

Big Idea: Solar Energy
Quarter

1st

Smart Tech	Grades: K-2		Time Frame: 9 weeks September 1st- November 6th		
<i>Benchmarks</i>	<i>Content/ Skills</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and career Readiness Standards</i>	<i>CCCS</i>
<p><u>Kindergarten and First Grade:</u></p> <ul style="list-style-type: none"> Understand the purpose and importance of the sun. Use and apply their knowledge of the sun's energy Demonstrate the effects of the sun through hands-on learning activities <p><u>Second Grade:</u></p> <ul style="list-style-type: none"> Identify ways in which the sun's energy comes to them. Classify the different types of energy. Understand that all living things require the sun's energy. 	<p><u>Kindergarten and First Grade</u></p> <ul style="list-style-type: none"> The purpose/importance of of the sun What types of things rely on the sun Light and shadows How the sun generates heat and energy <p><u>Activities:</u></p> <p>Solar Surprise (Darker colors attract the heat)</p> <p>Animal Shadows (Light and Shadows)</p> <p>Blow up a Balloon with the Sun (Sun's Energy)</p> <p><u>Second Grade:</u></p> <ul style="list-style-type: none"> The purpose/importance of the sun The role of the sun in the water cycle The use of the sun's strength for energy Which type of light is best for plants to grow 	<p><u>Kindergarten and First</u></p> <p>Sun Energy Heat Light Shadow Generate Rely Need</p> <p><u>Second Grade:</u></p> <p>Energy Heat Light Shadow Generate Rely Need Photosynthesis Strength Solar Power Evaporation Condensation</p>	<p>Quizzes Classwork Projects Classroom Observations</p>		

	<p><u>Activities:</u></p> <p>Sunlight and Plant Life (Plants to grow)</p> <p>Now We're Cooking (Solar Powered method)</p> <p>How Fast? (Rate of evaporation)</p>				
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Big Idea: Wind Energy

2nd Quarter

Smart Tech	Grades: K-2		Time Frame: 9 weeks November 9th- January 22nd		
<i>Essential Questions</i>	<i>Content/ Skills</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and career Readiness Standards</i>	<i>CCCS</i>
<p><u>Kindergarten</u></p> <ul style="list-style-type: none"> • What are things we do in the wind? • How can we study the wind? • What can we use the wind for? <p><u>First and Second Grade:</u></p> <ul style="list-style-type: none"> • How Do We Study the Wind? • How Do We Use the Wind? • Who are Mechanical Engineers? • Leif Catches the Wind • Testing Sail Designs • Designing a Windmill 	<p><u>Kindergarten:</u></p> <ul style="list-style-type: none"> • The purpose/importance of the wind • The role of wind as a form of alternative energy • Thinking like an engineer to harness the wind for energy <p><u>Activities:</u></p> <p>Cotton Ball Race (Wind to move objects)</p> <p>My Very Own Kite (Using the Wind's Power)</p> <p><u>First and Second Grade</u></p> <ul style="list-style-type: none"> • Examine everyday examples of technology & discuss how these objects were designed to solve problems. • Read the story Leif Catches the Wind. <ul style="list-style-type: none"> ○ Discuss the work of mechanical engineers. ○ Identify objects that catch the wind. 	<p><u>Third and Fourth Grade:</u></p> <p>Wind Energy Motor Potential energy Cyclone</p> <p><u>Fifth and Sixth Grade:</u></p> <p>Wind Energy Motor Potential energy Cyclone Anemometer Rotational Symmetry Turbine Rudder Rotor Mechanical Energy</p>	<p>Quizzes Classwork Projects Classroom Observations</p>		

	<ul style="list-style-type: none">○ trace Leif's use of the Engineering Design Process.● Predict which materials will catch the wind the best when used as a sail.● Observe and describe how different materials and shapes catch the wind when used as sails.● Test different sail designs by measuring how far down a track they move when blown by a fan. <p><u>Activities:</u> Designing a Windmill (Design and construct windmill blades)</p> <p>Sail Away (How to design a wind powered boat)</p>				
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Big Idea: Hydroelectric Energy

3rd Quarter

Smart Tech	Grades: K-2		Time Frame: 9 weeks January 23rd – March 24th		
<i>Essential Questions</i>	<i>Content/ Skills</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and career Readiness Standards</i>	<i>CCCS</i>
<ul style="list-style-type: none"> ● What is the water cycle? ● How is the water cycle important? ● How can water be used for power? ● How does water weather effect us? 	<p><u>Kindergarten:</u></p> <ul style="list-style-type: none"> ● Book: Students will watch a book app about the water cycle called “snowflake” ● Video/Website: Students will view the water cycle app via reflections as the teacher reads what it says ● Video/Website: Students will learn a “water cycle” song <p><u>Activities:</u></p> <ul style="list-style-type: none"> ● Students will create a KWL chart about the water cycle as a class, leaving the L column empty until the end of the unit. ● Students will draw and label pictures of the water cycle ● Students will work in groups to create illustrations to different parts of the song, and then will perform the song with their illustrations. <p><u>First and Second Grade</u></p> <ul style="list-style-type: none"> ● Book: Students will read “Water Energy” by Julie Richards 	<p>condensation</p> <p>evaporation</p> <p>precipitation</p> <p>run-off</p> <p>groundwater</p> <p>atmosphere</p>	<p>Quizzes</p> <p>Classwork</p> <p>Projects</p> <p>Classroom</p> <p>Observations</p>		

	<ul style="list-style-type: none">● Book: Students will read "Water Power: Energy for Today"● Poems about raindrops. Nursery rhymes, poems about rain, poems about storms.● Book: "How Does a Waterfall Become Electricity?" http://www.youtube.com/watch?v=Yw275056JtA● Book: "Hydropower: Making a Splash!" <p><u>Activities:</u></p> <ul style="list-style-type: none">● Water Cycle Wheel: On yellow paper make raindrops, on another sheet of paper cut out squares and label the parts of the water cycle. Use brad to hold papers together/move yellow paper around● Continue water cycle wheel● Readers theater about water cycle● Pretend to be a raindrop: make a poem about your journey.● Watch the water cycle song, and then create their own song about the water cycle. They will share their songs with the class.● Draw a picture of the water cycle.				
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	<ul style="list-style-type: none">• Write a story about if you were a cloud. What kind of cloud would you be? What would you do if you were a certain kind of cloud?• Make a cloud in a jar				
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Big Idea: Conservation/Recycling

4rd Quarter

Smart Tech	Grades: K-2		Time Frame: 9 weeks April 11th- June 17th		
<i>Essential Questions</i>	<i>Content/ Skills</i>	<i>Key Terms</i>	<i>Assessment</i>	<i>College and career Readiness Standards</i>	<i>CCCS</i>
<ul style="list-style-type: none"> • What is conservation? • What can we do to help save the Earth? • What are natural resources? • What is recycling? • What types of things do we recycle? 	<p><u>Kindergarten:</u></p> <ul style="list-style-type: none"> • Green Planet 4 Kids: http://greenplanet4kids.com/rr/why-reduce-reuse-recycle-01?gclid=CMSMm-K3_7UCFcRQOgodXU8Arg • http://www.kidsrecyclingzone.com/ • Recycling video: http://www.youtube.com/watch?v=uzIGMCNqo3I • Energy Conversation: http://juniorenergy.org/GradesK_2.aspx <p><u>Activities:</u></p> <ul style="list-style-type: none"> • Students will create a KWL chart about the recycling as a class, leaving the L column empty until the end of the unit. • Students will do a recycling sort worksheet. • Students will create a recycling collage as a class sorting magazine pictures into things that can be recycled and things that are trash • Activity One: Energy Matching 	<ul style="list-style-type: none"> Reduce Reuse Recycle Landfills Natural resources Renewable resources Fumes Toxic Environment Compost Ecological footprint greenhouse 	<ul style="list-style-type: none"> Quizzes Classwork Projects Classroom Observations 		

	<ul style="list-style-type: none"> ● Activity Two: Energy Down the Drain <p><u>First and Second Grade</u></p> <ul style="list-style-type: none"> ● Recycling video: http://www.youtube.com/watch?v=PYDAL50NNgM ● Recycling video: http://www.youtube.com/watch?v=H8GnrKvlxjk ● Recycling video: http://www.youtube.com/watch?v=IN1a9iduXnY ● Energy Conversation: http://juniorenergy.org/GradesK_2.aspx <p><u>Activities:</u></p> <ul style="list-style-type: none"> ● Students will begin to make piggy banks out of recycled water bottles ● Students will complete their piggy banks ● Students will complete the class KWL chart. ● Students will take turns playing the Trash Chaos app on the iPad via reflections 				
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	<ul style="list-style-type: none">• Activity One: Energy Matching• Activity Two: Energy Down the Drain				
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