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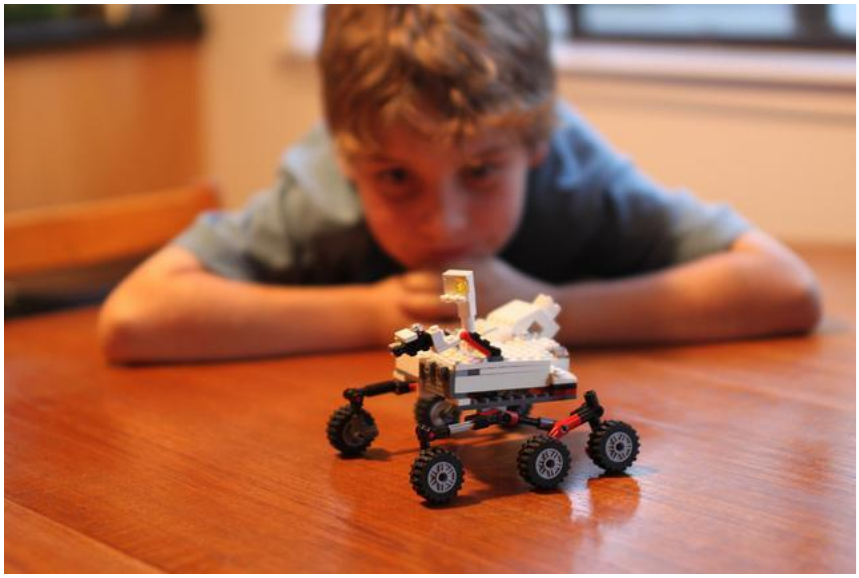
LEGO Science: How Construction Toys Can Help Build STEM Education

By Roxanne Palmer @rpalmerscience on February 13 2014 12:16 PM EST

Brightly colored blocks were the toast of the box office last weekend, thanks to "LEGO: The Movie." But our fond memories of the plastic blocks are from the playroom, not the cinema. LEGOs are also a fun way to help kids -- and adults -- get excited about science.

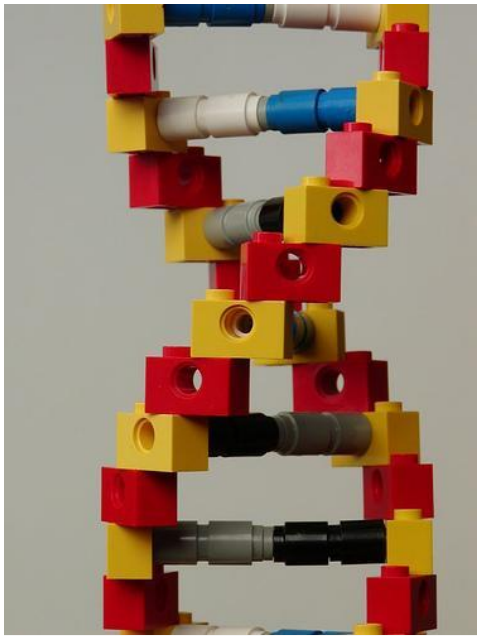
In Brooklyn's Coney Island neighborhood, the elementary school students at Public School 188 are learning about science and technology with the help of LEGO blocks. The children use the blocks to build robots that can be controlled with commands through a laptop. Dinosaur-shaped robots can open and close their mouths; LEGO blocks are also used to simulate a landscape after a volcanic eruption. It's a valuable hands-on lesson for kids at P.S. 188, where nine out of 10 live below the poverty line, and two-thirds of students don't have computers or Internet in their homes.

"The children are learning about different opportunities that they haven't been privy to or even known about before," principal Fred Tudda told the New York Daily News earlier this February. "To hear a 10-year-old young lady say she has the opportunity to become an engineer and now she's thinking along those lines, to me that's changing the world."



A LEGO rover encounters a gigantic creature. Flickr via Creative Commons/rlerdorf

Sure, you can buy the official LEGO Curiosity rover set on its own, but isn't it much more fun to make your own? LEGO artists of all ages have made their own science-inspired creations, like the Curiosity robot above, or the LEGO DNA shown below:



LEGO DNA helix Flickr via Creative Commons/mknowles

Or check out this LEGO version of the James Webb Space Telescope, which is slated for launch in 2018. (NASA has some instructions [PDF] on how to build your own).

A tiny LEGO space telescope. Flickr via Creative Commons/NASA Webb Telescope

Wired also has a good roundup of some awesome LEGO science models, including another Curiosity rover, by chemist and prolific LEGO artist Tim Goddard (whose Flickr feed is chock full of amazing LEGO robots, spaceships and monsters). Studies do suggest that LEGOs and other block toys seem to have lasting benefits for children who that start playing with them early. In one study, published in 2001 in the Journal of Research in Childhood Education, a trio of researchers started following a small group of children from preschool all the way through high school. The kids that played with blocks “in a highly insightful manner” scored higher on standardized math tests starting in the seventh grade.

You might think that the correlation between playing with block toys and higher math scores comes from something like natural smarts -- the kids that are going to have some innate math ability will probably be more likely to play with blocks, right? Maybe, but the the researchers found that the benefits of blocks still held up when they controlled for the children's IQ.

Building with LEGOs in groups may also help build social skills in autistic children. One 2006 studyfound that kids who attended a group play session with LEGOs improved much more socially than kids who were coached on socializing. LEGO has the market pretty cornered on snap-on blocks, accounting for about 70 percent of construction toy sales. But whatever your choice of construction toys might be-- LEGO, MegaBloks or Lincoln Logs -- go nuts and learn!