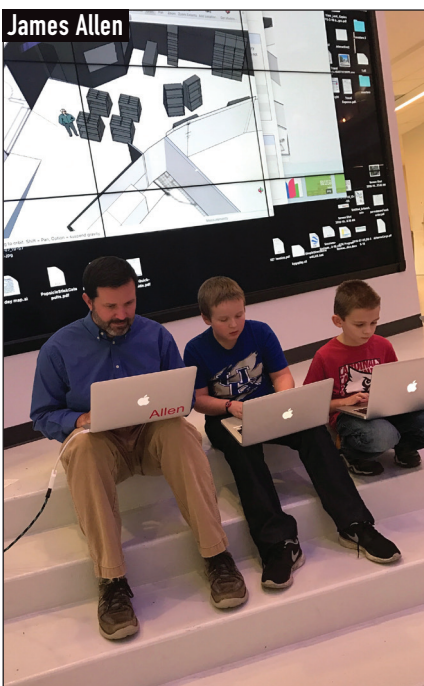


These 16 innovators maximize tech's creative potential

BY JENNIFER SNELLING

ILLUSTRATION BY JEFF ROGERS

WHAT MAKES A TECH LEADER? These 16 influencers have found innovative ways to leverage technology to enhance STEM and STEAM learning, amplify student voices, and more. From activism to aquaponics and breakerspaces to self-publishing centers, their pursuits inspire. It starts in the library.



STEM & STEAM Dreamers

James Allen

Teacher Librarian, Eminence (KY)
Independent Schools

Walk into the library at the Eminence Independent Schools campus and you'll be greeted by flying drones, a giant wall of computer monitors, an aquaponics lab, and a slide connecting the first and second floors. The rural K–12 school's new library, dubbed the EdHub (eminenceind.com/edhub), or the Experimental DaVinci Hybrid Ultra Bibliotheca, was built through a \$6 million nickel property tax and opened this year.

Librarian James Allen envisioned the space out of a desire to rethink instruction with a STEAM focus. Now, along with books, students have access to eight different labs that can be used for taking tours with virtual reality (VR) goggles, filming projects for class, and a LEGO wall. Still, "the things aren't really the important part," says Allen, president of the Kentucky Association of School Libraries. "Providing the best for our students, above and beyond the standard curriculum, is the goal." That means design thinking way outside of the box, using lab tools including Tinkercad, SketchUp, vinyl and laser cutters, a large-format photo printer,



and resources from the woodworking shop. Visit Allen's website: tljamesa.com Twitter: @TLJamesA

Tommy Martinez

Teacher Librarian, Glacier Point Middle School, Fresno, CA

When Tommy Martinez's rural district went 1:1, he knew his library had to change to stay relevant. He started a makerspace—the first in his district—and introduced more inquiry-based tech. The makerspace began with marble runs made of cardboard. A reverse engineering project, using a James Dyson Foundation engineering kit, allowed kids to view experts explaining building concepts. At the “breakerspace,” they took apart items such as printers, telephones, and electronic toys and used the parts for other building projects. Now, students also use QuiverVision augmented VR coloring and designing projects on Tinkercad for the 3-D printer.



Martinez hosts family nights with student-led stations with projects from yarn bracelets to LittleBits, simple LEGO machines, and Minecraft EDU. “It’s about piquing students’ curiosity and interest by exploring how things are made,” he says. Martinez now supports other district libraries with modeled lessons, tutorials, and tech PD. Twitter: @TommyMartinezTL

Raquel Hewitt

Librarian, Lancaster Middle School Lancaster, TX

Raquel Hewitt found an unused room full of strange-looking, idle equipment when she arrived at Lancaster Middle School. It was an aquaponics lab, which she and a science teacher got working again. Aquaponics uses waste produced by farmed fish to supply nutrients for plants grown hydroponically, which in turn purifies the water. It’s a perfect illustration of STEM applications at work. Hewitt reached out to Texas A&M



University, whose professors provided expertise and seedlings, and specialists in the community helped, too.

Hewitt’s project now includes an outdoor garden. Math classes devised optimal measurements for garden boxes. Social studies classes researched disease-resistant crops. Science students germinated seeds in the aquaponics lab to move outdoors, and marketing classes created a trademark logo for the produce. Students planted lettuce in January and harvested it by March, while also raising catfish.

Students in Hewitt’s lunchtime group, Create and Debate, undertake projects to serve the school or community: crocheting hats and scarves for the elderly, assembling toiletry bags for a homeless shelter, or painting rocks with positive messages for classmates. “There’s a method to my madness,” she says. “If I can plant a little mustard seed, you never know how big the plant will grow.”

Tamiko Brown

Librarian, Ed White Elementary, El Lago, TX

“I teach digital literacy, digital citizenship, as well as a love of books,” says Tamiko Brown. “It’s part of my job.” Her students spend much of their time designing prosthetic hands for their 3-D printer or winning state robotics competitions. But when Brown started at Ed White Elementary, the overhead projector was the primary tech in the room. Brown turned the library into a drop-in learning commons and launched the makerspace with no knowledge of coding or robotics and zero budget. She’s built it with funding from parent donations, the PTA, grants from Donors Choose, and her school district’s education foundation.

Checkout makerstations in a box include Makey Makey, Arduino, and Raspberry Pi.



Tamiko Brown

Each kit includes a book, either how-to or fiction, that aligns with the theme: The Ozobot kit has *Ozobots*, a nonfiction title, and the Rainbow Loom kit contains supplies and how-to craft books.

Brown recently added \$15 Merge Cubes to the kits, which allow students to view planets from different angles; the Merge Holocube lets them play Minecraft in the palms of their hands. “As an educator, I’m very much a learner,” says Brown, *SLJ*’s 2017 School Librarian of the Year. “When I see students learn, it becomes more accessible to me.” Blog: makerspacelibrary.blogspot.com; Twitter: @booksforkiddos

Megan Vallis

Library Media Specialist,
Truman Middle School, St. Louis

Every summer, Truman Middle School’s Camp Innovate hosts 40 to 50 kids for two camp sessions. Library media specialist Megan Vallis founded and directs the camp, whose mission is to encourage STEAM learning by designing and constructing objects. For instructors, Vallis recruits middle school teachers she knows are open to experimenting with tech, including Sphero robots, Bloxels, stop-motion animation, green screens, digital



Megan Vallis

breakouts, and Minecraft Edu. “The goal is to support teachers to try new technology” as well as students, she says.

“Technology is [students’] whole life,” she says. “Things they use every day can be tools in education.” Each Wednesday, she posts a 60-second book chat on the library’s Instagram feed. Vallis is also planning the Truman Design Lab, a dream space for innovation. She’s leading fellow teachers and administrators through the design process and preparing a proposal for district leaders. Library Instagram: @TMSLIB

D. Gregory Lum

Library Director, Jesuit High School,
Portland, OR

Sometimes little things make a library future ready, like lots of electrical outlets. When it came time to remodel Jesuit’s High School’s library, Gregory Lum participated in every consideration, from architectural design to furniture selection to outlets. The new space has two computer labs with large touchscreens and five conference rooms for group projects with “boat-style” tables and Apple TVs, lounge seating, and swivel tables for tablets.

The flexibility lets Lum help teachers with



D. Gregory Lum

inspiring, creative projects. Students used apps such as Adobe Spark, Keynote, and Pages to develop a zine with a comic strip on how a scientific discovery influences their lives. They loved it, and teachers asked Lum to help them find more time to work. In the second round, Lum helped the teacher flip the project and lay the groundwork by recording and posting an introductory lesson online, saving 40 minutes of explanation time. “I want what’s best for my students and colleagues. I don’t know what that is until I go out and learn,” says Lum, who is on the 2019 Newbery Committee. Library site: libguides.jesuitportland.org/ClarkLibrary; Twitter: @LumGregory

Amplifying Reading & Research



Beth Campbell

Beth Campbell

Innovation Technology Coach, Hopewell
Elementary School, Bettendorf, IA

Podcast, blogs, and hashtags help define the reading culture at Hopewell Elementary School. “[It] comes from our collective be-

lief that we want kids to be communicators and critical thinkers,” says IT coach Beth Campbell. That all started when teachers came to Campbell for help. Students felt as if they were reading and working in a vacuum and wanted an authentic audience. Campbell and teachers collaborated to help put

their book reviews on a podcast, *Books R Us*, available on iTunes. They use Wordpress to post about their reading on the library blog. But “it’s not about the tech,” Campbell says. These tools help them consider how books “ignite them to do, think, and feel.”

Students also create book-related hashtags. They pull out passages that resonate, post them on an adult’s social media using #quoteables, and tag the author. When authors weigh in, says Campbell, kids as young as third grade know their ideas matter. Website: talkingtechtconnect.weebly.com; Twitter: @HopewellLibrary



Rhonda Jenkins

Rhonda Jenkins

Library Media Center Director, Kendall Elementary School, Naperville, IL

In Rhonda Jenkins’s library, a first-grade book report is also an introduction to tech tools and the idea of skills transfer. Students use Google Drawing, onlinephotoscissors.com, and Padlet to illustrate and communicate their ideas about a book. They learn about intellectual property by appropriately crediting Creative Commons for images. Later, they’ll apply these design skills to create projects with the 3-D printer.

Jenkins loves it when kids tell her a tool doesn’t work. She reminds them that the tech is only doing what students tell it to. Jenkins, whose daughter calls her “the nerd,” says it’s important to let kids struggle a bit while developing tech fluency.

“When they understand how something works here, maybe it will also work somewhere else,” she says. Jenkins encourages her students to make good choices in their digital lives, and to learn from mistakes there, too. Blog: scholastic.com/bookfairs/idea-share/rhonda-jenkins; Twitter: @luv2teachtech



Colette Cassinelli

Colette Cassinelli

Library and Instructional Technology Teacher, Sunset High School, Beaverton, OR

A few years ago, a creative writing teacher at Colette Cassinelli’s school was producing books of student work. Cassinelli suggested they go to the local Powell’s bookstore, with an on-demand print machine, to print the anthology. The store asked the class to do a reading.

That’s when Cassinelli got the idea for the Apollo Press Student Publishing Center, including green screens, video equipment, mics connected to Chromebooks, and more. A grant from her school and the Nike Innovation Fund launched the program, maintained with donations from local agen-

cies. Students can produce projects for class or their own use, including self-published books, an old-time radio show, videotaped public health service announcements, or recreations of historical events such as a Martin Luther King Jr. speech. Students share projects with classes, families, and community.

Embracing tech, Cassinelli says, “We have to ask ourselves, ‘What can I do to make sure every kid is successful?’” She lunches with different staff every day, asking how she can help. At a learning showcase she organized, students ran demonstration stations for teachers, from project-based learning activities to creating a website and VR. Cassinelli wrote *Inspiring Curiosity: The Librarian’s Guide to Inquiry-Based Learning*. Website: edtechvision.org; Twitter: @ccassinelli

Brooksie Kramer

Librarian, Brookville High School, Lynchburg, VA

Tenth graders at Brookville High School spend a year researching a potential career using information literacy skills. Instead of writing a paper, they use Instagram to create a final “Day in the Life” project. Throughout, they learn about ethical use of photos and use digital tools to synthesize research.

It’s part of a four-year inquiry continuum that Kramer oversees. Ninth graders learn about good sources in a research boot camp. Eleventh graders study the United Nations’ global goals and apply them to a local project, using Google Drawing to create infographics or a green screen while shooting



Brooksie Kramer

videos for a campaign. In 12th grade, they create a *Serial*-style podcast about a topic of their choice.

Kramer's work has spawned several professional learning communities, including a Google Classroom she set up where teachers and students complete training challenges, ranging from coding games to cleaning up their Google Drives. She gets ideas from podcasts, including Google Teacher Tribe, and Twitter, which "totally changed" her PD. "I'm the only librarian in my building. Suddenly, I had lots of people thinking with me." Twitter: @BrooksieBKramer

Kate MacMillan

Coordinator of Library Services

Jennifer Baker

Library Media Specialist

Napa Valley Unified School District, CA

Kate MacMillan and Jennifer Baker strongly believe that using available tech will keep libraries relevant and able to evolve in the future. "Technology can either be the librarian's



Kate MacMillan



Jennifer Baker

best friend or the death knell," says MacMillan. "You embrace it, or it works against you."

At Napa Valley USD, that meant moving beyond the idea of the brick-and-mortar libraries circulating print books to a digital district-wide model. Now, 49 percent of NVUSD retrievals are digital. MacMillan and Baker had expected that most checkouts would be anthologies and heavy books used by older students. The surprise was the huge

number of read-alongs and audiobooks circulated by elementary kids.

MacMillan and Baker's One Card Project allows a student's ID, issued in kindergarten, to serve as a full-service library card. "It's a journey, a digital journey," says MacMillan of the libraries' digitization and other endeavors. "It's just begun, but I think it's going to blossom." MacMillan blogs at *Knowledge Quest*: knowledgequest.aas.org/author/kmacmillan

Good Citizenship & Social Justice

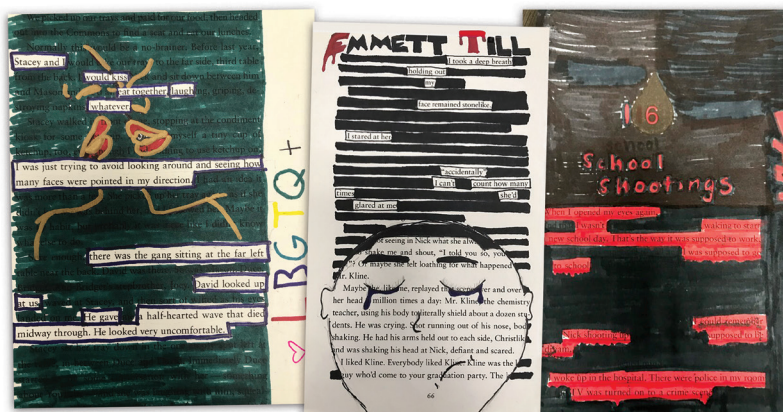
Joquetta Johnson

Library Media Specialist, Randallstown High School, Baltimore

Joquetta Johnson's idea for an #activism lesson started in 2015, when Freddie Gray, an unarmed black man, died in police custody near her Baltimore school. Johnson wanted to help students work through their pain and fear. They studied the Black Lives Matter movement and how hashtags most effec-



Joquetta Johnson



tively bring people together to advocate for social justice.

Now, they choose a social justice issue to research and create a hashtag for it. "We always say, 'don't do this, don't do that' on social media," says Johnson. "I wanted to show them a positive aspect and how they can use their voices. I always try to leverage technology to level the playing field."

In another project, students analyze poetry by Tupac Shakur and Childish Gambino's *This Is America* video. Using Padlet,

Johnson curates a collection of YouTube videos from diverse perspectives to help students develop their analyses. They also read Angie Thomas's *The Hate You Give*. Students responded with blackout poetry, created by blacking out pages of a text except for selected words, and had the option of sharing it via social media. "Part of using tech well is understanding when to bring it out and when to put it away," says Johnson. Blog: smore.com/y852d-joquetta-l-johnson; Twitter: @accordin2jo

Kristen Mattson

Library Media Center Director, Waubonsie Valley High School, Aurora, IL



Kristen Mattson

Should a principal be able to search a student's social media profile? What about a college admissions officer or future employer? When you take a Disney vacation, your thumbprint becomes your ticket. What if the government wants that?

These are questions that Kristen Mattson asks government class students who are studying the Supreme Court. It's one way she weaves digital citizenship into a class, discussing privacy and security topics highly relevant and engaging to students.

"I'm working to expand the definition of digital citizenship to what it means to be human in this digital age," she says. "Most people say it means being nice online, but I think it's about how we are engaged in a global community of citizens."

Her philosophy around tech in the library involves giving kids access to experiences they wouldn't otherwise have. Her school is 1:1 with Chromebooks, and the library has become a home for STEM kits and different engineering courses with Arduino and Hummingbird. Students who aren't taking the courses can still use those tools at the library. Mattson works with adults even more than students. A 2018 ISTE Emerging Leader, she moderates the Future Ready Librarians' Facebook group. Website: drkmattson.com; Twitter: @DrKMattson

Jennifer Gladkowski

Librarian, Village Community School, New York City

Imagine a commercial showing a husband and a wife on a sofa. The woman begins to cry. The husband says she's too emotional. Conflict? Not anymore! The husband goes into the Hug Machine and cries along with his wife.

That's just one of the gender stereotype-busting commercials created by Jennifer Gladkowski's sixth graders in her media literacy unit. Students also study toy ads to understand the intended audience and message, and then write an original commercial or a counter-narrative for an existing one. They film it, edit it in iMovie, and present it to the class. "Our conversations have gotten heated," says Gladkowski. "The kids have strong views about gender types and roles. We're changing young minds here."

She works with teachers to design learning experiences that bring in tech. When one teacher's class had produced more papier-mâché projects than could be displayed in one room, she helped students photograph their projects with a green screen and produce a poster.



Jennifer Gladkowski

"What excites me most about ed tech is when students are creating authentic, original content based on the information they consume," she says. "[It] opens up creative possibilities."

Christina Larrechea

Teacher Librarian, Frontier Middle School, Vancouver, WA

While teaching digital citizenship to her entire K-5 school, Christina Larrechea uses breakout boxes. Student groups solve



Christina Larrechea

a puzzle and open the lock on the box, requiring tech and collaboration skills. The boxes, purchased from Breakout EDU with a grant from the Evergreen Public Schools Foundation, contain items Larrechea assembles for each week's lesson. During the fourth grade copyright lesson, students watch a video, solve a jigsaw puzzle, and complete a crossword puzzle while learning about plagiarism, copyright, and citation. Using clues from these tasks, they break into the box to find their masks and a little money bag with chocolate coins.

As the campus tech expert and fixer, Larrechea initially struggled to find time for digital citizenship lessons. She recruited help, training one student per class to fix simple things such as resetting passwords or fixing trackpads. In the first semester, she had 300 requests for help. Once her Tech-Xperts were up and running, requests for help were cut in half. Twitter: @Larrecheareads

Based in Eugene, OR, journalist Jennifer Snelling writes about teachers and students changing the world.

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