

# Embracing the Toy Store for STEM



**By Mark Gerl**

Here in the early 21st century we have a wealth of new materials we can use to teach and learn an amazing array of ideas.

While Edtech is a booming business, some of our greatest educational tools are hiding in the toy aisle of stores or the game section of retailers. STEM kits,

STEAM toys, VR games, the list goes on and on, but bringing these great resources into the classroom is still the realm of the outliers, the pioneers and the vanguards. How do we make STEAM toys the norm for our classes?

At Fulton Academy of Science and Technology (FAST), there is an extra class called “Innovation Hour” specifically created for students to learn the engineering design process through project-based learning. This process requires students

to problem-solve, plan project solutions, produce tangible designs and evaluate the outcome of their work.

**Here's the process and how students become STEM/STEAM innovators:**

- Three days a week, a teacher presents a problem for students, which students study so they understand its impact as well as what limits there are to solving the problem.
- Students then brainstorm ideas that might help achieve the solution and plan their projects accordingly.
- During the planning stage, some ideas may prove too impossible to execute so students are guided to weed out these ideas so they can continue working on the ones that might work.
- Students then create, build, and prototype their ideas. With trial and error, students tweak their designs through the improving stage — evaluating the students' creations as a viable solution to the original problem. Students learn quickly how to get closer to their goal during this class.

All of these components are the heart and soul of innovation.

The “Innovation Hour,” and all of the designs created during the class, are examples of how toys can transform into teaching tools. How do you make this initiative work in your school or district?

**Here are a few ways you can get started:**

- **Set a goal for students to tackle.** Even if their solution is impossible, the challenge is the driving force. Give them agency to approach the challenge in their own unique ways.
- **Hide the instructions.** The instructions explain one way to use the toy, but that's not the only way it can be used. Be creative, be curious, and find more than one way to achieve a goal. The greatest inventors don't follow instructions, they write their own.
- **Document EVERYTHING.** To quote Adam Savage “The difference between science and goofing around is writing it down.” Use pictures and videos, online word processors, pen and paper,

whatever — but WRITE IT DOWN. Otherwise you're just goofing around.

- **Have students present their findings.** A great design is only as good as the way you present it. This is when educators can incorporate cross-curricular learning into STEM. English Language Arts, math and science all come together when students document and then present their designs.
- **Encourage failure, as long as students are learning from every attempt.** No design is ever right the first time and even good ideas can be made better. There is no one right answer and there are thousands more wrong ones. Ensure students that they will fail, but they should embrace it because that's part of the process.

It all begins with the first brave step, go to the toy store and see what looks fun!

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