

Technology & Creativity Blend to Deepen Learning

Artistic processes & curiosity drive tech-enabled teaching.



Bullis Charter School,
Los Altos, California



Blair Dual Language School,
Waukesha, Wisconsin

The pressure to incorporate technology into schools feels intense. With 20,000 new apps added to iTunes each month, keeping abreast of new educational technology is overwhelming. Too often, technology's bells and whistles dominate discussions instead of planning around students' curiosity and capability and the school's curriculum goals. The U.S. Department of Education Office of Educational Technology crafted guidance in its report, *Future Ready Learning: Reimagining the Role of Technology in Education*. The recommendations begin by calibrating the focus on learning—to engage and empower.

According to the guidance, "all learners will have engaging and empowering learning experiences

in both formal and informal settings that prepare them to be active, creative, knowledgeable, and ethical participants in our globally connected society." Putting the student, instead of the technology, in the center of the discourse helps educators avoid the tempting distraction of focusing on what the technology does. Schools that have done this have shared their stories to inspire others.

Art Electrifies and Conducts

There is an electrifying buzz throughout North Summit Elementary School in Coalville, Utah. A symphony of moving sculptures ring, swing, and hum per students' directions. The kinetic art gallery is filled with student-designed bionic characters that move using hydraulics and magnetic levitation—all visualized and crafted by students in grades

K-4. Principal Lori O'Connor and her creative leadership team wanted to harness the energy of STEAM (Science-Technology-Engineering-Art-Math integration) to electrify learning. Their schoolwide, yearlong project, "Artistic Robots Showcase Creativity and Tech Skills," accelerated beyond expectations.

"The display of artistically designed student inventions is amazing. But what I'm most proud of is how children are using the scientific language and engineering process in their daily conversations and work. When I heard playground conversations around increased motion due to aerodynamic design, I knew they really got it and applied learning beyond the gallery project," O'Connor explained.

Students learned about hydraulics when they controlled water pressure

with syringes that moved their sculptures' handcrafted bionic arms. As they created and painted cars for their Maglev track, they talked about the color wheel and how complementary colors were similar to the way magnets repel or attract. But the learning was deeper than the inventions students created.

"This project gave students confidence in their own problem-solving abilities. I was thrilled to overhear a student telling a teacher, 'Wait—I think I have a better idea we should try,'" O'Connor said.

STEAM Ignites a Mindset

Bullis Charter School in Los Altos, California, is committed to innovative teaching and learning. When principal Wanny Hersey talks about STEAM, she contagiously radiates energy. "It's a process that makes learning more accessible to all students," she stated. "We can't think in silos when we create STEAM projects. Art informs the decisions, just like science and math do. Worksheets and classic tests are inadequate to assess learning that is this cross-disciplinary." Bullis teachers have embraced a mindset where students are challenged to solve big real-world problems and provide evidence of their thinking.

Their success is rooted in helping teachers serve as the facilitators who give students agency over their own work. Adults are very intentional in their intervention to expand, but not dictate, students' experiences. "Our real goals are long term—help students take responsibility for driving their own instruction, not be passive receivers of knowledge," Hersey said. "And STEAM projects ... are well suited to this philosophy."

For example, eighth-graders are designing schools of the future. They're exploring what could be the ultimate architecture and environment for learning. Students realized that learning centers can be metaphorical, not always bound to



Students at Bullis Charter School create scribble bots as a STEAM project that integrates the art and science concepts of force, motion, and balance.



Jackson Primary School,
Williamsport, Pennsylvania

a classroom or physical building. To be authentic, STEAM projects must ignite a new mindset in students and teachers that shifts the view of power.

Playful Places to Fail Forward

Principal Kirk Felix credits art teacher Sandy Corson with the vision to take an Art Integration Maker Space concept to the next level at Jackson Primary School in Williamsport, Pennsylvania. Their Maker Space, dubbed “Tinkertown,” is more than a collection of stuff; it’s a true catalyst for art-infused, student-driven learning. “When a third-grader who had previously been too afraid of failing decided to take risks and try something he wasn’t sure would work, I knew we had given the kids the freedom to tinker with ideas. Then when this same child reported his plans to go to MIT, where he would design flying shoes as a new way to travel, I knew we had given our kids a new way of looking at the future and their potential,” Corson reported.

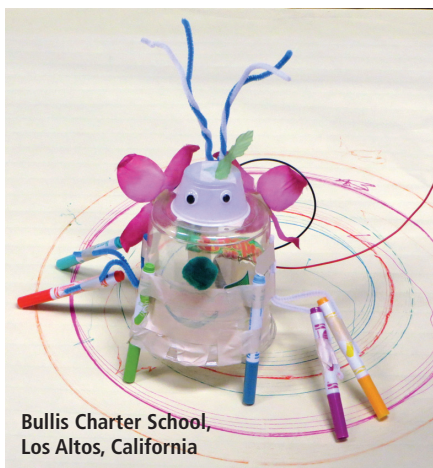
The school’s motto—“If you build it, they will come. But if you let them build it, they will learn!”—is spreading. In fact, it caught the attention of the district’s curriculum director and the local library. “We’re shifting the focus from right answers to helping children come up with questions and using art to design prototypes,” Corson explained. “‘From Tinker to Thinker’ is the hands-on approach to problem-solving that artists and designers use to solve real-world problems.”

Students and Explorer Characters Bring History to Life

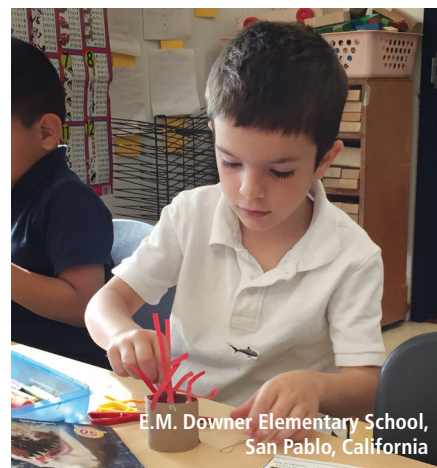
“Let the creative process and student interest drive projects—everything else flows from that,” advised Justin Stephans, principal of Regency Park Elementary School. The Title I school in Pittsburgh, Pennsylvania, has a passion for merging creativity and technology to engage students. “Many educators underestimate the power



Blair Dual Language School,
Waukesha, Wisconsin



Bullis Charter School,
Los Altos, California



E.M. Downer Elementary School,
San Pablo, California



Blair Dual Language School,
Waukesha, Wisconsin

of creativity and ed tech together to enthrall students and enliven faculty.”

Stephans said his school’s journey was sparked by a Carnegie Mellon University Make-a-Thon. When his teachers shared with the rest of the faculty what they learned at the “Arts ‘n Bots” professional development session, the electricity in the room was palpable. This led to Regency Park students creating and coding customized, handcrafted robotic Explorer characters. The project merged technology, art, language arts, and history as the characters came to life—telling stories from their history lessons.



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“The era of teachers standing on center stage giving out content is over. Learning is more meaningful when students discover it in a real-world, hands-on context that uses their own creative ideas and technology,” Stephans said. According to the principal, when the students learned how to code their Explorer characters for the history project, they were intrinsically driven to get the robots’ facial expressions and nonfiction storytelling right, not to pass some memorization test. Coding robots was one part of the art- and technology-integrated social studies-language arts project, not a stand-alone end goal.




Coronita Elementary School,
Corona, California

Tech Tools that Are Truly Creative

Damian Sugrue, principal of Luther Conant Elementary School in Acton, Massachusetts, is also committed to having creativity drive the technology adoption in his school and credits his school’s progress to art teacher Melissa Hayes. “When you have a highly collaborative, visionary teacher leader like Melissa, provide the support needed to help embed schoolwide.”

For example, Sugrue provides substitutes periodically so that Hayes can co-teach and coach colleagues in their classrooms, showing them how to embrace the creative process and use tech tools that build creative thinking. Hayes recommended the following tech tools that align with the creative processes:

- **Create.** Crayola Animator provides a streamlined way of turning students’ drawings into animations. The mannequin connects with the iPad app and enables students to design characters’ movements as well as background scenes.
- **Present.** Chatterpix is great for merging physical and digital creating. Students paint or draw portraits, or make 3-D sculptures, mark where the mouth is and then record what the historical character or creature should say. Art comes alive with the child’s own words.
- **Respond.** Thirty Hands turns student drawings or paintings into a slideshow. They can add voiceovers that document their response to others’ work.
- **Connect.** Help students document the creative process by taking photos and videos of classmates during the hands-on, minds-on artmaking process. Filming peers helps students become astute observers of others’ efforts and epiphanies. This deepens metacognition.

Using technology, in service of broader objectives, is clearly a theme within innovative schools and the *Future Ready Learning* report. Blending creative hands-on experiences with tech-enabled tools and resources is elevating project-based learning to a higher level—and simultaneously transforming roles of both teachers and learners. 

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