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Leaving NCLB Behind Us

THE STATED GOALS of No Child Left Behind were noble ones, in keeping with the progressive aims of the original Elementary and Secondary Education Act. Who doesn’t believe, after all, that all American children should be afforded equal educational opportunities? But those stated goals turned out to be less of a driving principle for education reform than a bait-and-switch sales pitch for ill-informed policies that turned out to be a burden on schools and a disservice to the students the law was nominally designed to serve.

NCLB is, thankfully, no longer the law of the land, having been formally replaced just last month by the Every Student Succeeds Act. For that fact alone, educators have some cause to celebrate, as virtually any change to the law would have been a step in the right direction, if even a small one.

And indeed, the steps in the right direction contained in ESSA are small ones — so small that I’m not sure we can quite say that we’re entering a post-NCLB era yet. For example, while AYP is technically gone, responsibility for mandatory testing and “accountability” has merely been shifted to the states.

The good news, though, is that the form of those accountability systems has not yet been determined, so there’s time for educators to influence policy away from measures that pawn the blame off on the very people who have dedicated themselves to educating our kids — and who are, it should be noted with some irony, trained and certified by their respective states to do just that.

We know how to improve education for all students. It isn’t by punishing teachers or forcing busywork on them; it isn’t by holding school funding hostage; it isn’t by abandoning the very foundations of education to turn schools into test-taking factories or vocational training centers; it isn’t by reducing 13 years of formal education to a multiple choice test.

We know that “accountability” systems to date have not been aligned to education but to superficial measures of arbitrary outcomes. Those measures might be useful for some very narrow purposes, but they’re useless for conveying a real sense of the state of education or driving comprehensive education policy — and certainly inappropriate for meting out punishments against individual teachers.

The challenge we have to solve now in order to leave NCLB truly behind is determining measures that should be used (if any beyond the assessments of the aforementioned millions-strong state-trained and -certified professional teaching force). Is it arbitrary test scores? Or can we come up with something more meaningful? Or is Christopher Harris right when he posits on page 29 of this issue, “… [I]t seems that the education profession agreed that we are all too lazy to actually put in the work it takes to assess learning in an authentic way?”

I’d like to hear what you think an ideal accountability system for schools would look like or whether you think any should exist at all.

Please write to me or post your views online at thejournal.com/nclb.

To continue the conversation, e-mail me at dnagel@1105media.com.
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2. Platforms that enable more interactive video components.

Aaron Sams, co-founder of TurnAbout Learning LLC in Pittsburgh and former Flipped Learning Network chairman, said software makers are focused on making their video platforms more interactive for students. He said this strategy aligns well with the flipped classroom, where “we don’t want to encourage passive viewership; we encourage interactivity.”

Sams pointed to eduCanon, EDPuzzle and Zaption as three platforms that allow users to embed questions and other features into video content. When running, videos can stop at the one-minute mark, for example, and the software can pose a question to the students. “If they get it right, they move on,” said Sams. “If they don’t, the software kicks them back to the spot on the video where the instruction was given.”

3. Remote scientific laboratories.

Historically, science experiments were reserved for the school laboratory. Now, educational tools are making experiments possible at home — a development that could give instructors more in-class time to...
review difficult topics and concepts instead of handing out beakers and safety glasses.

“Lab time in a science classroom is often consumed by setup and cleanup,” said Jeremy Roschelle, co-director at SRI International’s Center for Technology in Learning. Done remotely, the same experiments can be paused, repeated and reviewed without the same time constraints. Students would bring their data to class the next day to analyze and interpret with the help of their instructors. The iLab Network at Northwestern University, for example, “creates experimental facilities via remote online laboratories that enable students and educators to use real instruments, rather than simulations, to carry out experiments from anywhere at any time,” according to the university’s site.

“This brings a very powerful sense of flipping,” said Roschelle, “using a number of worldwide portals that feature different remote labs set up for access by teachers and students.”

4. A place for centralized curriculum feedback.
At Elkhart Community Schools, Bennett’s team documents all of its curriculum contributions with the goal of sharing resources among one another. Using a platform like Google Drive or Office 365, teachers can discuss topics like:

- What worked and what didn’t?
- Which labs were most effective?
- What shifts need to take place?
- What adjustments need to be made?

“We’re trying to formalize the feedback process so that things can move a little faster and more smoothly,” said Bennett, who sees the repository as a good substitute for in-person meetings and the sending of documents back and forth to get to a conclusion. “Using the connected Web, we can hop on a document, contribute freely and then use the information in our classrooms,” said Bennett. “This is a valuable option in a world where it’s difficult to find in-service time.”

5. Improved digital storytelling tools.
As the set of available digital story-telling tools continues to improve, the flipped classroom is benefiting exponentially, according to Roschelle.

Annotating stories, indexing specific questions and identifying particular pause points have all been made easier with new technology.

“The earliest Khan Academy videos were just a video of someone [in front] of a blackboard. We’ve come a long way since then,” Roschelle explained. “Teachers now have an array of tools to use when creating content that students can view on their own time.”

6. The crystal ball: Tracking student feedback at the point of confusion or comprehension.
On Bennett’s wish list right now is an application that allows students to give feedback at specific points of the videos that they’re watching at home. This would help him pinpoint and fix any “problem” areas (e.g. insufficient instructions for difficult
Platforms like Blackboard and Canvas are playing a bigger role in the flipped learning environment. Other viable options include Google’s Classroom (pictured), which “automates” the sharing process but isn’t necessarily an organizational tool.

topics/tasks) and easily see where students are experiencing the most difficulties.

TechSmith’s now-retired “Ask3” video platform, for example, would have done the trick. It allowed users to watch a video and ask text-based questions at the point where playback was stopped. “I’d like to be able to look at my content and say, ‘Here’s a spot where there are a lot of questions and confusion,’” said Bennett, who also said he sees potential in an “I get it” button that would allow students to hit the button when everything clicks. “That would indicate the minimum viable video that I’d need to produce.” Learning Catalytics offers a similar product at a fee, Bennett said, “but I can’t charge my students $20 a year to use it.”

Bridget McCrea is a business and technology writer in Clearwater, FL. She can be reached atbridgetmc@earthlink.net.
3D Technologies Add Another Dimension to Learning

New enhancements to 3D instruction create a more immersive, interactive experience

IN SCOTT NICHOLS’ Principles of Engineering course at Pikesville High School in Maryland, students had a creative idea that could help people in developing countries receive better medical care.

Through research, the students discovered that people who suffer trauma might not get the attention they need because of a lack of doctors. They realized that if they could create a three-dimensional template for a generic arm cast, they could alter the file based on an individual patient’s arm measurements. With a small investment, developing countries’ medical facilities could buy a 3D printer that would cost much less than having a doctor on staff — and they could print a customized cast based on the patient’s measurements.

Using a new 3D scanning and modeling tool from HP, called Sprout, the students used three-dimensional scans of their arms to create a model cast file that could be altered based on the measurements of a patient’s arm and then sent to a 3D printer for creation. “Sprout allowed the students to bring their brainstormed ideas to life,” Nichols said. “They were able to create 3D sketches of their ideas and use the touch mat feature to rotate and ‘play’ with their ideas. It was almost as real as having a tangible prototype.”

Sprout is just one example of how 3D technologies are becoming more immersive and interactive, bringing a whole new dimension to K-12 learning. Students can capture, rotate and examine 3D images to design an invention that could revolutionize third-world health care, understand the inner workings of the human heart, explore the inside of a volcano — or take a virtual field trip to a faraway land.

Being able to manipulate 3D images “changes our understanding of what things are,” said Elliott Levine, chief academic officer for HP. “It gives students a greater understanding that the two-dimensional world [of images] fails to provide.”

Understanding How Things Work

Unveiled during the International Society for Technology in Education (ISTE) conference in Philadelphia in June, Sprout is an all-in-one computer and 3D scanner that enables students to grab an object from the physical world, manipulate it in the digital world and bring it to life using a 3D printer (not included).

With just a few taps, Sprout’s 3D Capture app creates a high-resolution, full-color 3D digital model that students can manipulate any way they choose, the company said. Students place an object on the touch mat and tap the scan button, which activates the device’s 3D cameras and sensors to capture a 3D color image of the object. Then, they follow the instructions to rotate and capture their object from multiple angles, and Sprout combines these images...
INTERACTIVE AV

Putting Excitement Back into Learning

At Lee Mathson Middle School in East San Jose, CA, students are using another immersive 3D technology called zSpace to explore the inside of a volcano, peel apart the various layers of the earth or examine a human heart as it’s beating.

“Sprout is a fantastic tool for any STEM-centric classroom,” Nichols said. “Throughout our Project Lead the Way course sequence, students focus on developing solutions to open-ended problems using the engineering design process. Essentially, the students identify a problem, brainstorm and sketch solutions to that problem, develop a tangible prototype, test the prototype and then use the feedback from the testing phase for future attempts. This machine allows students to experience a hands-on feel when developing solutions, without actually having to assemble a prototype.”

Sprout allows student to take a 3D image and stretch, rotate and manipulate it, which “substantially” aids in their understanding of how things work, Nichols said.

“It allows students to explore their ideas in a ‘real-life’ setting without facing the difficulties of actually producing the prototypes,” he said. Students are able to identify fundamental problems with their designs and avoid wasting time on developing non-working prototypes, leading to what he called several “ah-ha” moments.

Appealing to Different Learning Styles

Google soon will be rolling out a new immersive 3D service of its own, called Expeditions, that could take virtual field trips to a whole new level — and the company is accepting requests from educators to pilot the technology in their classrooms this year.

Using Google’s Cardboard, a simple viewing device made out of folded cardboard, with an Android phone, students can experience a virtual excursion as an immersive, 3D event. Reminiscent of the old stereoscopic View-Master devices introduced by Mattel in the late ’30s, Google Cardboard turns a smart phone into a cutting-edge virtual-reality viewer that gives an added dimension to virtual field trips.

Expeditions allows teachers to make their curriculum come alive by taking their students on field trips to almost anywhere they can imagine,” according to Google. “Around the globe, on the surface of Mars, on a dive to coral reefs or back in time — abstract concepts come to life in Expeditions, giving students a deeper understanding of the world beyond the classroom.”

In a global pilot program announced at the end of September, Google will be sending teams to train participating teachers. These teachers then will be able to use the technology in their classrooms for the rest of the day. Google will use their feedback to improve the service before it formally launches.

The images used to create the Expeditions are taken from photo spheres, or 360-degree views, within Google Maps and Street View.

Dani Kennis, a ninth and 10th grade world history teacher at Clarkstown High School South in West Nyack, NY, was one of the first educators to try the technology in her classroom. Kennis traveled to New York in December 2014 to help Google programmers develop an Expedition. In May, she got to take her students on the Expedition she helped create.

The experience “allowed them to tap into their kinesthetic and tactile learning style, because they were standing up and looking all around,” she said. “It was the most lively and exciting day I have ever had in my classroom.”

Kennis teaches several students who have learning disabilities, but on that day they were fully engaged in the lesson.

“Every student was so engaged and so excited; they felt like they were actually there,” she said. “It was amazing to see. It was a really powerful experience to see these students who are typically hard to motivate so immersed in something. That was probably the most amazing and rewarding part of it.”

Dennis Pierce is a freelance writer with 17 years of experience covering education and technology. He can be reached at denniswpierce@gmail.com.
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MAKE YOUR CASE FOR A DISTRICT NETWORK UPGRADE

Build your business case for improving the network infrastructure for your schools.

Computer-based testing in schools has finally passed a milestone. In a recent survey of state policies, EdTech Strategies found most states will be giving end-of-year summative assessments in elementary and middle school via technology. That’s just a single indicator of the extent to which education is undergoing a digital transformation.

That’s not the only survey. More than nine out of 10 K-12 administrators said the effective use of technology in instruction was important for achieving their schools’ core mission to educate and prepare students. That’s according to a survey done by Project Tomorrow and Blackboard. Researchers measured increased acceptance among educators for digital content in the classroom, use of mobile learning through tablets and other devices, and the growth of online classes for students and online professional development for teachers.

These aren’t simply casual statistics. They represent data you can use to build a business case for why your IT organization needs to improve Internet and network access and capacity in your district. The first data point lays out growth in digital testing among states that is seemingly unstoppable. The second points to the receptivity of district leadership to understand how technology intersects with the school mission of helping students learn. Wherever your district falls on these two spectrums, it’s probably not the same this year as it was last year.

A third set of data points from the Consortium for School Networking (CoSN) examines the issues of affordability, network speed and capacity. These are two broad areas that continue to plague school districts as they try to keep up with the explosive demand for broadband and technology infrastructure. Understanding these numbers can help you get a feel for how other districts have set their IT goals, where they are in achieving those goals and how your schools compare.

This year’s “CoSN 2015 Annual E-rate and Infrastructure Survey,” developed with AASA, the School Superintendents Association, and marketing firm MDR, queried district administrators and technology leaders from 48 states. On the affordability front, three main challenges surfaced:

- Meeting on-going expenses (reported by 46 percent of respondents)
- Coming up with up-front or capital funding (34 percent)
- Dealing with extremely high costs for Internet and wide area network connectivity

Bandwidth capacity, the second major category of concern for K-12 IT leaders, is certainly another struggle. CoSN results revealed more than half still haven’t met the recommended 2017 “short-term” Internet bandwidth capacity first proposed by the State Education Technology Directors Association (SETDA) and confirmed by the Federal Communications Commission: 100 megabits per second per 1000 students.

Currently, only 45 percent of districts report all their schools are fully there. And 23 percent of districts have no schools at all meeting the goal. The long-term goal is 10 times greater—a megabit per second per student.

One “pinchpoint” for respondents in meeting these goals is the amount of network infrastructure upgrading they need to do to support greater bandwidth. More than eight out of 10 districts stated they need to upgrade network components—switching, routers and firewall—to accommodate short- or long-term Internet capacity goals. These appliances can be expensive and complex to deploy and configure properly.

Also, nearly six out of 10 school systems (58 percent) are still supporting “old and outdated wireless speeds” with their wireless networks. CoSN includes 802.11n in that group. Only a third of districts are able to accommodate 802.11ac devices, the newest standard.

The network upgrade is an issue where geography poses no barrier at all. What does present a challenge, however, is IT effort. The technology organization must do its homework to put vendors it may not have worked with before on its selection list for consideration. There’s nothing that brings down pricing faster or improves customer service quicker than strong competition.

As you develop your IT business case, don’t shy away from examining where other schools or districts are in their technology roadmaps, as shared through the types of surveys discussed here. Using reliable data to demonstrate how others are tackling the digital transformation in education can help you create a sense of urgency around your own schools’ needs.
ADVANCED WIRELESS NETWORKS

GameChanger

HIGH SPEED BROADBAND ENSURES NETWORK CAPACITY

5 MUST-KNOWS ABOUT THE NEW E-RATE

Take advantage of E-rate dollars to construct a network that’s future-proof.

No one wants to leave money on the table. However, that’s just what you’ll face if your district doesn’t pursue funding for boosting its Internet access and bolstering its internal networking connections under the modernized E-rate program. The stated goals for the new E-rate, adopted by the Federal Communications Commission in 2014, are threefold:

1. Getting “affordable” access to high-speed broadband to support digital learning in schools
2. Optimizing the cost-effectiveness of spending for E-rate supported purchases
3. Simplifying and speeding up the E-rate application process

These five points provide a quick briefing on aspects of the program you may not understand:

1. Within and Without:
Category One of the Universal Service for Schools and Libraries Program includes services, such as fiber, that deliver data transmission and Internet access to schools. (It can also cover wireless services and wireless Internet access if those individual plans are the most cost-effective way to provide broadband for mobile devices at schools.) Category Two deals with the internal connections within schools, such as access points, wireless controller systems and switches, and basic internal connection management.

2. The Rural Premium:
Most rural districts (those with a population below 50,000 people) get an extra discount in their applications. If the rural district’s population of students eligible for the national school lunch program is between one and 49 percent, the discount will be 10 percent higher. For example, if the poverty level is 30 percent, a district would be eligible for a discount for either category of services of 50 percent in an urban area and 60 percent in a rural area.

The catch here is carriers that receive the subsidies for rural areas through Category One must offer high-speed broadband to schools at rates comparable to similar services in urban areas.

3. State Support:
To drive states to take care of their schools, the FCC has a new program to match dollar for dollar up to 10 percent of the state contribution for eligible new broadband construction, such as last-mile buildouts and infrastructure projects. One catch here is projects must aspire to build infrastructure that meets FCC’s broadband capacity targets (100 Mbps per 1000 users for the short term and 1 Gbps per 1000 users for the long term.) A second catch is states must set aside new funds for eligible broadband construction projects. High profile examples include New York, which set up a “Smart Schools Review Board” to evaluate grants and California, which has issued several hundred grants to schools that are “inadequately connected.”

4. Matrix Evaluation:
Price needs to be the most heavily weighed factor in evaluating bids. You’re expected to select the most cost-effective company or service provider. Bidding must be fair and open and every vendor must be treated the same and have access to the same information. Also, vendors can’t be involved in putting together Form 470, the form submitted by districts that lay out what services they’re requesting. The Universal Service Administrative Company (USAC) makes a sample bid evaluation matrix available online there. The matrix lists each factor, such as price or prior experience with the district, and shows the number of points available in that category. Simple addition reveals the winning vendor. The matrix also explains why specific vendors have been disqualified from consideration.

5. Spend it Now or Spend it Later:
Category Two funding requests are limited to a budget based on the number of students in a school—$150 per student pre-discount over a five-year budget. Pre-discount means a school with an 80 percent discount would be eligible for $120 per student. A 40 percent discount would equate to $60 of E-rate support per student. The school can choose to spend its entire budget in one year or spread it out over the five years. To ensure all schools receive sufficient support, there’s a pre-discount funding floor of up to $9,200 over five years for each school. Not even the smallest of schools will receive less than that pre-discount amount. And since 2015 demarcated a “clean slate” for every school, no program funding received prior to this year counts against that five-year budget. The first year a school receives E-rate support is also the first year of its five-year funding cycle. There catch here is students who attend virtual classes from off-campus don’t count in that student tally for the purposes of budgets.
A Delivered wireless access that meets the needs of your students and teachers calls for savvy vendor selection.

Funding is of course the biggest obstacle to providing ample high-speed broadband. Besides bringing the Internet to campus, school systems need to find sufficient budget to upgrade their networks.

School IT organizations are currently in a continuous upgrade cycle. Even as they receive approval for revamping the network to accommodate 1-to-1, the school board could decide to introduce student BYOD.

It doesn’t help that most licensing models impose a double whammy on customers. Not only do you need to buy the equipment—access points (APs), switches and controllers—but you also have to pay recurring licensing fees to manage each AP or even just to upgrade firmware.

The optimal situation is to work with a flexible provider that can address continuous network infrastructure scaling to accommodate growth in device usage. The vendor also needs to offer a robust line of APs that provide reliable connectivity throughout the premises, indoors and outside. And most importantly, the provider shouldn’t charge recurring fees or subscriptions for equipment use once it’s in place.

By playing to these requirements, EnGenius Technologies has created a solution for school environments with its Neutron Series Distributed Network Management Solution. The Neutron line hits four sweet spots for education:

- **Cost**: Two components contribute to total cost of ownership—initial hardware cost and ongoing fees (licensing, subscription or technical support) required to manage each AP on an ongoing basis. With no recurring licensing and a focus on affordability, Marketing Manager Mina Lee estimates Neutron deployments come in between 40 and 60 percent less than competitive products.

= **Ease of use**: Hardware is easy to deploy and manage, making it particularly appropriate for school settings where IT support isn’t always available. Lee says controllers are not required because APs can be managed by ezMaster Network Management Software from a local or remote PC server or from a cloud infrastructure, making Neutron series implementation simple and more affordable.

= **Distributed network management solution**: The combination of managed APs, wireless LAN controller switches and ezMaster Network Management Software for centralized network management enables school districts to expand or shrink the network infrastructure as school requirements change. The software can be deployed on-premises or within a cloud-based infrastructure. The same layout works for just a few APs or more than 1,000.

= **Product line**: This takes two forms. First, there’s the WLAN controller switch, available in 8-, 24- and 48-port models. Each controller switch is capable of managing up to 50 Neutron APs and delivering Power-over-Ethernet of up to 30 watts per port. Then there’s the end-to-end line of high-performance APs available in a variety of form factors to provide high-speed connectivity in nearly any environment and ruggedized to withstand the rigors of shop or outdoor settings.

This solution has found a home in California’s Geyserville Unified School District, New York’s Lima Christian School and Ohio’s St. Bernadette’s School, each with unique challenges. Lima Christian, for example, considered its legacy network overly complicated and unreliable. “[It] kept dropping clients,” says network administrator Jerry Thompson.

The number of laptops and tablets in the school continued to grow and the school expected an infusion of international students. Thompson knew he needed a new approach to deliver Wi-Fi.

A colleague suggested checking out EnGenius, which he did through a reseller who recommended a Neutron gigabit wireless management switch and Neutron indoor APs. Installation and configuration was “almost stupid easy,” says Thompson. He’s pleased with the coverage and range, which in his testing extends far outside the building.

The problem St. Bernadette’s faced was its construction. The school is a concrete building laid out in one solid square with a courtyard. Users experienced numerous dead zones and AP “hopping.” As iPad and iMac usage grew, the school’s service provider recommended EnGenius Neutron.

The Neutron solution addressed two factors: price sensitivity and the capability of the APs to support multiple service set identifiers (SSIDs), virtual LANs and WPA2 encryption and deliver wall-to-wall coverage. The set-up worked. Service provider consultant Chad King walked through the entire school while streaming a Netflix movie to an iPad without dropping a single packet.

Geyserville’s primary goal was to implement a wireless network that was cost-effective, robust and simple to deploy and manage. Neutron was “easy to install, easy to configure, easy to teach the techs at the school,” says the reseller. “There’s no on-going license or subscription fees.”

In each situation, IT leaders sought cost-effective networking solutions that delivered the reliability educators required and students expected.

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The numbers are in for our first-annual K-12 IT salary survey. While budgeting frustrations hamper much of IT’s work, there’s also a sense that the work they’re undertaking is important.

DAVID NAGEL AND DIAN SCHAFFHAUSER

$63,776: That’s the average annual pay for an IT professional of any rank, type of school or district or years of experience in this salary survey.

Whether that sounds low to you or high, keep reading. As we’ve learned from hundreds of K-12 IT people who have shared details of their jobs, there’s more to your work than a single number.

Because this is the first year that THE Journal has developed a salary survey, we lack a baseline against which to compare this year’s numbers. (That will come next year.) So we hope you’ll weigh in to let us know how close to the mark we came for your own salary and the other job measurements covered in this report.
Average Salaries

The average weighted IT salary in K-12 didn’t vary much between public and private schools. At $63,824, public schools won by a nose against private schools at $63,634. The median (that point that falls exactly between the highest and lowest salaries) was $60,000 for both types of schools.

The smallest salaries were given out to people who work on a help desk or provide computer support. Their average weighted gross earnings were $41,425. On the opposite end of that spectrum were C-level people — the CIO, CTO, CSO or related titles. The average weighted salary for that group of individuals was $99,045.

In between those two extremes, the three groups with the highest overall average earnings were:

1. Database and business intelligence staff: $76,436
2. Project management: $74,940
3. IT management: $72,993.50

Wide variations showed up in average salaries based not just on job title but also type of school — public versus private. For example, the highest compensated title in our survey was CIO. The average weighted salary for a CIO at a private school came in at $125,000. It was $98,889 in public school systems, a 21 percent difference.

Likewise, a project manager in a public district earned a weighted average salary of $81,136; the same role in a private school earned $56,900 — 30 percent less.

The highest salary reported in our survey was $190,000, earned by an IT director at a public district in Indiana. The lowest salary came in at $15,000, recounted by a computer lab manager in New York and a help desk person in Kentucky, both at elementary schools.

To put those incomes into perspective, the average salary for a network administrator within any industry — not just education — was $79,770, according to the Bureau of Labor Statistics reporting for May 2014. If that sounds high to you, keep in mind that the average annual wage for elementary and middle school teachers (arguably the most vital people in any school) in that same reporting period was $57,080. A secondary school teacher earned $59,180 on average. Both of those are less than the reported average in our survey.

Experience and Job Duration

Most respondents (53 percent) have worked in IT for more than 11 years in both public and private schools. A third of people have been on the job between 11 and 20 years. One in 10 has been in IT for two years or less.

Because some individuals have worked at their current schools longer than they’ve worked in IT, we interpret that to mean that they’ve taken on IT responsibilities along the way. For example, while 78 percent of individuals have been at their current private schools for between three and 20 years, only 70 percent have been in IT for that same period. In public schools, 73 per-
percent have worked for the same employer for between three and 20 years; but 69 percent have been in IT for the same duration.

**Prospects for Growth**

While most people (58 percent) working in private school IT said they expected to get a raise in the next 12 months, it’s just the opposite at public schools, where only 45 percent anticipate a bump in pay.

“My salary has been frozen for seven years,” noted an IT manager in a public primary and secondary school system in Michigan.

A similar sentiment was expressed by an IT manager in a combined public school system in the south: “No raises in Georgia for the last five-plus years, and furlough days due to budget cuts mean I actually make less than I did four years ago.”

Also, respondents were overwhelmingly pessimistic about their prospects for advancement in 2016. Only 5 percent of IT people in public schools and 9 percent in private schools predicted a promotion over the next year.

As a technical support specialist for a public high school in Washington asserted, “The issue with IT jobs in schools is there is no opportunity [for] advancement and no increase in pay without advancement. Thus, I make the same now as I did 20 years ago.”

On top of that, this IT professional added, staff is supervised “by individuals who have no idea of job scope, detail, tasks or really anything else. [It] makes it very difficult when they do not have any clear vision for hiring, hours, overtime, etc. They just want it all to work, period.”

In spite of the woes, it should be noted that by and large this isn’t a group looking for greener pastures. In public schools 81 percent of people expect to stay put for the next 12 months; in private schools the count is even higher — 86 percent.

“Things are very tight and understaffed; so while demand is high, that is not translating into more jobs, more pay or [a] better work environment,” asserted a project manager in a public high school in Iowa. “On the flip side, I have a job, make decent money; and there is not much threat of a lay-off; so that is good.”

It may be that most people are staying put because they’re fairly satisfied with the outlook for the future of IT in K-12. At public school systems, 56 percent of respondents said they expected either “healthy” or “unbridled” growth. Those in private schools are even more hopeful. There, 67 percent indicated they expect growth. A scant 7 percent of people from both kinds of schools foresaw a slow decline or “doom” in their futures.

Overall, those who earned less than the average IT salary were inclined to be a tad more optimistic about the future than those who earned more than the average salary; 62 percent of the former group forecast growth; for the latter group, the count was 56 percent. However, those earning $100,000 or higher were the most optimistic; 66 percent expected healthy or rampant growth.

**Job Satisfaction**

Nearly eight in 10 people (79 percent) reported feeling satisfied or very satisfied “overall” with their IT jobs in K-12. The highest points of satisfaction, in order, are these:
1. Co-workers (81 percent);
2. Physical comfort (77 percent);
3. Commute (72 percent);
4. Supervisor (71 percent)
5. Working hours (67 percent);
6. Equipment (65 percent); and
7. Benefits (64 percent).

Most people also were fairly happy with the top bosses; 54 percent of respondents were satisfied or very satisfied with the administrators or executives running their school or district operations.

“Enjoy coming to work every day!” declared a project manager in a public combined school system in Massachusetts.

But into every life a little rain must fall. For IT folks in K-12, the drizzle showed up in two areas: salary and department budgets. Thirty-one percent of respondents reported feeling unsatisfied or very unsatisfied with their salaries; 35 percent expressed the same feelings about the IT budget.

Budgetary restrictions are a continual source of vexation for an IT director in a public district in Iowa: “Technology budgets continue to be cut, but demands for integration continue to be pushed. I am forced to maintain more and more technology with less and less help. So the low priority items never get done.”

“I love what I do, although I wish I could do more,” noted another IT director in a combined public school system in Michigan. “The way we are funded, it doesn’t leave much for being able to meet the state and federal requirements in addition to doing all that we need to do to just stay current.”

**IT as a Calling**

Many respondents to the salary survey expressed frustration at having to tackle too much with too few resources. Summarized one media specialist at a public high school in California, “Bandwidth inadequate, [Internet service provider] not investing in solving access issues, admin and teachers not using tech tools to capacity, low skills, no money to train staff or invest in more bandwidth [or] better computers for students.”

But underlying those sentiments was also a measure of recognition that the struggle was worthwhile and must continue for the sake of the kids IT serves. As a trainer in a North Carolina public high school summarized, “Biggest issue is determining where to spend limited funds to keep our students competitive.”

“It’s not for the money!” added a technology associate for a public elementary school in Florida. “We will never make the salary that is offered in the private sector. For those of us who are here long-term, it is a calling to work in public education.”

David Nagel is editorial director of 1105 Media’s education group and editor-in-chief of THE Journal. Reach him at dnagel@1105media.com.

Dian Schaffhauser is a writer who covers technology and business for a number of publications. Contact her at dian@dischaffhauser.com.
THE Journal polled its readership in August and September of 2015. We put out an open invitation to IT professionals in education and incentivized them to participate with a $500 Amazon gift card as a prize for one randomly selected winner and promised confidentiality for respondents. The survey was advertised on thejournal.com and in newsletters and e-mail promotions to our subscriber list, and recipients were asked to encourage colleagues to participate as well. We received 1,132 completed surveys. Responses were manually culled that were clearly false or inappropriate for the survey. (For example, several higher ed IT staffers responded to the poll; their answers were excluded, as were responses from faculty members and non-IT staff and administrators except those who held dual positions in technology.)

Those who responded with patently unrealistic salaries — which ranged from salaries as low as three digits to those beyond the highest-paid IT salaries on record for the United States — were also eliminated.

The final tally for qualified respondents was 736, of which:

- 604 were from public institutions (124 elementary, 159 secondary, the remainder combined or district-level);
- 132 were from private institutions (19 elementary, 38 secondary, the remainder combined or district-level).

Vetted responses from qualified public and non-profit institutions were weighted by institution type to be representative of the nation as a whole based on data from the United States Department of Education.

We also asked for, but did not weigh against, geographic location and size of the institution's student body.

Geographically, our respondents tracked very closely with ED's regional data for K-12 institutions (using census regions):

- New England: 5.46 percent;
- Mid Atlantic: 8.94 percent;
- East North Central: 22.35 percent;
- West North Central: 9.6 percent;
- South Atlantic: 21.36 percent;
- East South Central: 5.79 percent; West South Central: 12.09 percent;
- Mountain: 5.8 percent; and
- Pacific: 8.61 percent.

Student body size among our participants tended to be on the larger side than would be representative of the nation as a whole. The breakdown in student body size among vetted respondents was:

- 0-499: 21.9 percent;
- 500-999: 23.9 percent;
- 1,000-1,499: 12.2 percent;
- 1,500-1,999: 6 percent;
- 2,000-2,999: 6.5 percent; and
- 3,000 or more: 29.5 percent.

There was a near-linear progression in overall unweighted average salaries based on institution size, with the smallest seeing the lowest overall salaries (with a low average of $52,149 for institutions in the 0-499 category) and the largest seeing the highest salaries ($76,121 for institutions with 3,000 or more students).

The one category that bucked this trend was the 2,000-2,999 category, at an average of $64,706, a bit lower than the 1,500-1,999 category, which averaged $67,269.

The survey consisted of 14 questions, 13 of which were mandatory. A final open-ended question asking for additional comments was optional, though nearly one-quarter of the qualified respondents (23 percent) chose to add their two cents.
Developing Virtual Medical Internships

The James Irvine Foundation provided the district with a grant to develop virtual medical internships using the Learnscape system from Toolwire, and leaders from the district worked with Toolwire to develop the computer-based simulations to prepare students for their actual internships.

The teachers and staff in the district’s health career pathways program are familiar with the typical scenarios that trip students up when they get out into the real world. They identified 12 career and technical education standards in the health field that students needed to master and mapped those internship scenarios to the learning standards. Toolwire’s staff then took that information and used it to create virtual simulations of the scenarios in the Learnscape software.

Virtual Medical Internships in Action

The virtual medical internship program consists of a series of three detailed scenarios designed to provide the students with experiences that will prepare them for real-world internships, and students in grades 10 through 12 work through the scenarios as part of their health career pathways classes.

The first scenario is designed for beginners.
and models situations students might typically encounter on their first week at a busy hospital. “A big part of the first scenario was helping students understand those job readiness skills that they have to have, that when it says that they have a 2:00 start time for their internship, that doesn’t mean start finding your way to the internship in that hospital at 2:00. That means reading a facilities map [and] finding out where you have to be and who you have to speak to,” said Susan Benz, manager of College and Career Readiness for the district. “First-timers don’t think of those things until they’re lost in the hallway.”

The beginner scenario also includes a number of situational dilemmas. In one situation, the student is at an office for the first day with their intern host, who is a medical assistant. When the host says she has to leave for just a minute and goes off screen, the phone rings and the student has to decide whether or not to answer it. If the student says yes, they have to participate in a simulated dialog with the person on the other end, and they soon realize that maybe answering the phone wasn’t such a great idea after all.

“They are just these wonderful, constant, situational dilemmas where we set kids up and they respond in the Learnscape, and they get themselves into situations where they have to figure out, ‘Oh, boy, how do I get out of this?’ And it teaches them that, ‘Oh, I’ll never answer the phone again without permission or without having the information I need ahead of time,’” said Benz.

The intermediate virtual medical internship scenario ramps up the level of challenge for students, and then the advanced scenario is very fast-paced and intense. It takes place in a hospital following an explosion, so the emergency room is inundated with patients. “It’s a rising level of instruction in the three scenarios, and the last one is really fast and furious, so you better know your stuff and you better have your answers ready,” said Benz.

**Results**
The students who participated in the pilot enjoyed working through the scenarios, according to Benz; and because they were virtual simulations, the students were able to make mistakes and learn from them without actually breaking HIPPA laws, breaching patient confidentiality or endangering anybody. “It’s very self-paced, and it was fun for them,” said Benz. “They also understood clearly that this is all real stuff that is going to happen to them on their worksite and they need to be ready for it.”

According to Benz, the teachers appreciated the virtual medical internships because their students’ level of preparedness for their real-world internships reflects on them as teachers, and the virtual simulations were an easy way for teachers to give kids the experience they need. The district plans to continue using the virtual medical internships in its health career pathways, and Toolwire has made the software available to other school districts.

Leila Meyer is a technology writer based in British Columbia. She can be reached at leilameyer@gmail.com.

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WHAT'S HOT, AND WHAT’S LOSING STEAM IN ED TECH IN 2016
Our expert panelists weigh in on education technology to give us their verdict on which approaches to tech-enabled learning will have a major impact, which ones are stagnating and which ones might be better forgotten entirely. GREG THOMPSON

The four panelists in THE Journal’s annual end-of-year survey hit full consensus on just two of 11 topics — giving the “hot” label unanimously to “blended learning” and “student data privacy concerns.” Meanwhile, e-portfolios garnered the least amount of enthusiasm, with two panelists opting for “losing steam” and two for “lukewarm.” Other topics formed a mixed bag, with the “lukewarm” rating suggesting that many technologies/techniques are holding steady, if not exactly lighting the education world on fire.
Bring Your Own Device (BYOD): Lukewarm to Hot

Karen Billings: There is huge upside [in BYOD], but it won’t be easy. Teachers need to keep up with the huge numbers of apps on the market. Administrators must get increased bandwidth for their schools, and tech directors must transition to cloud-based solutions. Providers need to ensure their apps work on tablets and smart phones. With the shifts in platforms, operating systems and form factors, there are major development issues for companies.

Jim Flanagan: With numerous studies and reports showing that personal tablet and smartphone ownership continues to grow for students, it makes sense that school districts are continuing to explore ways to have students use these devices as learning tools – whether at school, at home or both. However, many schools around the country still lack the WiFi connectivity necessary to truly realize the potential of mobile devices for learning. Ultimately, schools must prepare for “use any device,” as many students have access to many devices, while also guaranteeing equitable access to at least one high-quality, dedicated device for each student.

Dissenting Voice — Chris Harris: Despite showing promise as a way for schools to reach a 1-to-1 goal without having to spend money, this never really took off in most places. The problem with BYOD is that it provides a wonderful opportunity for those families with the economic means to purchase devices without really solving the major issues of providing equity for all learners. Add to that the problem of matching software/apps to multiple devices, and you end up with a solution that causes more problems than it solves. With the low price points on Chromebooks and the ability to pursue building or district-wide rollouts that provide equity, I don’t see BYOD persisting.

Tom Murray: All districts have BYOD in place as students are already bringing their devices to school. It’s whether or not school leaders embrace the device as a learning tool that’s the true discussion. BYOD will remain one of the most talked about initiatives in 2016, yet at this point, some districts have had this opportunity in place in some capacity for almost a decade. Many districts continue to pilot and dabble with BYOD, yet the fear of abdicating some classroom control still gets in the way for some teachers. Although an increasing number of schools are allowing and even promoting student devices on campus, changing the instructional pedagogy is ultimately the challenge and what takes the most time to transform. The FCC will continue its work mitigating the digital divide in what’s been coined the “homework gap,” and, as always, educators need to problem solve connectivity issues for those students who lose access the moment they leave the school campus.

Social Media for Teaching and Learning: Lukewarm to Hot

Karen Billings: Growth is lukewarm with consistent student interest and a growing acceptance by teachers, administrators and learning providers. Social media gives students more opportunity to write about topics that interest them and to reach an audience that they want to reach.

Jim Flanagan: A recent study by the University of Phoenix College of Education found that fewer than 15 percent of teachers have embraced social media, with 62 percent of those surveyed saying that they are reluctant to use social media in the classroom. The reason for their reluctance is the same as it often is with integrating other types of technology into learning and teaching: professional development. However, this could get hot again [lukewarm now] as we find ways to make teaching and learning more relevant to students' social media preferences.

Chris Harris: Social media as a teaching and learning tool is hot, but only for custom education platforms. Trying to shoe-horn teaching and learning into existing social media platforms always promises more than is ever delivered. What schools need are customized social tools that can be tweaked to support teaching and learning applications within established style frameworks.

Tom Murray: Over the next decade, 80 percent of jobs will require technology skills (via Intel Education). Social media provides a unique avenue for both students and teachers to tap a global audience to collaborate, network, share and learn together in real time, while simultaneously building such skills. Our students’ world is only limited by adult restraints. If one of our goals is to truly prepare students for their future, we must leverage the power of connectivity and model such practice for our students.

Digital Badges: Mostly Lukewarm

Karen Billings: Digital badges may catch on as they did among higher ed students ... if K-12 institutions provide paths for earning them. Proof of learning experiences can be a valuable asset for students who just want to learn to do something — like coding to produce Web sites or apps — and be engaged with that learning community.

Jim Flanagan: With the popularity of MOOCs and other independent learning experiences, you would think that the digital badging movement would have been a much bigger trend by now. But it hasn’t caught on yet — not in K-12, higher education or even the corporate learning world. Digital badges have the potential to become “hot” as badge value gets better defined as part of the human capital ecosystem.

Chris Harris: Informal learning in school and public libraries is growing steadily as these institutions flourish with maker
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spaces and online learning opportunities. Digital badges provide a way for libraries to certify and document informal learning using rich metadata and links to evidence that demonstrates mastery of skills and concepts.

Tom Murray: Districts continue to look for more effective strategies to implement professional learning opportunities as study after study indicates that the traditional top-down, one-size-fits-all, sit-and-get, hours-based approach to professional learning shows virtually no impact on student achievement. Digital Promise writes, “As an emerging professional development strategy, educator micro-credentials can enable our public education system to continuously identify, capture, recognize, and share the best practices of America’s educators so all teachers can hone their existing skills and learn new ones.” Although such a shift is being discussed in many districts, the hours-based model of professional learning has been entrenched in the system for decades, and, therefore, the transformation to a competency-based system for teachers will take significant time to implement properly.

Open Educational Resources (OERs): Mostly Hot

Karen Billings: OERs are lukewarm but have become mainstream as a major model for the development and distribution of content. Interest is still there given the free initial cost, and some resources better meet the needs of students and educators. Educators understand those benefits but also have discovered that OER materials require some initial investment/resources/time searching and vetting, then a longer and recurring cost for professional learning and support to make a systemic impact. If the only reason educators are using OERs is that they are free, the students may not be best served. But if it’s because the OER materials are the best fit for their students, then everyone wins.

Jim Flanagan: The use of open educational resources in schools continues to expand as educators look for materials that they can modify and adapt to meet student needs and personalize learning. In addition, these online learning resources provide schools with an on-ramp as they make the transition to digital learning. In fact, the U.S. Department of Education recently appointed Andrew Marcinek as the first ever open education adviser to focus on helping schools explore the use of open educational resources and establish guidelines and best practices for their use.

Tom Murray: The U.S. Department of Education has single-handedly made this issue hot for 2016. By recently announcing its first ever open education adviser and by leveraging and building upon the President’s ConnectED Initiative and recent Future Ready Schools effort, the push for open access and the pressure on companies to “go open” will reinvigorate the necessity for high quality materials that are free and open for use in schools.

Christopher Harris: OERs are sitting at a low simmer, and no matter how much we watch the pot, it just isn’t going to come to a boil until we turn things up to 11 by adding a usable platform. For OERs to flourish, we are going to have to put more energy (time and money) into UX design and platform creation. It is quite naive to think that OERs can replicate the value of commercial resources simply by mirroring

Christopher Harris: Music video recorders are hot. These hybrid devices that combine 1080p HD video capabilities with exceptional audio microphones are a hot choice for classroom video use. Cameras like the Canon VIXIA, the Sony HDR-MV1 or the Zoom Q4 or Q8 range from $200 to $400. The secret of these small devices is a tradeoff between video flexibility and audio power. With digital-only zoom, these cameras deliver full HD video (or better) but with limited distance capabilities. In return, the audio quality is unsurpassed by anything short of a professional boom or wireless microphone setup; most of these cameras feature high-end condenser microphone capsules that will make music or interview recordings shine. The Zoom series can also be connected to a computer via USB to serve as a very high-end Web camera, with exceptional audio to make video conferencing more effective. Most of these cameras also feature wide-angle lenses that make them great choices for recording classroom instruction for video mentoring.

Tom Murray: The Chromebook is hot. Seventy-two percent of Chromebook sales were education-related purchases in 2014. Due to the incredible price point of these browser-driven devices, the increase in quality seen in recent years and the ease of both deployment and management, the Chromebook looks unstoppable as the go-to digital learning device for 2016.

Karen Billings: Apple iPads are still hot. Apple had a head start with the design, relationship with schools and critical mass of the number of learning programs, especially for early elementary classrooms. But they are losing market share where cost is a consideration. Google Chromebooks and Android tablets are trending up, especially because of the growing use by teenagers and growing adoption given the lower end and burgeoning number of apps.

Jim Flanagan: The smartphone is hot. Every day, the smartphone becomes less of a “phone” and more of a device for connecting with others via social media, researching information on the Internet, learning with apps and games and recording experiences with photos and videos. For many kids, many adults as well, the smartphone is the true “nerve center” of their lives.
content; libraries know that the real power of high-end commercial resources is a carefully designed platform that makes it easy for teachers and students to find and use the content.

E-Portfolios: Losing Steam

Karen Billings: E-portfolios are flat now but expected to grow, given usage by higher education students who want to show potential employers what the graduate can do. The same could apply to graduates from high school who are looking for a job or entrance into college. Given the K-12 emphasis on accountability, curriculum standards and assessments, it will be a while before the e-portfolio becomes mainstream.

Jim Flanagan: While there continues to be discussion around the use of e-portfolios in schools, the actual adoption of them as an evaluation tool seems to have been slow to take hold. However, technology tools that can now support the development of e-portfolios, combined with the current national conversation around testing and assessment, may be the perfect storm to ignite the rapid acceleration of the adoption of e-portfolios as a way to provide a complete picture of a student’s academic experience. Conversely, student projects, and the “maker movement,” are hot, and this work needs to be curated and archived somewhere.

Christopher Harris: Are e-portfolios still around? I mean sure, it is a great idea, and they would be infinitely preferable to the standardized testing that abounds, but I haven’t heard about this in a while. I hate to be negative, but it seems like the education profession agreed that we are all too lazy to actually put in the work it takes to assess learning in an authentic way.

Tom Murray: The tools have been around for years, and similar to digital badging, such a strategy requires a shift in mindset as well as a systemic K-12 vision. Although many districts will continue to dabble in e-portfolios, with the likes of Google Sites inside Google Apps for Education, or OneNote inside Office 365, this strategy will gain little traction in 2016 as it requires a shift in mindset.

Learning Management Systems (LMS): Lukewarm to Hot

Karen Billings: Learning management systems are hot if called “learning platforms,” an emerging category with a full set of teaching and learning tools, especially on mobile devices. Growth is in the applications where students can access resources a teacher provides and collaborate to share the resources and knowledge they build. A trend that started in higher education, and evolved into a broader learning tool, became easier to use, and the providers have adapted the tool for mobile devices.

Jim Flanagan: While from an industry perspective the reported sales numbers of learning management systems continues to grow, there still appears to be some confusion about what learning management systems are and how schools use them. With growing trends like the use of OERs, personalized learning paths for students, blended learning environments, interoperability and adaptive assessment, the traditional LMS needs to continue to morph into a platform that will support these approaches to learning, as well as the next instructional innovations that are emerging.

Christopher Harris: LMS is hot, like an oppressively humid late summer day in Florida. You stand in the doorway, trying to cloak yourself in the last few seconds of air-conditioned comfort before sighing deeply and stepping forth into the torrid hotness of the sun that sucks all will to live from your pores, much like an LMS sucks the joy of learning from our classrooms. There has got to be a better way to do this.

Tom Murray: As more districts move to implement a 1-to-1 learning environment, the number of students enrolled in an LMS continues to climb. Although enrollments continue to trend upward, the question is really more about the utilization. Many large-scale LMS rollouts often simultaneously occur alongside ineffective professional learning practices and thus end up with minimal usage rates. The potential in this area is vast, and the tools continue to improve, but, overall, usage will remain generally under-utilized in 2016. The saturated market makes tools plentiful and high quality professional learning options difficult, thus leading to wide-scale implementation that often ends up being ineffective.

Flipped Learning: Mostly Hot (but Equitability a Question)

Karen Billings: It is getting incorporated into some teaching practices. It fits many subject areas (but not all) and certainly fits the higher grades more than the lower. Five years from now, we’ll know if it’s a fad or simply evolved to be part of a more dynamic teaching model.

Jim Flanagan: While virtually unknown a few years ago, flipped learning has gained significant momentum and is being implemented in an increasing number of schools around the country because teachers recognize its positive impact on student achievement. Jon Bergman and Aaron Sams — considered the fathers of flipped learning and ISTE authors — are powerful evangelists for this instructional strategy. Through their books, workshops and speeches, they have spread the word about how to implement flipped learning to thousands of teachers around the country.

Christopher Harris: Efficient and effective — but is it equitable? Before a school gets too excited about the hotness of flipped learning, we need to make sure that we are accommodating all of our students. It is great to see the FCC taking on the “homework gap” and exploring creative ways to bring broadband to more homes.
in such an environment. It’s a difficult justify how it’s best for a student to learn an instructional video on dial-up, and then broadband while at home. Try watching aged children lack access to high quality the 29 million households with school- to the Pew Research Center, 5 million of the “homework gap,” where, according to the Pew Research Center, 5 million of the past two years. But we also found that it has grown into a much broader definition and can include a fully digital curriculum delivered in the classroom.

**Dissenting Voice — Tom Murray:** As eloquently stated by Michael Fullan, “Pedagogy is the driver. Technology is the accelerator.” Just because we can doesn’t mean we should. Many of those who have moved to the “flipped model” have essentially created “lectures on the go.” Simply putting it online doesn’t make it effective. Flipped will also continue to lose steam in 2016, as schools become more in tune with the “homework gap,” where, according to the Pew Research Center, 5 million of the 29 million households with school-aged children lack access to high quality broadband while at home. Try watching an instructional video on dial-up, and then justify how it’s best for a student to learn in such an environment. It’s a difficult argument to make. Educators must always consider those that are traditionally underprivileged or under-served in decision making with such new models.

**Blended Learning:**

**Unanimously Hot**

**Karen Billings:** Blended learning is hot. The number of students taking online courses has grown dramatically over the past few years. In fact, SIIA’s Annual Market Survey found that the revenues in the online course category grew by 320 percent the last two years. But we also found with the expanded and personalized learning opportunities of online learning.

**Christopher Harris:** Good teaching that makes use of all available tools and resources is hot. Good teaching is always hot.

**Tom Murray:** Often used interchangeably (although technically defined differently) with “digital learning” or “personalized learning,” the premise of teachers mixing face-to-face instruction with high quality digital opportunities will continue to grow in 2016.

From priorities at the highest levels in Washington to the push for “open access” and gains in connectivity to a dropping price point for devices, a perfect storm has evolved for districts to blend digital content with face-to-face instruction. With that said, to be effective, classroom instruction must always remain learning-driven and not device-focused.

**Student Data Privacy Concerns:**

**Unanimously Hot**

**Karen Billings:** Consumers have become increasingly concerned about the security of their data given the increasing number of hacks of credit card information. Similarly, parents have become concerned about the privacy of student test data, even though the current publishers must comply with federal regulations such as FERPA and COPPA. The more that learning happens digitally, the more there needs to be a trusted framework among students, parents, schools and learning providers.

**Jim Flanagan:** Student data privacy concerns...

Lukewarm Mixed Bag

Apps for Learning: A Mostly Lukewarm Mixed Bag

Karen Billings: Apps for learning are hot. The growing use of mobile devices by students at home and in classrooms has led to huge and growing numbers of learning apps (250,000 by one estimate) and won’t slow down for some time. They are easy and fun to use, inexpensive or free. What’s not to like?

Jim Flanagan: Apps for learning are lukewarm. It is hard to believe that it was six years ago when Apple’s tagline in commercials promoting the iPhone was “there’s an app for that,” because today there literally does seem to be an app for everything, and learning is no exception. There are millions of learning apps for all types of devices. While the quality of these learning tools varies greatly, there are many that provide students with powerful supplemental learning tools, link to their curriculum or provide them with a chance to play a game that helps them build scientific inquiry or critical thinking skills. However, apps must increasingly be able to interoperate with learning and analytics platforms to provide students and educators with a more coherent and manageable resource.

Christopher Harris: Privacy concerns are hot like one of those fancy lighters that doesn’t show a flame but will burn you if you aren’t careful. The problem with privacy is that we usually only think about it after there has been a problem. Privacy is also one of those thorny issues where perception of risk can be more problematic than actual risk. As a librarian, privacy is very important to me, so I strongly encourage administrations to remember that this a very hot issue, even if the flame is invisible.

Tom Murray: 2015 was a year that saw an unprecedented amount of student data privacy legislation introduced at both the federal and state levels. By October 2015, 46 states had introduced 182 bills addressing privacy, while 15 states had already passed 28 new laws. Simultaneously, just under 200 educational technology companies signed on to the Student Privacy Pledge that was touted by President Obama in this past year’s State of the Union address. With the vast number of privacy-related bills currently in state legislatures, and action in both the Congress and the Senate, privacy will remain a hot topic in 2016 and beyond.

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Karen Billings: Apps for learning are hot. The growing use of mobile devices by students at home and in classrooms has led to huge and growing numbers of learning apps (250,000 by one estimate) and won’t slow down for some time. They are easy and fun to use, inexpensive or free. What’s not to like?

Jim Flanagan: Apps for learning are lukewarm. It is hard to believe that it was six years ago when Apple’s tagline in commercials promoting the iPhone was “there’s an app for that,” because today there literally does seem to be an app for everything, and learning is no exception. There are millions of learning apps for all types of devices. While the quality of these learning tools varies greatly, there are many that provide students with powerful supplemental learning tools, link to their curriculum or provide them with a chance to play a game that helps them build scientific inquiry or critical thinking skills. However, apps must increasingly be able to interoperate with learning and analytics platforms to provide students and educators with a more coherent and manageable resource.

Christopher Harris: What a hot mess — from discovery in an app store to designers with no clue about instructional methodologies, there are endless problems with apps for learning. What has worked for me over the last decade is to build internal capacity in my school library system for Web development. We now push out our own apps designed by school librarians, with school librarians and for school librarians that are meeting real needs and solving real problems. School districts and regional educational services agencies need to become educational startup incubators and develop apps that really work for local needs.

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Tom Murray: The potential for apps to personalize learning for each student remains feasible yet is under-utilized and under-planned. Quite often, apps are an after-thought, reinforce low level skills or have little strategic alignment to curriculum goals; no less to individual student needs. The use of apps will continue to increase as the number of devices continues to climb, but their effectiveness as currently used for learning will be minimal until there’s a pedagogical shift in this area.

Games for Learning: Hot

Karen Billings: Online games have grown phenomenally, especially the massive, multiple-player ones, though they are mostly used outside formal classrooms. Our annual CODiE Award nominations continue to see a steady growth in game-based learning products. Simulations work well where the teacher knows how to incorporate them, but there is still a stigma with the word “games.”

Jim Flanagan: If you attended ISTE 2015, ... you likely saw the long lines outside the sessions focused on game-based learning, teaching with games such as Minecraft and games [in the context of] the maker movement. Research shows that learning with games boosts student engagement, especially for struggling students, and that games provide students with an experience that helps them think like scientists. They try an approach, fail and then try again until they succeed. And this is a trend that has implications both at home and in school. To accelerate adoption, games must be able to interoperate with learning platforms. Also, I am curious to see the balance between teacher-created learning with OER and games/simulations.

Christopher Harris: Please, stop trying to make games for learning happen, and just make great games. Great games are complex, rigorous, and so deeply thematic that they are natural instructional resources that can be directly aligned to curriculum standards. The best games are also tabletop games that can be manipulated by an expert teacher to create custom scenarios and direct instructional experiences. This is my thing. See playplaylearn.com and teachingthroughgames.com. 

Greg Thompson is a freelance writer based in Fort Collins, CO.
SALES CONTACT INFORMATION

DIRECTOR OF SALES, EASTERN/CENTRAL
David Tucker
(510) 265-1512
dtucker@1105media.com

DIRECTOR OF SALES, CA/WA/OR
Navid Davani
(949) 265-1568
ndavani@1105media.com

CORPORATE HEADQUARTERS
1105 Media
9001 Oakdale Avenue, Suite 101
Chatsworth, CA 91311
1105media.com

MEDIA KITS
Direct your Media Kit requests to Jean Dellarobba, (949) 265-1568 (phone), (949) 265-1528 (fax), jdellarobba@1105media.com

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Now in her third year in the position after starting her career as a classroom teacher, Lenker has helped to spearhead a host of changes, including an overhaul of the school’s professional development program that has led to increased interest and participation in creative uses of technology.

**THE Journal: You started as an English teacher. How did you end up moving into this position?**

Tami Lenker: I went back to school to get my master’s in educational technology, and did an internship with a technology and learning coach while I was still teaching. I stayed home for a while after my second child was born, and then eventually the district contracted with me to do classroom observations. That was about 10 years ago. I saw what people were doing with technology — some really good things and some really bad things — and I became more interested in it. Then more recently when I had an opportunity to go back to work full-time, I decided that the key to getting to this generation was to come at them from that angle.

**THE Journal: How much has changed in those 10 years?**

Lenker: Well, you still see both sides. Some teachers will just have kids reading the textbook online, and that conserves paper, but that’s about the extent of it. But then you have classrooms where teachers are letting students produce their own videos or where they’re tweeting out their projects using a popular hashtag, knowing that many more people than just their teacher are going to see it. At the end of the last school year, we had a green screen set up in the library for students to do their final projects for an environmental science class, and I saw a class of seniors in their last week of school who were all working so hard and wanting to be there. So technology is definitely powerful when it’s used right.

**THE Journal: What’s been your main objective in this position?**

Lenker: We’ve had technology for a while now — we’ve been 1-to-1 for a few years — and we’ve been trying to raise the bar, or we call it level-up, and to get the teachers to share with one another and collaborate more. That’s started to happen, and it’s become contagious. We’ve had teacher-led professional development where you have an open mic, they get up and give a little elevator pitch about something they’re doing, and then afterwards people can choose to approach them for more details. We also did something like “speed dating” where we played music, everyone rotated and talked to a teacher for four minutes and then rotated again, so that they all got to see what other classes were doing, and it was less intimidating talking to a smaller group for a short time. We have an Innovation Incubator, where it’s like the *Shark Tank* television show — you go before people with a pitch, and they choose to buy in or reject your proposal.

**THE Journal: What was the rationale behind moving toward teacher-led professional development?**

Lenker: Historically, we had Tech Tuesday, covering a different topic each week. A lot of teachers would sit there, get some PD credit for it, and then be on their way, and I could see that with many of them it wasn’t transferring into practice. Some of them were completely lost, but they didn’t want to get up and say anything because they were in a room with their peers and felt intimidated. Other teachers felt obligated to be there but they already knew everything and they could have been the ones teaching the session better than I could.

So we decided on a more individualized approach, with smaller groups, teachers talking about their goals and ideas, and then we would try to help them with the logistics. That led to great conversations and lots of creativity.

They also decided to change the name to Teacher Enrichment and Engagement — TEE Time. And then we gamified it using a badges system.

**THE Journal: The LevelUp program?**

Lenker: Right. It’s a digital badge program. We did research on what would make teachers motivated to want to come to professional development.

We had mixed feelings about badging because some thought it might seem too }
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