

## The Classroom of Tomorrow Takes its Cues From Tech Startups

School near Pittsburgh transforms library into immersive learning space with robotics area, 3D printer and indoor treehouse

By Leigh Kamping-Carder



The Creativity, Innovation & Research Center at Haine Elementary/Middle School was once a library. Today, it has more in common with a Silicon Valley startup incubator. On the polished-concrete floor, children huddle around laptops, play with educational robots and craft “Shark Tank”-style pitches for inventions they’ve dreamed up. Some work on math problems, while others climb an indoor tree house. There is not a single book in sight.

The experimental classroom is part of a wave of so-called maker spaces popping up at schools across the country. They’re designed to facilitate complex play—open-ended, thought-provoking activities that involve tinkering and engineering with no “right” answer. According to Donna Ross, an associate professor of science education at San Diego State University, research suggests that these activities foster problem-solving, critical thinking and team-building skills—all attributes valued by today’s employers. As screen time and highly structured activities have colonized children’s off hours, “we’re trying to build [complex play] into the formal school day,” Ross said.

The \$200,000 space at Haine was funded by a state grant and opened in September; almost 1,500 students in kindergarten through sixth grade use it each week. Chairs, tables and whiteboards are on wheels, allowing the room to be configured for

a range of activities (books now occupy another space). Instead of leading lessons from the front of the room, teachers and librarians move among groups of students, guiding projects, facilitating discussion. “They really need to go through a paradigm shift in some respects,” said Ken Burk, CEO of Inventionland Institute, which designs curriculum, software and classroom spaces for schools, including Haine. The Pittsburgh-based company is planning four similar spaces, including two more for the Seneca Valley School District.

According to Ross, who is not affiliated with the project, there has been little research into how these environments can be most effective in school settings. “3-D printers and things are really cool, but you can use something that’s really cool without learning very much,” she said, adding that time with technology, science and engineering can benefit girls and students of color by guaranteeing them access they may not otherwise have.

Some of Haine’s students have continued developing their inventions outside school hours, said Sean McCarty, the school district’s assistant superintendent for elementary instruction. Like a tech incubator, the Creativity, Innovation & Research Center provides a safe environment for experimentation, he said. “If you find out you failed, then you learn from those mistakes.”

### THE FUTURE OF EVERYTHING



Over the summer last year, Haine Elementary/Middle School outside Pittsburgh transformed its library into the Creativity, Innovation & Research Center, one of a growing number of so-called maker spaces appearing in schools across the country.



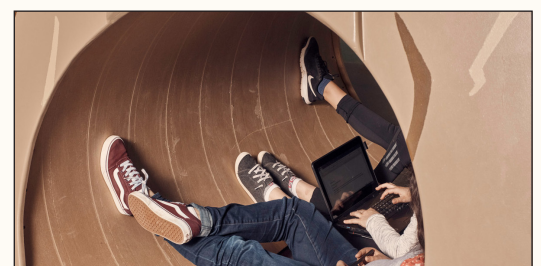
The immersive environment was designed in collaboration with Inventionland Institute, a Pittsburgh-based company that creates curriculum, software and classroom spaces for schools.



Sean McCarty, the school district’s assistant superintendent for elementary instruction, said the idea grew out of a review of the school’s library and technology programs and a fortuitous field trip that his daughter took to Inventionland, a product-development company that gives tours of its whimsical factory. (Inventionland Institute is its education-focused affiliate.)



Teachers and librarians had to shift the way they lead the class. Instead of lecturing in front of a blackboard, they move among groups of students, facilitating learning.



Students have created prototypes for a backpack that fastens with magnets and a hairbrush with a built-in mirror and hair-product compartments, McCarty said.