STEM for ALL
& ALL for STEM

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EBR Foundation STEM Fellowship 2018-2019

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Objectives

- Promote STEM education across levels (ES, MS, and HS)
- Connect real life applications to in class STEM lessons, activities
- Help students developing a sense of "science wonder/curiousity" in everyday learning and confidence
- Prepare students for high level courses in Science and Math in order to do well in college or obtain a solid STEM career as entering work force.
- Service Learning for High School Students (especially in STEM Club)

STEM Activities for ALL ages

Elementary School Levels

- ***Sound of Music***

- connect musical instruments/voices to science/math concepts (frequency, amplitude, and resonance)
- Materials: straws, scissors, and rulers

Elementary School Levels (con't)

- ***Spaghetti Straw***

- connect bridge designs (seeing everyday) to math/science concepts (geometry and force) and teamwork.

- Spaghetti straws, masking tapes, scissors
- Each group builds the tallest free-standing tower with the tennis ball on top.

Middle and High School Levels

- ***EggDrop Catcher***

- Connect techniques in packaging to math/science concepts (impulse, momentum)

- Materials: 5 pieces of 8.5”x11” papers, 1 yard of masking tape, scissors.

- design and build a catcher to prevent a raw chicken egg from breaking when it is dropped from a minimum height of 1.8 m above the catcher.

Middle and High School Levels

- ***See It Do it***

- Each team will have to assemble (copy) LEGOs as the sample model seen. This activity helps students to develop communication skills and team work.

- Teams of 2 students:

1 drawer (or writer) has 5 minutes to draw or describe the sample model after seeing it for 5 minutes. After 5 minutes, the model will not be available in the room. His/her drawing will be given to the teammate (doer) in another room.

1 doer has also 5 minutes to build the sample model based on the drawing or writing of the drawer/writer without seeing the model at all. There is no verbal communication between the drawer and doer.

Middle and High School Levels

- ***Scratch***

- Make music by using simple codes from Scratch MIT
- Connect instrumental music to science/math/and technology (computer science, CS)
- No requirements in computer science programming involved. Involve logical thinking and team work.

- ***Rocket***

- Modify a rocket model (level 2 & up) carrying a raw quail egg as a load
- Launch and land the rocket safely for the egg not being cracked.

Resources

- Elementary & Middle School Levels

https://www.exploratorium.edu/explore/activities: for short, nice, cheap material activities in all areas

https://scratch.mit.edu/ideas: figure coding, simple logics, visual learning.

- High School Levels

https://veritasium.com/: for demonstrations and explanation of Science Concepts (most Physics and Chemistry)

- All Levels

https://www.ligo.caltech.edu/page/educational-resources: for field trip, all levels of activities, especially for teacher workshop, PD during the summer.

- Questions and handouts for any of the included activities, contact Lai T. Cao, *lcao@ebrschools.org*


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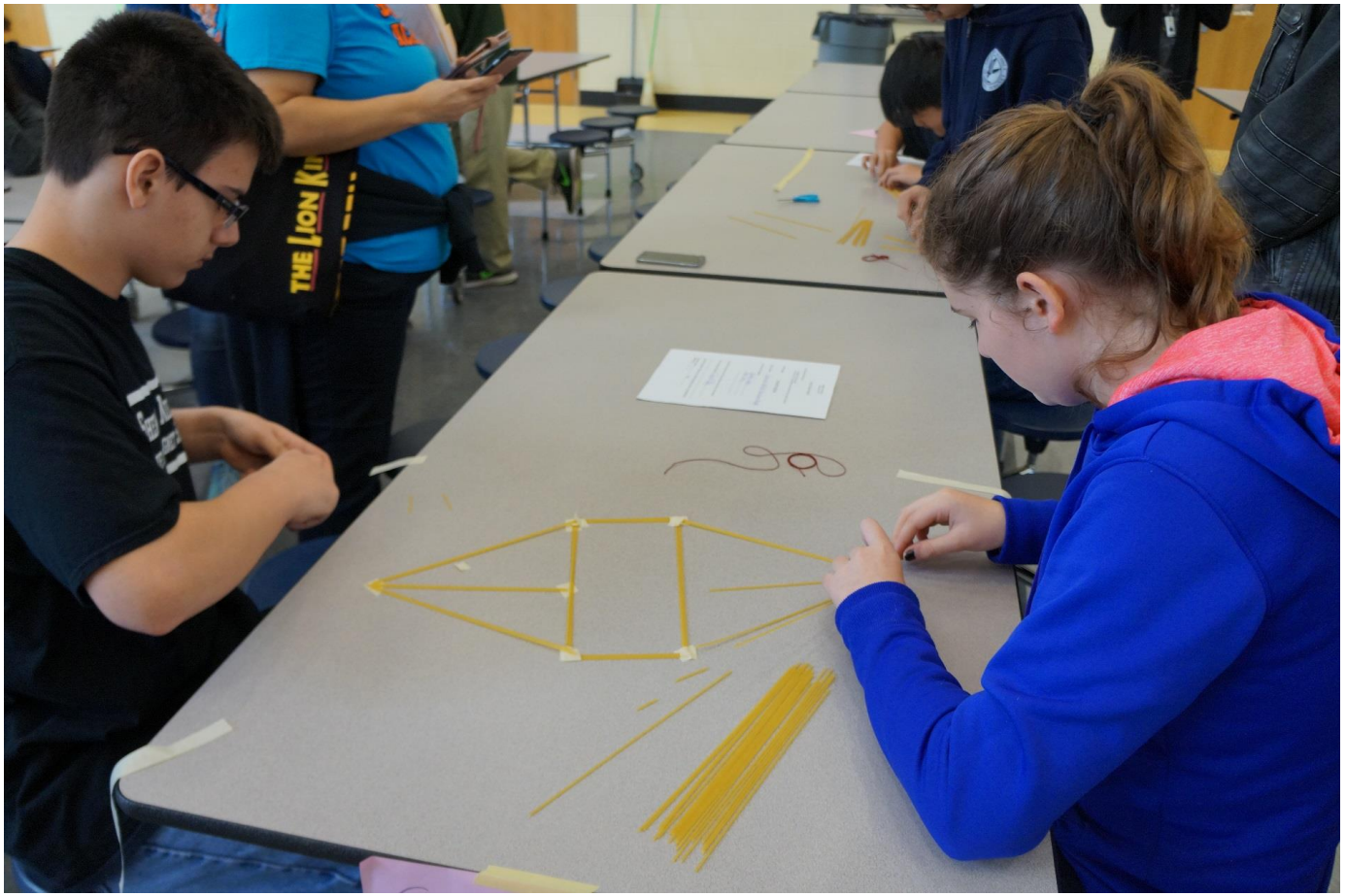
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