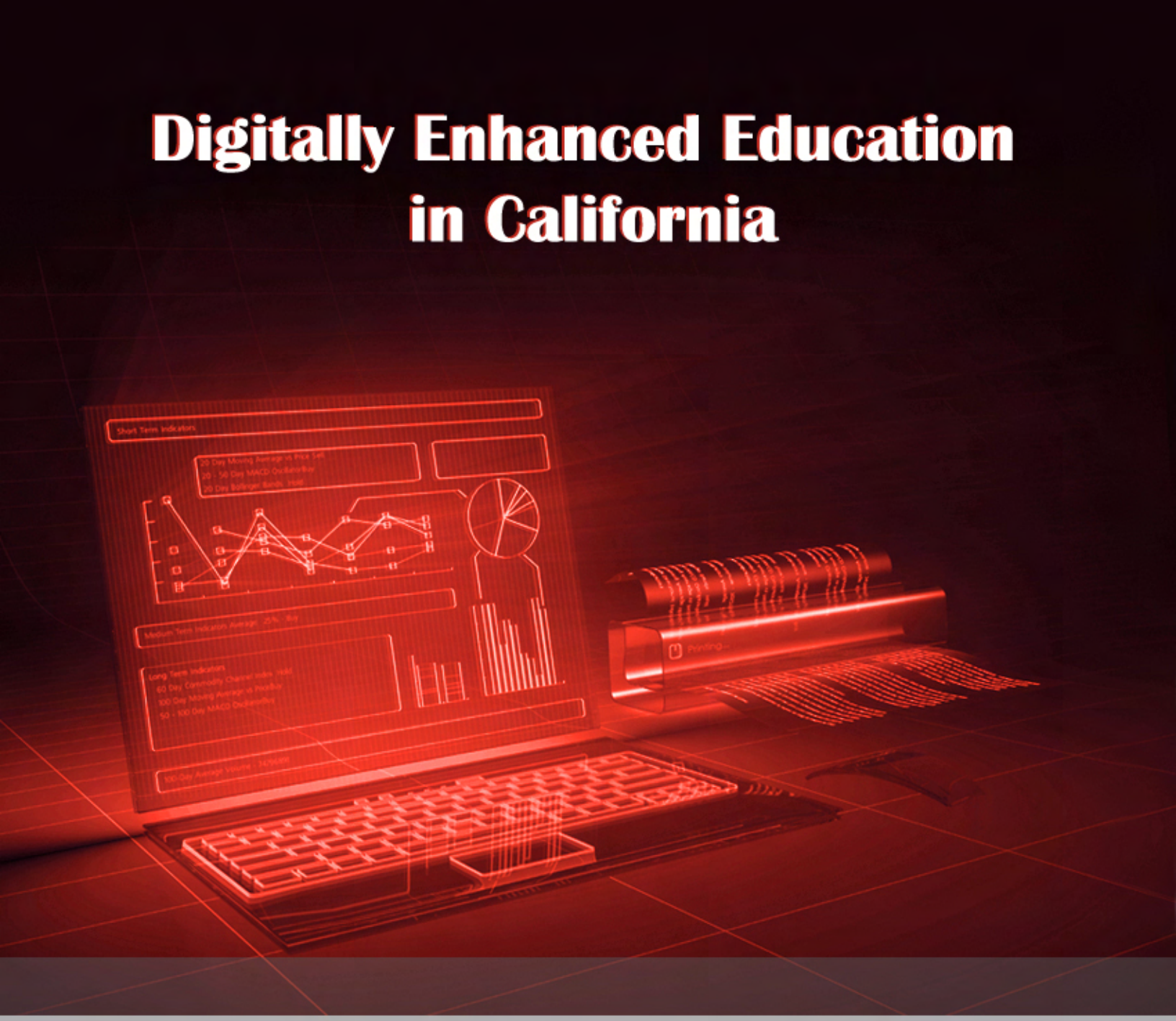
Digitally Enhanced Education in California



Creating a Vision for Integrating Digital Media into California's Teacher Preparation Programs

California Council on Science and Technology
October 2012

Digitally Enhanced Education in California: Creating a Vision for Integrating Digital Media into California's Teacher Preparation Programs

Summary of the California Teacher Advisory Council
"Teacher Preparation" Symposium

California Council on Science and Technology
October 2012

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 CCST is a non-profit organization established in 1988 at the request of the California State Government and sponsored by the major public and private postsecondary institutions of California and affiliate federal laboratories in conjunction with leading private-sector firms. CCST's mission is to improve science and technology policy and application in California by proposing programs, conducting analyses, and recommending public policies and initiatives that will maintain California's technological leadership and a vigorous economy.

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Introduction

On June 18, 2012, a large meeting room on the campus of San Jose State University was the venue for a gathering of science and math teachers, university faculty, philanthropists, and technical experts. The group had convened for a Summit on the Integration of Digital Media into Teacher Preparation — the second in a series of meetings convened by the California Teacher Advisory Council (Cal TAC) and the California Council on Science and Technology (CCST).

About Cal TAC and CCST

Cal TAC was formed in 2005 by two co-sponsoring organizations: CCST and the Center for the Future of Teaching and Learning (CFTL). CCST and CFTL joined forces to form Cal TAC as a means for bringing real-world classroom experience — the "wisdom of practice" — to policy makers and others whose decisions affect the quality of science and math education in California.

CCST is a nonpartisan, impartial, not-for-profit corporation established 24 years ago to offer expert advice to the state government and to recommend solutions to science- and technology-related policy issues. CCST's core support comes from California's major post-secondary institutions, which provide important backing, support, and resources to CCST. CCST is modeled after the National Academy of Sciences and National Research Council and is governed by a Board of Directors composed of representatives from its sponsoring academic institutions, the corporate and business community, and the philanthropic community. Together, these members are helping both the public and private sectors find answers to the important science and technology-related issues facing California.

Digital Natives and Immigrants

Brian Shay, Cal TAC's Chair, welcomed the group by noting that today's students can be considered digital natives. "Their native language is that of technology," he said, "and all of us are digital immigrants who don't speak technology as well as our students." Akin to English language learners, adults are technology-language learners. The challenge and the purpose of the Summit was to explore ways to redesign teacher preparation programs so that digital education is incorporated as an essential component, rather than an add-on.

Students can be considered digital natives, their native language is that of technology, and all of us are digital immigrants who don't speak technology as well as our students.

CCST Executive Director Susan Hackwood echoed Shay's comments, noting that digital media is on the cusp of transforming not just education but other fields as well. "The digital age," she said, "is coming of age." And the group assembled for the Summit, she noted, has the ability to

steer digital media and education in the right direction, applying reason and thoughtfulness to a complex and urgent topic.

Summit Purpose and Agenda

The Summit was organized into two parts. In the first set of sessions, the group heard from an elementary school teacher about how digital media has been integrated into her classroom and school. Next, a representative of the Commission on Teacher Credentialing (CTC) reviewed the technology standards in current teacher preparation standards. Three California State University (CSU) faculty members then described their innovative projects incorporating digital media into teacher preparation curricula in their respective programs.

Following these presentations, the group modeled the use of technology for collaborative work by completing two exercises designed to specify a vision for digital media and teacher preparation in the future. The first involved small groups describing a 21st-century teacher's skills, toolkit, and mindset. The second involved identifying specific changes in teacher-preparation programs and standards that would help bring the vision of a digitally adept teacher to fruition.

Following the Summit, participants had an opportunity to complete an electronic poll on priorities among the many changes suggested during the meeting.

Each of these presentations and discussions is summarized below. A meeting agenda and list of participants is provided as an Appendix to this report. Copies of slides and a link to a white paper on digital media and teacher preparation programs, prepared by Stacey Kyle, Ph.D., are available from the Cal TAC section of CCST's website (www.ccst.us).

I. Digital Media Integration at the School Level: A Snapshot

Kami Thordarson, Santa Rita Elementary School

Kami Thordarson teaches sixth grade at Santa Rita Elementary School in Palo Alto — part of the Los Altos School District. When Ms. Thordarson came to Silicon Valley from Colorado 4 years ago, she was expecting to find a school brimming with all kinds of technological resources, but the reality was quite different. Surprisingly, she said, her school in Colorado was ahead of the curve compared to her new classroom. At the Santa Rita Elementary School, three classes share 30 computers on a cart. New cloud-based tools may be in the wings, but at the moment, the shared cart is what she has to work with.

> "We will be a leader in revolutionizing student learning."
>
> — Los Altos School District Vision

What the Los Altos School District lacks in terms of technology it makes up for with a compelling vision: "We will be a leader in revolutionizing student learning." This vision, Ms. Thordarson said, has encouraged her and her colleagues to incorporate discovery, risk-taking, creativity, and excitement into their teaching, all in service of engaging students in different ways and enhancing both teaching and learning. Although it made some teachers nervous, Ms. Thordarson appreciates the bold, aggressive stance it represents. "The things that are happening now," she said, "wouldn't be happening without that vision."

With videos, photos, and descriptions of her classroom, Ms. Thordarson brought to life the effect that digital media can have on a classroom, as well as some of the tools she has found particularly helpful in transforming her own classroom. The tools are terrific, she said, but only if teachers know how to work with them. That's why her district's definition of blended learning includes combining an online delivery system of educational content with other quality tools, the best instructional practices, and constant (and intentionally designed) opportunities for classroom interactions.

Some of the digital media **tools** that contribute to this goal include:

- **Khan Academy** (www.khanacademy.org). While the Khan videos are useful, Ms. Thordarson said she and her colleagues rely more heavily on another feature of Khan Academy: its data. (In fact, she said, her students prefer to make their own videos.) The data are available in real time and give feedback to both students and teachers, indicating in a color-coded map where students are struggling or progressing. However, Ms. Thordarson noted, it's also important to spend time teaching kids how to look at the data to get the most out of it.
- Another important feature of the Khan Academy resources is that they give students opportunities to set their own goals and make choices about how and what they learn. Even if the class as a whole is working on the same module — for example, geometry —

individual students can work on different aspects of the module, at their own pace. Sometimes, Ms. Thordarson said, she picks a goal for the entire class, but also allows students to pick additional goals of their own.

- **Prezi** (www.prezi.com). Prezi is cloud-based presentation software that allows visual creativity (e.g., zooming in and out on images) and more flexibility than many other presentation formats, although it poses a challenge for pulling in video footage. (Indeed, Ms. Thordarson used Prezi for her own presentation to the Summit participants and a student-created video had to be shown via YouTube, instead of within the Prezi presentation.)
- **Chartgo** (www.chartgo.com). Chartgo is an online graphing tool. Many students enjoy using it, but some still like to use paper, pencil and glue to present the results of their work, which is encouraged and accepted. Again, this offers students choices.
- **Edmodo** (www.edmodo.com). Edmodo is a secure social network specifically designed for educational settings — a sort of Facebook for the classroom, with a similar layout. "Kids think it rocks!" Ms. Thordarson reported. It's also compatible with Google Docs and Gradebook. Once the students are in, the site is locked and not accessible by those outside the classroom.
- **Google tools.** A number of Google tools are used in the classroom to communicate (the students have their own gmail accounts), share materials (via Google Docs), and create Web sites.
- **Educreations** (www.educreations.com). This is an easy-to-use tool to create and share videos, which works smoothly with iPads. In Ms. Thordarson's classroom, students use it for screencasting. (A screencast is a digital recording of computer screen output, also known as a video screen capture, often containing audio narration.)
- **Edublogs** (www.edublogs.org). Ms. Thordarson encourages her students to blog using this tool. The students' blog has had 90,000 visitors over the past 2 years. With Edublog, Ms. Thordarson retains administrative control of which posts become public, so she has opportunities to send draft postings back to students with feedback. She wants her students to realize they are writing for a worldwide audience through the blog, so the stakes are higher.

Photos of Ms. Thordarson's students vividly depicted the **classroom environment** in which these tools are deployed. In the pictures, Ms. Thordarson pointed out, kids are talking to each other, working and collaborating in small groups. The room is messy. They are up and out of their seats, sprawling on the floor, gathering outside. They never sit in rows at their desks.

Just before the Summit, Ms. Thordarson participated in a week-long workshop for fellow teachers. Replicating some elements of her classroom for the workshop, Ms. Thordarson had arranged the space with movable whiteboards and places for small groups to gather and collaborate. She encouraged Summit participants to pay close attention to the classroom space (whether for students or colleagues) and to model the uses of digital media and a space that encourages interaction.

Asked how she had been prepared to offer this type of instruction, Ms. Thordarson explained that she always has taught in a project-based mode; “It’s just a lot of who I am as a teacher.” She described herself as someone who seeks out knowledge and information and always has loved technology and gadgets.

Another question concerned district rules about how much **access** students have to YouTube. Ms. Thordarson explained that her students don’t have access to YouTube in the classroom; they work under a Google domain that creates a bubble around them. It can be a stumbling block, she noted, if the students need to access outside resources — but many can do so from home, where they have their own e-mail accounts.

In general, she takes every opportunity to reinforce the notion of being a responsible **digital citizen**, keeping different audiences in mind. She also provides open classroom time for those students who do not have access to computers or the Internet at home (which applied to two of her students last year). If an assignment includes activities such as using Khan Academy resources or posting a blog entry, she makes sure there is time available for these students during the day to use the computers at school.

In terms of training, preparation, and support for teachers, Ms. Thordarson advocated for more workshops similar to the one she had described — a venue for explaining, exploring, and modeling the tools and their application in the classroom. For many if not most, these sessions present the challenge of a new way of teaching and learning so, she explained, she always talks about why she chose a particular tool. “You don’t want to just take a worksheet and put it online or make it a Google doc,” she said. “That’s not the point.” Instead, teachers should always look at the purpose of the worksheet itself and consider how to achieve that purpose in a different way — a way that elevates learning. “I always come back to the ‘why’ piece,” she said. “Why are you using what you’re using?”

She also advocated for workshops and similar gatherings as vehicles for teachers to form personal learning networks of their own, to support them as they seek out new knowledge. “It’s not a sit-and-get world anymore,” Ms. Thordarson observed, “where you sit there and I give it to you.” Instead, with today’s technology, teachers have to be active and search for new things — otherwise, they won’t be able to teach their students how to do so. “The mindset has to change,” she said.

Asked about roadblocks she may have encountered — either in the education code or from administrators — Ms. Thordarson drew knowing smiles from the teachers in the room when she concluded, “I don’t like to be told no if I think it’s best for kids!”

II. Review of Technology Standards in Teacher Preparation

Teri Clark, Commission on Teacher Credentialing
Ms. Clark provided an overview of standards related to technology in teacher preparation programs, noting that mentions of technology — let alone specifics about how these standards should be implemented — are sparse.

Using examples from the standards themselves, Ms. Clark noted that, although standards for teacher-preparation programs do address the basics of understanding hardware and software, as well as more complex legal and ethical issues, the language is often very vague, opening up the standards to very different interpretations. One example:

> "Candidates use appropriate technology to facilitate the teaching and learning process. Candidates are able to evaluate and select a wide array of technologies for relevance, effectiveness, and alignment with state-adopted academic-content standards, and the value they add to student learning."

In the Teaching Performance Expectations (TPEs) that delineate what every candidate should know and be able to do, Ms. Clark found no overt references to technology, but noted that many of the items related to assessing student learning, engaging and supporting students in learning, planning instruction and designing learning experiences for students, and creating and maintaining effective environments for student learning could be tied much more closely and specifically to the use of technology as a tool for advancing pedagogy.

A stronger draft TPE related to technology and classroom management had been removed, Ms. Clark said, because of concerns about whether or not student teachers would have access to the types of classroom environments needed to demonstrate competence in these areas during their teacher preparation programs. An additional concern was the considerable variation in the state of classroom technology across the state.

At a recent CTC meeting, Ms. Clark noted, the Commission's members took another look at TPE technology standards, within the context of the common core standards. Several work groups are also examining various aspects of how technology standards apply at different stages of teacher preparation programs and throughout a teaching career, but the state's budget problems have put several of these conversations on hold until the fall.

In responses to questions, Ms. Clark expressed caution about the idea that teacher-preparation and credentialing programs alone can fix the gaps. It's a larger issue, she

noted, that requires modeling and input at every stage of the education pipeline, including preparation, induction and professional development for veteran teachers.

Cal TAC members noted that candidates have to be extremely flexible and creative in order to use and adapt technology in the classroom, yet this is at odds with the way most teachers are trained and with the highly structured environments in which they find themselves as new teachers.

Another idea was to use the credential-renewal process as a mechanism for upgrading technological skills and applications. Related to that was the need for tools that allow teachers to diagnose themselves against standards (similar to how Khan Academy tests work in revealing areas for improvement).

III. Panel Discussion: Innovation in the California State University (CSU)

Jill Leafstedt, CSU Channel Islands
Jessica Parker, Sonoma State University
Penny Swenson, CSU Bakersfield

Starting Conversations at CSU Channel Islands

CSU Channel Islands is a relatively new campus, Professor Jill Leafstedt explained, just ending its first decade. Being new has given the university — and its teacher preparation program — some opportunities to move forward in terms of incorporating technology into teaching and learning.

Professor Leafstedt observed that three things came together that made their innovations possible. First, a CSU-wide initiative out of the Provost's office encouraged campus-wide attention to using technology. Second, the teacher-preparation program received a small amount of funding from Google, which allowed them to work across systems and departments. Finally, a real push for change was accelerating within the School of Education.

These three elements — support from the Provost's office and school administration, funding and collaboration with the private sector, and a push for change — helped launch a series of events. In science and math classes, students were brought in as learning assistants and assigned a final project: to infuse technology into the classes, using free technology. "The projects the students came up with were amazing," Professor Leafstedt said — so much so that the program will extend next year into multiple classes.

Next up was a showcase event within the School of Education. Faculty talked about something innovative they were doing with technology that others may not know about. Again, Professor Leafstedt said, she was amazed by the creativity and innovation hidden in plain sight. Some of the ideas led to workshops so that other faculty members could reap the same benefits from tools such as Google Moderator, Glogster (a visual communications network), integrating YouTube and other media into classes. These have been compiled on a CSU website, Affordable Learning Solutions (http://als.csuprojects.org/).

Through a "Digital Ambassadors" program, the group then learned to use Google+ Hangouts, which works similarly to Skype, complemented by Scoop.it and Massive Open Online Classes (MOOC). Professor Leafstedt observed that these tools helped CSU faculty and students connect to communities all over the country and the world, helping people who had never met feel as if they'd known each other for years.

More than the technology and its exciting possibilities, Professor Leafstedt feels that these events are leading to changes because they've gotten an important conversation started. The

tools are free, accessible, and relatively easy to learn. “First, though,” she added, “You have to know they’re there and have a reason to talk about them.”

One important result is that the School of Education has adopted a digital initiative in which they seek to improve the use of technology throughout the program, modeling its use in meetings, classrooms, and at every opportunity. A co-teaching model helps supervising teachers, teachers in the field and student teachers learn together, crossing the digital divide that sometimes separates these groups.

Climate Exchange for Language and Learning (CELL) at Sonoma State University
Professor Jessica Parker, a Google faculty fellow, is the author of *Teaching Tech-Savvy Kids: Bringing Digital Media Into the Classroom, Grades 5-12* — a result, in part, of her research into how secondary schools integrate technology.

Since arriving at Sonoma State’s School of Education in 2009, Professor Parker noted wryly, she has been “the” tech-ed person — the only one. That role, she realized, allowed her colleagues to avoid taking responsibility for technology in their own classrooms, outsourcing it to her instead. She decided she could best help her colleagues not by solving all their technology issues, but by trying to **create a community of practice around technology within the School of Education.** Using a relatively small amount of professional-development funding, she began to create a new model in which professional development would focus on faculty interests, building consensus and curiosity about digital media and technology along the way.

One result has been the Climate Exchange for Language and Learning (CELL), an 8-week program and research project with the University of Oslo that created an international social network for understanding climate change across high school science classrooms all over the world.

Professor Parker’s goals included engaging students to a level where they would discuss, debate, and argue as they learned. The project relied on Moodle, an open-source learning-management program that allowed Northern California high school science students to connect with peers in Norway, China, and New Zealand. The students eagerly discussed five climate-change issues: global rises in temperature, rising sea levels, human-induced greenhouse effects, deforestation, and biodiversity. Students interacted with scientists (including graduate and credential students) in an open dialogue, asking questions of each other and sharing pictures as well as ideas.

The students clearly benefited from the level of engagement with international peers, but the credential students did as well, seeing a real-life example of how social networks can be applied to enhance learning.

Next steps include evaluating and revising measures, analyzing data sources, and revising the Website components and instructional materials.

BirdsEye Detectives at CSU Bakersfield

Penny Swenson described BirdsEye Detectives, a project supported by Google and CSU that has brought together three campuses to explore the use geospatial technology for project-based K-12 instruction. These tools, which include Google Earth, Google Maps, and Fusion Tables, dramatically bring the world to life for students in ways that two-dimensional textbooks and maps cannot.

The three campuses — San Diego State University (SDSU), Sonoma State University (SSU), and CSU Bakersfield (CSUB), where Ms. Swenson teaches — range from a large urban campus of 35,000 students, to a mix of 8,500 rural and suburban students to 8,200 rural and urban students.

The idea was to teach pre-service teachers how to use geospatial technologies to create learning modules aligned with standards. Results were shared on the Web and combined with specific outreach to master teachers, other K-12 teachers, and CSU faculty.

Each campus approached its outreach differently. At Sonoma State, students shared their unit plans, lessons and activities in a poster-session format at a pre-service technology showcase, building on a participatory workshop that emphasized experiential learning (instead of a traditional, skill-based workshop). CSUB held an evening symposium in which students, faculty, and candidates (and even students' parents) came together to see "learning objects" in action — short demonstration or technology-based segments that are embedded within lessons to engage students.

One learning object — solving the midpoint of two graphical locations with the aid of Google Earth — was presented by one of Ms. Swenson's students, who told her, incredulously, "Some people don't like math!" He added, " It's my job to see that they do." His project can be viewed on YouTube: http://www.youtube.com/watch?v=mFNON-srWR0.

Ms. Swenson noted a number of benefits and best practices that accrued from the BirdsEye Detectives work. These included community recognition (through the showcases and symposia) of the high-quality student work generated by the project, the impetus to share these innovations across disciplines, and the laboratory this created for testing new ideas, methods, and technologies to standard-based teaching. The project also prompted participants to look at assessment in different ways.

The project was not without its challenges. As a separate technology course has yielded to a more integrated approach, considerable variation remains (depending, in part, on each

instructor's use of technology). The time required to satisfy standards becomes an issue, Ms. Swenson added. **At both the school and department levels, a specific vision for technology use and integration is missing.** And at CSUB, she added, students are not the "digital natives" they may represent elsewhere. In her program, Ms. Swenson said, 90% of students are the first generation in their families to attend college, and 60% do not speak English at home.

Equipment, materials, and connectivity often are limited, Ms. Swenson said. Her approach is to mimic the Lay's potato chip ads: "Bet you can't eat just one!" By infusing technology across the curriculum, Ms. Swenson said, she's confident that once people try it, they'll want more. "They'll use it, and it will change them," she said. "And they'll be hungry for more."

To learn more, visit CSUB's Edvention site (https://sites.google.com/site/edvention2012/home) or the school's BirdsEye site: (https://sites.google.com/site/birdseyedetectives/home).

Discussion and Observations

Reflecting on these distinctive but complementary projects, the three panelists continued their conversation by making the following observations:

- Developing a personal learning network is powerful — sharing information via Google Hangouts, Twitter, or other mechanisms, as well as having a buddy or support system when things go wrong.
- Administrators and District IT Departments are still locked in a generational divide. District IT people, in particular, have little contact with classrooms. "We can't have a protectionist approach to technology, if we want students (and teachers) to be media- and information-literate."
- Traditionally, universities are proprietary about their materials — "our book," "our lecture." It's a little scary, but that is going to give way to a much more open approach (e.g., Merlot). "We have to change our mindset about how special our little article was . . . to how global ideas can be. We can have people across the world contributing, making our little nugget into something much more wonderful."
- "We can't see technology as an end in itself. It has to be about designing a better learning environment."
- "We don't learn English in a year; teachers shouldn't be asked to learn technology in a year."
- "We want to have people curious about how to infuse technology — just pick it up and try it! Explore!"
- "We need to keep in mind the 'so what?'" "What to do and how sometimes get mixed up with, 'It's cheap and it's easy.'"

IV. Creating a Vision: What Does a 21st-Century Teacher Look Like?

Caleb Cheung, Cal TAC

Caleb Cheung introduced an exercise in which Summit participants were asked to break into small groups and consider three aspects of this question:

> **"What is it that we want teachers to have in their bag of tricks in terms of technology, once they leave a credentialing program — in terms of tools, skills, and a technologically savvy mindset?"**

One group presented a table, noting how difficult it was to distinguish cleanly among skills, tools, and an overall mindset. Highlights included the skill to map content with learning outcomes, choose appropriate technology, facilitate collaboration among others, and being well-versed in fair-use laws. Ideally, such a teacher would model learning, become part of a classroom community and be willing to take risks. A "can-do" attitude would also be essential, along with a vision of where the classroom needs to go. As part of the 21st-century teacher's work, he or she should feel an obligation to participate in professional organizations and be open to change. Most of all, the mindset should be that learning can happen for all kids.

21st Century Teacher Skills, Tools, and Mindsets

- Lifelong learner; model learning
- Map content with learning outcomes
- Choose appropriate technology
- Foster and participate in collaboration
- "Can-do" attitude; initiative
- Seek out resources (don't wait for them to come to you)
- Vision
- Flexible; open to change
- Risk taker
- Learn alongside students
- Admit "I don't know" freely
- Analyze, interpret data
- Teach/prod students to persevere
- Adapt teaching and learning to informal, 24/7, outside classroom walls interaction

The next group agreed with this list, adding that what they really want from 21st-century teachers is lifelong learners who embrace technology and are risk takes. Both are needed in order to be successful: being a risk taker, and being a lifelong learner. It's important to know — and be curious about — how students learn, and how to make learning exciting and accessible for all students. These teachers should be flexible and able to say, "I don't know." They should have enough self-confidence to let students take over learning and teach them.

Another group emphasized how important it will be to have access to the many wonderful tools that are available already, but not consistently so. Collaborative spaces — and the skills and mindset to use them — can accelerate this process. Teachers of the future also will have to have skills in data collection, management, and analysis, similar to how the Khan Academy data yields insights about the pace and scope of student learning. Like other groups, this group identified the need for teachers to be learners alongside students.

Additions include the importance of recognizing that we live in a global community, and have an ethical responsibility to educate young people about the world's diversity. Teachers of the future also are going to have to learn how to keep pressure on students to persevere, because it is so easy to conduct experiments and simulations online (without some of the necessary tedium of repeated steps). There is no shortcut to a real learning experience.

Another group discussed the need for new capacities to think about teaching in a different way — not as linearly as many current teachers learned in their own educations. This group also discussed "habits of mind" — thinking not only about what's available or waiting for tools to come to you, but taking the initiative to find new tools or resources. Some fears about the use of technology are understandable, members of this group noted. Applying appropriate self-assessments and actively cultivating a sense of comfort with different types of technology will be important skill sets for future teachers. Like previous groups, this group also noted the importance of fostering collaboration and networking among teachers to strengthen practice and maintain continued, ongoing professional development.

Adding to these ideas, another group noted that in the 21st century, a great deal of learning is already happening outside the class room, and the teachers of the future will have to learn to accommodate this relatively unexplored informal territory more effectively.

V. Moving the Vision Forward: What Changes are Necessary?

Jennifer Santos, Cal TAC
Breaking into small groups once again, Jennifer Santos asked participants to turn to two other questions related to integrating technology into teacher preparation programs:

- What are the biggest barriers or challenges to integrating technology?
- If the effective integration of technology requires a systems approach, what champions for change are necessary? Who needs to be actively involved in the conversation?

Following the meeting, participants voted online for the highest-priority responses to these questions, as reflected in the tally below.

Barriers and Challenges
The highest-priority barrier to integrating technology is **time**. Nine-month credentialing programs area already heavy with coursework, so there is little room (or **funding**) for integrating technology.

Knowledge among program faculty is another barrier. If faculty members are not prepared to teach and model the integration of technology, how can candidates be expected to do so? A related issue is making **assumptions** about the level of technological savvy that exists among candidates, based on generation or age alone. Using technology in one's personal or professional life does not automatically translate to integrating technology to improve teaching and learning.

Even if candidates receive learning that is aligned with 21st-century teaching models, they are likely to face a far different reality when they arrive at a more traditional 20th-century school, creating a **disconnect**. Moreover, if teacher prep methods are poorly aligned with K-12 settings, candidates will not be able to **apply** what they are learning during clinical practice.

Truly integrated technology should be invisible and "just part of the delivery/learning process." Yet for many candidates, technology will be interpreted as an additional topic or skill to teach. True integration requires a different **perspective** on what this really means in the classroom.

Teacher preparation programs cannot accomplish this alone. They need **leadership and support** from County Offices of Education, universities, and school sites — all based on a **shared vision**, which is also lacking.

Champions for Change

The list of potential champions for change — or at least those who should be involved in the conversation — included the following:

- Teachers and administrators, particularly K-12 and District level administrators, Superintendents and Directors of Curriculum and Instruction, emphasizing that this is about learning, not technology — and enlisting the support of those capable of ensuring that policy is not a roadblock to integrating technology
- Pre-service teachers
- Businesses/private sector, and public-private partnerships; companies (such as Google) who see the California education market as a compelling business opportunity and are willing to invest
- Colleges and universities, particularly teacher preparation programs
- Parents
- Non-profits such as Gooru
- Legislative leaders, especially those willing to champion change to those who might find it threatening (e.g., labor unions)
- Professional associations (CTA, CFT, NSTA, CSTA, NCTM)
- California Department of Education
- Engineers ("custodians of system design") and social scientists
- IT/Technology Directors
- Everyone with influence — i.e., all of us!

Several participants noted that no single group or champion is needed; rather, a chorus of influential voices, from many quarters, is needed to stimulate change and momentum.

Appendices: Summit Agenda and List of Participants

Creating a Vision:
Summit on the Integration of Digital Media into Teacher Preparation

June 18, 2012
San Jose State University
Loma Prieta Room
Student Union Building

8:30 A.M.	Continental Breakfast	
9:00 A.M.	Welcome	Mohammad Qayoumi
9:15 A.M.	Introductions and Framing the Day	Susan Hackwood Brian Shay
9:30 A.M.	Snapshot of Digital Media Integration at the School-level *Kami Thordarson, Santa Rita Elementary School*	Diana Herrington
10:00 A.M.	Review of Technology Standards in Teacher Preparation *Teri Clark, Commission on Teacher Credentialing*	Brian Shay
10:30 A.M.	Spotlight on Innovation in the California State University *Jill Leafstedt, California State University, Channel Islands* *Jessica Parker, Sonoma State University* *Penny Swenson, California State University, Bakersfield*	Jeff Bradbury
12:00 P.M.	Lunch	
1:00 P.M.	Creating a Vision: What does a 21st Century Teacher "Look" Like?	Caleb Cheung
2:30 P.M.	Moving the Vision Forward: What Changes are Necessary?	Jennifer Santos
3:20 P.M.	Closing Remarks	Brian Shay
3:30 P.M.	Adjournment	

PRESENTERS

Teri Clark
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Commission on Teacher Credentialing

Jill Leafstedt
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California State
University, Channel Islands

Jessica Parker
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