic Technology Officer Jeffrey McMahon says that the netbooks, which include cell cards for connectivity, allow teachers to be sure that every student has Internet access anytime and anywhere — particularly at home. Students can now use their netbook as a textbook and teachers can modify instruction by having students visit websites or watch videos in the evening rather than using class time for these activities.

## HANDHELD TECHNOLOGIES

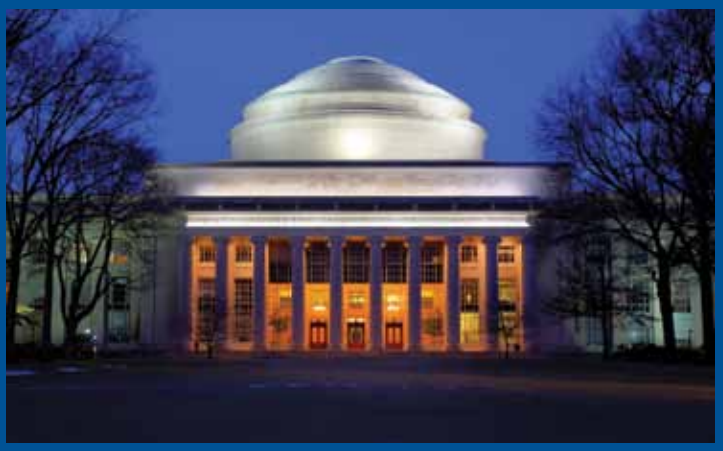
### CELL PHONES

Cell phones are one of the least expensive technologies that can be used to push information and assignments to students, but also one of the most controversial technological tools for use in teaching. Many schools and teachers are just as likely to prefer banning cell phones as they are to embrace them for educational purposes. Cell phones certainly have improper uses in a classroom. However, if those uses can be controlled, modern cell phones or smart phones — which really are fully interactive, handheld computers — can help teachers take advantage of digital content and have some of the greatest potential to positively impact and shape education. The number of mobile applications available for the educator to utilize is multiplying by the month.

### INTERACTIVE RESPONSE DEVICES

Interactive response devices enable all students in the class to respond to multiple choice questions simultaneously. Each student gets to actively participate in selecting right and wrong answers (not just those with the quickest hand or loudest voice), and after the class when results are displayed, the teacher or instructor can discuss the choices made by students, probing the reasons students selected one answer over another. This is a real-time, deep-dive review of not just the material, but the students' understanding of that material. It is a review and assessment rolled into one.

Without the ability to quickly assess student learning, teachers can spend too much time going over materials that the class already knows well, and lose time for reviewing more difficult material or reaching new concepts. The ability to poll students quickly and effectively with little disruption of classroom teaching has empowered even the more reticent test-giving teacher. The phrase "testing isn't teaching" is now under scrutiny as digital teaching has given way to a new format for assessment. The interactive response devices that



## Success: Open Source at MIT

The MIT digital content model is worthy of reprint here since the same methods and lessons can be applied to any school district or college.

MIT's successful strategy included the university president leading the charge from the top, working tirelessly on the initiative and meeting with all 33 campus departments to answer questions and discuss concerns.

One by one, established myths and preconceived concepts of what might happen never materialized: students still came to class; professors retained intellectual property rights while sharing their knowledge with the world; students continued to do their own work and remained highly engaged; and professor-student interactions were more individualized.

Interestingly, the breakdown of who uses MIT's Open Source Courseware is fairly balanced: 43 percent are independent learners, 42 percent are students and 9 percent are other faculty.

# The Many Roles of a Digital Teacher

## Master learner

Digital teachers are not stagnant content experts. They are master learners who continuously refresh their own knowledge to pass on to students with the aid of technology.

## Practical technologist

The constant evolution of technology and its ability to transform education can make any teacher excited and eager to use these digital tools in the classroom, but if teachers don't know how to properly use the technology, the outcome could quickly turn negative. Digital teachers are able to practically use technology and seamlessly integrate it into curriculum, in turn enhancing the learning experience for students.

## Learning coach

Being a "guide on the side versus a sage on the stage" really takes meaning here. With technology, learning becomes more personalized and student-centered. Teachers have the opportunity to step back, assess the learning environment, and act as a coach — encouraging positive learning experiences and strategically navigating around the learning roadblocks students may encounter.

Technology's presence in the classroom requires teachers to take on different roles and develop new and exciting skills. In some ways, technology transitions the focus away from teachers and onto students to create more personalized learning. Conversely, technology can make classes more interactive and turn the teacher into more of a rock star entertainer who ensures students are engaged in learning. Here are some of the roles that teachers are beginning to fill. Although not a comprehensive list, it gives an idea of the exciting new personalities the digital teacher is bringing to the classroom.

## Curriculum developer

Digital content and online resources allow teachers to creatively build lessons and present material in a captivating way. There are no constraints on imagination and lessons can be tailored in real time. There is no need to rely on the same redundant lectures anymore, the opportunity to build curricula that truly captivates student interest is now possible.

## Communicator

Through myriad digital tools, teachers can communicate concepts to diverse types of learners. Not only that, but teachers can also be facilitators of communication by creating learning scenarios that are more interactive and collaborative.

## Entertainer

Viewing a teacher or class time as a source of entertainment has not typically been the perception of the average student. But digital teachers that truly harvest the potential of technology can make learning interactive, exciting and — most of all — fun. Digital teachers elevate the classroom experience and can become the right kind of rock stars.

are available in the educational marketplace have game show appeal while retaining the metrics necessary to demonstrate student mastery. "Show what you know" is now an instructor's best catch phrase. Taking the angst out of assessment is not easy, but with this tool it becomes more attainable.

### E-READERS

E-readers are becoming increasingly popular in people's personal lives, and education is not far behind in realizing their potential. For secondary and higher education institutions, e-readers offer the ability to engage actively with the text through highlighting and note-taking functions. The weight of textbooks and the sometimes outdated information they contain are quickly becoming non-issues with the introduction of e-readers in the classroom. There are other advantages as well. Students with disabilities are able to enlarge print without having everyone in the class see the larger text displayed in their physical book. When students' e-readers look the same, there is an increased level of equity in the class between subgroups. English language learners benefit too, as the built-in dictionary functions are discrete and remove the stigma of having to physically consult another book for needed assistance.

"WHEN I ENTERED EDUCATION I THOUGHT OF IT IN A REAL TRADITIONAL WAY OF MY JOB BEING TO TRANSFER THE KNOWLEDGE AND CONTENT I KNEW TO THE STUDENT AND FILL THE RECEPTACLE. IT IS A DIFFERENT DEMOGRAPHIC NOW AND YOU CAN HAVE EXPERIENCES WHERE YOU CAN BE ONE AMONG A COMMUNITY OF LEARNERS."

BROOKE CAREY AHRENS, INSTRUCTIONAL TECHNOLOGY COORDINATOR, NOTRE DAME HIGH SCHOOL, SAN JOSE, CALIF.

## AUDIO VISUAL TECHNOLOGIES

### INTERACTIVE WHITEBOARDS

The interactive whiteboard is one of the most popular devices in modern classrooms and has helped dramatically improve classroom collaboration and student engagement.

Teachers have a presentational tool large enough to capture the attention of the entire class. Holding students' attention is far easier when the interactive whiteboard becomes an Internet search tool and students have the ability to move text and images around the board. Learning truly blossoms as a simple discussion comes to life. With many high-quality brands on the market, competition in this area has lead to lower prices with more integration options.

The interactive whiteboard can also be a starting point for the integration of other technologies. For example, the document camera can seamlessly integrate with the interactive whiteboard, and physical objects that would be passed around hand to hand can be immediately digitized and seen by everyone in the class or lecture hall. Tactile functions are not lost but redistributed as students still interact with the content but in a different, more manageable way that allows for increased access. For the teacher, the ability to save the digital content from the camera to the board to a subject content folder means building a foundation for the next time they teach that lesson.

### DOCUMENT CAMERAS

Out of sight, out of mind is no longer an option in the newly configured classroom. Proximity matters.

Mounting projectors on ceilings to create more space for movement was the first step. Document cameras are the new teaching standard, and with long-range cables — or better yet, wireless — the teacher can place the camera in the center of the room, creating an ideal space for teaching and bringing the teacher closer to all students. Camera adjustability translates to high adaptability with LED bulbs that greatly increase the projection life. Additionally, students can pass the camera around and project from anywhere.

## WEB 2.0 AND INTERACTIVE TECHNOLOGIES

### BLOGS AND WIKIS

In addition to providing access to standard texts in digital formats, some classrooms are giving students access to more active online resources like blogs and wikis. The next step is to take students from being passive receivers of this information to being participants in the creative process. Juliana Smith, a high school bilingual Spanish teacher, says that students have a higher interest level in her class when they are allowed to illustrate their own videos and upload them to a blog or when they participate in a wiki collaboration with other schools. Collaboration projects with classes in other countries are a part of the daily teaching experience. "My students do not take home books anymore. They just log in and the books stay in the room," Smith says. Smith's class is not just paperless, but media rich and interactive.

Troy Hicks, a professor in the Department of English Language Literature at Central Michigan University, created the Digital Writing Workshop, which brings together all the wonder and imagination of the writing process with the core tenant that "writing itself is technology."

Hicks views blogs as a "world of push button publishing from specialized knowledge [and wikis] that communicates active revision and greater discussion about topics," and he actively weaves in all media consumption into his courses. These technologies and tools impact writing as students see themselves as authors — whether their work is presented in 140 characters or less or turned into a more traditional assignment of a class anthology. Hicks says that the difference now is that students go online, enter contests and join communities of writers all around the world to have an audience of their peers.

## Students are Consumers and Producers

Students are not only consumers of information and technology, but they are increasingly becoming producers as well.

In Cleveland, one teacher is building on students' natural fondness for movies and their creative abilities to make movie trailer mash-ups. Students rework original movie trailers into different genres.

Teachers can harness YouTube-type media. The trick is to combine a desired educational result — e.g., the skills of abstraction, summarizing content and editing — with a desirable technology that will drive student engagement and involvement.

### SERIOUS GAMING

The use of games in the classroom is also enhancing the education experience. We've come a long way from Pong. Just as Sesame Street turned public television into a learning medium for the pre-K and early elementary set, video games are immersing students in interactive learning environments that are personal and realistic.

"I HAVE SEEN TECHNOLOGY USE CHANGE THE FACE OF MY SCHOOL DISTRICT. TEACHERS ARE USING VARIOUS WEB 2.0 TOOLS TO ENHANCE THE CURRICULUM AND TO TEACH OUR STUDENTS HOW TO BE RESPONSIBLE DIGITAL CITIZENS AND EFFECTIVE DIGITAL READERS AND WRITERS. THEY ALL HAVE WEBSITES THAT ARE INTERACTIVE AND ENCOURAGE A STRONG HOME-TO-SCHOOL CONNECTION. THE TECHNOLOGY INFUSION WITH THEIR TEACHING STRATEGIES HAS MADE QUITE AN IMPACT IN A SHORT TIME."

LAURA FLEMING, LIBRARY MEDIA SPECIALIST, CHERRY HILL SCHOOL, RIVER EDGE, N.J.

Dr. Kurt Squire, an academic gaming enthusiast in the Educational Communications & Technology program at the University of Wisconsin-Madison says games "are problem-based learning environments, [and] in some ways they really show the way we might think about designing future educational systems."

Augmented reality or interactive fiction games are a good example of a type of activity that fits easily within a traditional curriculum. For example, in a course on media communications, these games can have students studying history in the first person as a virtual historical figure. Students move through situations and packets of information, review historical quotes and then learn how to write a story appropriate for the time.

At the University of Kansas Medical Center, Sandy Turner, co-operating room manager, uses games and simulations to assist first-year nurse anesthesia students. "A virtual operating room simulation provides greater flexibility and lower costs while giving students an opportunity to participate in a compelling simulation of procedures they would one day perform on real people," says Turner. Bringing these elements down to size for the K-12 set will be the next leap in educational learning design.

## VODCASTING

Podcasting has been a fixture in education for some time, allowing students to have on-demand access to instruction inside or outside the classroom. But let's move from sound to sight into the world of vodcasting, or the video version of a podcast. Vodcasting is enabling teachers at all levels of education to record their lectures or class demonstrations and post them online for students. Also called vlogging in some circles, the application for education allows students to preview and review materials at their own pace. Instructors can ask students to look at material before class and use physical class time for questions and additional discussion or lab work. For this model to work effectively, all students must have adequate access to the vodcast and be able to view it prior to class time.

Essentially, there are two models that educators are using. The first is to create video lectures prior to the class meeting, which can be time intensive, but allows more editing time if needed to clarify lesson messaging. The second is for the instructor to record as the lecture unfolds in real time and then post the video shortly thereafter. Some colleges and universities have streamlined this process for professors, turning on the camera and audio equipment automatically when the class starts and turning it off at the conclusion. The professor clicks a button to approve the session for posting at the end of the class and the IT department takes it from there and ensures it is available for student viewing.

Vodcasting is a helpful tool for students struggling to master new or difficult content, English language learners or students who need more time and educational resources to be academically successful. With this method,

instructors can be assured that all the material is covered and can keep the curriculum pace on schedule. One thing to consider is the increase in classroom management skills necessary as students come together after viewing the vodcast. Students will need varying degrees of individualized instruction and homework help.

### INTERACTIVE LITERATURE

Laura Fleming has been working to infuse digital and interactive literature into her elementary school library program in River Edge, N.J., for the past three years. One way the library media specialist has been able to achieve this is through Inanimate Alice — a digital novel that tells the story of Alice, a young girl growing up in the first half of the 21st century, and her digital imaginary friend, Brad.

"This digital novel is a captivating new reading form that exemplifies reading and learning in the 21st century," says Fleming. "Students are connected and engaged with text because the literary elements come alive."

The digital book helps teachers get students interested in reading at a young age and makes it more of a collaborative activity.

"As students are interacting with the story, they are active participants in telling the story," Fleming says. "They fully understand what it is like to walk in a character's shoes. In using this digital novel with my students, I have never seen them more engaged in text. Inanimate Alice gives us powerful insight into the future of reading and the power of transmedia in education. Because of this story, I have been reminded of the power of creating a network of learners allowing opportunities for students and colleagues to collaborate and connect."

### VIDEOCONFERENCING AND VIRTUAL FIELD TRIPS

As a content provider of interactive videoconferencing since 1997, the Center for Puppetry Arts in Atlanta has award-winning virtual field trips and projects designed for schools. In one of its most requested videoconferencing workshops, young students learn about the lifecycle of the butterfly, color and camouflage. The videoconferencing technology brings digital content into classrooms as far away as Mexico with an interactive program that incorporates movement, animated visual aids, images and other videos to help students build marionette butterflies while reinforcing the underlying educational material.

> "TEACHERS ARE USING INTERACTIVE VIDEOCONFERENCING TO CONNECT AND COLLABORATE WITH OTHER TEACHERS AND STUDENTS TO SUPPORT RIGOROUS AND ENGAGING LESSONS ACROSS THE CONTENT AREAS. CLASSES ARE WORKING WITH OTHER DISTRICT CLASSROOMS, AS WELL AS CLASSROOMS FROM AROUND THE WORLD."
>
> PATRICIA VIRAMONTES, EXECUTIVE DIRECTOR OF INFORMATION AND TECHNOLOGY SERVICES, DALLAS INDEPENDENT SCHOOL DISTRICT

Patty Petrey Dees, distance learning director for the Center, shares that students do a "wiggle jiggle" dance as they hear about various lifecycle stages, and learn about symmetry while adding symmetric designs to their own marionette's wings. "They are very excited about the videoconference, and are not put off by it," says Dees. Sometimes they do not know it is videoconferencing and not television, and that is okay because they get so excited when I talk back to them and they think they are movie stars. It is like, 'Oh, she can hear us *and* see us?' When we ask questions, their hands shoot up as high as they can go because they want a chance to answer questions through the television screen."

The largest benefit of using videoconferencing is the ability to reach a broader audience that would otherwise not be able to physically visit the center. The benefit that is tougher to quantify — but priceless — is when Dees hears teachers say that they "have seen children who are participating and answering questions that they cannot get to respond in a traditional classroom setting."

## DIGITAL TEACHING AND THE EVOLVING CLASSROOM

Although changes have been incremental, the evolution of the classroom in the last few decades has been substantial. The chalkboard has gone from green to black to white — and now electronic. The No. 2 pencil is a digital pen. Encyclopedias are collaborative wikis

PHOTO CREDIT: PATTY PETRY DEES, DISTANCE LEARNING PROGRAM DIRECTOR, CENTER FOR PUPPETRY ARTS

and online searches. Mainframe computers relegated to computer labs are now portable handheld devices. Teachers roam the room and are no longer chained to the podium or to the front of the class. Sustained silent reading is achieved efficiently with e-readers versus a trip to the library. Ditto machines, copiers and large projectors are met with their 21st-century counterparts of multi-function digital printers, scanners and document cameras.

Most teachers today in both K-12 schools and higher education institutions can lay claim to being part of the above transitions of the physical classroom. But there is a constant swinging door of adjustment to new practices of instruction and learning. Significant changes to teaching practices are impacted by how instructional material is presented, the amount of material that is available and how it can be accessed, the ability of teachers to communicate with students, assessment options and learning interactions.

As teachers have more data points on how well students are performing in class, instruction can be better targeted. The ability for students to hone skills in one area of weakness while working independently has helped teachers keep them progressing along with their peers. Faster cycles of feedback for both student and teacher coupled with "guide on the side" instruction — made possible by more mobile and wireless technologies — means achievement gains are faster as well.

Blended or hybrid learning is also increasing in popularity and helps provide the student with the best possible combination of in-class and online learning venues. The key word is "combination," so that each methodology can be used to its greatest effect. Typically, a mixture of face-to-face and online learning can come in as many forms as there are technology tools. However a district or college chooses to utilize blended learning tools, it must make sure its students understand what "blended" means to them.

Digital teaching in a blended learning environment allows for greater access to information and enables learning to happen anywhere. A first step into the blended learning sphere typically involves transitioning portions of a class that have lab applications to online work. Students need to learn how to manage time on class assignments outside the brick and mortar walls of the traditional classroom. Finding the balance of communication interactions while making progress on tasks is important. It is also about learning how small group communication changes as the medium changes. Every group composition of learners brings something new to the blended learning table.

Using lecture capture technology, Dr. Jim Brown, dean of Engineering at Ocean County College in New Jersey, has managed to transition one of the most challenging of subjects — Microbiology — to an online format. At first glance, this course does not readily lend itself to distance education, but with some key technology advances the online course has been very successful. Students are shipped digital microscopes and begin lab work almost immediately out of the box. Using smart phone applications, students combine technologies with their home computer and post pictures of their experiments online. Requiring frequent pictures of lab tests, Dr. Brown can tell instantly whether a sample has been contaminated and contacts the student immediately. The experiment can be conducted in the kitchen, garage or back room — location doesn't matter. The ability for students to take a core lab course remotely has really "broken down a barrier to getting students coming into science [with] well over half of our students taking courses from other states [and even] from the military [stationed in] Afghanistan," says Dr. Brown.

## ENSURING DIGITAL TEACHING IS EFFECTIVE

Identifying good digital teaching can be challenging, particularly given all the various technology options. Teaching strategies and approaches that work well with one technology may not work as well with another technology. What counts as "quality teaching" can easily ebb and flow with the classroom technology and configuration. The strategy that works well for the document camera may be vastly different than the strategy for blended learning. In this environment, teaching flexibility is a key ingredient. Whether in the K-12 segment or higher education, teachers and instructors need a strong support system to provide them with the skills they will need to refine their current teaching methods for working most effectively with diverse technologies.

In terms of overall return on investment, the challenge is to figure out what teachers need, provide it and then monitor the contribution to their teaching and their students' performance. One approach is to repurpose human resources management software into a fresh configuration designed specifically to answer these questions in the education context. Modeling and measuring "teacher value-added growth" is exactly what a superintendent or university provost needs to determine if a technology investment is having an impact. Think of it as a talent management application that tells you what you need to know about teacher growth and performance — information that will be useful in making initial technology decisions.

It will take a persuasive pitch to a board or finance committee to invest in professional development and human resources systems. However, the payoff comes in the form of retaining good teachers and increasing their effectiveness and improving student achievement though the use of assessment data.

## OVERCOMING FEARS WITH OPPORTUNITY: THE NEED FOR PROFESSIONAL DEVELOPMENT

For most teachers, technology is recognized as a positive enabler or extender in the classroom, and its capacity to support and improve the art of teaching is embraced. Teachers appreciate the ability to project images onto a large screen, give students access to the Internet to do research, have an electronic method to track attendance, and post student assignments online. These solutions improve the classroom experience.

However, today's educational technologies can do so much more. They can provide highly effective content delivery modalities while assuring core standards and key skills are taught. They can enable immediate formative and quantitative assessments and provide students with a wide array of content in a reliable manner from anywhere.

But how do teachers become comfortable taking advantage of technology's benefits? It is one thing to learn the basics of using new technology tools: how to turn on the device, focus the projector, access the Internet and log in to sites and programs, and learn how to do these things in front of a full classroom of students without appearing to be awkward or uncomfortable. It's quite another to understand how best to use these tools to improve the teaching and learning that

## A Word about Digital Responsibility

As students continue to be defined by their increasing use of technology, schools are responding early in their academic career by making sure they are good digital citizens. This includes "being responsible, not only at school but also at home, and having lessons regarding digital footprints, illegal downloading, plagiarizing, and understanding what is okay to share and what should be kept private," says Ellen Stubblefield, early childhood specialist at Hoover City Schools.

By the time these K-12 students become higher education students, there is a sincere appreciation of how technology can enhance the learning experience while also being wary of potential threats. As more students access content online after school hours, schools also need to become more vigilant about communication, content and contact. Both districts and their higher education counterparts can ensure technological innovations are safe as well as successful with sustained ongoing training.

"The digital learning landscape is wide open, and the right professional development will help educators as they navigate this shift in the classroom dynamic — improving digital teaching while integrating educational technologies to enhance the learning process."

GEORGE GATSIS, VICE PRESIDENT OF PRODUCT MANAGEMENT, MARKETING AND DEVELOPMENT, FOLLETT SOFTWARE COMPANY

"True professional learning is a process, not an event. It is critical to build a professional learning plan for each district or school that is driven by instructional strategies that help teachers continue learning — with ongoing support and mentoring. Together, we can effectively impact instruction."

ADAM GARRY, PROFESSIONAL LEARNING SPECIALIST, DELL, INC.

"Electronic creation and delivery of classroom lessons and supplemental material can open up new techniques for teachers, plus expand the availability of content to students and parents through the Internet. The end result is that students' learning and retention is improved when content is provided in a way that is familiar to them."

MIKE KUJANSUU, EDUCATION MARKETING MANAGER, TECHSMITH

"The use of digital imaging in the classroom can touch students on many levels, from visual literacy projects for decoding words and sentences in learning languages to more advanced applications that employ the use of images for math and science. This can include the use of cameras, camcorders and printers, including projects were students can create a 3D object, print, cut and then assemble. This exercise provides elementary students with the basic skills used in engineering, which can evolve into advanced engineering applications."

KIMBERLY CARRETTE, MANAGER, CANON EDUCATION SALES

"By seamlessly integrating an immersive high definition video experience with unified communications and a simple, intuitive touch-and-swipe user interface, digital teaching is elevated to extraordinary new levels. This enables teachers and faculty to become more effective and stay focused on students and not on technologies."

GAVIN LEE, DIRECTOR GOVED INDUSTRY VERTICAL MARKETING, AVAYA INC.

"So much is riding on the decisions we make in education today. From workforce preparedness to global competition, it is crucial that educators and parents understand the full picture. The 21st-century classroom is a balance of creativity, technology and professional development. Take away any one element, and it simply will not work successfully."

BOB KIRBY, VICE PRESIDENT K-12 EDUCATION, CDW GOVERNMENT LLC

"In the course of our work, we run across hundreds and hundreds of teachers who are providing their students with a technology rich collaborative classroom environment. We need to continue to give those teachers — and many more — the technology tools and materials they need to continue to emphasize problem-solving, critical thinking, and the other skills all students will need to succeed in college and the 21st century."

JAIME CASAP, GOOGLE EDUCATION EVANGELIST

"The new digital classroom is about engaging students in each lesson. The range of our document cameras allows teachers to present high definition images from anywhere in the classroom. Our new wireless camera permits the lesson to move to the center of the room, or from learning group to learning group."

CHRIS LAUGHARY, LUMENS

goes on both in and out of the classroom. To get the transformative value out of the new technologies, teachers and instructors need professional development focused on acquiring new teaching strategies and pedagogies. Applying new technologies to the same old way of doing things is not the pathway to success. Professional development has to blaze a new and better trail for teachers and instructors to follow.

Professional training programs that implement fundamental change — not just skills refreshers, but brand new skills development and utilization — often must help employees overcome fears that introduction of new technologies may come at the expense of a teacher or instructor workforce. Unfortunately, the capacities of educational technologies can be seen by some teachers as a threat to the profession, generating fears that the technology might eliminate or greatly alter the need for teachers, enable greater class sizes or even a greater number of course assignments since elements of content preparation and delivery can be removed from the teacher.

These fears must be dealt with as part of the professional development program. Ideally, professional development can help teachers and instructors see the new classroom and teaching environment as liberating. Instead of focusing their time and attention on lecture and content delivery, teachers can spend much more of their time and attention on helping students understand why the content has meaning for them. They can guide learning activities that focus on higher learning skills, such as drawing real-life applications, investigating conflicting ideas, drawing conclusions based upon empirical evidence and making observations with an inquiring eye. Combining these activities with the ability to use experiences and training to reach students with varying learning styles and challenges can be very rewarding. This next section of the Special Report will focus on the importance of professional development in digital teaching and what needs to be addressed when implementing a professional development program at your school or district.

## PROFESSIONAL DEVELOPMENT: FROM CRUTCH TO CRUSADER

Professional development goes by many names and comes in myriad variations. "Continuing education" is the moniker used in many professions, "train the trainer" workshops in the corporate world, or simply "employee training." Whatever the name, the overall goal of professional development is the same: to further develop the skills, knowledge and abilities that are needed to get the job done in a changing employment environment. In the context of technology training for educators, the goal is to transform teachers and instructors who use technology only as a secondary crutch into digital crusaders who are committed to using technology creatively to improve the classroom experience.

> "PROFESSIONAL DEVELOPMENT IS THE SINGLE MOST IMPORTANT STRATEGY SCHOOL SYSTEMS HAVE TO ENSURE ALL EDUCATORS HAVE THE KNOWLEDGE AND SKILLS TO ENABLE ALL STUDENTS TO MEET STATE STANDARDS. TO PREPARE ALL STUDENTS FOR THE 21ST CENTURY, TECHNOLOGICAL KNOWLEDGE AND SKILLS ARE PART OF THE ESSENTIAL CURRICULUM FOR BOTH TEACHERS AND STUDENTS. TECHNOLOGY ENHANCES PROFESSIONAL LEARNING BY SUPPORTING IMPROVEMENTS IN CLASSROOM INSTRUCTION AND SPREADING BEST PRACTICES FROM CLASSROOM TO CLASSROOM, SCHOOL TO SCHOOL, AND SYSTEM TO SYSTEM."
>
> STEPHANIE HIRSH, EXECUTIVE DIRECTOR, LEARNING FORWARD

To enable this transformation, certain core concepts have to be a part of every educational institution's professional development program. The program not only has to be unique to education, but it has to account for the rapid evolution of technology in the educational field.

### CONTINUOUS LEARNING

In the context of rapidly changing workplace technologies, professional development is absolutely essential for all employees to keep pace. The business community has found that one-shot training programs are not sufficient. Likewise, teachers and instructors need access to continuous learning programs. Technology is changing the day-to-day tools used by teachers and students in the classroom. The tools used to access

curriculum and content in the classroom are shifting from paper books to digital media. The content itself is shifting from static, or flat, publications to interactive programs, simulations and games. These are not small changes, and teachers need help improving their skills, expanding their pedagogical approaches, and accessing the new digital content. Ongoing professional development that is flexible for the constant change in technology is a must.

### COMMITMENT OF TIME

For many teachers, it is hard to find the available time needed outside of the classroom for professional development. With technology extending the classroom day and allowing teachers to access materials at home, it is almost impossible. But time needs to be set aside for meaningful professional development to occur. Many K-12 teacher contracts require that they be given a minimum number of hours or days per school year for professional development activities. Similar requirements for professional development in higher education are less formally structured, but are still there.

The commitment to professional development can be seen in the widespread availability of technical training for instructors on new classroom technologies. The commitment is also found in support given to faculty participation in regional, state, national and global academic meetings and conferences where professors and instructors gather together to learn from each other about the latest developments in their field. However it occurs, it is vital to work professional development into teachers' schedules and help teachers find the time necessary to focus their attention on learning how to become effective digital teachers.

### CONTINUOUS DEVELOPMENT THROUGH ALIGNMENT WITH PROFESSIONAL PROCESSES

School districts generally place the responsibility for organizing and delivering professional development content with both the information technology department and the curriculum and instruction department. Because educational technologies cross between these two departments, the best professional development efforts must be carefully coordinated to avoid duplication or possible conflict between groups. Professional development within higher education tends to be somewhat more integrated into a single, university-wide center for teaching and learning.

> "WITH THE U.S. EDUCATION SYSTEM CONTINUING TO LAG BEHIND GLOBAL COUNTERPARTS AND U.S. TEACHERS RECEIVING A FRACTION — ONLY ABOUT 15 PERCENT, ON AVERAGE — OF PROFESSIONAL DEVELOPMENT SUPPORT COMPARED TO TEACHERS IN OTHER NATIONS, THE URGENT NEED FOR [GREATER FOCUS ON PROFESSIONAL DEVELOPMENT AND CONTINUOUS IMPROVEMENT] IS CLEAR."
>
> STEPHANIE HIRSH, EXECUTIVE DIRECTOR, LEARNING FORWARD

In both K-12 and higher education, those responsible for professional development have the primary obligation of establishing easy access to appropriate training materials. Some departments have embraced digital teaching to the point of mandating digital lessons as well as providing a financial incentive for instructors to share these resources with peers.

## THE TOOLS OF THE TRADE: MATCHING TRAINING TO NEEDS

In designing effective professional development programs, one of the most difficult challenges is correctly determining what the workforce needs. Where are the gaps in skills, knowledge and abilities? Because this question is so critical, there is increased attention being paid to assessments and evaluations as crucial steps in determining the content areas for professional development. IT and curriculum and instruction departments, as well as centers for teaching and learning, are deploying more assessments and surveys to gauge the training needs of their staff. Regular teacher evaluations completed by students can also demonstrate areas of excellence as well as weakness. On the back-end of training, assessments are also utilized to determine if professional development has made an impact in the classroom. In this age of accountability,

if professional development programs are not having a measureable and positive impact, chances are the program will be cut, restructured or both. There is little room in the budget for programs that do not deliver tangible results.

Unfortunately, there is evidence that we are still missing the mark in technology-related professional development. According to a recent study of professional development programs, "American teachers say that much of the professional development available to them is not useful." While teachers give relatively high marks to content-related learning opportunities, with 6 of 10 teachers (59 percent) saying this training was useful or very useful, only a small percentage found much value in the professional development they received in using technology in the classroom (14 percent). These are disturbing results that highlight the need for schools, districts and higher education institutions to recommit themselves to the task of developing effective professional development programs dealing with new technologies.[1]

## Professional Development Firsthand: Rolling Out a 1:1 Initiative

At Marquez Charter School in California, school leaders knew it would take time to prepare teachers when the school began its 1:1 initiative. The school devoted two years to the cause, having early-out school days on Tuesdays and Thursdays to get teachers ready. On Thursdays, the school allocated an hour and a half to technology professional development just so teachers had time to share and to learn from one another through the implementation.

**First year professional development topics:**

- Using new applications
- Utilizing shared space
- Saving on the server
- Creating slide shows and using other classroom presentational tools
- Creating word processing documents with additional tools from applications

**Second year professional development topics:**

- Integration of curriculum with technology
- Subject by subject exploration
- Creation of student digital portfolios

Overall, the professional development demonstrated the capabilities of the programs and reinforced how to use them. Teachers emerged with a road map of a solid integrated technology lesson.

### ONGOING LEARNING MUST BE PRACTICAL AND AVAILABLE

Part of the challenge schools can have in providing appropriate professional development is the significant range in teacher skill level. On one side of the spectrum are experienced teachers who have been in the classroom for 30 years or more, some of whom may already be contemplating retirement. These teachers will have undergone their formative professional training long before information technologies were a staple in our lives and in our classrooms. Some will have already adapted to computer and communications technologies, but many will be faced with the challenge of trying to use unfamiliar gadgets in their daily work. They may feel a sense of uncertainty and even fear. Can I master this new technology? How long will it take to become proficient? Will my students know more than me? Is my job at risk? Will I be effective in this new teaching method?

At the other end of the spectrum, the most recent graduates from schools of education will likely be "digital natives," who grew up with computers, laptops, pods of all kinds, cell phones, and PDAs, and whose programs of study may have included courses on using technology in the classroom. These teachers and instructors would find training focused on the basics of technology to be boring and a burden.

Professional development must strike the balance by including programs that are both practical and readily available just when a teacher or instructor needs it. We need just-in-time learning. Given the pressure on the educational system to improve quality and performance, and with the increase in accountability, these types of professional training programs are needed

"WHEN WE THINK ABOUT ALL PROFESSIONAL EDUCATORS, ONE OF THE THINGS WE CAN STOP USING AS AN EXCUSE OR MANTRA IS THAT TEACHERS ARE NOT TECH SAVVY, CANNOT USE THE TECHNOLOGIES, AND NEED AN EXTENSIVE AMOUNT OF PROFESSIONAL DEVELOPMENT. WHAT WE NEED TO DO IS CHANGE THE CONVERSATION AND MAKE SURE TEACHERS DO HAVE PROFESSIONAL DEVELOPMENT TRAINING ABOUT HOW TO MEET THE NEEDS OF THIS GENERATION OF STUDENTS, ABOUT HOW THE PEDAGOGY CAN CHANGE AND ABOUT THE KINDS OF THINGS THEY CAN DO DIFFERENTLY BECAUSE THEY NOW HAVE ACCESS."

KAREN CATOR, DIRECTOR OF EDUCATIONAL TECHNOLOGY, U.S. DEPARTMENT OF EDUCATION[2]

now more than ever before. Furthermore, they must be presented in a personalized way that best meets the needs of each teacher or instructor.

The ideal is to find that sweet spot for each teacher or instructor that aligns their professional development coursework with their real needs. Because there is such wide variation within the workforce, the challenge for professional development is to build the capacity to offer an equally wide variety of training resources. Many information technology departments have answered the call of juggling the wide spectrum of training by utilizing screen capture software so that teachers can train on-demand with the topics of their choice. This is more common right now in higher education than in K-12, although school districts around the country are beginning to see the value of providing short, digestible training videos on everything from the learning management or course system to core computer software programs.

### TAKING ADVANTAGE OF THE TECHNOLOGY FOR TRAINING

Advances in technology have greatly expanded access to training materials for professional development. All of the educational technology tools mentioned in the first part of this Special Report have related applications in professional development. From desktop computers to tablets and netbooks, from e-readers to pads and pods, from interactive whiteboards to document cameras, there are training materials available online from manufacturers, resellers and professional development service providers. There is no shortage of material or professional development providers. Finding the correct one for the right faculty member is the key to success. These technologies tend to be fairly stable in their basic engineering and use. Furthermore, most tools allow for ongoing enhancements that can help a school modify the content to add relevancy.

A much more difficult professional development challenge arises when the technologies themselves are experimental or there is an integration of existing technologies into a novel, complex system. A good example can be found in the technologies used in some distance classes. While videoconferencing is certainly a mature technology in the commercial sector, its consistent use in the classroom can present some obstacles. Lines can drop, latency delays can interrupt the flow, systems can fail to link properly, and coordinating the technology requires specialized skills. Indeed, technical skills are required to successfully maintain and operate this equipment that may be beyond the support offered with current resources. For this and other reasons, educators should refrain from rolling out a technology that cannot be supported by either the IT department or with proper professional development.

The pressure on schools, districts and higher education to demonstrate results while containing costs has never been greater. New tools can improve student

"WHAT WE ARE TRYING TO DO IS HELP PEOPLE COME TO TERMS WITH THE FACT THAT TECHNOLOGY IS CHANGING ALL THE TIME; IT IS CHANGING RAPIDLY, AND WE ARE TRYING TO HELP THEM DEVELOP THE SKILLS THEY NEED TO RIDE THAT WAVE AND BE ABLE TO ENGAGE IN THEIR OWN EVOLUTION OF TECHNOLOGY AS EXPERTS."

DR. BRADLEY COHEN, ASSISTANT DIRECTOR, MANAGER OF FACULTY DEVELOPMENT PROGRAMS AND CONSULTATION SERVICES, UNIVERSITY OF MINNESOTA

learning in ways that can be directly measured and assessed. Future support for classroom technologies, as well as for teachers and instructors, will depend upon demonstrating these improvements quantitatively, especially when return on investment will set a benchmark for further investments.

In short, teachers and instructors can use the opportunity presented by these new technologies to take their profession to the next level of performance and sophistication. The digital education revolution is the perfect time to make this change — when the basic role of the teacher and instructor in the classroom is undergoing examination and revision. Now is the time to embrace and drive the change, instead of trying to resist the inevitable.

## CONCLUSION

Around the country, instructors are reinventing themselves as 21st-century digital teachers in this new technology classroom environment. Digital devices are more mobile and convenient, digital curricular materials are more comprehensive in scope and content, and the classroom is now connected to the world. As a result, classrooms are becoming more interactive and students are increasingly engaged. In this report, we have included success stories to illustrate what this looks like. The Q2 Special Report will explore the increasing mobility of students and teachers and its impact on education. We will also discuss the security concerns that arise in a mobile age.

Teachers and instructors can use the opportunity presented by these new technologies to take their profession to the next level of performance and sophistication. Now is the time to embrace and drive the change, and now is the time for education leaders to make the investment in professional development to help the workforce seize the future. Digital teaching without sufficient professional development is guaranteed to be short lived by a select few, but with robust professional development supported by institution leaders, the lifespan will be long and fruitful for many.

## ENDNOTES

1 See www.nsdc.org/stateproflearning.cfmand at http://www.srnleads.org. The report is part of a larger study, *The Status of Professional Development in the United States,* a multi-year research initiative.

2 *Education Week's* Leadership Forum "Unleashing Technology to Personalize Learning," was a live, in-person forum, held Oct. 5, 2010, in Washington, D.C., for district-level personnel charged with maximizing the effectiveness of technology in education. http://www.edweek.org/ew/section/video-galleries/october05-event-edtech.html#cator-pd

# Solutions for Success

Technology is constantly changing, and keeping up with it is important, especially in education. Teachers must embrace technology to teach students today. But having the best tools does not always guarantee success, especially if no one knows how to use them. Educators who recognize this know having teaching staff trained on the latest technology is essential.

Today's technology is widespread, and learning it requires more than just completing a tutorial or reading a manual. It requires hands-on training and an instructor to guide learners through the process of using that technology.

SMART Technologies believes that the key to a successful implementation is continuing to work with educators to help them use the products to their fullest potential. SMART offers training options for all needs and budgets that are both convenient and cost-effective, allowing schools to save on two of their most important resources — time and money.

With a full range of training courses, from online to on-site training, through to certification that allows educators to become SMART Certified Trainers, SMART Technologies aims to ensure that all customers can make the most of their technology implementations, regardless of time and budgets.

## Providing Flexible, Convenient Training

SMART's training solutions go beyond just how to use the product. Users also learn about integrating products into their workflow, as well as how to use the tools to enhance their lessons, keep students engaged and improve learning outcomes. SMART provides schools with convenient training options that work with any experience level — beginner to professional. Create your Personal Learning Environment on the SMART Learning Space (https://learningspace.smarttech.com) and pursue a learning plan that is aligned with your professional development needs.

## SMART Provides an Array of Training Offerings to Fit Your Needs

**Live Online Training** — Attend training sessions online without having to incur travel costs. And because the training is live, any questions or comments you have can instantly be answered by an online instructor.

**Distance Learning** – Learn at your own pace and convenience. Distance courses support comprehensive learning in a number of areas over extended periods of time.

**Training Events** — Experience high-impact, multi-dimensional courses that will impact the way you teach and facilitate learning. SMART offers training at multiple times throughout the year at locations all over North America.

**On-Site Training** — Bring a SMART Certified Trainer to your school or district. On-site training is one of the simplest and fastest ways to train a large number of educators at once.

**Certification** — Become a SMART Certified Trainer. This coveted distinction gives you the skills to share your expertise with others and ensure you are making the most of your technology investment.

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SMART™

**SMART Technologies**, the global leader in interactive whiteboards, develops easy-to-use integrated products and services that improve the way the world works and learns. For more than 20 years, innovation and commitment to excellence have been at the core of our business. Through engagement with the education community, we help educators achieve better results with technology products that support student-centered learning. More information on SMART products and services can be found at **smarttech.com**.

To learn more about SMART training solutions, please visit **smarttech.com/training**.

# Broadening Technology Learning Objectives

Education today means providing students with the skills that will be relevant tomorrow, which includes teaching them how to use the latest technology. A decade ago, teaching students how to use a computer was the sole technology learning objective of many schools. But today, schools must expand their objectives beyond computers to include other devices such as digital cameras, a standard component of today's technology.

The use of digital images and video as an interactive medium is a major part of media literacy. Students can use cameras to create a slideshow for class projects or use video to interact with schools in other parts of the country or even across the world.

Canon provides schools with a wide range of digital cameras and camcorders with incredible image quality to teach students, including a professional line of cameras and camcorders.

## Capturing Still Life

Digital cameras are a great tool for students to use, and Canon has many cameras that can fit the needs and budget of any school.

The Canon PowerShot is a line of simple point-and-shoot cameras with many additional features that are well suited for students. The PowerShot D10 camera is even shock and waterproof, making it an excellent choice for elementary schools to have students handle.

For junior high and high school students, Canon has an array of advanced point-and-shoot and professional digital, single-lens reflex (DSLR) cameras available. These SLRs are a great addition to any photography class and are excellent cameras to teach advanced skills.

## Shooting Video

Canon's camcorders have a crisp video quality that can be used for a variety of different assignments, such as weekly news broadcasts. Students of all ages can learn to use camcorders to make their own movies using built-in creative cinema filters for special effects.

There are many Canon camcorders for schools to choose from, including an entire product line that offers full HD video for sharper picture quality. Canon's VIXIA camcorders offer many sought-after features, such as full HD video, internal memory and dual memory card slots, all in one compact package. VIXIA camcorders offer superior video quality and versatility, so they can be used from elementary all the way to high school.

High-end HD camcorders are also available, an ideal choice for junior high and high schools that teach videography. These camcorders can be used to create student movies and also are great to use for school events, like dances or assemblies. Network (IP) cameras also have the ability to stream video to and from other classes in real time for distance learning and virtual field trips.

Canon's line of cameras and camcorders can give educators the tools to keep students up to date with today's demanding technology requirements. Canon offers cameras and camcorders for students of all ages, and at all levels.

**The PowerShot D10 is a durable camera** that will last schools for years and has a bevy of features that make taking pictures fun.

- ✓ Shockproof—so it will work even after dropping it.
- ✓ Waterproof—so rain and swimming won't ruin it.
- ✓ The DIGIC 4 Image Processor has an advanced Face Detection Technology that tracks moving subjects.
- ✓ 12.1 megapixels and a 3X Optical Zoom lens make it easy for anyone to take stunning photos.
- ✓ The Smart AUTO function can select proper settings for different shooting conditions.

From academics to administration, the Canon Education Sales Department is a one-stop solution for all of your imaging needs, with devices that range from Digital SLR cameras for photojournalism to HD camcorders that record events and movie productions. Additionally Canon's multifunction printers can print, copy, scan and fax a variety of different media such as documents, books, photos or negatives. Network (IP) video cameras, for security and distance learning, and multimedia projectors are also available.

Canon

For more information, please visit **www.usa.canon.com/educationsales**, email us at **canonsales@sedintl.com**, or call **800-344-9862**.

# Canon: Serving Diverse Student Needs and Skills

College students today are coming to campuses looking to learn skills that will set the stage for their careers. While most students have a camera or camcorder of some sort, students who are interested in learning photography and video want to train using professional equipment. Besides visual art students, more and more undergraduates are using cameras and camcorders for class projects or college events.

Universities and colleges across the country are looking to invest in quality cameras that can last in media centers and other departments for years to come. Not all campuses are the same, so Canon offers a range of cameras that can fit the needs of any college or department.

## Professional Training and Learning

Canon's line of digital single-lens reflex (DSLR) cameras and camcorders are great tools for visual art students. These cameras and camcorders can enhance any video or photo class when teaching the fundamentals of production to students.

Considered an industry standard, many Canon EOS DSLR cameras go beyond capturing still images by offering full HD video capability and have superior image quality as well. The EOS cameras also feature an integrated cleaning system that cleans collected debris on the image sensor. This means less maintenance and ensures longer life for the equipment. Additionally all of those EF lenses sitting around from film-based EOS cameras work on the EOS DSLRs, saving a school money when it's time to convert from a film lab to a digital environment.

## Cameras and Camcorders for All

Many other students want to use digital cameras and camcorders too. Using digital images and video in class projects is becoming increasingly common, and it is imperative that schools provide some equipment that students can use. And many universities are using digital cameras and camcorders to capture events, like shows or club mixers. Canon's point-and-shoot cameras and personal camcorders are ideal choices for media centers that allow students and faculty to check out equipment for such purposes.

The Canon PowerShot series offers durable, compact point-and-shoot cameras with excellent image quality. These easy-to-use cameras have many practical features, such as face detection, and most capture HD video as well.

The Canon VIXIA series camcorders record video in stunning full HD quality and take still images too. The VIXIA camcorders have internal flash memory, dual card slots and an extended battery life, so users can record for longer time periods.

Specialized departments and campus media centers want to buy cameras and camcorders that fit the needs of their students. Canon offers a variety of consumer and professional products with the latest features that meet the wide range of needs that exist in today's colleges and universities, while staying well within a school's budget.

**Canon EOS Digital SLR cameras are an industry standard,** are equipped with some of the most sophisticated technology available today and make an excellent choice for college students.

- ✓ Go beyond still photos — several Canon EOS models have HD video capability.
- ✓ Canon's CMOS sensors produce crisp image data and reduce power consumption.
- ✓ The EOS Integrated Cleaning System uses both mechanical and software methods to clean accumulated dust on the imaging sensor of EOS cameras, which means less maintenance.
- ✓ Canon has more than 60 EF lenses compatible with EOS digital SLR cameras — providing users with a wide range of shooting capabilities.

Canon

From academics to administration, the Canon Education Sales Department is a one-stop solution for all of your imaging needs, with devices that range from Digital SLR cameras for photojournalism to HD camcorders that record events and movie productions. Additionally Canon's multifunction printers can print, copy, scan and fax a variety of different media such as documents, books, photos or negatives. Network (IP) video cameras, for security and distance learning, and multimedia projectors are also available.

For more information, please visit **www.usa.canon.com/educationsales**, email us at **canonsales@sedintl.com**, or call **800-344-9862**.

# Sharp Focus

*The right technology helps teachers focus on students and schools improve efficiency.*

With today's tight budgets and increasing demands, schools and campuses need technologies that produce results. Whether providing new tools in the classroom, responding to growing enrollments or improving security, educational institutions need affordable technologies that make a difference.

Avaya provides video, voice and unified communication technologies that meet the needs of today's schools while simplifying their communications architecture to dramatically reduce costs and energy consumption.

Avaya empowers teachers and faculty to be more effective by allowing them to stay focused on students, not processes or technologies. Avaya's video collaboration solution with the Avaya Flare™ Experience offers an intuitive touch-and-swipe user interface to let students and teachers start to conduct learning sessions and build study groups instantly.

Whether improving distance learning, giving students greater access to resources or providing better voice and video service over IP, Avaya solves problems and increases productivity for students, faculty and staff.

Unified communications from Avaya means real-time communications and collaboration with voice, video and data all on the same network. It provides quick, reliable and easy access with a consistent user experience, whether using desktop video, social media, audio/video/Web conferencing, desktop phone, cell phone or other method of communication. And with everything on the same platform, schools can lower their costs.

With Avaya, students, faculty and staff can all communicate seamlessly. It's easy to share documents during a video session or to see the history of your communications with someone — all IMs, e-mails, call logs and Facebook activity. Users can easily communicate with others not on the main conversation. Or users can quickly browse the Web to find content to share.

With Avaya handling the technology, teachers can focus on their students — keeping them engaged with media-rich content like never before.

**Avaya is breaking new ground** in cost points and performance — making it easier than ever for educational institutions to afford high-definition video conferencing, opening up opportunities for new applications and venues previously deemed cost prohibitive. Avaya technologies make collaboration and group learning more effective than ever, with crisp images and sharp sound quality. Avaya enables educational institutions to:

- ✓ Create and extend new learning opportunities
- ✓ Enhance inclusion for homebound students
- ✓ Offer educational opportunities to more students in more locales
- ✓ Provide student mentoring at a distance
- ✓ Extend the reach of guidance counselors
- ✓ Increase opportunities for international study
- ✓ Provide collaborative environments for faculty and staff
- ✓ Enable students in numerous locations to collaborate on projects with one another
- ✓ Avaya solutions cost less than others, and its bandwidth-management capabilities allow Avaya to require less bandwidth

AVAYA

INTELLIGENT COMMUNICATIONS

Avaya is a global leader in enterprise communications systems. The company provides unified communications, contact centers, data networking and related services directly and through its channel partners to leading businesses, governments, educational institutions and organizations around the world. Enterprises of all sizes depend on Avaya for state-of-the art communications that improve efficiency, collaboration, customer service and competitiveness. To learn more about the Avaya Flare Experience, visit www.avaya.com/flare.

**For more information about Avaya solutions for education, please visit www.avaya.com/education.**

**TechSmith Gives Educators the Tools to Engage Students in New Ways:**

- TechSmith's family of educational solutions let students view and listen to material in any way they like — on their computers, iPods, phones and more — at any time.
- Using Snagit, Camtasia Studio and Camtasia Relay lets students learn at their own pace. Recorded lectures, video tutorial and other content made available for later viewing make it easier for students who don't yet understand a concept to catch up because they can review the materials later.

# TechSmith Enhances the Educational Landscape

**With the integration of technology in education,** it's more common for teachers to receive e-mails or text messages from their students asking questions about a particular subject or assignment. While this has improved communication between students and instructors, learning outside the classroom isn't as effective as it could be because e-mails provide little help beyond what students already can see in their textbooks.

Now teachers can give their students a complete learning experience when they use education solutions from TechSmith. Instead of teachers referring their students to a particular reading, lecture notes or assignments, teachers can use TechSmith's range of interactive teaching tools, which include images, video and audio, to connect with students and help them retain information. The educational tools from TechSmith include Snagit, to quickly capture what's on screen; Camtasia Studio, to record video of on-screen actions; and Camtasia Relay to record lectures and quickly post them to the Web.

## Snagit

Snagit lets users capture their entire screen or just a part of it, simply by clicking a mouse or pushing a hotkey. Then users can edit, organize and share images. Use Snagit to create a step-by-step guide, using screenshots, and post the material online. Students can also use Snagit to easily capture images online for interactive projects or presentations.

## Camtasia Studio/Camtasia for Mac

Camtasia lets users record actions on their screen quickly and easily to create their own training, demo and presentation videos. Camtasia also allows users to edit and share their recordings and is available for Mac and Windows platforms. Using Camtasia to record on-screen, teachers can create a video tutorial showing students how to do algebra problems. Then teachers can post the tutorial for students to see and get a visual understanding of key concepts.

## Camtasia Relay

Camtasia Relay records presentations, meetings and lectures and allows users to automatically publish them. Users can edit video and audio with Camtasia Studio or Mac, and Camtasia Relay includes a presenter dashboard to keep track of videos. An instructor can record a lecture and post the video instantly for students to see for later reference. Plus, giving students access to a recorded lecture can help them stay engaged in learning and participating, instead of racing to write down every word.

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## Create the engaging content students love

**With TechSmith software — like Snagit and Camtasia Studio — educators can create anything from eye-grabbing images for presentations, to on-demand video lessons recorded straight from their computer screen. It's easy to create engaging, visual content with TechSmith's family of software solutions.**

TechSmith

# Cognite™: Providing Interactive Digital Solutions for K-12

The rapid acceleration of technology has transformed the way we run schools and teach students. Teachers and librarians have seen their roles expand in today's digital age. Cognite from Follett Software provides educators with the right platform to expand learning beyond the classroom.

Cognite is a digital learning management environment that lets educators discover, share and organize learning materials and allows teachers, students and parents to access them and collaborate from most Internet-enabled devices.

Designed with K-12 educators in mind, Cognite gives them the opportunity to share ideas, lesson plans and other teaching aids across schools or districts. It even has mobile phone apps so teachers, parents and students can check messages or stay up to date with students and administrators.

Implementing Cognite is simple and hassle-free. You can install it directly onto a school or district server, or it can be hosted in a software-as-a-service model.

As more and more digital resources become available, the demand for educators to integrate technology into the classroom has never been higher. Follett's professionals can quickly and easily integrate your school's electronic resources in Cognite.

**Follett's Professional Development** courses assist educators in learning how to use Cognite to their advantage. And Follett Software offers a variety of learning options to fit the needs of busy professionals, including on-site training, webinars and e-learning modules, so educators can focus more attention on what matters most: students.

**"Parents now know what's going on with their kids in the classroom. Whether at home, at work, or even using an iPhone app, parents are connected, which is critical."**

*— Bert Whittier, sixth-grade English teacher, Melrose Middle School, Melrose, Mass.*

Cognite is the latest addition to the Follett Software solution suite supporting educators and engaging students in today's digital environment. View our video and learn how Cognite inspires student success and maximizes education resources. **www.FollettSoftware.com/Cognite/demo.cfm**

## Maximize Your Resources

For today's educators, having to work with less is an immense challenge with few viable options. With Cognite, your district or school can streamline digital resources into a single location that can be shared with other teachers and be accessed year after year. This central system can also implement curriculum changes quickly and easily throughout a school or district in very little time.

## Save Time

No more separate make-up work for absent students, because they can access their assignments at home and return homework on time. Teachers can prepare lessons plans and archive them for future use. Using the Standards database product embedded in Cognite, educators can ensure their curriculum is meeting the state or provincial standard. In addition to supporting content searches based on standards, Cognite correlates original teacher-created content to Standards.

Cognite further helps students and teachers through integration with Turnitin® Web-based plagiarism prevention, peer reviewing and paper grading solution.

## Encourage Engagement

If students and parents are engaged, then students are likelier to succeed. Individualized learning is encouraged through the Project Spaces feature. Parents and students have access to your school's library resources 24/7 with Cognite along with your school's other digital resources. Using Cognite, parents can be on the same track as teachers, and together, can encourage a student's performance. Through Cognite, communication is easy between teachers, administrators, parents and students with the messaging application. And with Cognite's mobile apps — which are now available via iPhone and Android — parents, students and teachers can collaborate easily.

Follett® Software Company

A Follett Corporation Company

Combining proven thought leadership with digitally powered, K-12 technology solutions, Follett Software Company helps sustain a rich, collaborative, 21st century learning environment that supports student success. Follett's integrated educational technologies, training and services help districts achieve better results by maximizing resources—from library materials, digital content, textbooks and other assets, to school and student data.

**Learn more at www.FollettSoftware.com or call 800-323-3397.**

# Google Cloud Solutions to Control Growing IT

Maintaining on-site e-mail and application services for a large user base can be an enormous and costly task, requiring staff, expensive hardware and even additional space. But maintaining these services on-site is especially challenging when schools are being told to operate on tighter budgets.

Google Apps for Education helps schools cost-effectively offer the services students and faculty need by migrating these services to a cloud system. Google Apps enables easy communications and allows students, teachers and staff to collaborate. It lets students and educators e-mail, maintain their calendars, create and share documents, set up their own websites and host video. Additionally Google Apps provides schools with security and technical support, and can be accessed remotely from any location at all times. Schools have the option to implement ready-made solutions or integrate Google Apps into existing systems. And it's free to all nonprofit K-12 and higher education institutions.

## Cutting IT Costs and More

Implementing Google Apps can help schools maximize IT efficiency and save money. Because it's a cloud solution, Google Apps eliminates the need for hosted servers and — more importantly — the costs associated with maintaining them. Also, by moving e-mail and other services to Google Apps, school IT departments need not worry about maintaining and updating those services and can instead focus their efforts on providing better technology resources for education.

## Custom Solutions to Fit Different Needs

Google Apps provides schools with a variety of customizable tools. Schools can use open application programming interfaces to build their own custom applications or use them to integrate Google Apps with other educational platforms, such as Blackboard and Moodle.

Google Apps gives schools a flexible solution for e-mail and applications, while removing the hassle and costs associated with purchasing and maintaining expensive hardware.

## Google Apps for Education Is Free and Provides Your School:

### ✓ Gmail

Gmail gives students, teachers and staff up to 7 GB — and growing — of e-mail storage, while protecting them against spam and viruses. Gmail also includes IM and voice, video and group chat.

### ✓ Google Calendar

Google Calendar lets users collaborate with one another to schedule meetings and event reminders, and reserve rooms. It can even be used remotely on a mobile device, so items can be added to the calendar without users being on campus.

### ✓ Google Docs

Use Google Docs to create word processing documents, spreadsheets, forms and presentations. Google Docs also can be accessed by mobile devices, so collaboration can occur outside of campus.

### ✓ Google Sites

Create shared websites that allow your school to stay connected. These websites are simple to build and can include videos, pictures, audio, documents and much more.

### ✓ Google Video

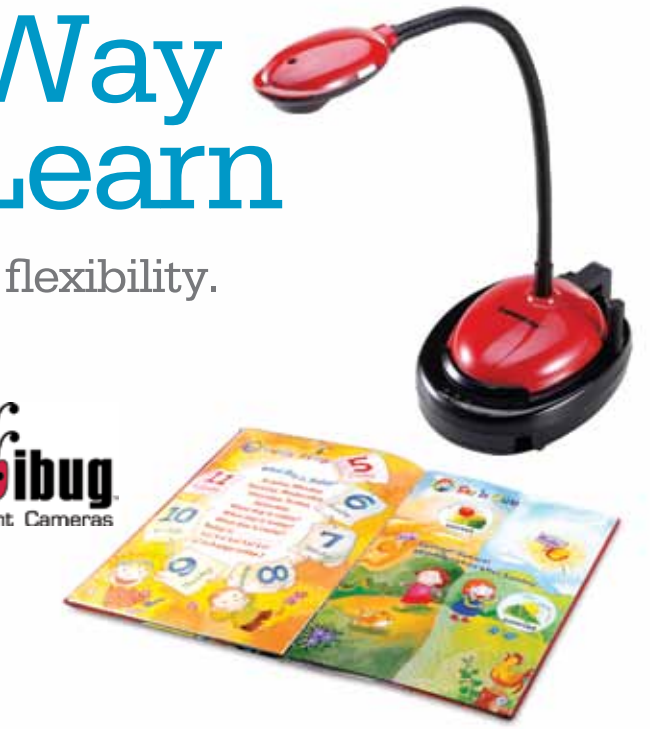
Upload your own videos securely and share them at school. Google Video even lets users comment, tag and rate videos.

**For more information, please go to www.google.com/apps/edu.**

Google™

# Teaching the Way Kids Need to Learn

## Document cameras offer educational flexibility.



As students become more technologically savvy and interactive at much younger ages, teachers must find ways to not only face their students, but also stay within their range of attention. Poorly placed classroom control panels or unwieldy carts can hinder teachers' efforts to manage their classrooms by walking around. Recognizing this impediment to effective teaching, Lumens — maker of the Ladibug line of Document Cameras — developed the world's first wireless document camera to address the need for teachers to hold students' attention by presenting a wide array of information from any location in their classroom.

Ladibug cameras have always had the ability to integrate with the teacher's computer workstation via USB connection, but the Wireless DC120 Ladibug FLYER goes beyond that, letting instructors turn the document camera into a wireless hub and power supply by attaching a simple adapter. As a wireless hub, it has no footprint on existing school networks, and can be easily secured to only allow those workstations with proper credentials to obtain a signal from the document camera.

Freedom from wires lets teachers send an image from any location in the classroom. This means that no teachable moment will be missed, whether it is from a lab table, classroom learning station or even a student's desk.

Putting the Ladibug to work in the classroom introduces students to content in new ways and encourages reluctant students to improve skills. Early learners depend heavily on visual cues for learning, so the use of a document camera meshes naturally with their preferred learning style. Math class, for instance, creates many opportunities for sharing visual information, over and above basic math operations such as addition, subtraction, multiplication and division. Whether it's science and art, or the basics of reading, writing and arithmetic, the ways in which the document camera can be used to stimulate young learners are countless.

### Reading Comes to Life

- Drill students on common "sight words" to help them learn the basics of reading.
- Let the entire class take turns reading aloud from the pages of a single book projected on the screen.
- Help students get the hang of looking up words in the dictionary by doing it together.

Ladibug Document Cameras

### Writing Made Visual

- Demonstrate proper letter formation for improved penmanship.
- Demonstrate poetry styles and construction, and then write as a class, by putting the emerging class composition side by side with a classic form.
- Show students' writing examples to provide positive feedback, reinforce effort or provide recognition.

### Math Made Mesmerizing

- Let students see geometric shapes, so they can readily identify polygons, quadrilaterals, polyhedrons and more.
- Illustrate fractions with numbers and pictures.
- Illustrate place values (i.e., units, tens, hundreds, etc.).
- Show students how to use common math tools, such as rulers, compasses and calculators.

As a value-added commitment, Lumens offers free manufacturer's training to all Ladibug users and an unmatched five-year replacement warranty. Training ensures that teachers know how to use all the powerful features of the Ladibug cameras, and the Lumens warranty provides peace of mind that any issues will be resolved in a timely manner.

Providing the digital tools teachers need is no longer a luxury. Increased and enhanced technology in the classroom is a necessity to keep pace with the continuing challenges of educating students. As students increasingly communicate with the world around them through digital, visual-intensive means, schools must stay ahead of the curve and engage students with teaching methods that appeal to this visually oriented generation. The Ladibug document camera is the solution to this growing challenge in schools.

Lumens™ Inspired Learning

Lumens offers high-definition multimedia document cameras that address the needs of today's schools. Our goal is to provide teachers with tools that enable innovative teaching techniques and let educators concentrate on their students and course content, rather than struggle with technological barriers. And we are continuously improving our product designs to offer the world's most advanced features.

For more information, please visit **www.MyLadibug.com**.

# Connected Classrooms: Enhancing Instruction the Digital Way

Education in the 21st century requires a strategy that engages students in ways that weren't even possible several years ago. Today's students are growing up in a digital world, where online collaboration and electronic media are part of everyday life. Educators must leverage technology and digital media to engage students and ensure they have access to the resources they need to succeed in the digital age. That's why we've developed the Connected Classroom, a model for integrating technology into the learning process to enhance and connect the entire educational system, including students, teachers, parents, administrators, the community and the technologists who provide the tools that underpin the learning environment.

Technology brings new opportunities to today's students by extending learning beyond the classroom, engaging them in new ways and helping them develop the skills necessary to succeed in the 21st-century workplace. By working with education leaders and key technology partners, such as Microsoft, Dell is committed to providing educational technology solutions that enable educators to transform education for the 21st century.

**Engaging tools, now and for the future:** Technologies from Dell and Microsoft give students the tools they need to cultivate a variety of crucial skills, from creativity to critical thinking and problem solving. Collaborative tools from Microsoft, such as Windows Live Essentials with Messenger, E-mail, Photo Gallery and Movie Maker, allow students to express their ideas in a rich multi-media format. The connected student is better prepared for college and career, and can work with teachers, parents, administrators, other students and the community on the same platform.

**In the classroom and beyond:** Dell Latitude netbooks and laptops with Microsoft® Windows® 7, Windows Live™ Essentials and Microsoft Office 2010 are vital tools for the 21st-century learner. Students and teachers can team up on projects at school or at home with Microsoft Office 2010 applications like Microsoft Word, Excel, OneNote and PowerPoint. They can post documents and share ideas online with Office Web applications. And students continue to learn and share even outside the classroom with mobile broadband and WiMAX connectivity options.

**Professional Learning for learning professionals:** Dell's Professional Learning services are designed to help educators incorporate technology into the learning process so they can reach educational goals. Covering a variety of topics from curriculum development, Internet technologies, media development, software integration, hardware integration and administrative training, Dell's Professional Learning offers schools and districts the knowledge they need to fully incorporate technology into their classrooms. The outcome-based model is built on a combination of research and classroom experience that can help educational institutions define technology goals and achieve them.

**Dell's** Connected Classroom solution empowers educators with the latest tools and professional development necessary to help improve student achievement, teacher productivity, administrator effectiveness and community involvement.

**Learn more about Dell and education at www.dell.com/k12.**

**Microsoft** works with local, national, and international education communities to create technology, tools, programs, and solutions that help address education challenges, while improving teaching and learning opportunities.

**Learn more about Microsoft and education at www.microsoft.com/education.**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# Successful Teachers Can Ensure Successful Students

Most of America knows what it takes to successfully teach students — effective teachers. Though everyone agrees good teachers are an essential part of education, viewpoints on how to measure and develop teacher effectiveness vary.

Some teachers unions and education think tanks believe teacher effectiveness cannot be measured. The media, parents and elected officials have often been on the other side of the argument, saying accountability is key to ensuring teacher performance. Unfortunately, in most districts, data collection and analysis mechanisms that can effectively tie teacher performance to student learning outcomes have not been deployed.

For instance, in 2010, the *Los Angeles Times* published a searchable database of the Los Angeles Unified School District's test scores showing how the scores corresponded to individual teachers. Many of the district's teachers had never seen the data before, and approximately 2,000 teachers requested their scores from the *Times*.

Teachers want this data too. Finding the right tools to analyze the information is necessary to help instructors understand their own effectiveness as well. A talent management system that uses this vital information can develop better teachers.

For years, educational institutions have invested in technologies, such as computers, Wi-Fi and even some longitudinal data systems, to make teachers more effective. But many do not track the human resources aspect of teacher development.

An effective talent management system can help schools correlate trends that make teachers successful and help educational institutions act upon those trends. For instance, schools could see if and how teachers with advanced certifications affect the quality of classroom teaching or how teacher attendance impacts student learning.

## Steps to Success

A system that can help districts recruit, retain and evaluate teachers and encourage them to improve student outcomes is entirely achievable. Districts should consider several aspects of staff development as they work to achieve that goal.

*Support from the beginning can ensure a long, successful career.*

When new teachers are hired, districts must take the initiative to train new teachers. Over time, teachers may accrue more certifications and improve their skills and talents. Districts must have systems to track certifications, coursework and more.

*Distinguishing good work and behavior.*

Districts should recognize and reward teachers with exemplary records. By keeping data on its most effective faculty, districts know which teachers can help drive educational initiatives.

*Finding the best way to integrate data.*

When choosing a system that incorporates different sets of data, districts must ensure the system can easily update faculty history and is accessible. Individual teacher data is important and tracking teachers' progress over time can even help them improve student achievement if necessary.

In addition to monitoring teachers, districts will have to lay out strategic goals, educational standards and classroom activities that also focus on student success. Measuring and increasing teacher effectiveness is an ongoing process, so having a good system that analyzes data and tracks a teacher's career is essential to improve student achievement.

To learn more, please download the Center for Digital Education's white paper, *Aligning Teacher Effectiveness to Greater Student Achievement*.

LAWSON™

Lawson provides solutions for school districts that combine mission-critical administrative and maintenance tools with value-added services.

Industry differentiating products including Lawson Teacher Contract Administration and Talent Management provide our customers with the tools to not only operate more efficiently, but to better align with their overall organizational objectives like managing teacher effectiveness to promote positive student outcomes.

Integrated enterprise-wide solutions from Lawson help streamline processes, adopt best practices, and help districts operate more effectively. Find out more at **www.lawson.com/publicsector**.

**Innovation #2,478**
Classroom of the Future

# Turn English 101 into English 2.0.


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Dr. Kari Kelso is a senior fellow for the Center for Digital Education. Dr. Kelso knows K-20 education from the inside out, having taught at the university level at three universities and having managed K-12 Assessment, Research and Evaluation Departments for 10 years.

CENTER FOR DIGITAL EDUCATION converge

The Center for Digital Education is a national research and advisory institute specializing in K-12 and higher education technology trends, policy and funding. Along with its research services, CDE issues white papers and conducts the annual Digital School Districts and Digital Community Colleges surveys and award programs as well as hosting events across the K-12 and higher education arena. CDE also supports the Converge media platform comprised of the quarterly themed Converge Special Reports, Converge Online, and custom publishing services.


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