

Librarian's Shelf by Rachelle McPhillips

High-Tech Tinkering Supports STEM Initiative

Area educators and leaders are focusing on increasing student exposure and interest in science, technology, engineering, and mathematics. The Columbus Chamber of Commerce's strategic plan included addressing the need for STEM learning and Columbus Public Schools are committed to bringing STEM concepts to students, most visibly with a "STEM Academy" in the new high school. To support this movement, the library has added several opportunities for visitors to the Teen Space to experiment or "tinker" with these concepts.

Ozobots are one of the more recent additions to the Teen Space collection of robots. These tiny bots have sensors or "eyes" on their bases that read colors. When Ozobot detects black, blue, green, or red, the color of its light changes accordingly. Different combinations of colors in short succession tells the robot how to behave. For instance, if Ozobot sees "blue, red, blue," it will do a U-turn. Seeing "red, green, red, green" will make it spin like a tornado.

Playing with Ozobot and learning how it works gives Teen Space visitors a basic and introductory understanding of programming language. When a path drawn for Ozobot doesn't work as planned, visitors apply logic and critical thinking to correct the design. You can learn more about Ozobots at <http://www.ozobot.com>.

Cubelets are the most recent addition to our robot collection and young adult visitors have been loving playing with these after school. They are cubes that snap together with magnets. Each cube has a slightly different function. Some of the blocks detect temperature or distance from other objects. Others light up, roll, or make noise. Yet others increase or decrease the output of light, movement, and sound. These cubes also have add-ons that make them compatible with Lego building blocks which enhance the design and engineering possibilities.

One of the best things about watching Teen Space visitors use Cubelets is the collaboration that happens. In the short time these have been available for patrons, I have been shown multiple robots that students have created on their own and then combined, and one group was eager to show me the conveyor belt they created. (I never would have thought to put the wheels up to make a conveyor belt on my own!) Read more about Cubelets at www.modrobotics.com/cubelets.

After school visitors have not been able to get enough of our LittleBits collection. These electronic building blocks allow our young people to explore circuits and build machines and gadgets that light up, make noise, and even operate a small fan. Using a 9V battery, visitors snap together the components and via experimentation, see how circuits work and how switches can stop or allow a flow of electricity.

When a patron connects a dimming switch to another block that has a light, they see first-hand how a light on a dimmer switch works and gain a deeper understanding of their world. LittleBits fascinate our Teen Space visitors for hours and you can learn more about them at <http://littlebits.cc>.

The Teen Space also has five MaKey MaKey inventor kits, Sphero robots, and a peg board that visitors use to make a marble run. All of the above components include lesson plans that can be used in a classroom setting and I am able to bring them to schools. Contact me at 402-562-4201 or mcphil@columbusne.us for more information about this or any of our teen services.