

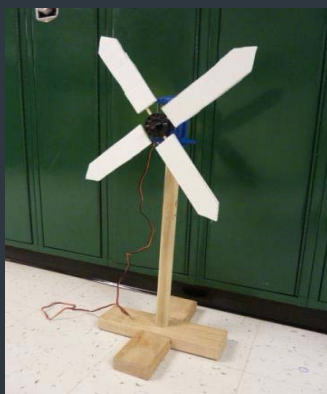
STEM Ideas for Science Classes

DESIGN A FAN BLADE

Using blocks, wooden dowels, corks, straws, paperclips and index cards students can build fans to solve the "it is hot in here!" problem found in many classrooms. Students can research various blade designs and construct a fan that will spin using wind from a box fan.

Lesson extensions can incorporate the addition of a motor to demonstrate wind turbines. This design challenge can be used to teach Next Generation Science Standards including Global climate Change, Ecosystems dynamics functioning and resilience and the Conservation of Energy (Conduction, Radiation, Convection).

These challenges, connected to the NJCCCS and NGSS, are available for your classes. Please contact your building's STEM Specialist.



# Step into STEM

Bringing engineering into the classroom through an integrative, real-world approach to learning science and mathematics.



## Family Engineering Night

During the last week of October, our school district is planning to host the 2nd annual Family Engineering Night for 8th grades residents of Middletown and their parent. Pre registration is required and information is available on the district website.

The evening night will consist of several competitive design challenges with student teams competing against parent teams. In addition, administrators from High School North and South will be present during the evening to explain the STEM Pathway that is currently in it's third year for students in our high schools who are interested in possibly studying or working in STEM-related fields in the future.

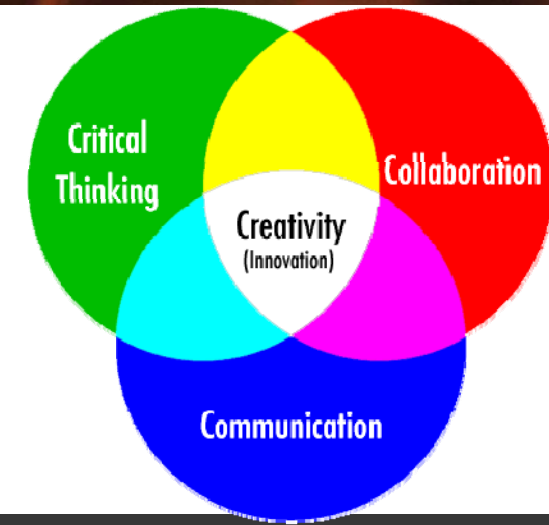
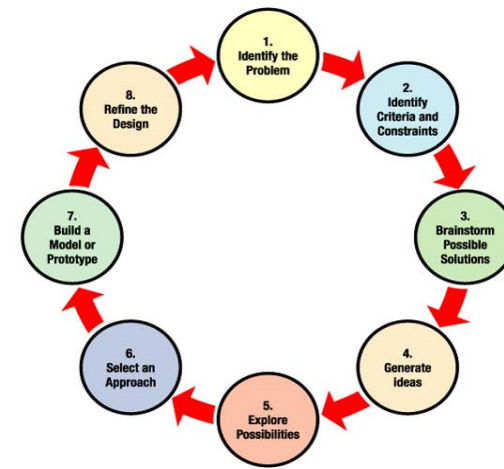


## STEM Club Kick Off

The STEM club has begun meeting! They started the year off with an introduction to the *Seaperch* underwater design challenge. Students will design, build and test their underwater rovers throughout the school year. In February and March, club members will be meeting at the Red Bank YMCA to learn how to maneuver and control their rover in the Huber Pool there, culminating with the completion to be held on April 16th at Rowan University.



Students participants commit to scheduled dates for meetings during which they complete the building of the rover, prepare an oral presentation and complete a design journal of the Seaperch experience as required for the competition.



## Introducing..... MaKey, MaKey

*MaKey, MaKey* is a unique and innovative approach to engineering in which students are challenged to become artists, designers and innovators by creating game controllers, musical instruments and keyboards out of everyday objects such as playdoh, apples, and bananas! A kit is used that contains everything needed to get started: one USB Cable, seven alligator clips, six connector wires, illustrated instruction guide, and stickers. (Bananas not included.)

*MaKey MaKey* works on Windows, Mac, Chromebooks and some tablet devices. Students interested in doing this at home can order kits through [MakeyMakey.com](http://MakeyMakey.com) for \$49.95.



## Engineering Resources

The National Science Foundation offers a collection of lessons, activities and web-based resources intended to help interested educators, students, and families learn more about engineering.

<http://www.nsf.gov/news/classroom/engineering.jsp>



Engineering~ Go For It (eGFI) provides a website, magazine, and an e-newsletter as well as free materials for the classroom. Engineering activities are grouped by topic as well as by grade level.

<http://teachers.egfi-k12.org/category/lessons/grades-6-8-lessons/>

STEM Ideas for Math Classes

DESIGN A LIFEGUARD STAND

Incorporate "Design a Life-guard Stand" into your math classroom to build on conversion skills from metric to inches and to focus on collaboration! Students are required to build a life guard stand out of index cards that will allow a "lifeguard" to sit upright for 20 seconds at a height of 35 cm. The lesson focuses on planning, collaboration, metric conversions and the force of compression. Each chair is tested and students are given time to identify problems with their chairs and focus on rebuilding them!



Middle School STEM Specialists

Bayshore:  
JoAnn Layton, ext. 2610

Thompson:  
Jeanette VanFechtman, ext. 8776

Thorne:  
Kristen Parry, ext7785