What Does it Mean to “Engineer”?

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Erin Fitzgerald, Engineering is Elementary
Museum of Science, Boston

Goals for Today

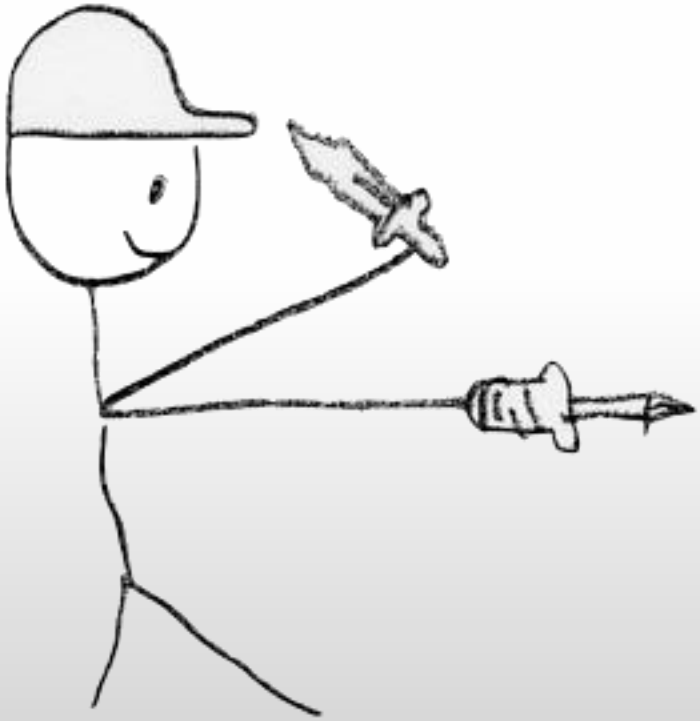
- Learn more about the Engineering is Elementary project!
- Engage in an engineering design challenge.
- Make connections between the Tower Power! Engineering challenge and the NRC's *Successful K-12 STEM Education* report.

Engineering is Elementary is a

- research-based,
- standards-driven,
- classroom-tested

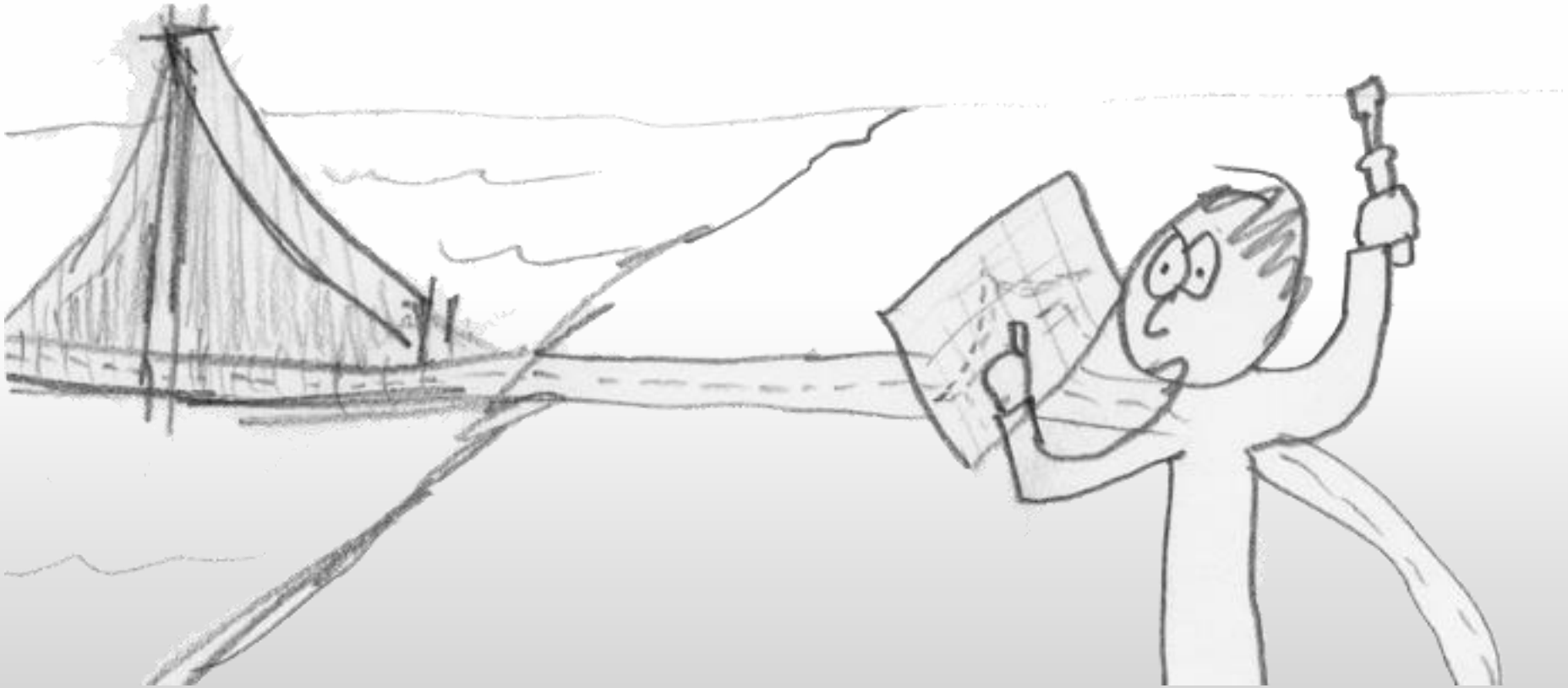
curriculum that integrates engineering and technology concepts and skills with elementary science topics.

Engineers… build buildings.



Engineers…

build bridges and roads.



Engineers…

fix cars, engines, and machines.

Engineers…

use or fix computers.

Why Elementary Engineering? Why EiE?

Technological literacy is a basic 21st century literacy.

Engineering makes math and science relevant and integrates other disciplines.

Engineering practices build and reinforce 21st-century skills.

EiE increases students' awareness of and access to engineering and science careers

EiE is consistent with the Framework for K-12 Science Education.

	SCIENCE TOPIC	UNIT TITLE	ENGINEERING FIELD	STORY SETTING
EARTH SCIENCE	Water	**Water, Water Everywhere:** Designing Water Filters	Environmental	India
	Air & Weather	**Catching the Wind:** Designing Windmills	Mechanical	Denmark
	Earth Materials	**A Sticky Situation:** Designing Walls	Materials	China
	Landforms	**A Stick in the Mud:** Evaluating a Landscape	Geotechnical	Nepal
	Astronomy	**A Long Way Down:** Designing Parachutes	Aerospace	Brazil
	Rocks	**Solid as a Rock:** Replicating an Artifact	Materials	Russia
LIFE SCIENCE	Insects/Plants	**The Best of Bugs:** Designing Hand Pollinators	Agricultural	Dominican Republic
	Organisms/Basic Needs	**Just Passing Through:** Designing Model Membranes	Bioengineering	El Salvador
	Plants	**Thinking Inside the Box:** Designing Plant Packages	Package	Jordan
	Ecosystems	**A Slick Solution:** Cleaning an Oil Spill	Environmental	USA
	Human Body	**No Bones About It:** Designing Knee Braces	Biomedical	Germany
PHYSICAL SCIENCE	Simple Machines	**Marvelous Machines:** Making Work Easier	Industrial	USA
	Balance & Forces	**To Get to the Other Side:** Designing Bridges	Civil	USA
	Sound	**Sounds Like Fun:** Seeing Animal Sounds	Acoustical	Ghana
	Electricity	**An Alarming Idea:** Designing Alarm Circuits	Electrical	Australia
	Solids & Liquids	**A Work in Process:** Improving a Play Dough Process	Chemical	Canada
	Magnetism	**The Attraction is Obvious:** Designing Maglev Systems	Transportation	Japan
	Energy	**Now You're Cooking:** Designing Solar Ovens	Green	Botswana
	Floating & Sinking	**Taking the Plunge:** Designing Submersibles	Ocean	Greece
	Light	**Lighten Up:** Designing Lighting Systems	Optical	Egypt

20 EiE Units

EiE Unit Structure

Prep Lesson: Technology in a Bag

Lesson 1: Engineering Story

Lesson 2: A Broader View of an Engineering Field

Lesson 3: Scientific Data Inform Engineering Design

Lesson 4: Engineering Design Challenge

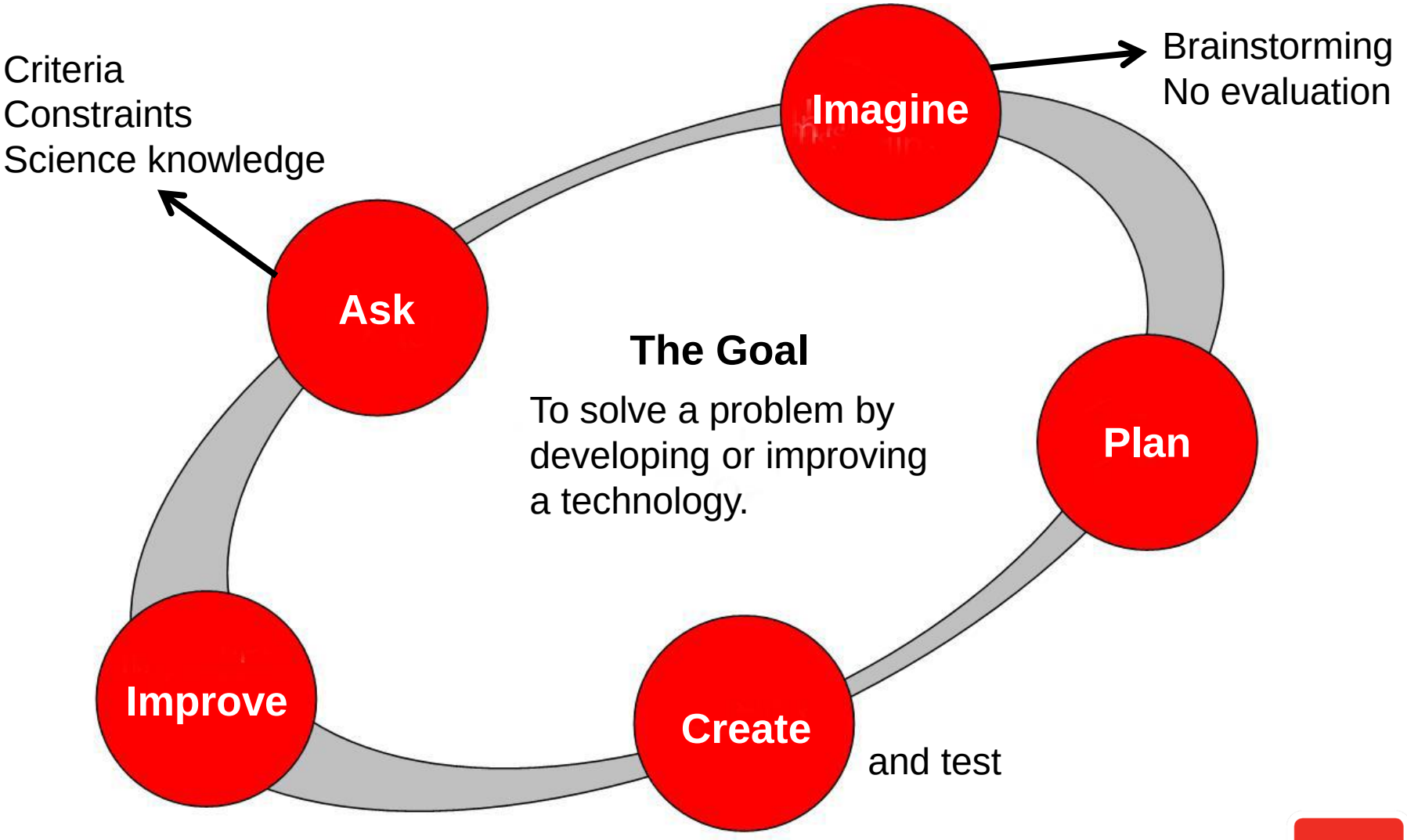
What is Engineering?

What is the problem?

What do you need to know before you start?

Using verbs, describe what you did during the design process.

The Engineering Design Process



Reflection

- What was fun and engaging about this activity?
- What was challenging about this activity?
- What aspects of this activity connect to the principles outlined in the NRC's report?

Engineering is Elementary

Developed by the Museum of Science, Boston

Erin Fitzgerald:

efitzgerald@mos.org

Engineering is Elementary:

EiE@mos.org

www.eie.org

National Center for Technological Literacy:

www.nctl.org