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Inside This Issue

Flipping special education

Flipped learning and one-to-one can be a powerful combo

Flipped learning allows for both flexibility and differentiation.

By Dennis Pierce

At E.L. Haynes High School in Washington, D.C., 44 percent of students are English language learners, have special needs, or both. Yet all of the students in this urban charter school's first graduating class have been accepted into college, said Principal Caroline Hill—and she attributed this success to a personalized, self-paced approach made possible by technology.

E.L. Haynes has a one-to-one laptop program, and students also can bring their own devices to school. Using a flipped learning approach, teach-

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Do teachers like data tools?

By Laura Deveney
Director of News,
@eSN_Laura

Two-thirds of teachers in a Gates Foundation study said they are not completely satisfied with the data, or tools designed to help them work with data, which they are able to access on a regular basis.

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Ohio brings internet home

Ohio's OneCommunity expands broadband to schools and private homes

By Bridget McCrea

Since 2003, OneCommunity of Cleveland has been connecting and enabling public benefit organizations across the state like schools, government agencies, healthcare, museums, and libraries with next-generation fiber optics. And lately, they've begun working with schools to identify private homes that lack sufficient bandwidth.

Lev Gonick, chief executive, said OneCommunity was born out of the need to elevate Northeastern Ohio's "Rust Belt" status by infusing the region with faster and more accessible internet. "Northeast Ohio was looking for a roadmap to reinvent itself," said Gonick, who at the time was vice presi-

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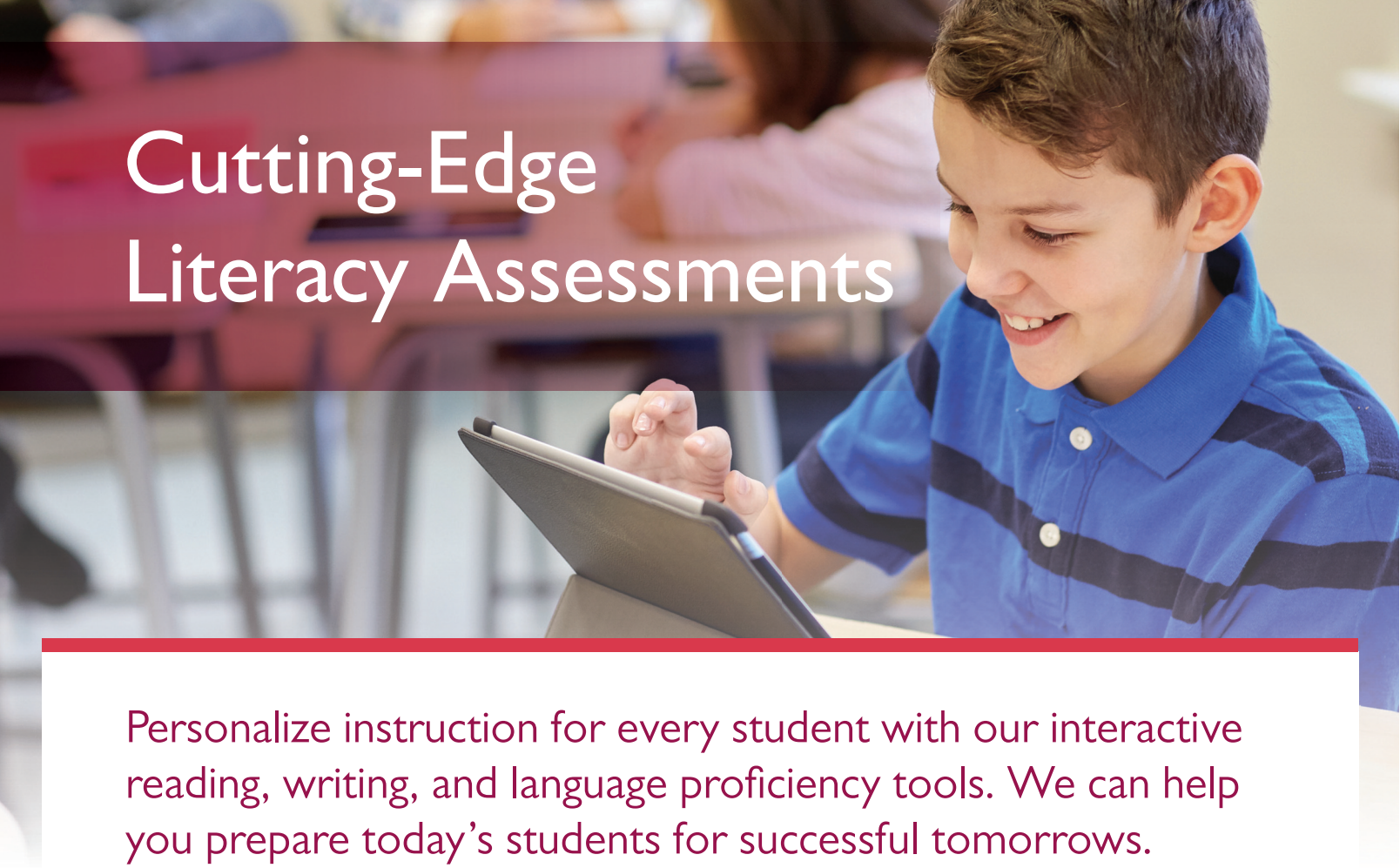

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PUBLISHER'S REPORT

If you can Google it, why teach it?

With Google in the classroom, teachers should reimagine lessons

By Carla Bluhm and Kevin Mobbs

Are any of us better than Google as an instructor?

Is there anything value-added vis-à-vis your classroom teaching? Might one contribute a unique understanding or presentation of content? Is offering a professional, high-quality filtering of fluff and misinformation your unique contribution? Or, is there high-quality feedback that deepens and furthers learning – something arguably Google still does not do?

Kitchen table pedagogy

The point is, of course, that you probably can Google every single concept you currently teach, and your students know this well. An added challenge is to grapple with the informal course designs that are popping up all over the internet. We might reference this phenomenon as kitchen table pedagogy. These home-based "course designers" are challenging in ways that most academics have not even begun to consider; that is, their value, and perhaps the edge they may have over other forms of transmitting traditionally taught academic information.

In the field of psychology there are numerous kinds of homegrown experiments peppering the internet. For example, many good examples of kitchen table concepts exist, such as object permanence, the rouge nose experiment, and examples of egocentrism.

One can wonder how professors justify their classroom design in light of knowing how much teaching and learning are available any time and free of charge on the internet. How can one in good faith continue to teach as if the internet does not exist? With each semester that passes, students are not just a little bit more digitally native, but are algorithmically more in-tune with how to find information on the internet.

In a recent NPR interview with correspondent Anya Kamenetz, former Montgomery County Public Schools (MCPS) superintendent, and current CEO of PDK International, Joshua Starr, asked a prominent school superintendent in the Washington, D.C., area similar questions. Starr, discussing his stepping down as superintendent commented, "I ask teachers all the time, if you can Google it, why teach it? Because we have so much information today. How do you help kids navigate that? That's critical thinking and creative problem solving."

"Yoda Google"

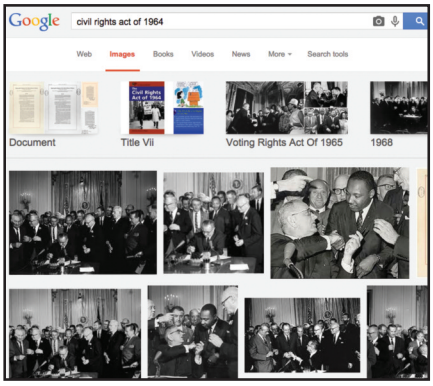
Obviously, our mission is not to be an entertainer, and reimagining the role might seem more difficult to construe. If we can face the reality of Google and electronics in the classroom, what kinds of creative solutions can be offered?

Perhaps one can start by considering that students are both face-to-face and online students at the same time. In essence, we design all of our face-to-face classes into a new form of blended course design. What may emerge is some as-of-yet unnamed course design that ignores the formal distinction and takes on the real nature of teaching in the time of Google: "Yoda Google."

If you are wondering how to approach your course to ensure value, try our exercise based on this Yoda concept, called "What would Google do?"

Make a list of the 10 activities or uniquely "you" things that cannot be Googled. Strip your course back and see what remains. This may be your own personal stories, their own stories related to course materials, or even a creative exercise like asking students to take Play-Doh and play with it toddler style in order to relate their creation to Piaget's stages of cognitive development.

Resist the social and research-based convention that learning cannot take place in this realm. If the student has come to class and is online while you lecture, then considering why they came to class seems a plausible path to take. Are they there due to a strict attendance policy? If not, then are they there because they like the experience of being with peers? Might they still be learning even if looking distracted? If so, what kinds of learning can take place while they're online? Just as memory is now known to be based on many factors (feelings, words, situation, past experiences, etc.), learning may be similar in that one learns not simply by focus and alertness, but by being in a thoughtful and overall engaged state; an alertness that engaging with electronic devices might provide.



Teachers cannot ignore the internet.

Become fully human in the classroom: more authentic and engaging, vulnerable, storytelling, thoughtful, and interesting. While amusing students is sometimes seen as a shortcoming, it is a form of getting others to "get it." Other forms of being fully human might be to forget all forms of technology in the classroom and talk with students, asking them thoughtful questions and become one of the remaining areas of life that is free of technology. eSN

Carla Bluhm is an associate professor of psychology at the College of Coastal Georgia. Kevin Mobbs is an assistant professor of education at Jacksonville State University.

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Is your one-to-one program primed for success or destined to fail?


Tom Daccord

It's been a busy summer leading workshops at many schools and districts with one-to-one iPad, Chromebook, and laptop programs. Many of these schools are years into a one-to-one program, and my conversations with school administrators often focus on the success of their program.

In several of these conversations, school administrators have categorized their one-to-one program as "stagnating" and that they face continued resistance from a significant number of teachers. Yet, at first glance, the administrators have provided everything the faculty needs for success.

For one, every student and teacher has a device (and in some cases multiple ones). These schools have a stable wi-fi network, so accessing websites and online programs in the classroom is not a problem. Network filtering is restrained so that teachers can bring social media websites into the classroom. Administrators have also hired instructional technology specialists to assist the teachers. Finally, teachers are afforded much latitude in tech implementation. At these schools there is no explicit requirement for teachers to use the devices and no one is tracking the hours of classroom time dedicated to technology integration.

So, these administrators naturally wonder why their technology integration program is not entirely successful.

At the outset, I typically ask a series of questions: "Why did you decide to go one-to-one?" "How does technology integration align with the school's vision of meaningful and purposeful learning?" "How is learning supposed to be different as a result of a one-to-one program?"

When I ask these questions, it's not uncommon for there to be silence for a few moments. The administrators often glance at each other and hesitate before responding. What might emerge is a vague statement on improving student proficiency in the four Cs: creativity, collaboration, critical thinking, and communication. Sometimes administrators divulge that they do not have a vision of how learning should be different as a result of the technology. Many point out that the teachers have everything they need and have given teachers freedom to develop implementation strategies.

From the outside, it often seems crazy that schools make major technology purchases with no clear plans for how learning should change. We've found, however, that there are so many details in technology planning—acquisition, security, sustainability, teacher training, parent education, and so on—that many schools lose track of the most important issues. To paraphrase educator/speaker Dan Meyer: "If iPads/Chromebooks/laptops are the answer, what was the question?"

A defining trait of effective leadership in successful school technology programs is a well-defined vision of technology-aided teaching and learning that is shared with various constituents: administration, faculty, staff, parents, and students. A well-defined vision communicated effectively and consistently provides a common mission for the entire school and a rallying point for change.

Yet when I speak to teachers, they often question the purpose of the one-to-one program. "Why are we doing it?" With no clear motivating educational vision, some faculty ascribe less-than-altruistic reasons for the program (such as the desire to "keep-up-with-the-Joneses" district that has gone one-to-one). One interesting paradox is that faculty at one-to-one schools often praise administrators for the autonomy teachers enjoy in designing and implementing tech-infused lessons, yet at the same time criticize administrators for a lack of direction and leadership.

From our vantage point, school leaders need to do three things to make the most of the investment in technology:

1. They need to work with their communities to articulate a clear vision for how new technology will improve instruction.

2. They need to help educators imagine how new technologies can support those visions.

3. They need to support teachers and students on a developmental journey that will take them from using technology for simply organizational and administrative tasks to using them as objects to spur thinking.

Many one-to-one programs focus on learning the device itself and not enough on thinking beyond the device. The best technology integration (one-to-one or otherwise) tends to take place in schools created around a focused pedagogical vision, such as project-based learning, differentiated instruction, and digital citizenship. Science Leadership Academy in Philadelphia and High Tech High in San Diego feature project-based learning. The Silicon Schools Fund in the San Francisco Bay Area supports schools concentrating on blended learning and differentiated instruction. Providence Day in Charlotte, N.C. has a One to World initiative that seeks to connect students to the global community, and empower them to become active participants.

It's hard to move a faculty along if teachers are left to their own devices (pardon the pun) and there is no broad consensus on the purpose and implementation of a program. A "let's try this" or "it's all up to the teachers" environment is not a recipe for success. As one teacher recently opined: "'Let's try this' is not leadership."

Tom Daccord is the director of EdTechTeacher (http://edtechteacher.org), a professional learning organization.

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SCHOLASTIC

Flipped

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ers record their lessons and post them online, so students can watch the content over and over again until they understand—and class time is used to provide more personalized support.

If schools are to meet the learning needs of every student, including those with disabilities, then "we have to think differently about how we provide instruction," Hill said.

Hill was speaking at a June 17 briefing on Capitol Hill that focused on the intersection of technology and special education. During the event, which was hosted by the National Coalition for Technology in Education and Training, Hill and other educators described how technology is empowering students with disabilities to achieve at high levels.

About 2.5 million U.S. children have a learning disability. "For these children, technology has been a game-changer. For some, it's been life changing."
—Kim Hines, National Center for Learning Disabilities

About 2.5 million children in the U.S. have some kind of learning disability, said Kim Hines, associate director for the National Center for Learning Disabilities. For these children, "technology has been a game changer," she said, "and for some, it's been life-changing. … We now know what kids are able to do, and not just what they are unable to do."

Making learning the constant

At E.L. Haynes, students are able to work at their own pace, Hill said—making learning the constant and time the variable, instead of vice versa. This eliminates the anxiety that students often feel when the teacher moves on to the next topic and they have not learned the previous content.

"For students with disabilities, this anxiety could be the difference between staying engaged in their learning and mastering content," Hill said, "or disengaging and failing."

Angela Foreman, a special-education teacher at Jamestown Elementary School in Arlington, Va., said her school has seen "a huge difference" from putting iPads in the hands of students with disabilities.

Like E.L. Haynes, Jamestown has embraced a flipped approach to instruction. This helps with pre-teaching concepts, Foreman said, such as multiplying large numbers. Kids can watch the videos "as many times as they need" the night before a lesson, and Foreman and her colleagues infuse these videos with humor and catchy songs. Then, when students come to class the next day, the teachers start singing those songs—and "the light bulbs come on" for students, she said, stimulating the connective pathways in their brains.

Technology also helps teachers differentiate their lessons for students with disabilities, Foreman said. For instance, teachers can create customized content for students to download and work on independently.

Kate Nagel, a science teacher who works with high-functioning students on the autism spectrum at The Ivy Mount School in Rockville, Md., said her school is using the Science Techbook from Discovery Education. This interactive digital textbook includes features that make the content more accessible for students with disabilities, such as the ability to have the text read aloud to them.

"This gives students a sense of independence and ownership," she said, because they no longer have to ask for help.

The Techbook content also includes interactive games and video clips explaining key concepts, which students find engaging, Nagel said. When students are interacting with the content in this way, "they really internalize what they're learning."

For instance, her students recently played a game in which they had to build cells and keep out invading viruses. "They remembered every single part of the cell," she said. "That was not going to happen from just looking at diagrams."

Relevant for all students

Throughout the briefing, participants noted that these same technologies that are helping students with disabilities to succeed also help other students as well.

By talking about technology and special education, "we're helping the future of all kids across the country, and not just those with disabilities," said Alexa Posny, a consultant and former assistant secretary for the Education Department's Office of Special Education and Rehabilitation Services.

Posny moderated a question-and-answer session at the end of the event, in which she asked participants: What will it take for more schools to adopt these types of changes in their instruction?

Nagel said getting teachers to change their approach can be difficult, because many teachers already feel overworked and resent having technology "pushed" on them as yet another mandate. She recommended that schools encourage instructional shifts by modeling best practices for their teachers.

"Use it yourself, and invite people into your classroom," she urged teacher leaders. "Make sure other teachers are seeing that, and also seeing the results—[such as] how students are excited to learn."

Foreman said school leaders should allow teachers to explore technology use on their own in professional development workshops, letting their creativity emerge instead of telling them what to do.

"Let us see what we can do when we're given the time and the opportunity to do that," she recommended. eSN

The former editor in chief of eSchool News, Dennis Pierce is now a freelance writer covering education and technology. Reach him at denniswpierce@gmail.com.

Educating Parents of the Siri generation

In our digital world, some parents may feel lost at sea

By Carl Hooker

When I was a kid, I used to listen to music my parents didn't like and stay out riding my bike until the street lights came on. Today, our kids have scheduled playdates and a steady stream of organized activities, and spend the rest of their time connecting to others online. We no longer live in an analog world, yet why do we think our parenting should look the same as it did back then?

As an administrator in a one-to-one mobile device district, I've seen firsthand how access to devices can disrupt learning for both good and bad. But we forget that this disruption also occurs at home when the students take their devices home. Our teachers hopefully have hours and hours of support and training for integrating these tools in the classroom, but what help are parents getting?

The first reaction of parents is to take away the "threat" (in this case the technology). They'll look for the quick and easy way to block, filter, monitor, and track everything their kids are doing online. Don't get me wrong, I think it's good to be aware of things your kids are doing. Last fall, I wrote a letter to parents about YikYak and social media awareness. While parents were happy to hear about this new app, I also sensed an increase in frustration and helplessness. How can we stay ahead of our kids? They seem to have the two things we don't have: time and lack of responsibility.

The hard truth, and the thing a lot parents don't want to hear, is that there is no easy way out. There is no magic button. There is no all-seeing, all-knowing internet filter. You can lock the doors, windows, and network but little Johnny or Mary can still get into mischief. And the reality is that we have ourselves to blame. Why do kids jump from social media network to social media network? Because we "old people" decided to get on Facebook. I see the same trend happening with Instagram now.

So what's a parent to do in this new digital age? Well, the past might actually help. Many of the same tenets of classic or analog parenting can help us still today. Think about it this way—if you have a dozen cupcakes sitting out on the countertop, do you let your kids eat all of them? The same can be said with screen time or time online. Guidelines and limits are a part of parenting, whether it be digital or analog. Technology can actually help with this in terms of lock screens and time limit trackers. It can provide some data for kids to learn how to be self-sufficient, but only if there are consistent guidelines and expectations.

While parents may try and create these new guidelines in clever ways (like parents who have kids earn their Wi-Fi password), they often don't model the behavior they want their kids to follow. I've been in countless playgrounds, museums, and aquariums where I see kids interacting and having fun while their parents check Facebook or text friends. Yet we complain about our kids with their noses in their phones. We need to look in the mirror before looking out the window.

So with all this change in the world with our kids, what's a parent or school district to do? The lines between home and school have been forever blurred, and perhaps it's time to revert to the old mantra: "It takes a village to raise a child." Schools need to be having conversations with parents about the digital responsibilities their kids need to be adopting. Especially in school districts with mobile device initiatives—whether it be one-to-one or Bring Your Own Device—parents need to have a voice in the learning process. I'd argue that we need to take it a step further and provide parents with some level of support, much like we do with teachers.

The hard truth, and the thing a lot parents don't want to hear, is that there is no easy way out. There is no magic button. There is no all-seeing, all-knowing internet filter.

Modeling good behavior is a first step.

Helping parents learn guidelines, new tools, social media look-fors, and digital parenting skills helps create a dialogue and platform for conversation between members of the community. Providing resources for parents gives them some level of buy-in and support of the program too, which can only help with its success. If parents are modeling the same things at home that are happening at school, kids will see the use of technology not as a toy but as a learning tool. In return, parents can gain some new skills to mesh with the old and help them survive this transition to the new digital world of parenting. eSN

Carl Hooker is director of innovation and digital learning at Eanes ISD in Texas.

NETWORKING THAT

Chromebooks ✓ **Network** ?

It is not surprising that a lot of educational institutions and school districts are getting caught up with the newest technology looking for ways to increase engagement and learning, opportunities with Chromebooks, tablets, wireless printers and digital whiteboards. But the biggest obstacle seems to be not enough infrastructure to support it.

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Keith Krueger

The three key ingredients for mobile learning success

Don't forget these cornerstones of mobile implementations

Why are some mobile learning implementations successful while others struggle? It seems struggling districts are missing at least one of a handful of ingredients that successful districts have in common. When it comes to mobile learning success, leaving out just one key ingredient can ruin an otherwise perfect recipe.

What are these ingredients? They can be categorized as leadership, strategy, and expectations management.

Most leadership considerations are simply standard change and project management best practices such as ensuring that all stakeholders are on the same page, that the goals are clearly defined and documented, that policies and procedures are in place, and that there is sustainable funding. Others are somewhat more challenging.

One leadership component that is often missed by districts is to have a very clear vision for why they are implementing mobile learning. Beyond shiny toys, engagement, and efficiency, successful districts use mobile learning to change teaching and learning. These districts focus on preparing students to work and live in a connected world that will expect them to be able to gain new knowledge and completely new skills every few years.

With a clear vision of the "why" in place, districts can address another often-overlooked element of success: marketing.

Mobile learning is still relatively new, and classrooms and homework that use technology look different than the classrooms teachers, community members, and parents graduated from. A marketing campaign can help everyone come to a shared understanding of how the changes will benefit students. To really make the message clear, it is a good idea to explicitly brand the program—give it a name, a tag line, and plenty of clear communication about what to expect. And when the inevitable bumps in the road happen, successful districts are prepared to communicate quickly and transparently with parents, the community, and the press about what happened, and what measures are in place to address the issue.

Being clear about the "why" also makes it possible to identify and document specific measures of success for the program. Some districts are looking for greater engagement, fewer discipline problems, increased attendance, and other things that are measured quantitatively. Others are looking for deeper learning, collaboration and creativity, growth mindsets, self-directed learning, or other goals that are the result of changes in instruction. Whatever the goals, documenting and celebrating progress helps successful districts stay on track, particularly when things get bumpy.

The strategy elements of a successful recipe consist primarily of effective execution: plans and effective implementation of a robust network, roll-out logistics, professional development, curriculum, digital tools and resources, and marketing communications. However, these necessary and straightforward elements depend on one key person for their success—the leader in each building.

Once plans are in place, the success of a mobile learning implementation is in the hands of each principal. A principal who has taken ownership of the goals—the "why" of the project—relentlessly keeps the building focused on the transformation, shifting the culture to one of continual growth and improvement. In such an environment, it is common for both teachers and students to be working harder than ever and yet to feel as though it isn't work at all—they are engaging in Seymour Papert's "hard fun" and are adamant about how they could never go back to teaching and learning the old way.

In buildings where the principal is skeptical or disengaged from the goals of the project, that transformation is slower, if it happens at all. It is normal within a district for there to be a range of adoption initially—those who are unleashed by the opportunity and surge ahead, those who are reluctant, and the many in between. When looking at successful districts, they don't expect everyone to make the leap at first—they focus on and support their early adopters and let them become the visible success stories that inspire the rest.

The final set of success ingredients fall under the category of expectations management. Mobile learning still means different things to different people. Given that it is new and different and problems inevitably arise, successful districts find it helpful to let everyone know what to expect. But most important, successful districts make it clear that digital transformation is an ongoing, living work in progress that will never be completed, that implementation will be uneven between schools and classrooms, that the timeline is years as opposed to weeks for teaching and learning to really change, and that though problems are inevitable, so are solutions.

Leadership. Strategy. Expectations management. These are the ingredients successful districts combine to serve up mobile implementation success. eSN

Keith Krueger is CEO of the Consortium for School Networking.

Google's virtual field trips enter the classroom

Google Expeditions is introducing some kids to the world beyond their walls

By Stephen Noonoo
Editor, @stephenoonoo

Last spring, Hector Camacho guided his high school economics class on comprehensive tours of the New York Stock Exchange, Federal Reserve banks, and the Treasury Building. Students swept their eyes up countless Neoclassical columns before heading inside for a detailed look—all without leaving the library of their Mountain View, California school.

The catch? Students were plugged into Google's latest virtual reality creation, Expeditions, which creates immersive, 360-degree tours out of a cardboard viewer and a smartphone.

Expeditions creates field trips from a cardboard viewer and a smartphone.

"The best thing about it is that we can't physically go to these faraway places," Camacho said. "At the high school level, time is really precious. For field trips, you have to worry about buses, lunches, permission slips. If you can remove all those obstacles, still take them to a very faraway place, and give them a similar experience, that's powerful."

When Google got in touch with Camacho's school, St. Francis High School, they laid down some specific parameters. Camacho and history and biology colleagues were responsible for all the prep work behind the virtual field trips. Teachers picked the locations and sent their geographical coordinates to Google, which compiled the tours based on streetview and still images. Google provided the cardboard viewers and smartphones, but asked that teachers let the kids figure out how to use everything themselves.

"It was an easy thing for the kids to figure it out," he said. "Look in the drawer and everyone got a cardboard. There were the handheld devices and they each got one of those and then there was a tablet for me—that accessibility and ease of use was important to them and my kids figured it out right away. They just had to figure out how to put the device into their cardboard." Before long, he said, they were walking and turning around and reaching out as if to touch what they were seeing. "You could hear the level of awe. This is something you don't really hear from 17-, 18-year-old's anymore."

Camacho previously had taught U.S. history, a subject that he said lends itself more readily to a tool like Expeditions than economics. "This was more of a challenge for me as an econ teacher, because it's not much of a place-based subject, it's more concept-based. So I had to think about where would an econ teacher take his or her students."

Ultimately, he decided on a tour of the Great Recession, a concept he could convey in class but anchored by a visual look at the banks and federal buildings where much of the action took place. He started by showing each building's facade and then, by clicking "next" on his tablet, students were transported for various looks inside. (At launch, it will come loaded with a handful of existing tours, but teachers will eventually be able to create their own).

"I used this as kind of a hook lesson," Camacho said about his use of Expeditions. "Then they had a point of reference for when we were doing the rest of the lesson piece. That's what's really missing from education today, that whole relevance and context component. Kids are looking for something to connect to, and when I start the lesson with something they can visualize and almost touch, those are the kinds of things they're looking for because now they have buy in to what we're talking about."

As far as modern technology goes, the cost is far from ruinous: The cardboard viewers are dirt cheap and Google expects all sorts of smartphones will eventually be compatible. Recently, a rep at the ISTE Google lounge even floated the possibility of providing schools with cheap devices not connected to any data plan. And no one's suggesting a one-to-one ratio.

"One of the things that came out of the conversation was that this is not necessarily something you would use every class," Camacho said. "Maybe there's a virtual field trip space where you could launch an Expedition, with one or two sets per school. In a way, it brings the library to life. The kids are getting excited about going to the library." eSN

Nonprofit

continued from page 1

dent and chief information officer at Case Western Reserve University, one of OneCommunity's founding partners.

"Community leaders embraced the idea that whatever our future might be," he adds, "fiber optics would [provide] a very important underlying and enabling infrastructure to get us there."

To date, the organization has built about 2,500 route miles of its own fiber that currently connect 800 different institutions to the internet, and to one another, at ultra-high broadband speeds.

To do its part in that mission, OneCommunity handles all of the design work for the fiber optic installations and then partners with third parties (that manage the construction work) to implement the fiber that gets laid across Northeastern Ohio. A nonprofit organization, OneCommunity also has a portfolio of programming activities designed to train, educate, and enable the individuals who use those networks.

Signing Them Up

According to Gonick, OneCommunity currently works with 800 organizations (i.e., subscribers) that pay for the bandwidth access and/or fiber connection. On the K-12 education side, the group connects about 50 different schools systems that work through partner consortiums to acquire the access. "Those consortia pay us for their fiber and they, in turn, connect the schools to the fiber," Gonick explains. "The consortia then charge the schools for their [usage]."

The Cleveland Metropolitan School District is a OneCommunity partner that turned to the organization for help supporting a one-to-one Nook initiative. Funded by a local philanthropic agency, the initiative found OneCommunity providing the increased internet access—so students could have up-to-date e-textbooks on their devices—along with training and support. In addition, OneCommunity has provided videoconferencing technologies and teacher training/support at the district's early college program, John Hay School. New at the time, the school was "poor performing," according to Gonick. In 2014, John Hay School's early college program was ranked as the top science school in the state of Ohio, based on state graduation test results. "All of the school's curriculum leverages the broadband network," said Gonick, "so the [district] considers us one of their important champions and ambassadors."

Right now, OneCommunity is working on a seven-city collaboration that will support science, technology, math, and engineering (STEM) education, with a primary focus on computer science. "These seven cities very much like what they see and hear taking place in Cleveland, and have asked us to help organize this multi-city collaboration," Gonick explains.

Creating Accessibility

OneCommunity's Connect Your Community initiative was a 3-year project focused on bridging the digital divide. The program worked with households that were below the poverty line, providing them with training, equipment, and broadband. Gonick points to The Pew Internet & American Life Project as proof that a digital divide exists in America, especially among people older than 65, those with little education, with household incomes of $25,000 or less, people with disabilities, African Americans, and those in rural areas. "These are precisely the groups that we serve with Connect Your Community," Gonick said.

Bill Callahan, director of Connect Your Community 2.0 (the new iteration of Connect Your Community, whose federal grant ran out in 2013), said the program served about 26,000 households across eight localities. "A high number of our activities were done in cooperation with school district programs," said Callahan. "We had a significant number of parents who were trained by the school districts, for example, and who then served in classes that were oriented toward digital-parenting engagement."

The parents who were involved in the program were self-selected and typically learned about the opportunity via school-generated publicity. The focus was on parent engagement with the school district, including 20 hours of training on general skills plus whatever portal the district was using to engage with parents, Callahan explains. While the federal grant has since ended, Connect Your Community 2.0 is developing additional resources and running as a collaborative effort among partners (including OneCommunity).

Lev Gonick, CEO, OneCommunity

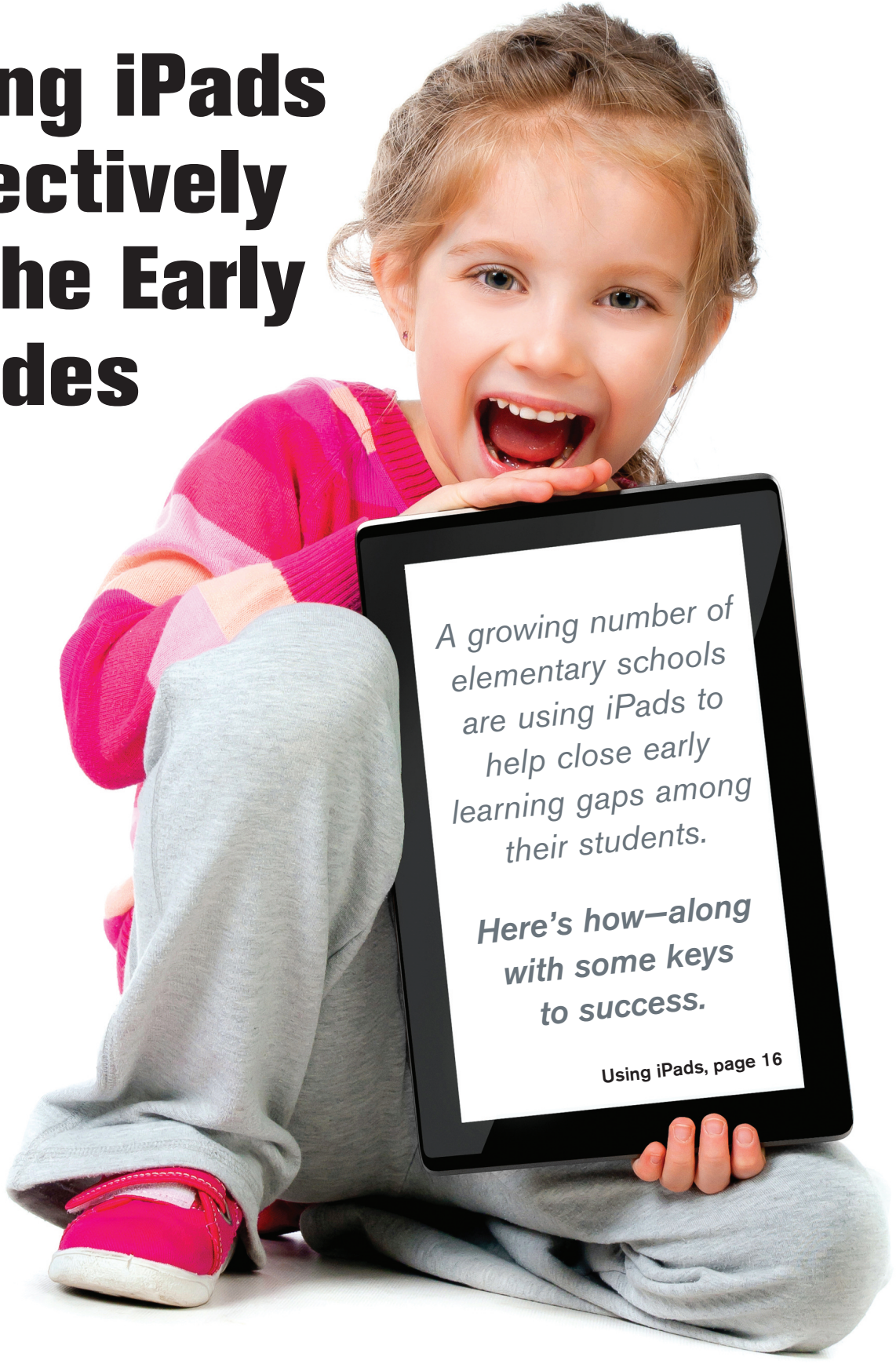
Crossing the Digital Divide

Looking back on OneCommunity's track record during the last 12 years, Gonick said the effort could definitely be replicated in other communities and districts across the nation. To create the most impacts and get the best results, however, he said multiple organizations, constituents, and districts must be willing to get behind the initiative and support it over time.

"We've learned that it definitely takes a village to sort through all of the technical, pedagogical, and student-related services, and to bring the technology community to the planning progress," said Gonick. "These steps are vitally important to the success and for building a coalition. But in a world where high-speed broadband is no longer a 'nice to have,' but a 'must have' formula, the effort is definitely worth it." eSN

Bridget McCrea is a contributing writer for eSchool News.

Using iPads Effectively in the Early Grades



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Using iPads

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This past spring, elementary school teachers in North Carolina's Lenoir County Schools added a new twist to their students' field trips with the help of new iPads: video-based scavenger hunts.

"Students would have to take pictures or video of items they were asked to find—say, at a museum—and then come back to school and put together an iMovie that highlighted all the things they were supposed to see and learn," said Digital Learning Instructional Coordinator Stacy Cauley.

Not only did student engagement "skyrocket," Cauley said, but the students are now much more likely to remember what they learned from their experience.

Lenoir County, which just distributed iPads to every student in its nine elementary schools in December, is among a growing number of U.S. school districts that are using the devices with students in the early grades.

According to education research firm MDR and its "State of the K-12 Market 2014" report, 97 percent of K-12 leaders say they are using at least some tablets within their district—and of these, 91 percent are using Apple devices.

While MDR does not have figures to distinguish between tablet use at various grade levels, many educators say they are using iPads more often in the early grades, for a number of reasons.

For one thing, very young students aren't doing as much writing, so having a keyboard isn't as important for them as it is in the later grades. Also, younger children are very tactile learners, and the iPad's touch interface is a natural fit for these students.

"iPads are just more intuitive for young children," said Benjamin Heuston, president of the nonprofit Waterford Institute, which develops early learning software for preschool through second-grade students. "Children are hands-on learners, and they want to experience and grab things."

A mouse isn't as intuitive for young children to use, he said.

In its computer-based software, Waterford has included an activity that helps young children learn how to use a mouse and interact with the program appropriately. This year, Waterford has introduced a new iPad version of its software, and Heuston said, such a tutorial will not be necessary for the iPad version. "Children will just naturally be able to pick it up and work with it effectively," he said.

He added: "Anything you can do to reduce barriers to technology use is a good thing. You don't want technology to get in the way of instruction; you want it to be so transparent that children are focused on the learning, and not on how it is happening. I think iPads have done a very nice job of that."

Personalizing instruction

Adaptive curriculum for iPads has been very effective in helping teachers personalize the learning for every child, said Leslie Wilson, founder and CEO of the nonprofit One-to-One Institute, which advises schools on the use of

iPads are used in the classroom individually or in small groups to enrich the learning experience.

"In the early grades, **iPads can help** harness and nurture students' inherent creativity and curiosity, providing immersive, kinesthetic, and differentiated learning environments that build critical thinking skills," said Tom Daccord, director of EdTechTeacher, which helps educators use technology effectively.

technology to transform instruction.

"If every student has an iPad and you're using digital resources aimed at taking kids from where they are to the next level and moving them forward at their own pace, those kinds of activities are really very helpful," Wilson said. "Not every child needs to be learning the same lesson; they can be at different starting points and get feedback on their progress and move forward either individually or in a small group."

Personalizing instruction can help schools address the gaps in young children's math and reading skills, before these become bigger problems later on. (See "*Why closing gaps early is critical for achievement.*") That's a key reason why Lenoir County Schools adopted iPads last year—and it's an important goal for Prince George's County Public Schools in Maryland as well.

As part of a project called Transforming Education through Digital Learning (TEDL), Prince George's County has given classroom sets of iPads to 20 teachers to help close achievement gaps in its Title 1 elementary schools, and three of these schools have gone fully one-to-one with iPads.

Many of the instructional programs Prince George's County is using offer iPad versions. That now includes Waterford Early Learning, which is used by teachers to enhance the literacy skills of first and second graders in 41 of the district's Title I schools.

"The technology has enabled teachers to differentiate their instruction to meet the students' individual needs," said Title I Supervisor of Digital Learning Meri Robinson.

For instance, teachers can use Waterford's personalized curriculum and reporting tools to quickly assess

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Why closing gaps early is critical for achievement

When used effectively, iPads and other technology tools can help preK-3 teachers quickly identify gaps in their students' skills and deliver highly targeted instruction to fill these gaps. That's an essential goal for educators, as research suggests that a growing number of students are starting school already behind their peers—and that closing these gaps early is critical to a child's success.

The Great Recession that began in 2008 has led to a dramatic rise in the number of U.S. children living in poverty, according to figures from Kids Count, a project of the Anne E. Casey Foundation: from 13.2 million children in 2008 to 16.4 million in 2012.

Nationally, about 23 percent of children lived in poverty as of 2012, the latest year for which the foundation had figures. That's up from 19 percent in 2005. Mississippi had the highest percentage, at 35 percent, followed by New Mexico and California.

"Too many of our kids get an unequal start in life, because their families struggle just to make ends meet," Kids Count said.

Why is this significant? Successful readers have had about 3,000 hours of pre-literacy training by the time they reach first grade, wrote Marilyn Jager Adams in her 1990 book "Beginning to Read." But children who come from poorer, less-educated families have had between 20 and 200 hours, on average, because they have not been read to as often—and their homes aren't as rich in verbal communication. At best, that's only about 7 percent of what they need, Adams warned.

The challenge is compounded by the growing population of U.S. students from households where English is not the first language. Across the nation, an estimated 4.6 million students are considered English language learners, making them "the fastest-growing student population in our schools," said Education Secretary Arne Duncan in a recent blog post.

If these gaps in literacy and other academic skills are not closed early on in a child's education, they will only get worse.

Closing gaps early is critical to a child's development, said Benjamin Heuston, president of the Waterford Institute, because "children who can't read fail publicly in front of their peers and their teacher … 180 days of the year." They start to believe that reading is something they can't do. But it doesn't mean they can't read, he said; it simply means they haven't had the support they need to be successful.

The psychologist Keith Stanovich has argued that children often follow a self-reinforcing path when they're learning to read, Heuston said. Those who experience success early on develop confidence, which motivates them to work even harder—while those who struggle tend to shy away from reading, which further exacerbates the problem.

Stanovich called this the "Matthew effect," and if it's true, then "getting started on the right path becomes a determinant to a child's success," Heuston said. eSN

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whether their students understood a lesson, and then break the students into smaller groups to work with those children who need additional help—while the more advanced students can begin learning the next concept on their own.

While initial achievement results were not yet available as of press time, student engagement is on the rise—and disciplinary problems have declined.

"There's an energy and excitement that didn't exist before. Kids now look forward to coming to school," said Christina Jerome, an instructional technology specialist for the district.

Fostering creativity

iPads also tap into the imagination that students possess at an early age, allowing them to express their creativity in pedagogically sound ways.

"In the early grades, iPads can help harness and nurture students' inherent creativity and curiosity, providing immersive, kinesthetic, and differentiated learning environments that build critical thinking skills," said Tom Daccord, director of EdTechTeacher, which helps educators use technology effectively.

iPads allow students to express their learning using different modalities. For instance, instead of asking students who are learning English as a second language to write a paragraph about an experience they had, "we've had them create videos where they can verbally express to their teacher what they have learned and use images or voiceovers," said Jerome. "This gives them extra confidence and creativity as they demonstrate that they've actually mastered the content."

As Lenoir County's use of iPads on school field trips suggests, students become much more invested in their work when they are producing a multi-modal artifact to reflect their understanding.

"Instead of having students write a paper, now they can create an iMovie to show the ideas they've learned, or they can create a newsletter in Pages," Cauley said. "The iPad apps really do allow for a lot of creativity in product development."

iPads don't just unleash student creativity; they also enable teachers to be more creative as well, Cauley noted.

Beth Holland, an EdTechTeacher instructor who oversees communications for the company, wrote a recent blog post with ideas for using iPads to teach early literacy skills in creative ways.

"Spread around the room and place iPads next to books," she wrote as one of several suggestions. "Have students use Educreations to take a picture of the

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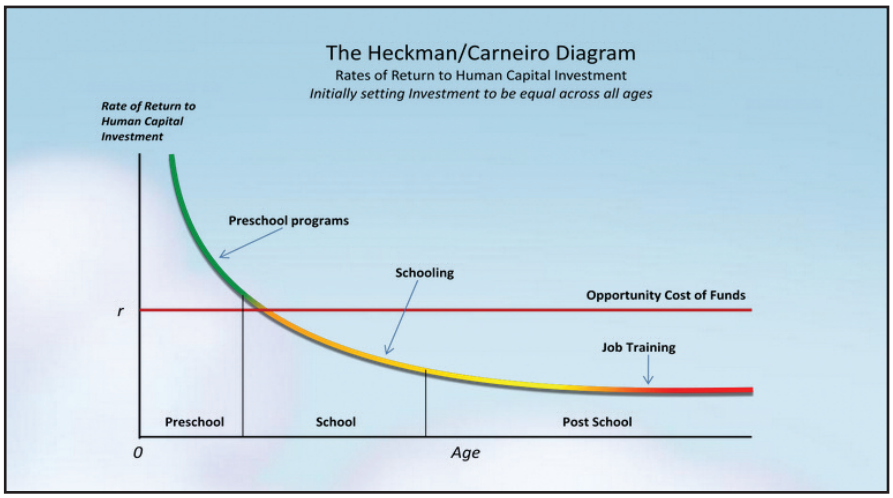

Source: Heckman (2008), "Returns to a Unit Dollar Invested," illustrates that the greatest impact for learning investments is at preschool age and earlier.

Using iPads

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page in the book that they are reading, and then record themselves reading it. You could even have multiple students read multiple pages."

With students all logged in to the same class account, they could collaborate to screencast a book for their peers. "With one app or website," Holland wrote, "you now have a way to assess students for fluency and decoding."

Choosing apps for learning

Another reason for the iPad's popularity in the early grades is the abundance of educational apps developed for the iOS platform. Apple's App Store includes more than 80,000 educational apps that cover a wide range of subjects for every grade level and learning style.

But having that much choice also can be a challenge for educators.

At Prince George's County, each school has its own account to purchase apps, and school-based teams choose their apps by grade level and content area. "We do not regulate the apps they purchase," said Instructional Technology Specialist Terri Jefferson. "However, we do provide a rubric for selecting appropriate apps."

The rubric helps educators evaluate apps according to several factors, such as age-appropriateness, how closely it aligns with learning goals, how easy it is for students to use, how engaging or interactive it is, and whether it is collaborative in nature.

Jefferson said she likes that many of the vetted instructional programs Prince George's County is using, like Waterford, offer iPad versions as well.

"With the increasing number of mobile devices available in our elementary schools, we are looking forward to using the Waterford iPad app this fall with students," she said.

The Waterford School in Utah, a nationally-ranked private preK-12 school founded by the Waterford Institute, piloted the institute's new iPad app during the 2014-'15 school year. "The biggest benefit was how much more interactive it was," said Teri Andrach, a computer lab manager for the Waterford School.

While the traditional version of the software would ask students to trace letters on the screen as they were learning the alphabet, it wasn't always easy for students to do this with a mouse, Andrach explained. With the touch-enabled iPad app, however, this activity was much easier for students—and the software was able to provide more precise, immediate feedback.

"The kids loved it," she said. "They were excited about using the iPads. They took to the platform in a more engaging way."

Mikkel Storm, vice president of prod-

Five recommendations for iPad success

How can educators ensure the success of their iPad initiatives in the early grades? Here is some advice from the field.

Identify your learning goals.

The key to successfully integrating iPads into instruction is the same as with any classroom technology: "Start with your learning goals in mind, and then choose high-quality curriculum with apps and activities that support these goals," said Tom Daccord, director of EdTechTeacher.

Don't neglect security.

One reason the Los Angeles Unified School District's high-profile iPad initiative recently failed was because the district did not have a secure mobile device management system to control students' online activity. But with a solid MDM system in place, "we can control what is on the device and what kids can do with it," said Terri Jefferson, an instructional technology specialist for Prince George's County Public Schools in Maryland.

Learn from other educators.

"Connect with a community of educators who have been using these devices for a fair amount of time, because they're obviously going to have a wealth of experience and resources," said Leslie Wilson, founder and CEO of the nonprofit One-to-One Institute. "There are plenty of communities like that out there; you can find them on Twitter or in online chats and discussion groups."

Take advantage of curated resources.

As the number of educational iPad apps continues to grow exponentially, "it's like drinking from a fire hose," Wilson said: "It can be overwhelming to keep up." Curated websites, which collect resources that have been reviewed by educators, can help you choose the right apps to meet your goals. PowerMyLearning and Common Sense Media's Graphite are two such free online platforms; within these sites, "you can plug in the standards and grade levels, and you can find a lot of vetted resources that are applicable to the iPad."

Think deeper.

Once you know your learning goals, consider: What are the possibilities for using iPads in transformational ways? "Simply taking a snapshot of the curriculum and placing it on an iPad is not transformational change," said Benjamin Heuston, president of the Waterford Institute. "But when teachers use iPads to deliver inquiry-based, personalized instruction, that's when real learning happens." eSN

uct and marketing for the Waterford Institute, said the app includes all the activities in Waterford's early reading software, as well as new activities that take advantage of the iPad's touch interface. The app is available to Waterford customers at no additional charge, as part of their subscription.

"Children can shift from using Waterford in the classroom or in a computer lab for their 15 minutes in the morning, to using it on an iPad during one-on-one time with their students.

"Our experience with teachers is that they are overwhelmed. They have children coming to school unprepared," he said. "They're overwhelmed with the complexities of English language learners in the classroom. And they're overwhelmed by the amount of data they need to capture and process and report on."

What teachers really need, he said, are tools "that can take some of the heavy burden off of their shoulders, and free them up to do some of the other things they really love doing—actually teaching the children—which is why they got into the profession to begin with.

Technology helps automate teacher tasks–giving them more one-on-one time with their students.

time at school. They can pick up the iPad and start right in the curriculum exactly where they left off that morning," he said.

"They're working in a personalized, individualized sequence, and they can switch back and forth between devices. That's very powerful, and it provides a great way to reach students with whatever device they are using."

Moving the needle on student success

Heuston believes that, when used effectively, iPads can help automate many of the onerous tasks involved in teaching, such as grading student assessments or going over letter sounds again and again—while giving teachers more

But to do that, teachers need robust tools and apps that combine rigorous instruction and assessment.

"It's vital that people are looking at systems or solutions that can really move the needle on a child's learning trajectory," he concluded. "And that's a really heavy lift. It's not just something a 99-cent app can do." eSN

The former editor in chief of eSchool News, Dennis Pierce has been covering education and technology for nearly 18 years. He can be reached at denniswpierce@gmail.com.

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Private clouds help schools weather data concerns

Districts are using private clouds to save money and retain control over data. Is it right for yours?

By Dennis Pierce

With student data privacy commanding so much attention these days, some K-12 districts are building private clouds to distribute curriculum and IT resources to students and staff over their own networks.

A private cloud is an environment in which software or data are stored on a central server and delivered to users online—but instead of being hosted by a third-party provider and delivered to users over the public internet, these resources are hosted by the school district itself, under the control of the district's IT department.

Because a private cloud setup is implemented safely behind a district's own firewalls, it gives the district more control over its own data. The tradeoff is that the district becomes responsible for managing IT resources, instead of passing that responsibility on to a third-party cloud provider.

For a small but growing number of K-12 districts, this extra hassle is worth it to ensure the security and reliability of sensitive information.

Cloud control

The Cypress-Fairbanks Independent School District in Texas is developing a private cloud as part of a major network refresh, funded by more than $200 million in bond money.

"We wanted to give students 24-7 access to all of their services, and we wanted these to be secured," said Frankie Jackson, chief technology officer for the district.

Cypress-Fairbanks is the third largest school district in Texas, with about 113,000 students. Everything in the district is centralized, including the delivery of IT services—and moving to a private cloud "will lend some advantages to us," Jackson said.

To create a private cloud, school districts will need a robust data center. Cypress-Fairbanks has upgraded its main data center to a Tier 3 facility and is moving its mission-critical systems to a Tier 4 facility on its own separate grid. Fiber connections run from all six of the district's hub sites to both data centers and the internet backbone.

"We are working with Microsoft to design federated Active Directory [service], so that students can log on from home and use their same network credentials they would use to authenticate as if they were at school," Jackson said.

A project like this requires a significant investment and is not for every district, she noted.

"You need a strong, committed staff" with the expertise needed to manage a data center, she said, and "you have to have a cheerleader" who can advocate for the necessary support.

Cheaper storage

The Raytown Quality Schools in Missouri have nearly a decade of experience with managing a private cloud. The district operates a fully virtualized server environment using VMWare and is upgrading its storage capacity to more than 500 terabytes this summer.

"We look at each individual system to see if it's best for us to host it or have the provider host it," said Melissa Tebbenkamp, director of instructional technology for the district. "But when it comes to data that needs to be stored—my security video, my file storage—I'm going to host it internally in a private cloud instead of paying someone to host it, because I can buy storage cheaper, I can manage and secure it and know that I have control over what's happening with it."

Tebbenkamp said it makes financial sense for Raytown to host the majority of its data in a private cloud, because the district has made the up-front investment to make this possible. "For us, it's significantly cheaper just because we have that volume of scale internally," she said.

One exception is email: Raytown stopped hosting its own Microsoft Exchange system last year and adopted Gmail, hosted by Google in the public cloud. "Exchange is a beast to manage," Tebbenkamp explained, adding that it made more sense for the district to use Google's free program than to spend time and money on email storage, backup, and retention.

When K-12 leaders are considering whether to trust a public cloud provider, they should do their homework, Tebbenkamp said: How much room does a given cloud provider allow for negotiating within contracts to ensure data security? What processes are in place to protect data?

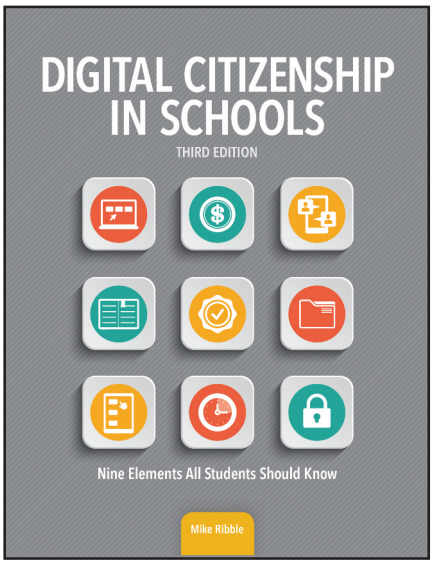
If you're going to create a private cloud, "your data center switching is critical," she said. "Do you have the switching to keep up with the speeds you're going to need internally?"

You also have to evaluate what kind of data you're working with and then find the right storage solution for your needs. And, "you've got to have the staff on site to be able to manage your storage and servers." eSN

The former editor in chief of eSchool News, Dennis Pierce is now a freelance writer covering education and technology. Reach him at denniswpierce@gmail.com.

Three ways to be a better digital citizen

Practicing empathy, offering assistance, and staying safe are good behaviors online and off



Most of us today live as digital citizens.

By Mike Ribble

Walk down the street, look around in a restaurant, or watch people waiting in line and you'll notice how fully technology has become integrated into our daily lives. Views of technology and its place in society can be seen in movies, television, and cultural references.

It has become such a part of what we do and who we are that it become to be defined as a sort of "digital" citizenship. So what describes a digital citizen?

In my book *Digital Citizenship in Schools*, I define a digital citizen as someone who shares ideas, makes purchases, plans activities, asks for answers, interacts both at work and in play and much more on digital devices (computers, laptops, smartphones, tablets, etc.). In short, living within a digital world.

The technology has provided great opportunities for everyone using technology. These tools have increased our productivity and knowledge base in many ways (checking the weather, looking up facts), but these advantages come with a price. Now, by increasing these opportunities to connect, collaborate, and engage with our personal and professional networks requires using and understanding these tools differently. Engaging in these behaviors forces us to act in new and sometimes conflicting ways—to be more social but also more individually focused on our technology. These opportunities to find and share information have increased our dependence on technology.

Being overly connected is resulting in FMO (Fear of Missing Out) or worrying what others are doing, saying, posting, liking, or friending at any time. This has become such an issue that some will keep their devices near them even when they go to bed (and will wake up and post/Tweet/chat in the middle of the night). How can users balance this idea of ultimate knowledge with being with others IRL (In Real Life)?

As with everything, there is balance. There needs to be an interaction of our two sides, our digital life and our real life. As our lives become overwhelmingly influenced by our digital interaction, we need a new set of rules to guide our behaviors.

It's easy to lose touch with humanity when engaging with an online community, but being a digital citizenship means having empathy in all that we do. Having empathy is important in any context. However, in our real lives there are many more cues to guide our behaviors and to signal if there is an issue (facial cues, head nodding, a smile). Reading the written word can make it difficult to judge emotions in a digital environment. Online, systems have attempted to help—think emojis—but the lack of direct contact can make this process more difficult. This means communicating in a digital world requires more thought and time to consider the impact of our words, pictures, and videos.

To assist in this process, there are three focus points to help users of digital media practice good behaviors that can make them more empathetic and conscientious online and off.

Respect. Think of respect as a two-way street. Keep others in mind as well as yourself. When working toward empathy, we must think about the needs of others even before our own.

- Be polite to others, even when they are not always polite themselves. Make sure that when you are online, you include others whenever possible, even if they are not connected to digital devices.
- Remember that laws/policies/proce-

In my book *Digital Citizenship in Schools*, I define a digital citizen as someone who shares ideas, makes purchases, plans activities, asks for answers, interacts both at work and in play and much more on digital devices (computers, laptops, smartphones, tablets, etc.). **In short, living within a digital world.**

dures that have been created to protect you and to help others. Without these it would be difficult for anyone to be productive.

- Give others your attention. Some stores have signs that say that they will be willing to help you once you are done with conversations with others on your device. Your time is important, but so is theirs.
- Remember that illegal downloading does affect others. It is not just the big record/movie companies that it hurts, but many others working in those industries. If you wouldn't walk out of a convenience store with a candy bar, why would you download something that you had not paid to use?
- Digital citizenship is about character and how you want to be seen by others. Do you want to be known as a good person? How will you show this to others?

Tools.

- Learn about the tools (computers, smartphones, and tablets) and applications (software, apps, and programs) that run on them.
- Help others learn these skills as well. There are many ways that someone can communicate with others using technology. Do we communicate with our students in the same way as we do with their parents (most likely not)?
- Find ways to keep up with technology changes. The belief that students are smarter with technology is not necessarily true, but they are more willing to pick up how to use the tools from others. What is popular today may not be tomorrow.

Safety.

- By protecting ourselves we also can help to keep others safe as well. We are all a part of the system that makes up the online world and if we cause harm or infect others because we do not have virus or malware protection we hurt the system.
- Point out to others when they are about to make wrong choices. Help them to find a better way so that we all can benefit from technology. So much information is now online, we need to be aware of what we say and also what others might say about us or in our name. It is important to be aware of your own digital tattoo—or those permanent marks we leave behind in social media, e-mail, or other posts.
- Remember, technology has to do with balance, knowing how much and when to use it. Students are being encouraged to use the technology in schools and homes at an early age. Show them that there needs to be time to go out and be with others. Technology has provided opportunities to become more efficient; let's use this time to get out and be with others as well. eSN

Dr. Mike Ribble is director of technology for a district in Kansas. He is co-chair of ISTE's Digital Citizenship Professional Learning Network (PLN).

Eight ideas for the innovative classroom


Trevor Shaw

Innovation is a trait that I desperately want to instill in my students, and many teachers I talk to seem to share that goal. In the current climate of high stakes testing, state standards, and prescribed learning outcomes, it can be incredibly difficult to foster an atmosphere of innovation and creativity that inspires students. But rest assured, it is possible.

Here, I outline eight basic principles for the "Innovative Classroom."

1. Give students a problem that is both interesting and authentic. There is no such thing as a problem that is going to be interesting to every kid. This means that a project has to be flexible enough for students to tailor it to their own interests. It also means that teachers need to take the time to learn about their students' interests. Authenticity comes from using real tools to tackle problems that don't have their answers printed at the back of the book. Ideal projects dictate some general parameters and tools, but leave the specific problem definition up to the student. Some examples of interesting, authentic projects with built-in flexibility include:

a. Design a musical instrument that you can play without using your mouth or hands.
b. Choose a challenging terrain and design a vehicle that can conquer it.
c. Create a sculpture that incorporates both light and motion.

2. Give students the basics, but keep it short. Students will always need some basic knowledge to get some traction on their projects, but the amount of information that the entire class will need is probably less than you would expect. Chunk this general information into organized blocks of ten minutes tops, and deliver these in a mini-lesson at the start of class. If you find that you need more time, ask yourself if they really need the information you are delivering. If they do, ask yourself if the project they are working on is indeed an authentic problem and not your own learning objective disguised as a problem that the students really own.

3. Model great research skills. If I have done a good job with the project design, students will get the vast majority of the information they need from their own independent research. For this to work, however, I need to coach them in good research skills, and I sometimes invite the librarians in to help. This research, which often draws from internet message boards, programming language documentation, sample code, and Wikipedia, is a slightly different skillset than the research that students might do for a history research paper.

4. Scaffold complex skills. Tools like Makey Makey, Little Bits, Scratch, Tickle, and Tynker make it easier than ever for novice students to create authentic products that solve real problems. If you teach CompSci or electronics and you aren't familiar with any of these tools, stop reading right now and Google them. My personal favorite is an Arduino compatible board called the Light Blue Bean, which can be programmed from an iPad using the block-based language Tickle.

5. Check for understanding always. In a classroom focused on highly individualized projects, it's critical that the teacher monitor what students are struggling with. Optimal learning occurs when students struggle with a problem that they believe they can find the solution to. If they crossover into frustration and confusion, they are at risk of giving up. Teachers should keep careful track of what students know and what they need to learn in order to successfully complete their projects. Use strategies such as "fist-to-five" or "thumbsup" to check the understanding of the entire group.

6. Favor found and recycled objects. In his TED talk, Daniel Pink talks about the connection between creativity and what is know as Functional Fixedness—or people's tendency to see only a single use for an object. Requiring students to fashion electric switches out of clothes pins, or building a robot torso out of a soda bottle, will help students to flex their creative muscles and think beyond the standard uses for everyday objects.

7. Model mental inventory taking. Innovation and problem-solving depend on having a great understanding of what you know and what you still need to learn. Build in components of your projects that require students to list the things they understand about their project and to articulate as specifically as possible the things they still need to understand better.

8. Whatever you do, don't try to grade creativity and innovation. Grades work really well when there is a correct answer you want students to work toward. If you want them to own a problem and to produce a genuinely original solution to it, you cannot motivate that with a grade. In fact, when you assign a grade to something like creativity, students will often perform for the grade and not for the best possible solution. Thus, a grade for creativity, will often become an unintended disincentive.

Innovation isn't a standard that you can teach to directly and then test for. Innovation is more like a habit of mind that is fostered through consistent attention to classroom culture and expectations. With practice, the eight guidelines above can help teachers cultivate such a culture in any classroom. eSN

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How do you get tech-resistant teachers to embrace change?

The secret may be in organization-wide changes and lots of support

Peter West

Many millions of dollars have been wasted over the years by the well-intentioned, but ad hoc, introduction of technology into education. Eager tech-savvy teachers or administrators may jump in feet first, but a significant portion of their colleagues are left struggling along or resisting the change.

The results of well-planned, long-term implementations, however, can produce momentum. When even reluctant adopters are given support, training, and time, positive changes can occur.

The diffusion of innovation

Teachers are similar to other groups in society. They follow the "Diffusion of innovation" graph as proposed by Everett Rogers. This categorizes users (teachers) into innovators, early adopters, etc. (users are represented by the blue line; the yellow represents market share, which will eventually reach the saturation level).

However, for organization-wide change to occur, the late majority and laggards (I prefer to call them reluctant adopters) must be actively involved in the change. We cannot leave it to the innovators and early adopters.

This takes time and effort, and a fair amount of discussion, understanding, and gentle persuasion.

The five stages of adoption

Researchers have identified five stages of adoption that occur during the process of getting all stakeholders positively engaged in change. These are shown in the diagram below. The five stages are

1. Knowledge—the person is made aware of the innovation.

2. Persuasion—the person becomes more informed of the change.

3. Decision – The person compares the advantages and disadvantages of the change and chooses whether to become involved.

4. Implementation—the innovation is used. More information may be sought during this process.

5. Confirmation—the decision on whether to continue to use the innovation or abandon it is reached.

Problems revealed at the implementation stage

Getting the late majority and reluctant adopters to the stage where they decide to implement the change may take years. The implementation stage is the point where the school leader may think that the hard work has been done and that implementation will become easier.

However, this is where some significant insights become obvious, as the late majority and reluctant adopters are often in these categories for other aspects of technology-based innovation. That is to say that even when people in the late adopter and reluctant adopter stages do engage in technology-based change, they may find this difficult, as they have a limited technology skill set. This was reinforced recently when a teacher I know who had taken a long time to accept the need for change confided the amount of time required to complete some preparation for blended learning; it was many hours. However, it would have taken only an hour or so for someone with a more advanced skill set.

This can then produce a negative feedback loop, which hampers implementation. There is always the juggling of effort vs. outcomes. The reluctant adopter may reach the point where he or she looks at the amount of effort required to change and decides that it is too much. The teacher then reverts to

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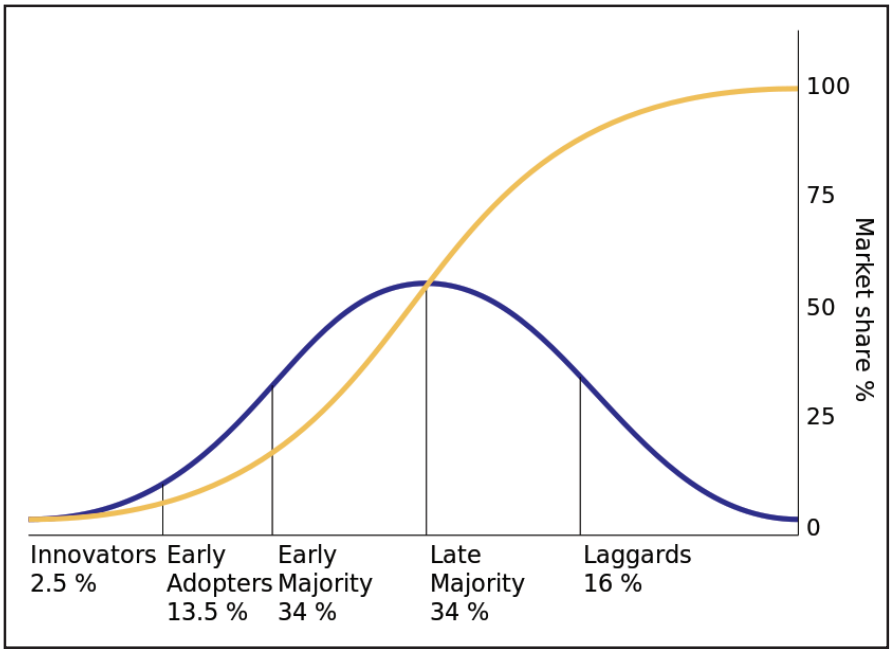

Embrace

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the old paradigm and methods.

The reluctant adopter not only has to deal with the current change, he/she also has to deal with the task of developing some of the more fundamental technology-based skills that may be required. This may be overwhelming.

School leaders are thus left in an interesting position.

They realize that:

- Organization-wide change is vital for long-term success.
- All teachers thus need to be "on board."
- All teachers are at different levels of understanding and skill development, and need to be brought to a minimum standard so that success can occur in a reasonable time.
- Some staff may have a very limited skill set, and thus need a significant amount of training to be able to work in a blended learning environment with a "normal" amount of effort.

How to solve the problem

This leaves a few possibilities.

- **Hope that things will "just work out."** Not a good plan.
- **Forget about organization-wide change and work only with the innovators, early adopters, and early majority.** The idea here is that hopefully the rest will decide to follow. I have not seen this work across a whole organization, and I've found no research indicating that it happens.
- **Provide online training and expect staff to upskill in their own time.** This is probably not suitable or sufficient if it is the only solution implemented.
- **Build an environment of trust, understanding, and support so that teachers feel comfortable asking for help when things are difficult or take too much time.** This requires significant effort and allocation of resources. People and training resources must be available when needed. It requires a staffing model where enough support staff, and the right type of support staff, are available when needed.
- **Allocate individualized (and possibly confidential) professional development time and resources.** Teachers should be supported in their quest to gain skills, and should not feel embarrassed about what they don't know.

The reluctant adopter not only has to deal with the current change, he/she also has to deal with the task of developing some of the more fundamental technology-based skills that may be required. This may be overwhelming.

No doubt there are more possibilities, and a blend of some options is probably needed. This is not meant to be a complete list of solutions. It is meant to be a discussion starter.

What is obvious is that traditional structures in schools have to change to support all staff as they move to a new paradigm of teaching and learning.

The future of our students is too important to leave things unchanged. eSN

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Co-Founder Larry Siegelman 1954–2002

93%

of teachers surveyed

use digital data tools

among them:

- Digital gradebooks
- Auto-uploaded grades
- Teacher dashboard
- Excel spreadsheet
- District assessments
- Common Core alignment
- Summative assessment
- Digital remediation
- Test banks
- Test-creation and scoring

90%

of teachers surveyed

use non-digital data tools

among them:

- Student observation
- Quick, formative assessments
- Student projects & journals
- Grouped student discussions
- Rubric assessment
- Gradebook
- Public, self-driven student tracking

67%

of teachers surveyed

are not satisfied

With the effectiveness of the data and the tools they have access to

Source: *Teachers Know Best: Making Data Work for Teachers and Students*, Bill & Melinda Gates Foundation

Data tools

...continued from page 1

Teachers Know Best: Making Data Work for Teachers and Students examines digital instructional tools that help teachers collect and use student data and attempts to outline the challenges teachers face when working with these digital tools.

Teachers in the national survey (in which about 4,600 participated) said they believe they have a responsibility to support each and every student, and that they should adjust instruction based on each student's strengths, needs, and interests. In fact, 86 percent seek ways to engage students based on who student are, and 78 percent said they think data can help define where students are and where they can go.

Ninety-three percent of surveyed teachers currently use some type of digital tool to help guide their instruction, although 67 percent are not satisfied with those tools.

The survey responses revealed that teachers fall into six groups when it comes to their approaches and comfort using data and the technology supporting data:

1. Data mavens individualize learning plans to address the whole student.

2. Growth seekers use data to differentiate instruction in the classroom and adapt how they teach.

3. Aspirational users believe in using data but frequently find it overwhelming.

4. Scorekeepers use assessment data to help students prepare for state tests and high-stakes assessments.

5. Perceptives rely on their own observations of how students are doing in order to guide instruction.

6. Traditionalists focus primarily on grades to gauge student progress and highlight where to focus their teaching.

Forty-eight percent of surveyed teachers fall into the data mavens and growth seekers groups, but many participants said they are uncomfortable using digital tools to meet learning objectives.

School environment matters, too, and the survey reveals that the proportion of data mavens is 15 percentage points higher in technology-forward schools than in other schools. Those schools are characterized as having technology-proficient principals, they prioritize technology spending and investments in technology staff, they allocate dedicated time for teachers to use data, and they give teachers room to choose the tools they use.

Surveyed teachers said the current digital tools used to collect, analyze, and use data are often:

- **Overwhelming** due to large amounts of data from various sources, making it challenging to identify important factors.
- **Incompatible** with one another, requiring manual entry to put data to use.
- **Inconsistent** in their ability to report data and the level of detail provided.
- **Too slow** to provide information in time to tailor instruction in impactful ways.

For more details in the report, including recommendations for product developers, teachers, school leaders, and funders, read the full report at: http://www.teachersknowbest.org/reports/making_data_work. eSN


Jamie Tettey, CCC-SLP
Speech-Language Pathologist, Schools
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