How 'Makers' Make the Classroom More Inclusive

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By Melina Delkic

When Jean Kaneko started volunteering at her son's kindergarten class in Santa Monica, Calif., she was surprised by how hesitant the children were to play with toys they didn't recognize, to make a mess and, well, to be kids.

"I can't do that. I'm not good at that," she remembered them saying. Even at 4 or 5 years old, there was already a 'be perfect, don't fail' attitude, she said.

So she started bringing in blocks, strange clay creations, crafts, and handing them to the students with no instructions. They warmed to it. The craft supply grew, the activities changed and soon teachers were asking her to go into classrooms and even host after-school programs and camps.

Ms. Kaneko describes herself as a maker, and she brings maker spaces to schools all over her area. Now, those include 3-D printers and virtual reality technology.

"Maker" is a vague term – and that's intentional.

Making should be practical and relevant to some problem a student sees, Dale Dougherty, who is considered by some to be the founder of the maker movement, said in a phone interview. "It's this sort of creative process of taking an idea, developing it, using tools and techniques to make it real," he added.

Maker Faire, a gathering of makers and educators held each year in cities around the globe, was co-founded by Mr. Dougherty in 2006 in San Mateo, Calif. This year, the focus of the flagship <u>Maker Faires</u>, which draw some 200,000 people annually, has changed. "A lot of the previous years, we've been organized around how do you engage kids and making and the idea of maker spaces," Mr. Dougherty said. This year it's "on the future of work."

Image



Dale Dougherty is considered by some to be the founder of the maker movement. The process should be practical and relevant to some problem a student sees, he said.CreditNathan Bajar for The New York Times

Some who attend are educators who want to learn about it; some are students showing off their maker projects in a supersize show-and-tell; some work for education nonprofits and want to keep up with trends. Some are not so sure about it.

"I'm a little unclear about what being a maker is about," said James Bacchi, a biology teacher at Brooklyn Technical High School who was at the event in Queens in September. He grew up working in his dad's garage, fixing fuel pumps, modifying his bicycle. He was a hands-on learner. "I guess that's missing from today's kid culture," he said.

He was interrupted by one of his former students, James DeLaura, who was there with his physics professor at Kingsborough Community College. He reminded Mr. Bacchi that he had been one of his environmental sciences students a few years ago.

"I have a 3.8 now," Mr. DeLaura said with a smile. "I'm not a terrible high school student anymore." And he has become a maker himself, teaching 3-D printing in middle school classes.

Like Mr. DeLaura, a growing group of students who haven't responded to traditional textbook-and-work sheet learning are excited and inspired about making, teachers say. There are more than <u>400 active spaces</u> for hacking and making in North America.

Image

At Maker Faire, name tags by Brilliant Labs that change color as they get close to one another.CreditNathan Bajar for The New York Times

Carolyn Barnhart, a science teacher at Fredericton High School in New Brunswick, Canada, was about two decades into her teaching career when she heard about making, and cautiously began to apply it to her classroom. She had been accustomed to airtight lesson plans and scripted lectures.

It was an adjustment: "You're not the expert anymore. You're not seen as the sage on the stage," she said of making. She found herself searching Google to answer things her students asked her, and sometimes simply saying: "I don't know."

At first, she was terrified. But the students never pushed back on her new methods. In fact, they grew more and more excited and engaged in her classroom — especially, she said, the students she had trouble energizing about math and science before.

"The kids need to be solving real-world issues in our classrooms, not just taking notes about it, not just reading about it," she said. "Science is dirty. Science needs to be messy, and we have to be confident enough to get messy."