Gaining STEAM at Your Library!
by Diana Rendina

Setting the Scene

**Bulletin Board:** Get your students to think outside of the box and get excited about science with this display. Create and cut out the periodic table symbols for thorium (Th), indium (In), and potassium (K), and use them to spell out the word “Think” on your bulletin board. Underneath or next to that, spell out “outside the.” Then include either an image of a box or an actual cardboard box. Top it all off with an image of (or an actual) lightbulb outside of the box. Bonus points if you create additional displays spelling out words using periodic table elements. You can download symbols from the periodic table at [http://sciencenotes.org/black-white-periodic-table-element-cells/](http://sciencenotes.org/black-white-periodic-table-element-cells/).

**Make It at Your Library Display:** Inspire your students and patrons with a three-dimensional display. Artfully display a variety of arts and crafts supplies (or print out images of them for a bulletin board), such as a ball of yarn with needles, some origami cranes, a paintbrush, etc., on a table. Display arts and crafts books related to the realia alongside the display. Top it all off with the “Create” poster from Upstart ([http://www.demco.com/goto?PRD13708730](http://www.demco.com/goto?PRD13708730)) and a sign that says, “What will YOU make today?”

**Collaborative LEGO Display:** Keep a LEGO baseplate and a bin of LEGO pieces at the checkout desk. Every time a student checks out, allow him or her to add one LEGO per book to the display. Take pictures as the sculpture changes, and share the pictures on social media.

**Project Hall of Fame:** This works best after holding a library event where students design and create projects such as LEGO sculptures, arts and crafts projects, or even digital creations like Minecraft. As students complete their projects, take photos (or screenshots) of their finished creations. Print them out in color, and display the images on the bulletin board. If you’d like, include a caption with the title of the project and the name of the student who created it. This is a great way to display the projects your students are creating so that everyone who visits the library can see them, even if you have to take them apart or the students take them home.

**Games/Contests**

**Egg Drop Contest:** Divide students into groups, and give each group an assortment of arts and crafts supplies and a raw egg. Include an insulating material (foam, cardboard, fabric, packing peanuts, etc.) and
something with which to attach things (tape, glue, yarn, paper clips, binder clips, etc.). Also include some decorative supplies so that students can get creative. Challenge them to build something that can hold and protect an egg when it is dropped from a ladder. Set a time limit so that they have to work quickly. After time is up, gather everyone together and test the egg holder contraptions. Place a plastic tarp underneath the ladder to prevent getting egg goo on the floor. Once all of the egg holders have been tested, discuss with the students. What were the common characteristics of those contraptions that kept their eggs from breaking? How could the ones that didn’t work be modified to work next time?

Food Architecture Game: This is a fun activity where you get permission to play with your food. A variety of foods and materials can be used. Some favorites are spaghetti and marshmallows, grapes and toothpicks, gum drops and toothpicks, etc. By stabbing the spaghetti or toothpick into the food, you can build a variety of structures, from houses to towers to geodesic domes. Up the ante by incorporating a design challenge into the mix: Who can build the tallest tower? Who can build a dome with the most sides? The bonus comes at the end, when students can snack on their creations. Note: Have students wash their hands before building their creations.

Snacks

Gingerbread Robots: This activity borrows from the concept of gingerbread houses with a STEAM twist. Gather supplies for building a gingerbread house, but instead of building houses, have your students build robots. Licorice can become cables, gum drops can be LEDs, pretzel sticks can be levers, etc. Warning: They might just be too cute to eat.

LEGO Treats: Using a candy or gelatin mold, create treats in the shapes of LEGO bricks and minifigures for students to snack on. Molds can be found by searching “LEGO mold” on www.amazon.com.

Arts/Crafts

DIY Slime: Slime is easy, fun, and affordable to make, and students love the gross factor. You’ll need ½ cup of school glue (a standard bottle), 1 cup of hot water, 2 tsp of borax, a plastic zip-top bag, and some food coloring (may stain hands and clothes). Heat up water until it’s hot but not boiling (have adults help children with this). Mix ½ cup of hot water with the glue. Set aside. Mix the borax and food coloring with the remaining water. Add both mixtures to the plastic zip-top and seal it closed. Agitate the bag until the slime starts to thicken. After a few minutes, you can take the slime out and play with it. Add glitter for sparkle slime.

Used-Book Art Meets Paper Circuits: Gather up your weeded and discarded books, and give your students permission to create art out of them. Have plenty of scissors, glue, glitter, markers, and other art supplies on hand. Amp it up to the STEAM degree by adding in paper circuits. Paper circuits are easy to create using coin batteries, copper tape, and surface-mount LEDs. The LEDs are tiny and can be difficult to manage, so have plenty of tweezers handy and have some extra adults on hand to help the little ones. Students can use the paper circuits to light up their artwork. Find resources on how to create paper circuits here: http://tinkering.exploratorium.edu/sites/default/files/instructions/paper_circuits.pdf.

Special Events

“Make Something Awesome” Movie Night: Arrange a showing of one or more feature family films centered around the themes of creativity and making.

- The LEGO Movie (directed by Phil Lord and Christopher Miller, Warner Brothers Pictures, 2014, DVD, ASIN B00I6JOD2S)
- The Boxtrolls (directed by Graham Annable and Anthony Stacchi, Universal Studios, 2015, DVD, ASIN B00HLTDARS)
- If You Build It (directed by Patrick Creadon, Docurama, 2015, ASIN B00UVCI2S4)

Mini Makerfair: Set up a variety of makerspaces throughout the library. Some examples of activities could include LEGOs, K’NEX, electronic circuits, coding, robotics, and arts and crafts. Invite local businesses to set up a booth and demonstrate some of the technology they have to offer. Make it a party and incorporate snacks, fun activities, and even maker goodie bags. If you have students who regularly build
projects, have them display their projects and explain them to visitors.

**Math Activities**

**Design a Project on a Budget:** Create a cost structure for your supplies (e.g., paper clips cost 10 cents, one cardboard box costs $1, etc.). For some supplies, like LEGO and K’NEX, you might even be able to look up the actual value on their websites. Give students a design challenge, such as build a working catapult, design a rubber-band car, etc. Then add a budgeting element to the project. See which groups can create the most affordable project that works. Afterward, have a discussion with students about economy of materials. What were the advantages of designing a cheaper item? What were the drawbacks?

**Writing Projects**

**Storytelling around Projects:** Student projects almost always have a story behind them. Conduct one of the previously mentioned STEAM activities, or give students free time to create whatever they want with the supplies you have on hand. Then ask students to write a short story explaining their project. Look for volunteers who are willing to share their story with the group.

**Blackout Science Poetry:** Using discarded science books and magazines, have students create blackout poetry. Provide black markers to students. Students can look for words that stand out to them and outline them to begin creating their poems. Once they’ve found all the words for their poems, they can either black out or color over the rest of the text to make their poems stand out. Ask for volunteers to read their poems aloud.

**Internet Activities**

**Scratch:** Designed by students at MIT, this site is a fun way for students to be introduced to coding. Students can play and create games using a simple block coding system. Scratch is also fantastic for digital storytelling. [https://scratch.mit.edu/](https://scratch.mit.edu/)

**Code:** This site is an amazing resource for helping kids learn how to code. Have students work through some of the shorter activities, or draw it out into a multi-week program by helping students work through the 15-hour course. Includes activities for both elementary and middle school. [https://code.org/](https://code.org/)

**PBS Design Squad:** Bookmark this site for a great place to find STEAM-related videos, activities, and games for students: [http://pbskids.org/designsquad/build/](http://pbskids.org/designsquad/build/)

**Resources**

**Fiction**


**Picture Books**


**Nonfiction**


