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The night before my senior thesis was due the power went out across a whole swath of town. In a stroke of proto-mobile learning at its finest, I was able to finish the last minute formatting (really it was only formatting, the paper was done by then) by trudging my Apple Classic the three blocks to campus where the power was still on. Fast forward to the Annual CUE Conference this past March where I witnessed CUE members attending sessions, presenting, and roaming around Palm Springs on photo walks with two, three, four or more truly mobile devices; all more powerful and much, much lighter than my “mobile” 16-pound Apple Classic.

I suppose it’s fitting that as I cycle off the CUE Board of Directors after six years that my final OnCUE article concerns mobile learning, one of the topics I’m most passionate about. Judging by device proliferation at the CUE Conference it’s something you, our members, are equally engaged in. As a classroom teacher, I witnessed my students excelling when using the classroom computers, but the inability to move around while working impeded learning. When the original iBook was released, it freed students to move around the classroom or campus for learning. Immediately, mobile learning’s promise was apparent.

Some 16 years after that original iBook made its debut, the true power in mobile learning is reaching maturity in both life and in classrooms. Over the last few years the practice of researching information with a mobile device has become commonplace, and the advent of better cameras in our devices ensures that the sharing of photo and video creation is exploding (but, even though that camera in your iPad is passable, there is no excuse to being caught outside school grounds using it as your main camera). More than a decade ago at the then-named National CUE Conference, the first sessions devoted to demonstrating how to use your iPod in education sprung up. Now, sessions drawing on the learning power of mobile devices abound, from Chromebooks and laptops to iPads and Android devices, are entirely commonplace.

What’s so exciting is that the promise of mobile learning is now maturing. Throughout the school environment I see educators and students moving beyond the idea of using mobile devices for research. Instead, it’s now common to see students engage in the learning process. CUE members across the country and around the world are leading students in research and activities to learn, to create, to share, to reiterate, and to share again. The professional learning facilitated by CUE members highlights how far mobile revolution has come as educators drive to utilize mobile devices to redefine learning. As CUE members lead this mobile revolution in their classroom, schools, and districts I can’t wait to see what levels learning reaches in the years to come.

Robert Craven is the Senior Director, Technology at the Tustin Unified School District, an Apple Distinguished Educator, Google Certified Teacher, and was recognized as one of the five “Best of ISTE” presenters in 2007, 2009, and 2010. Robert is currently finishing his third term as President of the CUE Board of Directors.
digitalroberto@gmail.com
Results Are In

Following this year’s election, three newly-elected board members will join six continuing members to make up CUE’s board of directors. The new and re-elected directors will begin their three-year terms on July 1. Voting took place from Saturday, March 21 until Thursday, April 23. Visit cue.org/boardofdirectors for more information. The newly elected (or re-elected) members:

**Tim Green**  
Affiliate Nominated: Orange County CUE  
Professor of Ed Tech & Teacher Ed., California State University, Fullerton  
La Habra, CA

**Suzanne Mitchell**  
Incumbent  
Director of Technology, Las Lomitas Elementary School District  
Menlo Park, CA

**Roger Wagner**  
Incumbent  
Independent Consultant and Software Designer, HyperStudio  
San Diego, CA

Rolling to a Classroom Near You

Thanks to a generous donation, 10 new Sphero robots will help comprise a new mobile STEAMpunk lab. Packaged with lesson plans written by Sam Patterson, the labs—two packs of five Spheros—will soon start rolling out into classrooms. Check out page 14 for more on Spheros and drones in the classroom. For more information about the STEAMpunk labs, contact CUE’s Jon Corippo at jcorippo@cue.org.
WELCOME

CUE is looking for members and friends to share their learning, teaching, and technology experiences with their fellow members. Presenters who can address the uses and integration of technology in all disciplines and at all educational levels are encouraged to apply for a presentation. We are looking for sessions to meet the needs of beginning, intermediate, and advanced technology users.

GUIDELINES FOR SUBMITTING

Concurrent Sessions
Concurrent sessions are one-hour presentations that address all areas of the curriculum and appeal to a variety of teachers. Sessions may be given by a single speaker, team or panel who can address the needs of the novice user of educational technology as well as the more experienced professional.

Concurrent Session Panel
Panel proposals are submitted and accepted in the same manner as concurrent session proposals. A group up to five speakers is considered a panel. When available, more than one session may be allotted to a panel. Only 1 Panel member will be compensated registration (not membership).

Poster Sessions
Poster Sessions promote your research. CUE will offer two-hour poster sessions during each of the poster session timeslots Thursday and Friday of the conference. All poster stations will include access to power and Internet connectivity. They will also include a counter-height presentation table and LCD screen as your ‘poster.’

CUE Tips
These quick, 20-minute presentations focus on emerging and existing innovations to enhance learning, productivity, or understanding. They should be noncommercial, brief, and focus on one or two tips, techniques, or resources. NOTE: CUE Tips presenters do not automatically receive complimentary conference registration. Present 3 or more CUE Tips to receive complimentary registration.

Deadlines
Concurrent sessions & Poster sessions: September 25, 2015
CUE Tips: December 2, 2015

Submission Process:
To submit proposals and see selection criteria, go online to cue.org/conference/present.

Contact CUE at 925.478.3460 or cueinc@cue.org.
Technology Support Shift from Regional to Local: By now it is well known that funding for the California Technology Assistance Projects (CTAP) and the Statewide Educational Technology Services (SETS) was merged into the Local Control Funding Formula (LCFF) along with more than 30 other programs. The merger has meant that school districts and county offices of education have the discretion to spend the funding to support local educational needs. A few county offices of education are maintaining some CTAP services, while most are repurposing funds formerly earmarked for CTAP and SETS to address other priorities. The Educational Technology Blueprint, released by Superintendent Torlakson, strongly encourages districts to identify ways to use technology to support implementation of Common Core State Standards (CCSS) and the Smarter Balanced Assessment Consortia (SBAC) computer adaptive student assessment system. In this month’s funding update, we’ll discuss how districts can prepare Local Control Accountability Plans (LCAPs) to include funding for a variety of uses of technology as well as suggesting other potential sources of funding and support for planning, implementing, and sustaining educational technology.

LCFF to fund technology: The increased funding to schools made possible by the LCFF and the CCSS one-time implementation support funding is a potential source for technology and related resources based on local district decisions and planning. Districts are required to prepare an LCAP spelling out how the LCFF funding allocation would be used to improve the academic success of targeted students (low-income children, foster youth and students learning English). The plans are updated annually based on any locally documented changes in needs, funding levels, and state priorities. The LCAP should also address the use of technology to support instruction and especially the implementation of the computer adaptive assessments. Additionally, one-time funds have been, and likely will be available again in 2015-2016 to provide support for teacher and administrator professional development, as well as guidance on how plan, procure, and implement the appropriate technology.
Each district must identify LCAP goals and actions to be implemented that, at a minimum, address the following 8 priorities (with additional details found at cde.ca.gov/fg/aa/lc. The items in purple italics are included as suggestions for ways that technology relates to each of the priorities.

Each district LCAP needs to be approved by the county superintendent of schools and then forwarded to the CDE for review and filing. The CDE has prepared a template with guidelines for districts to prepare their LCAP. It is likely that the LCAP template will be revised for next year based on first-year use.

**Incorporating technology into the LCAP:** County offices of education, as well other education support entities, can assist districts in developing LCAPs that target the many uses of technology to support their annually established and updated LCAP goals, objectives, and activities. The LCFF district funding along with the one-time supplementation funding to districts can fund hardware, connectivity, digital learning resources, and professional development for teachers and administrators. Needed professional development and technical support services can be incorporated into school district LCAP plans. The CDE provides periodic updates regarding CCSS, SBAC, and LCAP, which are accessible online by subscribing to the California Assessment of Student Performance and Progress (CAASPP).

It is suggested that CUE and/or other organizations may want to facilitate incorporating technology and related services into LCAPs by preparing an LCAP Template or “boilerplate” language describing how to integrate technology into specific LCAP activities related to LCAP goals as appropriate. The boilerplate could then be made available to districts on request who are focusing on technology integration into their LCAP planning.

Most county offices of education and the CDE as well as professional education associations such as CUE and CETPA provide the following resources and support services:

- Implementation of the computer-adaptive assessment system
- Online professional development related to CCSS planning
- Providing continual updates on CCSS and LCFF implementation requirements
- District LCAP preparation, development, implementation, and monitoring
- Selection and use of CCSS-aligned digital resources
- School to home-technology-enabled communications
- Collaboration between districts and county offices of education
- Regional technology hardware and software purchasing consortia
- Technical support related to hardware and connectivity
- Research and policy advice related to technology use
- New and emerging digital resources relevant to teaching and learning
- The use of student assessment data to inform teaching and learning
- Developing plans needed to qualify for E-Rate and other funding

**John Cradler** is President of Educational Support Systems and the Legislative Policy Consultant for CUE. He has been actively involved in developing policy and legislative proposals for educational technology at the state and national levels for the past 25 years. He played the lead role in the development and advocacy for State legislation that established CTAP and SETS (SB 1510) as well as other State legislation related to staff development (SB 1882) education technology and assessment. He has been conducting formative and summative evaluations of state and Federally funded statewide, regional, and local educational technology prgrams and projects for the past 35 years. He has served as Director of Technology for WestEd, the Council of Chief State School Officers, a Teacher Education and Computing Center (TECC), and the South San Francisco Unified School District. Contact him: cradler@earthlink.com; and visit cue.org/advocacy.

### LOCAL CONTROL FUNDING FORMULA RESOURCES

- California County Superintendents Educational Services Association, Local Control and Accountability Plan (LCAP) Approval Manual. 2015-16 Edition February 17, 2015. [cue.tc/lcapmanual](cue.tc/lcapmanual)
- Legislative Analyst’s Office (LAO) LCFF Overview – California’s nonpartisan fiscal and policy advisor’s report on LCFF. [cue.tc/laolcff](cue.tc/laolcff)
- California Department of Education LCFF page resources to learn more about LCFF including frequently asked questions. [cue.tc/CDE-LCAP](cue.tc/CDE-LCAP)
- WestEd LCFF Channel – a video channel focused on how to locally implement LCFF. [cue.tc/WestEd-LCFF](cue.tc/WestEd-LCFF)
- CSBA LCFF Toolkit – checklists and guidance for the 4 stages of planning an LCAP geared to the school governance team. [cue.tc/CSBA-LCFF](cue.tc/CSBA-LCFF)
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Membership Application

BENEFITS
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- CUE Up! email newsletter for advance notice and up-to-date information.
- Group Membership discounts. Please call the CUE office for information.
- Discounted ISTE conference registration.
- Online member benefits, visit www.cue.org/memberbenefits.

AFFILIATE AND LEARNING NETWORK OPTIONS
CUE supports many regional Affiliates and Learning Networks. As a CUE member, you not only gain access to a network of forward-thinking educators in your area, but are free to join an affiliate, and any number of our Learning Networks. To add more than one affiliate, there is an additional $10 fee.

AFFILIATES
For more information on affiliates visit www.cue.org/affiliates
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  Los Angeles County
- CUE Nevada
  State of Nevada
- CUE San Francisco
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- Orange County CUE
  Orange County
- San Diego CUE
  San Diego County
- San Gabriel Valley CUE
  San Gabriel Valley
- San Luis Obispo CUE
  San Luis Obispo County
- Santa Barbara CUE
  Santa Barbara County
- Silicon Valley CUE
  San Mateo and Santa Clara counties
- None

LEARNING NETWORKS
For more information visit www.cue.org/networks
- Administrators Network
  Support for technology-using school administrators.
- eLearning Network
  Supporting online teaching and learning.
- Higher Education Network
  Support and collaboration for Higher Education technology-using professionals.
- Independent Schools Network
  Private, parochial, K-12, and higher education organizations.
- Library Media Educators Network
  A support group for learning resource professionals.
- Technology Leaders Network
  School, district and county coordinators’ support
- Video in the Classroom Network
  Supporting multimedia educational experiences in our classrooms.
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In the recent Spring 2015 issue of OnCUE, we published a letter critical of a story in our Winter issue, “From Stacks to Macs,” detailing the genesis of the library and media lounge at rural Minarets High School, near Fresno. How, the letter writer wondered, could author Mike Niehoff write such an adulatory article while hardly mentioning his librarian?

Niehoff responded, but as that issue went to press we began receiving more and more feedback asking the same thing: Can a 21st Century library overhaul really be considered a success without a teacher librarian there to support it? Librarians, it seems, have struggled in recent years against perception problems, technology changes, and shifting budget priorities in districts and schools. But they have risen admirably to the challenge, realigning their traditionally-strong research skills for the digital era. We recently convened Niehoff and Minarets co-founder Jon Corippo along with several library media thought leaders for a conversation exploring the role and opportunities for today’s teacher librarians and what school leaders everywhere can learn from them.

Q: Jon, I know you frequently travel across California visiting various districts. Are you seeing a shift in the way librarians are using their skills as a general trend?

Jon Corippo We are still emerging from the 2008 budget, which was really imposed on us over the past 5 years where we went way back in terms of funding. A lot of districts lost their budget. When I was at Mariposa County, we did not have a librarian in the county office—that had been removed before I got there. All that had been remaining was an MOU at the local county to share their librarian services when needed. When Mike and I started up Minarets, we had a district librarian, but there was no funding for a site librarian. That’s kind of how Minarets ended up with that unique model Mike talked about in the article. We were just never given any full-time employee for that role. I’d like to mesh that with the fact that there are a lot of districts that have super good library and librarian resources that were able to make it through those years, but even those have been drawn down in some cases, or otherwise impacted. A couple years ago I proposed that a librarian can serve a cool role not as an administrator necessarily, but sort of like all these TOSA positions you see coming back—teachers on special assignment—or tech coaches, essentially. I think a really neat marriage of that would be having a librarian serving as an instructional leader. I’ve seen several districts where the librarians are hosting maker labs right in the libraries. Going forward, there are some neat opportunities for keeping the same capacity librarians have with their online and research skills, and blending that in a model that is in direct leadership work with teachers.

Mike Niehoff The context is important. In terms of the article, we just had a unique situation. The district librarian was definitely not on board. We saw the media lounge being a flexible space. We had a huge media production program that was housed in the same building. We only had five buildings on campus, and we really saw this building not only as the library but also as a cultural center. We ended up with a total of 135 students in the school, so we weren’t going to be given a lot of staffing.
We had money for a part-time person to kind of keep things moving in the media lounge. The maker movement was probably a little bit into the future in terms of when our school opened. If you’re remodeling spaces and adding library space or getting new buildings or redesigning them today, you might be looking at a number of things including that maker-type space. It’s not something we were focused on at the time, but we really focused on a student center, cultural center, media production facility, after school tutoring. I think it demonstrates in five or six years how much things have changed.

**Jane Lofton** As we move forward, the role of the teacher librarian is all the more important as more and more reading and research is being done online. I’m going to share two quotes: “Google can bring you back a hundred thousand answers; a librarian can bring you back the right one” (author Neil Gaiman), and “Increasingly, collection is less what you buy and more what you use and make discoverable” (Joyce Valenza). Given the explosion of the information age, students have access to more information than they know what to do with. They need someone to help guide them through these resources wisely. Our role is how to access, how to evaluate, how to responsibly use the information resources, and then how to create things with those resources. I don’t think anyone had heard of makerspaces in 2008, but that’s just one example of the way that teacher librarians are helping students explore and be creators. So many of us are helping students to become creators and share their work outside the school walls so that they can connect with the world, connect with people from the outside, and make a difference.

**Melanie Lewis** Going back to what Jon had mentioned earlier: the instructional technology coach phenomenon is really on the rise and that links back to the article that Mike wrote. I think we have a perception problem. There exists this stereotype of a librarian that’s been perpetuated by the media for years and reinforced in our schools. Librarians in California are staffed by classified paraprofessionals. Some of them may not have any training in library science or technology, so that’s what most people have experienced.

I myself was in the same place. I taught for almost nine years in the classroom and four years in districts, and I never met a credential teacher librarian. I’d never heard of one. It wasn’t put in my credentialing program, wasn’t put in any publications I read. So I really had no idea either. I thought, like you might, that librarians sit there and help check out books, and they don’t do a whole lot besides that. I think a lot people share that view in California, and around the nation, because that is typically what they see in their libraries. When you hear, “Hey, you should hire a librarian,” schools think “Ah, no. I don’t want a librarian because they don’t do anything. Aren’t they just old ladies that just sit and check out books?” I would like to have a conversation about how can we change that perception and start dispelling that stereotype and really begin communicating what teacher librarians do.

When you look at all these job descriptions for instructional coaches or digital learning coaches, what districts are looking for is actually what we do. So how do we put those together? There is a common need out there, but how do we get past that librarian stereotype to where as soon as you hear “librarian” people say, “Nope, I don’t want one of those. I want a digital learning coach.” If we changed our name away from librarian, I think we would have a lot of growth in our schools. When you add the Common Core, a lot of districts need someone trained in how to effectively integrate technology into the curriculum, collaborate with teachers, plan out units with them, and that’s what we do and what I train teacher librarians to do in my program.
Corippo I would argue the opposite could be true with the TOSAs, because here you have credentialed teachers who were very successful in classrooms but don’t necessarily have any training for leading those things, like a digital learning coach might. They may be a fabulous teacher but there is a small but significant different skill set in leading that kind of learning as opposed to just leading the students. There’s kind of a yin-yang thing where one side is seeing one way and the other seeing the other way and they’re both kind of true at the same time.

Niehoff The name of things does matter. I love the title information media specialist or technologist or leader. Those root words speak pretty powerfully as a title.

Lewis People just don’t know. You don’t know what you don’t know.

Lofton We would love help from CUE in helping people understand what we do. All those things mentioned, you’re also getting double bang for your buck because you’re getting a leader of professional development—the tech integrationist, the TOSA. But you’re also getting someone who is working directly with the students, curating the library collection—whether print or electronic—and assisting the students directly, as well as working with the teachers. So why would you not want that?

Also remember, we started off talking off about the facility at Minarets, and I would say that any state-of-the-art teacher librarian would love that type of facility—the flexibility, the opportunity for collaboration, the access to media, and so on. We just we don’t want to have a state-of-the-art facility and not have the person who can make the most of it there to run it.

Q: It sounds like Mike and Jon rejected the notion of a stereotypical “shushing” librarian whose functionality was limited to working with books. But it sounds like modern librarians are rejecting that notion as well.

Corippo I wouldn’t say we rejected it; we never had funds to decide at all. It was just an empty space staffing-wise. We had to scratch up money just to have a library media tech in there and that was for maybe 40 percent of the time. I think that article was primarily focused on the space, the building, and what we did have. If I could have rolled in there with a librarian who had the skillset we are talking about right here, that would have given that building 50 percent more hitting power academically.

Niehoff We were fortunate we had Jon and some innovative teachers who led the charge on information and media literacy and the research skills. It would have been nice to have somebody where that was their daily charge. Every administrator I’ve ever seen is way too busy to do these sorts of things. They’re getting to work at 7:30 a.m. and leaving at 8:30 p.m. They’re more of the CEO of the school. I see the modern librarian/tech support person as sort of the COO of the school. They’re the person that’s able to break down some data or maybe work on some lesson plans or introduce some tools that teachers can use in a more innovative way, because I don’t see relief coming from administrators anytime soon. So the only way to fix this problem is to introduce that new position. I think there’s a huge demand right now for folks who can help teachers understand new pedagogies beyond just teaching math or literacy. Those are important, but I think everybody in this conversation can agree that this is a new language, a new form of communication for kids to interpret. It’s now part of the landscape just as much as literature has been. We’re trying to create balance in the educational experience.

Lewis I was the library media specialist at Golden Valley during 2008 and I survived the budget cuts. I was very happy about that. But I was also the district librarian at that time. That eventually evolved into an administrative position because you’re talking about a very valuable role. In my position, I had a horizontal view of the curriculum. I was the one who knew all of the curriculum: distributing it, processing it, ordering it. Besides the library media specialist, there really isn’t anybody else in the school that has that view of the curriculum, so it’s really valuable to have that person on staff. They’re the person that holds all those puzzle pieces together.

Corippo They can articulate what’s going on between grade levels, which is something that’s very difficult for a building administrator to do because of how their day looks. Whereas the library media specialist has the ability to say, “Hey second grade, check out what third grade is doing,” and make some of those connections that can really accelerate learning. And that’s a hugely valuable position.

Lewis With funding now from LCFF, you have a great opportunity to prioritize how you’re spending your funds and how you’re hiring. I was encouraged that Coalinga-Huron Unified has written into their LCAP that they plan to put a teacher librarian into every single school in the district over the next two to three years because they are going 1:1 and they see the value in having a person on site. That person is going to be a coordinator for that new initiative and help get everything together.
**Glen Warren** I think it’s important to surface the reality that the California Commission on Teacher Credentialing has put it right there in the credentialing that teacher librarians are qualified to provide professional development specifically for information literacy, digital literacy, and digital citizenship. The reason I bring this back up is that CUE’s involved in PD support in districts across the state. I would love to see a commitment to having truly qualified people provide that kind of PD in those areas. Another way of saying that is: If we’re going to provide PD around information literacy, digital literacy, or digital citizenship, let’s make sure, at least from a California standpoint, it’s the person that’s credentialed to do that job.

**Q:** Melanie, how important are professional networks for strengthening the role of the modern library media specialist?

**Lewis** I think it’s vital because of the few teacher librarians there are in California, they’re usually pretty isolated. They’re usually the only person like them in their schools so they need to find ways to network. Here in Fresno, we have quite a thriving network of librarians that get together both face-to-face and virtually. It’s very important to stay current in technology and to integrate it into the curriculum.

**Q:** In an age when budgets can still feel too tight, how do schools make the right choices around upgrading facilities, purchasing technology, and hiring staff for their libraries?

**Lofton** Budget cuts are always tough. I think what happens when we have budget cuts—which obviously none of us like—good educators of whatever sort come to the table and multitask as much as possible. And I think we’ve been talking about it already, but one of the huge benefits of librarians is that they can fill more than one role. They can run the library and teach in the library, but also do the technology integration work that is so desperately needed today as well. So when you’re facing budget cuts you want to think: Who are the types of people who can do more? And I think at least one of the top categories on that list should be a teacher librarian.

**Warren** Equity is a key piece, equity of access. Some of these kids don’t have internet at home and keeping the library open during school hours is so important; you can’t keep it open unless there’s a teacher librarian there. When we start thinking about equity, and once that realization comes through, it’s going to help drive budgetary considerations.

**Corippo** At Minarets, I’m not ready to say that we were that innovative, but people think we were. And they got that impression from the way that Mike and I deployed. And for much of the time we were sort of co-administrators and my head was wrapped around digital citizenship, digital footprints, and getting teachers to do more project-based learning. A lot of the innovation was me going as an in-between from Mike to the teachers. There was that one-two punch of having a person who was really thinking big ideas, as Mike was, and me working with the nuts and bolts. I see that as a model that can work for a teacher librarian and an administrator all over the place. Because one person is focusing on the vision of the school and the business of the school, like we said the CEO, and the other one is more the COO.

**Lewis** That’s what teacher librarians are supposed to be doing with their administrators: working in tandem with them. That’s how it’s worked with my previous districts and it’s worked really well.

**Lofton** I’m in a school with 2,400 students and I do as many lessons as I can but obviously I can’t reach all of the classes with those numbers. If I can reach the teachers then the teachers can pass it on. This just brings to mind one teacher librarian, Deborah Stanley, who has a group of students who teach lessons on digital citizenship. She trains them. They show short films, they moderate discussions. She’s reaching out not just with the teachers but also with student ambassadors. And the program’s been very effective.

**Warren** We hear a lot about 20 percent time, the idea of passion-based learning. This is something that seems really new, but it really isn’t. From the beginning, one of the things that has been transformed is the model school library standards. They are being used as a framework to say to students: Let me help you learn anything you want to learn; and let me help you in the process of learning. It’s about giving students credit not for the content they master but the quality and sophistication of the process of going after that information. And there’s some really great examples of that going on across the state. Schools are saying, “Here’s the stuff you have to learn, but we’re going to honor the stuff you want to learn, too.”

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Thanks to the popularity of the Hour of Code, many of us—and our students—have at least dabbled in coding, whether with Anna and Elsa in Frozen-themed activities, or co-creating our own Flappy Bird. Lately, some innovative educators have been taking it one step further, introducing a physical, indeed robotic, element to the teaching of coding.

The Sphero—a programmable ball that moves on command—has been catching on with students, too, as they are now available in major electronic stores and can interact with any smartphone or tablet using free apps, such as Tickle. Much like Scratch and Tynker, the languages featured in Hour of Code challenges, Tickle uses visual coding where blocks represent lines of codes. Blocks build upon each other to carry out an order and, ultimately, an entire program.

Once your students are comfortable with what they’ve learned on the computer, it’s a simple transition to an iOS device and Tickle (alternately, students can learn right from the app through built-in tutorials). The wonderful thing about Tickle is that it communicates with Spheros and drones—which are small, programmable copters—via Bluetooth, so you can program both using a simple visual coding language.

When introducing coding for Spheros and drones in the classroom, I start with the basics. I actually start teaching coding without a computer and work my way up with activities like flying maneuvers with the acrobatic Parrot Rolling Spider Mini Drone, which can fly and also crawl along a variety of surfaces. The benefit of Tickle is the ability to connect our curriculum of block-based coding with real life objects. This is where the wow factor really comes into play.

**LESSON IDEAS**

Here are some activities we and other innovative teachers have used in the classroom with the use of the Tickle app and a Sphero:

**The Obstacle Course:** Create a course in the classroom where the students will have to program the Sphero to travel from start to finish without knocking over objects that are spread out through the course. This is best done in teams so that students can communicate as they create their code, and so that if it doesn’t work team members can go back and edit their code. As they get better at navigating the course you can make it more creative and complex for the students. Eventually, ask the students to create their own obstacle courses and challenge each other.

**Bocce Ball:** Like Bocce Ball? Substitute Bocce Balls with Spheros and set up a game where students program their Sphero to roll down the lane and stop on a small target. The other team then has the opportunity to write some code to either get their ball closer to the target or else knock the other team’s Sphero farther away. Other teachers have done something similar, adapting the Spheros to create their own bowling game. Both games are fun and engaging ways to program the robotics balls, while supporting communication and problem solving.
THE FINE PRINT

Won’t You Put An Eye Out?
When I started using drones with my K-3 programming club one of the parents asked “couldn’t the propeller get caught in someone’s hair?” The honest answer is yes, but it will smack into their head and crash to the ground first. When the drone flies into me I get a small red welt that fades pretty quickly, but do know that these will crash into people. If you have the kids programming the drones instead of flying them, there will be fewer accidents. This is not a risk-free activity, but so far the kids who have been hit by the drone have laughed it off.

Drone Jarts:
Remember the fun game where we used to run around the backyard trying to avoid giant darts flung in the air that were intended for targets? That’s right, Jarts! Well this is a lot like that. It’s also like Bocce Ball where you code the drone to fly down towards a target, a “Jart Board,” and attempt to land on numbers with the highest point value.

So what is the outcome for using the TickleApp, Spheros, and Mini Drones in the classroom? Working with these tools, I have observed students using the 4 Cs—or is that 5 Cs?: collaboration, communication, critical thinking, creativity, and coding. These are great tools to get student engaged in the classroom while addressing the 21st century learning skills. They’re also a wonderful way to keep students engaged. Hearing all the oohs and aahs makes it all worthwhile. Who knows? Perhaps someday soon the Mini Drone will become our kids’ version of flying a kite in the park.

Obstacle Courses:
Much like the obstacle course with the Spheros, but now we can set obstacles and goals at different elevations and altitudes. This is where the “Iteration Mindset” comes into play, as you ask students to try and try and try again until you reach the goal. Critical thinking, creativity, and communication are crucial as your students plan out each flight.

QR Drone Recon:
These mini quadcopters have a small camera that takes photos looking straight down. Now that the TickleApp has a photo-taking function, you can fly the drone down and take a photo of a QR code that reveals the next clue, objective, riddle, or prize. (This idea came about from brainstorming with fellow CUE Rock Stars.)

Rechargeable Learning Needs Charging
Working with Spheros and drones requires a good deal of battery maintenance. The drones charge from a mini USB port and the Spheros require a dedicated outlet. The Spheros need at least 90 minutes to charge for about 60 minutes of run time. The drones need 90 minutes to charge for about 90 minutes of run time. The drone batteries will begin to discharge if over-charged, so be sure to set a timer and don’t just leave them plugged in. Each robot lesson takes a certain amount of prep and post-production to make sure they are ready to go for next time.

One iPad Per Sphero
If you can manage the resources, dedicate your Sphero robots to only one iPad, which will let you deploy them much more quickly than if you are trying to figure out which robot is connected to which iPad.

Painting With Sphero:
The amazing Lisa Nowakowski tweeted about an activity she uses with her students, Painting with Spheros. Think back to when we were in school and would grab a cardboard box lid, tape down a blank paper with some blobs of paint placed strategically around the paper, drop some marbles into the box, and roll it around to create a painting. Nowakowski’s idea is in the same vein, but on a larger scale. Either control a Sphero or create some code to paint a masterpiece. Two words of advice learned through experience: tempera paint.

As you can see, Spheros are great tools for incorporating coding in the classroom and gaining more experience with robots. If you’re feeling more adventurous, you may be ready to venture out and start experimenting with drones in the classroom. Now we are incorporating elements of flying, something students and teachers alike are enthusiastic about. Here are a few of the challenging ways we’re encouraging students to use them in their learning:

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Sam Patterson, Ed.D., is a K-5 Technology integration specialist at Gideon Hausner Jewish Day School in Palo Alto, CA. After hard work as a middle and high school English teacher, he finally earned his way into elementary education. Sam is a Google Certified Teacher and, more importantly, a CUE Rockstar Teacher.
THE GREAT iPad VS. Chromebook DEBATE

“The iPad is a consumer device; the Chromebook is a creation device.” By now, we’ve all heard this supposed maxim said (and debunked) ad nauseum. Of course, it all comes down to the way you use the device. But which is most suitable for schools?

iPad deployments can be a headache, while Chromebooks can be set up in a snap. Both might technically be “mobile,” but the iPad seems to have the edge in portability. Chromebooks are probably more convenient for online testing, while third-party keyboards with shaky battery life can add stress to teachers’ lives. You can edit video on either, but the native iMovie app for iPad, which doesn’t rely on web speed, makes it a powerful tool.

So while Chromebooks remain the king of large, easy deployments, iPads still have a special place in the classroom environment with regards to tools like Minecraft; Sphero, drones, and quadcopters; and the creation of high-quality video and photography, including tools like stop motion and screen annotation. Google Classroom’s native app also allows multiple students to use the same iPad much more easily. For example, students can take pictures and send them straight to Classroom and when the Classroom app is installed students gain a “share as” option for Classroom when handling files and media.

In reality, pitting iPads vs. Chromebooks might be a false dichotomy. Every time the two of us have this debate we end up in the same place: a mix of devices and an open mind is really what’s best for kids. Check out the following chart, compiled with help from numerous educators and friends, to see how each device stacks up where it counts.

<table>
<thead>
<tr>
<th>Talking points</th>
<th>Chromebook</th>
<th>iPad</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>Prices start at about $200 (plus management console access fee). Case is optional. Insurance is cheap.</td>
<td>Starting price for a 16GB Mini: $239. Add a case for $35.00, which includes keyboard.</td>
</tr>
<tr>
<td><strong>Deployment</strong></td>
<td>Log in. Device locked to domain. Some schools have deployed 80 in under 75 minutes including unboxing.</td>
<td>Apple’s configurator is problematic for managing updates and assigning users. Some users have better luck using Apple’s Deploy.com tool: deploy.apple.com. (Apple is also rumored to be simplifying the Apple ID process for schools later this year).</td>
</tr>
<tr>
<td><strong>Customizing</strong></td>
<td>Can open multiple tabs and run side by side. Almost everything can be controlled/customized. Settings based on OU make it easy to repurpose devices on the fly.</td>
<td>Students can have Safari or Chrome browsers. Safari and Chrome browsers can have multiple tabs. Free apps are easy to push out. Paid apps, less easy.</td>
</tr>
<tr>
<td><strong>Updating</strong></td>
<td>Automatically updates in background, or via user initiation. Can be locked to a specific version. Beta and developer versions easy and available, so you always know how new versions will impact your network.</td>
<td>Notifies user and requests permission for update via MDM (Meraki or Airwatch, for example). You can also set apps to update automatically. Right now, the iTunes store is only “on” or “off.” If it’s on, large updates can swamp a school. Updates are easy to setup via wireless. Apple’s Configurator is now a by-gone model.</td>
</tr>
<tr>
<td><strong>Durability</strong></td>
<td>May vary by brand, cases available. Easy and quick to fix (many screens can be replaced in under five minutes).</td>
<td>Cases available for about $35. The California Risk Management Authority (CRMA) has a program where kids can “lease” their iPad for $20, and can be replaced once if stolen or broken.</td>
</tr>
<tr>
<td>Talking points</td>
<td>Chromebook</td>
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<tr>
<td><strong>Apps/Software</strong></td>
<td>No software to worry about. Apps update automatically. Android apps now available. Education specific app categories available, including subject specific and school specific (elementary, middle, high school) categories. Ability to purchase bulk apps at a discount and deploy from Admin Console. No equivalent to the iPad’s GarageBand and iMovie. Not as adept at shooting HD video.</td>
<td>iOS updates take are time-consuming, app updates slow down machine and productive use (unless the caching server built into the Deploy.com tool is used). Students can be limited to iTunesU access only. It’s almost this simple to invoke: Educreations and Explain Everything may work better on an touch interface, which is lacking on most Chromebooks. Free apps are pushed out easily. Ability to purchase bulk apps through Apple’s Volume Purchase Program (VPP). Deploy through MDM solution.</td>
</tr>
<tr>
<td><strong>Professional development</strong></td>
<td>Chrome only. Flash and other plug-ins available. Can be customized/locked down via console. No Java. No Minecraft.</td>
<td>Safari by default, can install other browsers. Chrome browser can also be used on the iPad but with limitations (e.g. no apps and extensions). Most of the non-Flash sites now have apps that work in HTML5, like Starfall or BuzzMath or Front Row Math.</td>
</tr>
<tr>
<td><strong>Leveraging other device features</strong></td>
<td>Various models and price points to suit your needs and budget. Webcam and mic for screencasting and Hangouts. Built-in keyboard and touchpad. Some models have touch screen. Users must log in to use device; multiple users may share device with individual profiles. True multitasking, like side by side windows and audio playing in the background while using other apps. Has USB ports.</td>
<td>Front and back cameras; Facetime; Skype available, easy to do a Hangout or Facetime conference. On-screen keyboard; detachable keyboards available. Made as a 1:1 device; management issues arise when sharing (e.g., on a charging cart between classes), although having kids log into Drive can ameliorate the issue. No USB ports. No built-in VGA or HDMI ports. Airplay is easy and cheap when used with AirServer or Reflector2. Easy text-to-speech and translation.</td>
</tr>
<tr>
<td><strong>Keyboard</strong></td>
<td>Real or virtual.</td>
<td>Virtual or via a seperate case.</td>
</tr>
<tr>
<td><strong>Portability</strong></td>
<td>Google and Chrome Apps available on almost all devices. App Smashing is harder on Chromebooks, where each app is separate.</td>
<td>Many apps restricted to iPad. App Smashing makes it very easy to combine many kinds of work into a single cogent product.</td>
</tr>
<tr>
<td><strong>Productivity</strong></td>
<td>Full version of Google Apps. Can read Kindle and Nook books. Full Photoshop now available, plus free alternatives. Many of the things the iPad is known for, the Chromebook now has similar functionality. Dedicated Google Classroom app that enables multiple users per device, offline caching, and monitoring/submitting assignments. Read Kindle and Nook Books. Many draw and photo apps, including Sketchbook (free), Photoshop Express, Snapseed, and Pixelmator. Free Apple core apps need no internet.</td>
<td>Dedicated Google Classroom app that enables multiple users per device, offline caching, and monitoring/submitting assignments. Read Kindle and Nook Books. Many draw and photo apps, including Sketchbook (free), Photoshop Express, Snapseed, and Pixelmator. Free Apple core apps need no internet: Keynote, Numbers, Pages, Garageband, Photos, iMovie, and Garage Band.</td>
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As the nation’s 25th largest school system, Baltimore County Public Schools has taken on the challenge of a 1:1 instructional digital conversion that is learner-centered by design, and not led by technology. Our theory of action is to: ensure that every school has an equitable, effective digital learning environment to equip every student with the critical 21st century skills needed to be globally competitive. We’ve launched Students and Teachers Accessing Tomorrow (S.T.A.T.) a multi-year transformation of teaching and learning, to realize this theory of action.

It is essential for school districts to effectively articulate the vision and foundational beliefs which drive our work. At BCPS, we’ve established a teaching and learning framework to guide the priorities and work of the entire system. At the center of the framework is the goal of developing globally competitive graduates. Our foundational belief is that all students, regardless of race, gender, English language competency, or disability must have daily access to rigorous, relevant, and responsive instruction that prepares them to be globally competitive. This belief is supported by the Danielson framework for teaching and 21st century learning outcomes. The Danielson framework develops a common language to facilitate conversation among administrators, teachers, parents, and students in regard to effective, equitable instructional practices across the district.

EIGHT CONVERSIONS TO TRANSFORMATION

Instructional transformation on this scale requires more than a change in classroom instruction—it calls for systemic changes in everything from curriculum to budgeting. To that extent, we’ve begun a series of what we’re calling “conversions” to transform teaching and learning. Each conversion—there are eight altogether—began with our teaching and learning framework in mind. These conversions are not carried out in silos, or as part of any checklist. Rather, they are conducted simultaneously and as needed.

To wit: A digitally-enhanced curriculum is allowing teachers to facilitate a blend of digital and face-to-face instruction. Student learning is driven through digital resources and tools curated by content experts in our learning management system, providing equitable access to a rigorous curriculum that removes barriers for students and places greater emphasis on critical thinking and analytical skills. We want teachers to have high-quality resources at their fingertips, so that their energy and time can be devoted to customize and personalize instruction to meet the needs of every student. We are also developing curriculum-aligned formative and summative assessments available in our learning management system to support responsive instruction.

To build capacity for this work, we are undergoing an organizational development conversion, which involves a strategic and systemic plan. Every school has a full-time instructional coach, called a S.T.A.T. teacher, to support teaching and learning. School-based administrators, S.T.A.T. teachers, instructional, and curriculum staff all receive targeted professional development opportunities to move the entire system forward in our theory of action simultaneously. Along with this comes policy changes to reflect a systematic shift in language that emphasizes empowering students and staff over mandating rules. At BCPS, our policies dictate what we can and cannot do, and therefore must be aligned with our theory of action. We’ve also begun a communications conversion to keep all stakeholders abreast of the work happening in our district. We’ve marshaled the school and district websites, social media platforms, and our own television station to tell...
our story, and set up a parent “university” to better explain our vision. (Visit lighthouse.bcps.org to learn more about these).

Finally, in order to implement a 1:1 initiative in a truly learner-centered environment there must be significant updates in infrastructure. We are on a five-year timeline to issue mobile devices to all instructional staff and students and ensure wireless access in every school building and in strategic county locations, such as public libraries. All of this requires a budget conversion to account for the necessary substantial financial investment. We’ve centralized funding for most technology at the district level, ensuring efficient and equitable use of resources across the county.

All of these conversions must come together to make the ultimate conversion—a fundamental shift in teaching and learning—a reality. Infrastructure, budget, communications, and policy are managed at the district level, allowing schools to focus on teaching and learning. Curriculum, assessment and organizational development provide the support educators need to implement the learner-centered environment. Our vision for the learner-centered environment involves shifts in three key areas: the teacher, the space, and the student.

THE TEACHER AS FACILITATOR
In the learner-centered environment, teachers are necessarily facilitators of learning. Relevant digital resources and curriculum in the learning management system, along with print books and manipulatives, drive instruction with embedded opportunities for students to personalize their learning. Teachers must have a deep understanding of individual learners’ strengths and needs, and even grounding in their culture and interests. This information is used together with continuous formative assessment to provide flexible pathways for students to achieve their learning goals. As a means to instruct students, a teacher might, for example, facilitate small groups responsive to student needs. Feedback is given in a timely manner so that students can develop skills in self-reflection and goal setting to make decisions about their own learning. Rigor is maintained through high-level questioning aligned with curricular standards.

A FLEXIBLE SPACE FOR LEARNING
A shift to a learner-centered environment cannot be fully realized without re-envisioning the physical space of the classroom. We have asked educators to consider, “Who owns the real estate in your classrooms?” In a classroom that belongs to students, the physical space reflects input from all students. Furniture and learning spaces are strategically arranged so students can easily transition from collaborative groups, to direct instruction, to individual work. Often, in this plan, there is no designated teacher space. Some of our classrooms have brand new furniture designed for flexible arrangements, while others use more traditional classroom desks in innovative ways. The wall space provides visual resources that are co-constructed by students to support independent thinking and learning.

THE 21ST CENTURY STUDENT
Our framework for learning broadens the expectations of what students should know and be able to do in the classroom to include the 21st century skills they need to be globally competitive. In the learner-centered environment, all students are active participants in the learning process. Students facilitate their own learning, working independently with peers or small groups led by teachers. The learner-centered 1:1 environment provides equitable access to dynamic digital content and tools, empowering students to personalize their learning. We have even seen students serving as tech support experts and sharing their knowledge with teachers as early as the first grade.

ENSURING TRANSFORMATION FOR ALL STUDENTS
When we enter our schools, we see transformation in teaching and learning beginning to take place. In order to make certain that our work is well-aligned with our intended goals and reaches all students, we have partnered with Johns Hopkins University Center for Research and Reform in Education to evaluate the effectiveness of S.T.A.T. Our evaluative efforts currently focus on measuring the impact on teacher practice, classroom environment, and student engagement. As digital curriculum and mobile devices are in place in schools for longer periods of time, we aim to expand our research to investigate the impact on all students’ growth and development of 21st century skills. If we are to equip every student with the critical 21st century skills needed to be globally competitive, then we must also ensure that our work is a vehicle for promoting equity.

Ryan Imbriale (left) is executive director of the Department of Innovative Learning for Baltimore County Public Schools.

Tricia Stokes (right) supports digital curriculum development and professional learning as an Innovative Learning resource teacher for Baltimore County Public Schools. To learn more about the district’s 1:1 program, visit bcps.org/academics/stat.
CiHALLENGE: WHERE iPADS MEET CHALLENGE-BASED LEARNING

Picture it: At the front desk, a group of students are on the phone with the Los Angeles mayor’s office discussing grey water legislation; in the front of the classroom, a student is on a Skype call with a local amphibian rescue organization making plans for their upcoming City Council presentation; at a lab bench, a handful of students are working in TinkerCad to develop a 3D printed scale model of their car design; behind them, students are producing a video to promote their upcoming sea lion rehabilitation supply drive. All across the classroom, students are working collaboratively to develop and implement solutions to real problems. This is but a typical day inside the challenge-based learning (CBL) classroom, and it’s a big reason why we’re so excited about it.

CBL is a powerful strategy for teaching and learning that requires students to actively engage in the process of learning by developing solutions to real and relevant problems. Developed by Apple in 2008, CBL is designed to cultivate collaboration, self-directed learning, and resilience. iChallenge (a variation that uses iPads to support the CBL process), gives students challenges that mirror the modern workplace and an engaging vehicle that allows them to develop tech fluency with a host of mobile tools.

Through CBL, students discover that risk taking is essential for real progress. What happens when the mayor’s office doesn’t return your phone calls, or the rescue organization doesn’t have time for a Skype interview? Students learn about the power of failure through ongoing reflection and revision. And they experience the joys of success through meaningful community partnerships and authentic outcomes. CBL makes learning matter.

“I enjoyed the independence. We were rewarded for taking risks!” – Eighth-grade student

“I had never done anything like CBL before! It really shows you that students can make a difference.” – Seventh-grade student

“I enjoyed how open the opportunity was. You could take it anywhere!” – Eighth-grade student

“That a group of students could take a bill, get it introduced, and testify before a state assembly committee, was just a really amazing experience.” – Tenth-grade student

CBL, much like its older sibling, project-based learning, promotes a hands-on, active learning environment. Both bring together multiple disciplines and allow students to dig deeply into relevant content areas. Both allow flexibility and personalization as students pursue individual passions and interests.

But the CBL model recognizes the vast amount of information at students’ fingertips, and leverages that technology for research, collaboration, and communication. Technology plays a pivotal role in challenge-based learning.

CBL is also unique in that it challenges students to implement measurable and sustainable community solutions. Students have to move beyond information consumption. Using the tools we will discuss, students become the content creators, and implement community-based solutions to global problems. Every project allows students to connect with the outside world and an authentic audience through the purposeful use of technology.
THE FRAMEWORK

The Challenge Based Learning framework allows students a great deal of academic and creative freedom, while still providing appropriate support and coaching at each stage. Each CBL project begins with the select of a topic or big idea, which could be anything ranging from biodiversity to bullying. The only way to go wrong here, is to not go big enough. To build excitement around our CBL launch, our team makes a challenge video that introduces the essential question (or questions) with thought-provoking text and images. (If you’re not sure where to begin, join the online community of educators using CBL at challengebasedlearning.org).

As students move from guiding activities into the solution development and implementation phases, the teacher’s role will begin to shift to coach and mentor. It’s helpful to prepare students for this transition by letting them know that they will be taking a leadership role in their learning, while you assist, support, and guide them. Blogs and video reflections allow students to document and reflect in real-time throughout the project. The publication and presentation phases push students to apply their technology skills and creativity to share their accomplishments with an authentic world audience.

TIPS FOR GETTING STARTED

Your CBL project can be as big or as small as you want it to be. Projects might range from five days to three months. According the data gathered by Apple in their pilot study, the number of days devoted to the project did not impact desired outcomes such as student engagement and enjoyment. CBL is accessible to teachers of at all grade levels, and in every discipline. Although initially designed for middle and high school students, elementary schools and universities have also been highly successful in implementing CBL.

For educators, the hard work is in the preparation. Decide which faculty and staff at your school might want to be involved, and gather your team early. Think outside of your department or grade level, and reach out to specialty subjects and other disciplines. Elementary teachers might consider including a buddy class in a project, or teaming up with another school. Middle or high school teachers can draw on their librarians, or visual and media arts faculty. Once you’ve created your team, establish a regular meeting time, and use Google Drive or DropBox to organize shared resources for use throughout the project.

Depending on the size and scope of your project, you may want to spend the weeks leading up to your launch developing labs, hands-on activities, and curriculum to support students during their guiding activities. Shared calendars help to organize dates for culminating events, field trips, special guest speakers, and student outreach events.

DIG DEEPER

Technology is all about connection. CBL recognizes this potential and encourages creative application of technology from project start to finish. Tech support is an important component of any CBL project, but you don’t need to be an expert to get started. Many of the apps suggested in this article are very accessible and appropriate for beginners. With the encouragement to experiment, students will naturally discover additional tools to support their project goals.

When using technology to support your CBL project, choosing the right tools will set the stage. Consider which platform is accessible to your students, the age of your students, the complexity needed, and your budget.

As students dig deeper into the topics they have chosen, mind-mapping and brainstorming tools help students organize and consolidate their ideas. Students need to make connections between their ideas and the challenge to develop the guiding question they will use as the basis for their research. Free tools like iBrainstorm, and the lite versions of Popplet and Corkulous, are great places to start, and both feature student-friendly interfaces. MindNode is a good for-pay option with an extended tool box of features. Padlet is a free web-based tool that easily allows cross-platform collaboration. Whatever tool you select, consider giving the students time to explore on their own.

RESEARCH AND COLLABORATION

During the research phase, students will need to manage workflow, organize sources, share resources and documents, and connect with members of the community. Thank goodness for technology! Google Drive makes collaboration easy with shared documents or folders. Likewise, Google Forms and Sheets provide terrific tools for gathering and presenting survey data. Students can use the free BaiBoard app to take collaborative notes or share ideas.
and groups can manage their workflow with the free app Trello. EasyBib and NoodleTools have app and web-based interfaces to allow students to manage shared citations. Skype and Facetime easily allow students to reach out to experts and leaders in their community. The iPad is an amazing tool for collaboration, but more importantly it provides a conduit and connection to the world.

**REFLECTION**

Reflection—perhaps the most powerful learning tool in Challenge Based Learning—asks students to get meta. Using Blogger, students can share their CBL journey with each other and the world in a forum that invites comment and interaction. Students are encouraged to address the obstacles their group has faced, and to discuss their strategies for overcoming them. Video reflections using iPad cameras and iMovie give students opportunities to discuss challenges and successes throughout the project. Both strategies offer teachers opportunities for meaningful formative assessment of student process and progress.

**PUBLICATION AND AUTHENTIC ASSESSMENT**

Choice is a powerful motivator. The final phase of CBL offers students a variety of ways to publish and share their solutions. Students can demonstrate their digital media proficiency using photography, videography, design, and a broad range of writing skills (think blogging, social media posting, web writing, and book content). For-pay apps such as iMovie, Book Creator, Doceri, Keynote, and Explain Everything allow students to create unique content. Weebly and Google Sites are free website creation tools. Aurasma and Thinglink apps create interactive multimedia presentations. Prezi, Keynote, and Google Slides provide free mobile presentation apps. Many students use social media to promote ideas or events related to their projects. Students also exercise low-tech presentation skills with a live audience through a culminating public event.

With the freedom to choose preferred tasks and focus on individual strengths, challenge-based learning motivates learners by personalizing the learning experience. Authentic tasks build engagement and promote a love for learning.

**WHY CHANGE PEDAGOGY?**

As schools across the globe look for ways to thoughtfully incorporate technology into their curriculum, the primary focus should be on how the tool will be used to enhance student learning. Technology integration might begin at the traditional phase with little functional change. However, through iteration, we aim to enrich and evolve the student experience. Much like the SAMR model, TECH2 suggests that technology can be used to accomplish learning outcomes that would not otherwise be possible.

Challenge Based Learning encourages us to “shift it higher,” by using technology to modify and redefine learning driven by student interests to enhance outcomes. CBL puts learning in the capable hands of students, and challenges them to think creatively, work collaboratively, design thoughtfully, and act courageously. Is it time consuming? Yes. Is it hard work for teachers and students? Yes. Is it worth it? Absolutely.

**Jim Bologna** has been working with technology in education for over 25 years and is the director of technology, co-director of the Center for Teaching and Learning, and dean of science and technology outreach at Windward School in Los Angeles. He is fascinated by anything that enhances the student learning experience, including technology and formal and informal learning space design. Jim teaches app and game design, is a national conference presenter, and has most recently served on the ATLS organizational committee. You can follow him on Twitter @tremere.

**Julie Gunther** teaches middle school science and leads challenge-based learning curriculum at Windward School in Los Angeles. A passionate and positive teacher-leader, Julie has been working to personalize learning for students through purposeful technology integration and innovative 1:1 practices in her work with K-8 students. She is co-director of Windward’s Community Collaboration Group, a staff and faculty collaborative dedicated to building a greater sense of community by creating space for social time together, building more collaboration in curricula, and engaging in cross-disciplinary conversations. Connect with her @JulieMGunther.

**REFERENCES**


(2) SAMR: SAMR model developed by Dr. Ruben Puentedura. hippasus.com.

1:1 AROUND THE CLOCK

1 o’clock, 2 o’clock, 3 o’clock, Rock!
4 o’clock, 5, o’clock, 6 o’clock, Rock!
7 o’clock, 8 o’clock, 9 o’clock, Rock!
10 o’clock, 11, o’clock, 12 o’clock, Rock!
We’re going to rock around the clock tonight!
We’re going to rock, rock, rock….

This is the Oakland Unified School District (OUSD) approach to mobile learning but with a twist that Bill Haley & His Comets would never have imagined. For the district and its city and community partners, it’s known as “1-1 Around the Clock.” The initiative was born out of a public-private partnership, called Get Connected Oakland, to help reduce and eliminate the digital divide.

In Oakland, 1:1 does not mean purchasing a laptop or tablet for every student to use in school and take home. Although this is the approach many school districts have taken recently, at OUSD, it’s not the best option for several reasons. First and foremost, over one-third of our families do not have internet at home. Giving students a computer that will not work fully at home is a disservice to say the least. Second, transporting computers in Oakland may not be safe for our students. Third, as a Full-Service Community School District, the district wants parents and guardians engaged and active with their students’ learning as well as with the district and community. Our goal, instead, is to enable every family to have a computer and high-speed internet access.

OUSD supports a district-wide vision that all students and families have equitable, supportable, and standardized access to computers and broadband (high-speed Internet) 24/7 to support learning and community engagement. To ensure that all students have continuous access, there are three components in the 1-1 Around the Clock model: (1) access to the right computer during the school day; (2) computer labs in recreation centers, Boys and Girls clubs, libraries, etc.; and (3) computers and broadband connections in all homes.

In Oakland, we envision mobile learning not as students running around with their own personal iPad or Chromebook, but rather with students moving to the right computer or checking out the correct device for the job at hand. For writing or blended learning assignments, for example, a Chromebook may work best. At our Life Sciences, Engineering, or Computer Science academies, a high-powered laptop may be more appropriate. And sometimes an iPad or large, touchscreen desktop is the right choice for a younger or special needs student.

This approach is made possible not with BYOD (Bring Your Own Device), but rather with “BYO-ID”—Bring Your Own ID. All students in OUSD have a Google Apps account, which is used to give the students the same experience on any device they are using. When our students log into the Chrome browser on any device—anywhere—they are greeted with a “school launch page” with all the resources appropriate to that school. Importantly, all students use Google Drive so all documents—Google Docs, Microsoft Office or Adobe Photoshop files, etc.—are saved there. So, conveniently and securely, as students move from computer to computer and place to place, they have access to their resources. And, for those who have them, they can even access them on their smartphones.

The greatest gap in service in the 1-1 Around the Clock model is at home. According to a survey conducted by Get Connected Oakland, at the opening of the 2014 fall semester, more than 14,000 students did not have a working computers or access to high speed Internet at home. This equates to approximately 40% of OUSD’s total student population (or approximately 11,000 households).

To make our initiative successful we have launched an audacious program to make that happen over the next three years. Get Connected Oakland, in partnership with OTX West, will give any family a free computer if they haven’t had internet for the past six months provided they sign up for internet connection that costs as little as $10 a month. Besides a massive engagement program, Get Connected Oakland, through OTX West will provide our families with both training and support. Perhaps issuing every student with a single device would be easier, but here in Oakland, we think we are on the right track with mobile learning to empower students with their families to be college, career, and community ready.

John Krull is the Information Technology Officer at Oakland Unified School District. Previously he was Chief Technology Officer at Fremont Unified School District, and Vice President for Technology at Envision Education, a Bay Area charter management organization and consultancy.
HAVE TABLET, WILL WRITE!

Tablets are a fantastic tool for media creation. But when it comes to more traditional needs, like writing, laptop or desktop computers are still the way to go (or so the conventional wisdom says).

But as it turns out, tablets are extremely versatile tools for supporting writing instruction in the classroom, for everyone from our littlest learners to high schoolers and beyond. Why use tablets for student writing? Research indicates that using digital tools in teaching student writing encourages students to be more invested in their writing, facilitates collaboration, encourages creativity and personal expression, and allows students to share their work with a wider and more varied audience. Read on to learn about a few of my favorite apps to support the prewriting process and enable your students to create dazzling digital books.

**KIDSPRIMATION MAPS >>**
www.inspiration.com/go/kidsmaps
Want to add some pizzazz to your writing unit? Try Kidspiration Maps, which lets students create thinking maps with text and images to capture their ideas. Kidspiration's vast library of more than 3,000 symbols helps children plan and organize their stories using pictures to complement their words. Not only are the diagrams visually appealing and fun to create, but they also help students organize their writing and generate ideas. In addition, Kidspiration Maps has the added benefit of converting a student’s work from graphic to outline format at the tap of a button. After organizing their ideas in pictorial format, students can expand their ideas and switch to writing sentences in writing view.

**POPPLET >>** www.popplet.com
Looking for a simple tool to help students brainstorm and organize their ideas? Look no further than Popplet, a simple but handy graphic organizer app for both iPad and the web. Simply tap on the screen to create a “popple,” or thought bubble, then add text, hand drawings, or images. Popbles can be sorted and organized on the screen or linked together to connect related ideas. With its simple interface, Popplet is intuitive enough for students as young as kindergarten to learn and use. The free version of Popplet will allow students to create one Popplet board; the paid version allows for unlimited boards and adds a collaboration feature. Students’ finished Popplet boards can be exported in PDF or JPG format for sharing.

**BOOK CREATOR >>** www.redjumper.net/bookcreator
Perhaps the most popular iPad book creation app available today, Book Creator is a powerful, fun and flexible tool for creating digital books. Have students start by adding text across all pages. Later, they can move on to other parts of the publishing process, such as customizing fonts and colors, adding images, and creating hand drawings. Capture students’ voices (and give them practice with reading fluency) by recording audio voiceovers. The fun doesn’t stop there: Book Creator gives students the ability to embed content from other apps (think Puppet Pals or Explain Everything videos). Want to create a compendium of class work? No problem: Book Creator allows you to combine separate book files. Last but not least, provide your students an authentic audience by exporting and sharing the final products in your chosen file format: as a PDF (print-friendly); ePub (for reading in iBooks); or even as a video.

**MY STORY >>** www.mystoryapp.org
Billing itself as “the simplest storytelling and book making app for kids in the classroom,” My Story is another great option for creating digital books. Similar to Book Creator in its basic functionality—students can add text, drawings, and audio voiceovers to the pages of their books—My Story’s clean, intuitive interface is geared specifically toward preschool and early elementary-age authors. Kids will love the library of stickers, wide array of color options, and enhanced drawing tool. Teachers will love the ability to set up multiple authors on a single device (each with his or her own bookshelf) and automatically sync students’ work to a class Dropbox account. Note that My Story offers the ability to export books as ePub or video but not PDF, so books can be shared digitally but not printed.

Kerri Willa has been involved in education for 12 years, first serving as a classroom teacher, and for the last four years as the Director of Educational Technology at Chinese American International School (CAIS) in San Francisco. In her current role she has initiated a 1:1 iPad program, developed teacher training, taught coding classes, and spearheaded the opening of a new makerspace. Contact her at kerri.willa@gmail.com.
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cue.org/supersymposium

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cuerockstar.org

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CUE 2015 Fall Conference
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www.cue.org/fall

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