



STREAM Academy Classes 2015-2016
Mondays, 2:00-3:00

- ❖ **Academy 1: October 5 – November 30**
- ❖ **Academy 2: February 1 – April 1**

Kindergarten:

- **Recycling Tower Challenge**
As an introduction to engineering, the students will build the tallest tower possible with the recycled materials they were given.
- **Sink or Float**
Students predict whether a material will sink or float and explain why. Then they test their theories. They record both their predictions and conclusions on a data chart.
- **Save Fred the Worm**
Students practice working in partners and problem-solving as they have to help Fred the Worm put on a life vest and get back on his boat. Fred is a gummy worm, his life vest is a life saver candy, his boat is a plastic cup but the catch is that they can't use their hands, only paper clips as tools.

1st Grade:

- **Save Fred the Worm**
Students practice working in partners and problem-solving as they have to help Fred the Worm put on a life vest and get back on his boat. Fred is a gummy worm, his life vest is a life saver candy, his boat is a plastic cup but the catch is that they can't use their hands, only paper clips as tools.
- **Building a Bridge**
Students use straws and paper clips to build bridges They then improve the bridge to make it sturdier.
- **Animal Groups**
Students chose one of the five vertebrate groups (mammals, reptiles, amphibians, fish, and birds) and design a brand new species that will fit into that group. After planning their design, they build a model of the animal using recycled materials. Groups are asked to prove that their animal belong to a certain group by its distinguishing features.

2nd Grade:

- **Volcano**
Students participate in 2 volcano experiences. First, they watch a volcano model demonstration using baking soda and vinegar. Then, they take a virtual helicopter tour using an app called Volcano 360. After discussing both experiences, students compare and contrast the two volcanoes on a Popplet idea web (or one that is similar).
- **Science of soap**
Students complete an experiment by dropping water onto a penny to find out how soap affects the surface tension of water. Eventually, they learn that washing your hands with soap is important because it allows the water to surround the dirt and wash it away instead of clinging to other water molecules.
- **Whatever Floats your Boat**
Each student works on a "top secret laboratory" (a.k.a. behind a bucket) to build a boat out of aluminum foil. After they build their boats secretly, they are put in groups to help each other improve their boats. They engage in student-lead conversation about what their boats remind them

of, what they were imagining while building the boats, ways they might improve the boats, other examples of things that floated well, etc. Finally, the students will take turns floating their boats and asking each other questions such as, "How would change your boat if you did this project again?"

3rd Grade:

- **To get to the other side: Designing Bridges (Civil Engineering)**
When civil engineers design bridges, they must take into account factors like balance and motion. This unit introduces the principles behind bridge design with the storybook *Javier Builds a Bridge*, about a boy who needs a safe footbridge to get to his island play fort. Students will reinforce their understanding of “push” and “pull” as they explore how forces act on different structures. They’ll use what they know about balance and force as they experiment with beam, arch, and suspension bridges—and learn how bridge designs counteract and redirect forces and motion. In the final design challenge, students plan, build, and test their own bridges.
- **Beanie Baby Habitats**
Students research the needs of a Beanie Baby animal and then build an appropriate habitat for the animal. They must take into consideration the food, water, shelter, and space an animal needs in its habitat.

4th Grade:

- **Just Passing Through: Designing Model Membranes**
Students design a model membrane to mimic the properties of real membranes in live organisms
 - 8 Lessons
- **Shake Things Up: Engineering Earthquake Resistant Buildings**
 - 9 Lessons

5th Grade:

- **Designing Water Filters:**
Students apply their knowledge of the water cycle and investigate the properties of filter materials as they plan, construct, test and improve their own water filters.
 - 8 Lessons
- **Rockets and Rovers**
Aerospace Engineering (will align with Mr. Sharp’s Flight program)
 - 8 lessons

6th Grade:

- **Pizza Box/Arcade Games**

7th Grade/8th Grade:

- **Robotics - Vex Competitions in 2015/2016**
Students will focus first half of year on building robots, programming and in-class competitions. Students will compete in statewide competitions during the second half of the year.
Vex “Nothing But Net” Competitions