

**STEM Ideas for Science Classes
(Forces and Motion)**

Spaghetti Towers

Students enjoy using their engineering design skills to construct a tower using only spaghetti, marshmallows, paper, and cardboard. Every piece of material has a price, and students learn quickly that their allotted budget does not buy much! The final structure must meet a minimum height requirement and be able to hold 50g of weight for 10 seconds.

Egg Drop

This exciting activity has our students design and build a device out of basic materials that keeps a raw egg from breaking when dropped!

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.

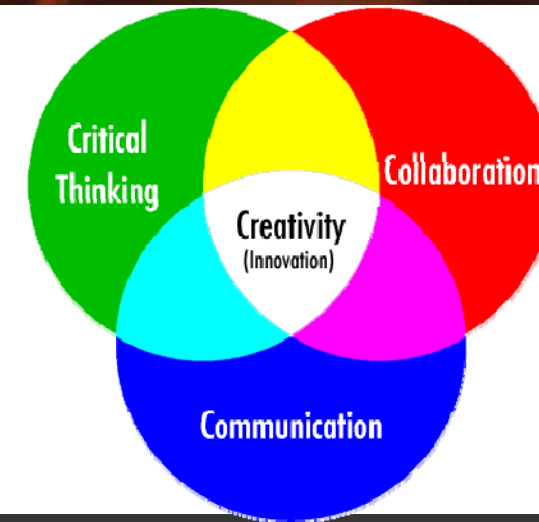
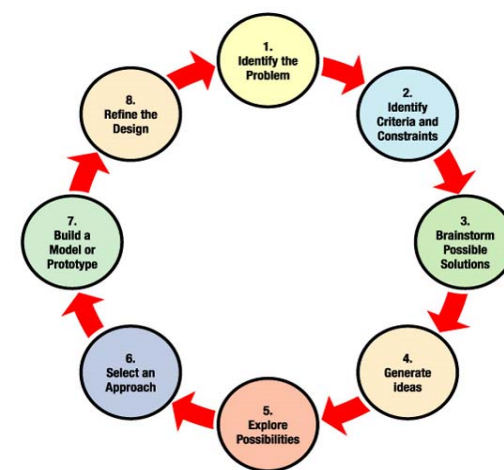


STEM Club Kick Off

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 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

Engineering

Students in 8th grade math use their engineering design skills to construct a working pen out of basic house-hold materials, such as, string, glue, corn starch, water, foil, toothpicks, flour, wire, etc.

Students may use scissors and spoons to help them build, but not in their final design. Students learn to overcome strict constraints, as the pen must be planned, built and tested in only 1 class period. The students should be able to write a short essay with their newly constructed pen.



Middle School STEM Specialists

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