

Washington Township School District			
STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Physical Science: Material Magic/ Why Do We Wear Clothes/ Inventing a Backscratcher
<b>NJ Learning Standard(s):</b>	2-PS1-1, 2-PS1-2, K-2-ETS1-1 K-2-ETS1-2, and K-2-ETS1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To use everyday materials to build something useful</li> <li>To utilize and design and sketches in creating a product</li> </ul>		
<b>STEM/ Unit Activities</b>	<p style="text-align: center;"><a href="#">Making a Backscratcher</a></p> <p>Engineers are constantly using their creativity to find solutions to everyday problems. To solve a problem, you must first recognize that the problem exists. For example, have you ever had a pesky itch on your back that you just could not reach? Typically, when you have an itch on your body, your first reaction is to scratch it with your fingernails. However, this itch is an unreachable itch and no one is around to scratch it for you. What do you do? As an engineer, you use your creativity and the materials around you to come up with different solutions and design a backscratcher. What types of materials would you want to use for the backscratcher and why?</p>		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>tape</li> <li>string</li> <li>scrap cardboard</li> <li>paper towel tubes</li> <li>scissors</li> <li>glue</li> <li>any other materials you wish to use; students may also bring supplies from home</li> </ul>		
<b>Resources to Support Unit:</b>			

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STEM/Makerspace Curriculum		
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b> Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Melting Pot: The States of Matter
<b>NJ Learning Standard(s):</b>	2-PS1-1 and 2PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3	
<b>Objective:</b>	<ul style="list-style-type: none"> <li>to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</li> </ul>	
<b>STEM/ Unit Activities</b>	<b>Melting Pot: States of Matter</b>  Design the fastest way to melt ice.	
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>	
<b>Supplies Needed:</b>	Aluminum foil Bowls (plastic, metal, glass, etc) Ice cubes Ruler Timer Tin pie plate	
<b>Resources to Support Unit:</b>	Applying the Standards: STEM page 9	

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STEM/Makerspace Curriculum		
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b> Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Cool My Home
<b>NJ Learning Standard(s):</b>	2-PS1-1 and 2-PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3	
<b>Objective:</b>	<ul style="list-style-type: none"> <li>to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</li> </ul>	
<b>STEM/ Unit Activities</b>	<u>Cool My Home</u> Build a house that stays the coolest in direct sunlight	
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>	
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>Aluminum foil</li> <li>Cardboard boxes, such as shoe boxes or tissue boxes</li> <li>Construction paper</li> <li>Cotton balls</li> <li>Paper milk cartons</li> <li>Newspaper</li> <li>Scissors</li> <li>Glue</li> <li>Tape</li> <li>Thermometer</li> </ul>	
<b>Resources to Support Unit:</b>	Applying the Standards: STEM page 11	

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<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b> Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Build a Solar Oven
<b>NJ Learning Standard(s):</b>	2-PS1-1, 2-PS1-2, and 2-PS1-4 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3	
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To engineer a solar oven to melt crayons</li> </ul>	
<b>STEM/ Unit Activities</b>	<b><u>Build a Solar Oven-</u></b> Build a solar oven to melt crayons into new shapes	
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>	
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>Cardboard boxes</li> <li>Scissors</li> <li>Aluminum foil</li> <li>Clear tape</li> <li>Plastic wrap (heavy duty or freezer zip lock bag will also work)</li> <li>Black construction paper</li> <li>Newspapers</li> <li>Ruler</li> <li>Thermometer</li> <li>Heat lamps</li> </ul>	
<b>Resources to Support Unit:</b>	<p style="text-align: center;"> <a href="#">Melting Crayons</a>  <a href="#">Build a Solar Oven</a>  <a href="#">Making Multi-Colored Crayons with Solar Energy Ovens</a>            Video on building a solar oven: <a href="http://camp2017.wonderopolis.org/track/wonder-power-plant">http://camp2017.wonderopolis.org/track/wonder-power-plant</a>  <a href="#">Wonderopolis Power Plant</a> </p>	

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STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Physical Science: Material Magic/ Why are so many things made out of plastic?/ Get Wet
<b>NJ Learning Standard(s):</b>	2-PS1-1, 2-PS1-2, 2-PS1-4 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To plan and conduct an investigation to describe and classify different kinds of materials by their observable properties</li> <li>to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</li> </ul>		
<b>STEM/ Unit Activities</b>	<b>Get Wet:</b> Find the best material for an umbrella		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	Construction paper A variety of fabrics Newspaper Wax paper Plastic wrap Chenille stems	craft sticks water scissors glue tape	
<b>Resources to Support Unit:</b>	Applying the Standards: STEM page 31 <a href="#">Umbrella STEM Challenge</a>		

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<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b> Physical Science: Material Magic/ What materials might be invented in the future?/ Build a Better Pencil
<b>NJ Learning Standard(s):</b>	2-PS1-1 and 2-PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3	
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To plan, make, evaluate, and modify simple designs and to develop an awareness of constraints such as safety, time, cost, space, and availability of materials.</li> </ul>	
<b>STEM/ Unit Activities</b>	<p><a href="#">Build a Better Pencil</a></p> <p>To come up with a plan for solving your pencil problem. You may develop as many solutions as you'd like, but you will have to choose just one design to build and present to the class. This design must be able to be built or carried out in the classroom in one class period (choose a time period that your students can conceptualize, such as one class period or one afternoon), using materials that are readily available.</p>	
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>	
<b>Supplies Needed:</b>	TBD	
<b>Resources to Support Unit:</b>		

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STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Physical Science: Material Magic/ Sticky Structures
<b>NJ Learning Standard(s):</b>	2-PS1-3, K-2-ETS1-1, K-2-ETS1-2, and Math (MA.2.2G.A) K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To construct a three-dimensional structure using the concepts of strength, stability, and balance.</li> <li>To compare and contrast different structures for stability and balance</li> </ul>		
<b>STEM/ Unit Activities</b>	<u><b>Sticky Structure-</b></u> Construct a structure using playdough and toothpicks. The playdough will connect the toothpicks together at the joints which allow the students to experiment with a variety of three-dimensional patterns.		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	Playdough and toothpicks		
<b>Resources to Support Unit:</b>			

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STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Life Science: Plant Adventures/How did a tree travel halfway around the world?/ Seed Transporter
<b>NJ Learning Standard(s):</b>	2-LS2-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To develop a model that mimics that function of an animal in dispersing seeds</li> </ul>		
<b>STEM/ Unit Activities</b>	<b>Seed Transporter-</b> Experiment with a variety of animal-like body coverings one at a time to test the effectiveness of the material in transporting seeds. Then use that knowledge to build your own seed transporter.		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	Feathers	fabric scraps	felt scraps pom-pom balls
	Faux fur/animal scraps	cotton balls	popsicle sticks glue
	Tape	containers with different seeds	
<b>Resources to Support Unit:</b>	<p>The following are short video clips that may help students examine the design that allows seeds to:</p> <p><a href="#">Float in Water</a></p> <p><a href="#">Attach to Animals</a></p> <p><a href="#">Catch a Breeze</a></p> <p><a href="#">Fly</a></p> <p><a href="#">STEM: Have Seeds, Will Travel</a></p>		

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<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Life Science: Plant Adventures/The STEM Flower Show
<b>NJ Learning Standard(s):</b>	2-LS2-1, 2-LS2-2, and 2-LS4-1 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>to design and create a fantasy flower and its habitat using knowledge of plants and their needs.</li> </ul>		
<b>STEM/ Unit Activities</b>	<p>The STEM Flower Show-</p> <p>Use what you know about the parts of a plant to build a new, amazing, fantasy plant that moves. The plant will need to remain upright in a vase when displayed. It must have at least one moving part. It must have roots, petals, leaves, and a stem. The fantasy flower can have an imaginary habitat.</p>		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	3 pieces of tissue paper 5 pompoms one paper clip tape brad and paper fasteners	2 pieces of construction paper 3 pipe cleaners scissors string	
<b>Resources to Support Unit:</b>	TPT Lesson- <a href="#">The STEM Flower Show- Engineer a Fantasy Plant!</a>		

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<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Life Science: Plant Adventures/ Greenhouse
<b>NJ Learning Standard(s):</b>	2-LS2-1, 2-LS2-2, and 2-LS4-1 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To engineer a greenhouse</li> <li>To compare and contrast two plants and the effects of sunlight and heat on plants.</li> </ul>		
<b>STEM/ Unit Activities</b>	<b>Greenhouse-</b> to design a small greenhouse out of straws and plastic wrap to house a plant. They will plant two seeds one in the greenhouse and one outside of the greenhouse in order to compare and contrast the results and how that relates to the effects of sunlight and heat on plants.		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	Plastic wrap	Ziploc baggies (large-gallon size)	
	Straws	pipe cleaners	
	Scotch tape	plastic cups for planters	
	Soil	seeds	
	Watering can or spray bottles to water plants with		
<b>Resources to Support Unit:</b>			

Washington Township School District			
STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Life Science: Plant Adventures/Similarities and Differences in Plants
<b>NJ Learning Standard(s):</b>	2-LS2-1, 2-LS2-2, and 2-LS4-1 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>to compare and contrast similarities and differences in plants found in our community</li> </ul>		
<b>STEM/ Unit Activities</b>	<p>Museum Exhibit- Build a museum exhibit to show different types of plants you can collect at school or at home. In your exhibit, sort the plants according to their similarities and differences. **You can also make your exhibit using technology with clipart.</p>		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	TBD		
<b>Resources to Support Unit:</b>			

Washington Township School District			
STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Earth Science: Work of Water/What's strong enough to make canyon?/ Protect the Beach
<b>NJ Learning Standard(s):</b>	2-ESS1-1, 2-ESS2-2, 2-ESS2-3 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land</li> <li>To develop a model to represent the shapes and kinds of land and bodies of water in the area</li> </ul>		
<b>STEM/ Unit Activities</b>	<p><b><u>Protect the Beach-</u></b> New Jersey's coast is covered in miles and miles of beach, but our beaches are losing more and more sand each year due to beach erosion. Refiling the sand every year can become very expensive, so we are asking you to engineer a solution to prevent further damage.</p> <p>To develop you own erosion blocking system that will prevent further erosion of the beaches from the force of 15-20 waves.</p>		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>Sand</li> <li>Fabric strips 8"X1"</li> <li>Wire mesh strips 8"X1"</li> <li>Paper towels</li> <li>Clay</li> <li>Painting mixing sticks/ rulers</li> <li>Newspaper</li> <li>Large plastic pans/ trays</li> <li>Gauze</li> <li>Cotton balls</li> </ul>		
<b>Resources to Support Unit:</b>			

Washington Township School District			
STEM/Makerspace Curriculum			
<b>Grade:</b>	2	<b>Mystery Science Unit/Project Title:</b>	Earth Science: Work of Water/Landform Construction
<b>NJ Learning Standard(s):</b>	2-ESS2-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
<b>Objective:</b>	<ul style="list-style-type: none"> <li>To develop a model to represent the shapes and kinds of land and bodies of water in an area</li> </ul>		
<b>STEM/ Unit Activities</b>	<b>Landform Construction-</b> Create models of landforms and bodies of water		
<b>Suggested Assessments:</b>	<ul style="list-style-type: none"> <li>Exit Ticket</li> <li>Journal</li> <li>Project Rubric</li> <li>Unit Test</li> </ul>		
<b>Supplies Needed:</b>	<ul style="list-style-type: none"> <li>Paper plates</li> <li>Playdough</li> <li>Model magic</li> <li>Air dry clay (green, brown, and blue)</li> </ul>		
<b>Resources to Support Unit:</b>			