Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Why Do We Wear Clothes/ Inventing a Backscratcher
NJ Learning Standard(s):	2-PS1-1, 2-PS1-2, K-2-ETS1-1 K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• To use everyday materials to build something useful • To utilize and design and sketches in creating a product		
STEM/ Unit Activities	Making a Backscratcher 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?		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	• tape • string • scrap cardboard • paper towel tubes • scissors • glue • any other materials you wish to use; students may also bring supplies from home		
Resources to Support Unit:			

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Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Melting Pot: The States of Matter
NJ Learning Standard(s):	2-PS1-1 and 2PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.		
STEM/ Unit Activities	**Melting Pot: States of Matter** Design the fastest way to melt ice.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	Aluminum foil Bowls (plastic, metal, glass, etc) Ice cubes Ruler Timer Tin pie plate		
Resources to Support Unit:	Applying the Standards: STEM page 9		

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Cool My Home
NJ Learning Standard(s):	2-PS1-1 and 2-PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.		
STEM/ Unit Activities	**Cool My Home** Build a house that stays the coolest in direct sunlight		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	• Aluminum foil • Cardboard boxes, such as shoe boxes or tissue boxes • Construction paper • Cotton balls • Paper milk cartons • Newspaper • Scissors • Glue • Tape • Thermometer		
Resources to Support Unit:	Applying the Standards: STEM page 11		

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Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Can you really fry an egg on a hot sidewalk?/ Build a Solar Oven
NJ Learning Standard(s):	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		
Objective:	• To engineer a solar oven to melt crayons		
STEM/ Unit Activities	**Build a Solar Oven-** Build a solar oven to melt crayons into new shapes		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	• Cardboard boxes • Scissors • Aluminum foil • Clear tape • Plastic wrap (heavy duty or freezer zip lock bag will also work) • Black construction paper • Newspapers • Ruler • Thermometer • Heat lamps		
Resources to Support Unit:	Melting Crayons Build a Solar Oven Making Multi-Colored Crayons with Solar Energy Ovens Video on building a solar oven: http://camp2017.wonderopolis.org/track/wonder-power-plant Wonderopolis Power Plant		

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Why are so many things made out of plastic?/ Get Wet
NJ Learning Standard(s):	2-PS1-1, 2-PS1-2, 2-PS1-4 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• To plan and conduct an investigation to describe and classify different kinds of materials by their observable properties • to analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. •		
STEM/ Unit Activities	**Get Wet:** Find the best material for an umbrella		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	Construction paper A variety of fabrics Newspaper Wax paper Plastic wrap Chenille stems craft sticks water scissors glue tape		
Resources to Support Unit:	Applying the Standards: STEM page 31 Umbrella STEM Challenge		

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Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ What materials might be invented in the future?/ Build a Better Pencil
NJ Learning Standard(s):	2-PS1-1 and 2-PS1-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• 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.		
STEM/ Unit Activities	Build a Better Pencil 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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	TBD		
Resources to Support Unit:			

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Physical Science: Material Magic/ Sticky Structures
NJ Learning Standard(s):	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		
Objective:	• To construct a three-dimensional structure using the concepts of strength, stability, and balance. • To compare and contrast different structures for stability and balance		
STEM/ Unit Activities	**Sticky Structure-** 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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	Playdough and toothpicks		
Resources to Support Unit:			

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Life Science: Plant Adventures/How did a tree travel halfway around the world?/ Seed Transporter
NJ Learning Standard(s):	2-LS2-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• To develop a model that mimics that function of an animal in dispersing seeds		
STEM/ Unit Activities	**Seed Transporter-** 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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	Feathers fabric scraps felt scraps pom-pom balls Faux fur/animal scraps cotton balls popsicle sticks glue Tape containers with different seeds		
Resources to Support Unit:	The following are short video clips that may help students examine the design that allows seeds to: Float in Water Attach to Animals Catch a Breeze Fly STEM: Have Seeds, Will Travel		

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Life Science: Plant Adventures/The STEM Flower Show
NJ Learning Standard(s):	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		
Objective:	• to design and create a fantasy flower and its habitat using knowledge of plants and their needs.		
STEM/ Unit Activities	The STEM Flower Show- 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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	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	
Resources to Support Unit:	TPT Lesson- The STEM Flower Show- Engineer a Fantasy Plant!		

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Life Science: Plant Adventures/ Greenhouse
NJ Learning Standard(s):	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		
Objective:	• To engineer a greenhouse • To compare and contrast two plants and the effects of sunlight and heat on plants.		
STEM/ Unit Activities	**Greenhouse**- 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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	Plastic wrap Straws Scotch tape Soil Watering can or spray bottles to water plants with	Ziploc baggies (large-gallon size) pipe cleaners plastic cups for planters seeds	
Resources to Support Unit:			

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Life Science: Plant Adventures/Similarities and Differences in Plants
NJ Learning Standard(s):	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		
Objective:	• to compare and contrast similarities and differences in plants found in our community		
STEM/ Unit Activities	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.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	TBD		
Resources to Support Unit:			

Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Earth Science: Work of Water/What's strong enough to make canyon?/ Protect the Beach
NJ Learning Standard(s):	2-ESS1-1, 2-ESS2-2, 2-ESS2-3 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• To compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land • To develop a model to represent the shapes and kinds of land and bodies of water in the area		
STEM/ Unit Activities	**Protect the Beach-** 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. To develop you own erosion blocking system that will prevent further erosion of the beaches from the force of 15-20 waves.		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	• Sand • Fabric strips 8"X1" • Wire mesh strips 8"X1" • Paper towels • Clay • Painting mixing sticks/ rulers • Newspaper • Large plastic pans/ trays • Gauze • Cotton balls		
Resources to			

Support Unit:			
Washington Township School District			
STEM/Makerspace Curriculum			
Grade:	2	**Mystery Science Unit/Project Title:**	Earth Science: Work of Water/Landform Construction
NJ Learning Standard(s):	2-ESS2-2 K-2-ETS1-1, K-2-ETS-1-2, and K-2-ETS-1-3		
Objective:	• To develop a model to represent the shapes and kinds of land and bodies of water in an area		
STEM/ Unit Activities	**Landform Construction-** Create models of landforms and bodies of water		
Suggested Assessments:	• Exit Ticket • Journal • Project Rubric • Unit Test		
Supplies Needed:	• Paper plates • Playdough • Model magic • Air dry clay (green, brown, and blue)		
Resources to Support Unit:			