

# Gr. 2 - Understanding Earth & Space Systems

## *Air and Water in the Environment*

### A Strong Wall

<p><b>Specific Expectations:</b></p> <p>2.1 Follow established safety procedures during science and technology investigations.</p> <p>2.2 Investigate, through experimentation, the characteristics of air and its uses.</p> <p>2.3 Investigate, through experimentation, the characteristics of water and its uses.</p> <p>3.4 Identify sources of water in the natural and built environment.</p>			
<p><b>Big Idea (for lesson):</b></p> <p>Students investigate what makes a strong and sturdy wall, and test their wall in various conditions that are intended to replicate environmental and man-made forces.</p>			
<p><b>Accommodations:</b></p> <p><input checked="" type="checkbox"/> Increase time</p> <p><input checked="" type="checkbox"/> Visual Aids</p> <p><input checked="" type="checkbox"/> Manipulatives</p> <p><input checked="" type="checkbox"/> Chunking</p> <p><input checked="" type="checkbox"/> Step-by-Step</p> <p><input checked="" type="checkbox"/> Scaffolding</p> <p><input checked="" type="checkbox"/> Copy of Notes</p> <p><input checked="" type="checkbox"/> Student Grouping</p>		<p><b>Differentiated Instruction:</b></p> <p><input checked="" type="checkbox"/> Content: Use demo to show the content as you offer verbal descriptions.</p> <p><input checked="" type="checkbox"/> Process: Have students work in pairs and support each other if physical impediments exist.</p> <p><input checked="" type="checkbox"/> Product: Students may show their final product in pairs, and communicate their findings either verbally, visually, or through written means.</p> <p><input type="checkbox"/> Other: _____</p>	
<p><b>Bloom's Taxonomy:</b></p> <p><input checked="" type="checkbox"/> Knowledge</p> <p><input checked="" type="checkbox"/> Comprehension</p> <p><input checked="" type="checkbox"/> Application</p> <p><input checked="" type="checkbox"/> Analysis</p> <p><input checked="" type="checkbox"/> Synthesis</p> <p><input checked="" type="checkbox"/> Evaluation</p>		<p><b>Multiple Intelligence:</b></p> <p><input checked="" type="checkbox"/> Verbal/Linguistic</p> <p><input checked="" type="checkbox"/> Logical/Mathematical</p> <p><input checked="" type="checkbox"/> Visual/Spatial</p> <p><input checked="" type="checkbox"/> Bodily/Kinesthetic</p> <p><input checked="" type="checkbox"/> Naturalist</p> <p><input type="checkbox"/> Musical/Rhythmic</p> <p><input checked="" type="checkbox"/> Interpersonal</p> <p><input checked="" type="checkbox"/> Intrapersonal</p>	

### Delivering The Lesson:

Portion & Timing	Grouping:			Introduction:	Materials
<b>Minds On:</b> <b>5 mins</b>	W <input checked="" type="checkbox"/>	S <input type="checkbox"/>	I <input type="checkbox"/>	Teacher introduces the notion of strength and stability in structures: -For stability, the teacher can have the class quickly compete against one another to see	A Strong Wall – Magic Tube – Sick Science! #138

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## Air and Water in the Environment

				<p>who can stand on one foot the longest.</p> <p>-For strength, the teacher can do a demo with sand and tissue paper, or show the analogous video using napkins and salt. The steps of the in-class demo can be found here:  <a href="http://www.stevespanglerscience.com/lab/experiments/strong-sand">http://www.stevespanglerscience.com/lab/experiments/strong-sand</a></p> <p>Ask students if they consider sand to be a stable or strong surface to build a structure on. Ask them if they could use what they saw in the demo to make a strong structure? (<i>Answer: compact the sand tightly to make "bricks", or whole walls</i>)</p>	<p>Cardboard tube  Sand  Tissue Paper  Rubber Bands  Scissors  Stick</p>
<p><b>Action:</b>  <b>30 mins</b></p>	<p>W  <input checked="" type="checkbox"/></p>	<p>S  <input checked="" type="checkbox"/></p>	<p>I  <input checked="" type="checkbox"/></p>	<p>Have students build and test their different walls according to the instructions on the handout.</p> <p>Have a water station (a big bin with small watering can) set up beforehand.</p> <p>Teacher can circulate and ask questions of the different groups:</p> <p>-Do you think it matters that the bricks that touch lots of other bricks seem to make the strongest pattern? (<i>Answer: yes, the friction between these several different surfaces works against the wall moving.</i>)</p> <p>-What types of soil do you think your best wall would hold up well on? (<i>Answer: something compact, such as clay or loam, would hold up better than a looser soil, sand, or pebbles.</i>)</p>	<p>A Strong Wall Handout (Materials listed)  Large tub of water  Watering can</p>
<p><b>Consolidate:</b>  <b>5 mins</b></p>	<p>W  <input checked="" type="checkbox"/></p>	<p>S  <input checked="" type="checkbox"/></p>	<p>I  <input type="checkbox"/></p>	<p>As they finish, have the students draw their wall pattern down on the record sheet and compare with one another. Discuss any discrepancies, and the strengths/weaknesses of the different designs.</p> <p>Discuss the environmental concerns that arise with the building of walls: what factors are important to consider when you're building? (<i>Answer: temperature, air flow, precipitation, foundation, soil types, etc.</i>)</p>	<p>Record Sheet</p>