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Historical Women in STEM

Featured woman in STEM-Emily Warren Roebling

Challenge

Build a bridge constructed only out of the listed materials. The bridge must be able to stand on its own to span the gap and may not be supported by you. Must be strong enough to support 10 pennies for five seconds.

Materials

- Spaghetti noodles
- Toothpicks
- Craft sticks
- Straws
- Pipe cleaners
- String
- Copy paper

Adhesives

- Masking Tape
- Playdough
- Marshmallows or gumdrops



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About Emily Warren Roebling

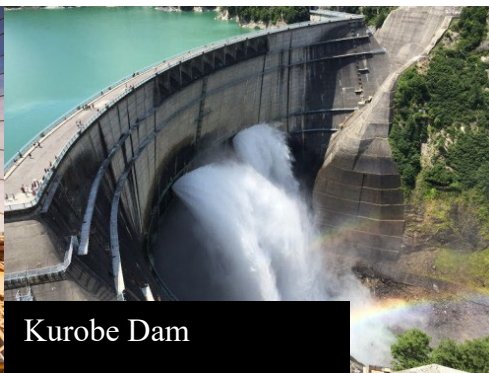
Emily Roebling loved learning. She studied mathematics and science even when women were discouraged from pursuing higher education. When her father-in-law died from tetanus, Emily's husband, Washington Roebling, took over his project designing and building the Brooklyn Bridge.

Early in the construction, Washington fell ill. Emily insisted the project continue. She relayed information from her husband to the workers, then studied to learn the subject material on her own. Emily Roebling mastered stress analysis, the knowledge of strengths of materials, and construction calculations, becoming the first woman field engineer. After the bridge was completed, she was the first to ride across it along with President Chester Arthur.

STEM Career Connection: Civil Engineer



Brooklyn Bridge



Kurobe Dam

In general, engineers design, construct, maintain, invent, and research topics to make improvements and solve problems. Civil engineers design and supervise the construction of things such as roads, buildings, airports, tunnels, dams, bridges, and water supply systems. Some civil engineers specialize in areas such as environmental, transportation, and water resources.



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RESOURCES Related Reading:

- The Brooklyn Bridge by Elizabeth Mann
- 21 Elephants and Still Standing by April Jones Prince
- Bridges: Amazing Structures to Design, Build & Test (Kaleidoscope Kids) by Carol A. Johmann

Math Connections:

- Ratios
- Graphing and Interpreting Graphs
- Measurements and Area calculations
- Rates

Science Connection:

- Tensile and Compressive Forces

Engineering and Technology Connections:

- NASA | NASA for Kids: Intro to Engineering
- How Bridges Work - Explain That Stuff
- Recognize the importance of materials and constraints of the design process

History Connections:

- American Society of Civil Engineers (ASCE) – Emily Roebling
- Brooklyn Bridge (PBS Documentary Clip)

Other:

- What Makes Bridges So Strong? | Engineering for Kids