

Civil Engineering Teaching Materials for Grades 3-6

Activity Title	Activity Description	Area	Topic	Grade	Source	Required Time	Special Materials
Under Pressure	Pascal's law and hydrostatic pressure - Investigate the behavior of water in plastic water bottles spilling through holes punctured at different heights.	Hydraulic, Hydrology & Water Resources	Water Pressure	4-6	Teach Engineering	30 min.	Sink or basin, Drill, Stopwatch
Water Filter I	Invent a filter to clean dirty water	Hydraulic, Hydrology & Water Resources	Water systems	3-6	ZOOM	45 min.	Gravel and sand
Water Filter II	Can you create clean drinking water? Filter out how to survive on a deserted island.	Hydraulic, Hydrology & Water Resources	Water systems	3-6	ZOOM	45 min.	Gravel and sand
Build a Dam	Can you build a dam out of popsicle sticks and small rocks?	Hydraulic, Hydrology & Water Resources	Dams	3-6	ZOOM	45 min.	Sand
Dam Forces	Learn how the force of water helps determine the size and shape of dams.	Hydraulic, Hydrology & Water Resources	Dams - Multiple Types	4-6	Teach Engineering	30 min.	
Dam Pass or Fail	Research and investigate the success or failure of large dams in the world.	Hydraulic, Hydrology & Water Resources	Dams - Multiple Types	4-6	Teach Engineering	40 min.	
Daredevils of the Sky	Experiment with the size, shape, angle of the wings, rudder position and weight of a paper airplane	Transportation	Airplanes	3-5	NOVA	n/a	
Paper Bridge	Can you make a paper bridge that can support 100 pennies?	Structural & Construction	Bridges	3-6	ZOOM	30 min.	
Straw Bridge	Build a bridge using straws and pins that can support 100 pennies in a cup.	Structural & Construction	Bridges, Truss	3-6	ZOOM	45 min.	
Suspension Bridge	How many books can your bridge hold?	Structural & Construction	Bridges	3-6	ZOOM	45 min.	
Build Your Bridge	Research a bridge, then redesign and build a version.	Structural & Construction	Bridges	3-6	Salvadori Center Program Brochure	12 90-min. sessions	
The key to the Keystone	Build an arch using grocery boxes.	Structural & Construction	Arches	3-6	ZOOM	45 min.	
Truss Me!	Build a truss bridge out of straws.	Structural & Construction	Truss	5-6	ASCEville	45 min.	
Straw Tower	Build a skyscraper out of straws that can hold 100 pennies.	Structural & Construction	Truss	3-6	ZOOM	45 min.	
Tall, Sturdy Building for a Gorilla!	Build the tallest tower you can out of stale marshmallows and spaghetti that can support the weight of a gorilla toy.	Structural & Construction	Truss	3-6	ZOOM	45 min.	
Paper Cup Walk	Can you stand on paper cups without crushing them?	Structural & Construction	Columns	3-6	ZOOM	45 min.	
Paper Cup Columns	Can paper cups hold your weight? What if you fill them with sand?	Structural & Construction	Columns	3-6	ZOOM	30 min.	
Raise Money!	Build a tower as high as you can using straws, and see how many pennies it can hold on the top.	Structural & Construction	Columns	3-6	ZOOM	45 min.	
Strongest Shape	Make a tent, a triangle, a box and a cylinder out of one piece of paper, and find out which one can support the most number of books.	Structural & Construction	Shapes & Strength	3-6	ZOOM	30 min.	
Marshmallow Tower	Build a tower as high as you can using only marshmallows.	Structural & Construction	Towers	3-6	ZOOM	45 min.	
Newspaper Tower	Build a tower as tall as you can, using just 2 sheets of newspaper.	Structural & Construction	Towers	3-6	ZOOM	45 min.	
Geodesic Dome	Build a dome out of connected newspaper triangles.	Structural & Construction	Domes	3-6	ZOOM	45 min.	
Gumdrop Dome	Build a dome using toothpicks and gumdrops, and see how many books it can support.	Structural & Construction	Domes	3-6	ZOOM	45 min.	
Sit Inside You Teepee!	Use newspaper sheets and paper plates to make a large teepee that you can sit inside.	Structural & Construction	Teepee	3-6	Cyberchase	45 min.	Rubber bands, Stapler
Canti-what? Build a Cantilever!	Build a straw cantilever going out from a desk or table top as far as you can.	Structural & Construction	Cantilever	3-6	ZOOM	45 min.	
Newspaper Chair	Build a chair out of newspaper that can hold the weight of a person.	Structural & Construction	General Construction	3-6	ZOOM	45 min.	
Enclose a Cow, But Give it the Most Room to Graze!	Use 26 playing cards to build a fencing area as big as you can for a farm animal toy.	Structural & Construction	General Construction	3-6	ZOOM	45 min.	Playing cards