**Robotics in the Classroom**

In elementary school, students are still learning with their eyes and hands – drawing, molding, and manipulating objects. They are starting the tough transition to learning by reading, and robots make it possible for them to work through problems visually and experiment with concepts they are learning.

To spark an early interest among elementary-age children, schools are adding Legos, robotics and other brain-boosting technology. The idea is to get kids interested in learning and doing robotics and coding while they’re still in elementary school, so by the time they’re in high school, they’ll have a more developed interest and will be able to do more.

“A lot of the kids don’t know how to tinker. They don’t know how to just experiment and try things. Now, they’re starting to get comfortable … (they have this sense of) ‘I did this. I figured it out on my own, and no one told me how to do it,’ ” said Kevin Frick, principal of Bluejacket-Flint Elementary in the Shawnee Mission school district.

It might seem odd to introduce coding and robotics to someone as young as 6, but it all fits into a larger strategy to get kids interested in science and technology.

For Jamie Sachs, director of education in New Hampshire,

“Students make a decision in fourth or seventh grade whether they’re good at STEM,” Sachs said. “We want to try and get kids interested or at least help them understand that they can do STEM before they decide, ‘I’m not good this.’ ”

Ms. Dweck’s students have designed mazes, produced geometric shapes, calculated perimeter, tested probability, composed music, recorded dialogue, and even retraced the voyage of the Mayflower with Dash. As Ms. Dweck says, “‘Millennials’ have been raised on technology. They have no fear of it and are eager to jump right in and create. They are natural innovators who relish and need this creative platform.”

Many of these pioneering teachers who focus on inquiry-based learning try to integrate robotics into as many subject areas as possible. Making these curricular connections also allows them to justify teaching computer science, a subject that is currently required in only a handful of regions.

Ozobots, little robots that follow different color paths created by the kids; Lego WeDos, Lego projects that can connect to an iPad; and Dash and Dot robots, which the kids can control with different apps. There’s even a robot students can code to play songs on a xylophone.

“Anything you could do with a Lego, you now have a device that can power the Lego,” Brown said. “The options with these go on and on.”

**Increases Creativity**

Robotics is a production-based learning module. Students have the opportunity to create something tangible and make it perform the actions that they program it to do. Not a lot of fields combine creativity with engineering and technology—robotics does. When students are given the opportunity to create something interactive that they think is cool, their engagement levels increase, and they retain more information. You might be surprised at the things kids can create when given the right information and tools.

**Teaching Children How to Turn Frustration into Innovation**

Learning how to build and program a robot can be a complex and difficult process. Many students will struggle with the concepts at first and often get frustrated. Robotics in schools can help these students turn their frustration into creativity and innovation. This is a valuable life lesson that teaches our students perseverance and determination when faced with challenges. Students learning robotics are able to channel their frustration into trying harder and aiming higher. All their hard work makes looking at that finished product even sweeter at the end. Not only does teaching students robotics teach them how to persist and solve problems, but it also helps them increase their maturity levels and prepare them for real-world situations.