

**Randolph Township School District  
Randolph Elementary Schools**

**Science Curriculum  
Grade 5**

*“The important thing is not to stop questioning. Curiosity has its own reason for existing.”  
-Albert Einstein*

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**Randolph Township School District  
Randolph Elementary Schools  
Grade Five- Science**

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## **Mission Statement**

*We commit to inspiring and empowering all students in Randolph schools to reach their full potential as unique, responsible and educated members of a global society.*

### **Randolph Township School District Affirmative Action Statement**

#### **Equality and Equity in Curriculum**

The Randolph Township School district ensures that the district's curriculum and instruction are aligned to the state's standards. The curriculum provides equity in instruction, educational programs and provides all students the opportunity to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

N.J.A.C. 6A:7-1.7(b): Section 504, Rehabilitation Act of 1973; N.J.S.A. 10:5; Title IX, Education Amendments of 1972

# **RANDOLPH TOWNSHIP BOARD OF EDUCATION**

## **EDUCATIONAL GOALS**

### **VALUES IN EDUCATION**

The statements represent the beliefs and values regarding our educational system. Education is the key to self-actualization, which is realized through achievement and self-respect. We believe our entire system must not only represent these values, but also demonstrate them in all that we do as a school system.

We believe:

- The needs of the child come first
- Mutual respect and trust are the cornerstones of a learning community
- The learning community consists of students, educators, parents, administrators, educational support personnel, the community and Board of Education members
- A successful learning community communicates honestly and openly in a non-threatening environment
- Members of our learning community have different needs at different times. There is openness to the challenge of meeting those needs in professional and supportive ways
- Assessment of professionals (i.e., educators, administrators and educational support personnel) is a dynamic process that requires review and revision based on evolving research, practices and experiences
- Development of desired capabilities comes in stages and is achieved through hard work, reflection and ongoing growth

**Randolph Township School District**  
**Randolph Elementary Schools**  
**Science~ Grade 5**

Introduction

Science is constantly evolving as technology advances and new problems emerge. The fifth grade science curriculum is inquiry-based and has been designed to guide students in developing transferable skills that will eventually allow them to imagine and create solutions to real world problems of the future. Through the 5th grade science curriculum students will explore engineering and design practices, matter and the Earth's systems. As students collaborate to investigate phenomena of the world in which they live, they will continue to foster critical thinking skills. Students will communicate by sharing theories, original ideas, and findings, which will encourage them to take risks and build confidence as learners. This curriculum integrates science with reading, writing, math, and presentation skills, in order for students to begin their preparation for meeting the broad-ranging demands of the 21st century workplace.

**RANDOLPH TOWNSHIP SCHOOL DISTRICT**  
**Curriculum Pacing Chart**  
**Science ~ Grade 5**

<b>SUGGESTED TIME ALLOTMENT (weeks)</b>	<b>UNIT NUMBER</b>	<b>CONTENT- UNIT OF STUDY</b>
<b>4 Weeks</b>	<b>I</b>	<b>Engineering and Technology</b>
<b>7 Weeks</b>	<b>II</b>	<b>Matter</b>
<b>7 Weeks</b>	<b>III</b>	<b>Earth's Systems</b>

**RANDOLPH TOWNSHIP SCHOOL DISTRICT**

**Science ~ Grade 5**

**UNIT I: Engineering and Technology**

<b>TRANSFER:</b> Identify real world problems in order to design, create and revise solutions.		
<b>STANDARDS / GOALS:</b>	<b>ENDURING UNDERSTANDINGS</b>	<b>ESSENTIAL QUESTIONS</b>
	Science and math are an integral part of the engineering and design process.	<ul style="list-style-type: none"> <li>● How are science and math used in engineering?</li> </ul>
	The design process is a series of steps that engineers follow to develop a solution to a problem.	<ul style="list-style-type: none"> <li>● How does the design process help people to create solutions for identified problems?</li> </ul>
	Advancements in technology enable solutions to improve on their efficiency, cost-effectiveness and sustainability.	<ul style="list-style-type: none"> <li>● How can engineers improve existing designs?</li> </ul>
	<b>KNOWLEDGE</b>	<b>SKILLS</b>
<p><b>3-5-ETS1-1.</b> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p><b>3-5-ETS1-2.</b> Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p><b>3-5-ETS1-3.</b> Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p>	<p><b>Students will know:</b></p> <p>Engineers design solutions to address problems that exist in the world.</p>	<p><b>Students will be able to:</b></p> <p>Name differences between a need and a want.</p> <p>Identify a simple design problem that reflects a need or a want.</p>

<p><b><u>ELA/Literacy</u></b></p> <p>RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p>RI.5.1 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</p> <p>RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.</p> <p>W.5.7 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.</p> <p>W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</p>	<p>Defined criteria describe the desirable outcomes of a solution.</p> <p>Constraints refer to limitations, including cost and time.</p> <p>Brainstorming within a group allows for a large number of ideas to be developed.</p> <p>By evaluating ideas, engineers can choose the best solution by identifying which meets most criteria.</p> <p>In order for results of tests to be most accurate and reliable, variables must be controlled.</p>	<p>List several examples of criteria.</p> <p>Organize specified criteria for success of solution of defined problem.</p> <p>Compare several examples of constraints.</p> <p>Predict constraints on solution, which may include materials, time, or cost.</p> <p>Generate and construct multiple possible solutions to defined problem.</p> <p>Evaluate multiple possible solutions to defined problem based on how well each is likely to meet the criteria and constraints.</p> <p>Create and defend one solution to test.</p> <p>Hypothesize outcome of solution before testing.</p> <p>Design fair tests in which variables are controlled.</p> <p>Execute experiments several times.</p>
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<p>W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p>	<p>By evaluating failure points, engineers revise and improve design for better results.</p> <p>Engineers share their ideas and knowledge to aid others in solving similar problem.</p> <p><b>KEY TERMS:</b> brainstorming, constraints, criteria, deforestation, erosion, tradeoff, variables</p>	<p>Record observations during experimentation.</p> <p>Analyze tests based on failure points to identify aspects of a model or prototype that can be improved.</p> <p>Redesign model or prototype to improve design.</p> <p>Critique the success of final design.</p> <p>Synthesize conclusions from experiment.</p> <p>Communicate recommendations for continued improvement.</p> <p>Apply concepts learned to the real-world.</p>
<p><b>ASSESSMENT EVIDENCE: Students will show their learning by:</b></p> <ul style="list-style-type: none"> <li>● Building a scaled model (<i>i.e. Create a 3D model of a hiking trail that prevents erosion and keeps people safe</i>)</li> <li>● Designing a labeled diagram and compose an explanatory text to propose an original idea (<i>i.e. Draw a plan for a more efficient lunch line</i>)</li> </ul> <p><b>KEY LEARNING EVENTS AND INSTRUCTION:</b></p> <ul style="list-style-type: none"> <li>● Record observations in “Evidence Notebook” to identify a problem by analyzing photos or through real world examples (<i>i.e. exploring</i>)</li> </ul>		

*erosion of trails by taking a walk on a trail outside)*

- In analyzing a specific problem, identify causes of problems (*i.e. causes of erosion include poor water drainage due to rock placement*)
- Determine criteria for success of solution of the problem (*ex: reducing washing away of soil*) and constraints of task (*ex: time, cost*) by using a graphic organizer
- Generate advantages and disadvantages of several materials that can be utilized for solution
- Assess self-generated solutions asking questions (*Would this solution keep people safe? Would this solution reduce or wash away water?*), use that evaluation to select best solution for testing

**RANDOLPH TOWNSHIP SCHOOL DISTRICT**  
**Science ~ Grade 5**  
**UNIT I: Engineering and Technology**

<b>SUGGESTED TIME ALLOTMENT</b>	<b>CONTENT-UNIT OF STUDY</b>	<b>SUPPLEMENTAL UNIT RESOURCES</b>
4 Weeks	UNIT I: Engineering and Technology	<p><b><u>Suggested Resources</u></b></p> <p><b>NASA for Kids: Intro to Engineering</b>  <a href="https://www.youtube.com/watch?v=wE-z_TJyziI">https://www.youtube.com/watch?v=wE-z_TJyziI</a></p> <p><b>Erosion- BrainPOP</b>  <a href="https://www.brainpop.com/science/earthsystem/erosion/">https://www.brainpop.com/science/earthsystem/erosion/</a></p> <p><b>DK Find Out! Search Engine for Kids</b>  <a href="https://www.dkfindout.com/us/">https://www.dkfindout.com/us/</a></p> <p><b>Kiddle - Visual Search Engine for Kids</b>  <a href="http://www.kiddle.co/">http://www.kiddle.co/</a></p>

		<p><b>Study Jams: Scientific Inquiry</b> <a href="http://studyjams.scholastic.com/studyjams/jams/science/index.htm">http://studyjams.scholastic.com/studyjams/jams/science/index.htm</a></p> <p><b>Newsela article "Damaged dam spillway in N. California forces almost 200,000 to leave"</b> <a href="https://newsela.com/read/oroville-dam-evacuations/id/26971">https://newsela.com/read/oroville-dam-evacuations/id/26971</a></p> <p><b>Readworks.org article "Watch for Steady Rocks"</b> <a href="https://www.readworks.org/article/Watch-for-Steady-Rocks/027a2720-f216-42be-895b-8efc3a66234e#!articleTab:content/">https://www.readworks.org/article/Watch-for-Steady-Rocks/027a2720-f216-42be-895b-8efc3a66234e#!articleTab:content/</a></p> <p><b>Science Dimensions</b> Unit 1, Lesson 1 Unit 1, Lesson 2</p> <p><b>Safari Montage (Use video chapters as needed)</b></p> <p><b>Literary Resources –</b> <i>Amazing Inventions</i> by Gilda Berger <i>You Can Save the Planet</i> by Jacquie Wines</p>
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**RANDOLPH TOWNSHIP SCHOOL DISTRICT**

**Science ~ Grade 5**

**UNIT II: Matter**

<b>TRANSFER:</b> Utilize systems to identify relationships.		
<b>STANDARDS / GOALS:</b>  <b>2-PS1-1.</b> Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.  <b>2-PS1-2.</b> Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.  <b>2-PS1-3.</b> Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	<b>ENDURING UNDERSTANDINGS</b>	<b>ESSENTIAL QUESTIONS</b>
	Matter is measureable, has different properties, and can change form.	<ul style="list-style-type: none"> <li>● Why is matter important?</li> </ul>
	Matter and energy in animals' food is used for body repair, growth, motion, and to maintain body warmth.	<ul style="list-style-type: none"> <li>● How do organisms use matter and energy?</li> </ul>
	Animals survive in ecosystems when its nutritional and spatial needs are met.	<ul style="list-style-type: none"> <li>● What makes an ecosystem successful?</li> </ul>
	<b>KNOWLEDGE</b>	<b>SKILLS</b>
	<b>Students will know:</b>  Matter is anything that has mass and takes up space.	<b>Students will be able to:</b>  Observe examples of objects made of and not made of matter.

<p><b>2-PS1-4.</b>Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p> <p><b>5-PS3-1.</b>Use models to describe that energy in animals’ food (used for body repair, growth, and motion and to maintain body warmth) was once energy from the sun.</p> <p><b>5-LS1-1.</b>Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p><b>5-LS2-1.</b> Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p><b><u>ELA/Literacy</u></b></p> <p><b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</p>	<p>Matter cannot be created or destroyed. By adding heat or energy, matter changes forms.</p> <p>Matter can only be measured accurately by using appropriate tools based on its property.</p> <p>Mixtures are combinations of two or more substances in which substances keep their identities, whereas solutions are mixtures that have the same composition throughout</p>	<p>Distinguish between examples of matter and non matter.</p> <p>Describe that matter is made of particles too small to be seen.</p> <p>Define <i>matter</i> and <i>conservation of matter</i>.</p> <p>Measure quantities of matter after adding heat or energy to objects.</p> <p>Graph results of experiment to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</p> <p>Categorize materials based on their properties.</p> <p>Assess dimensions of objects by measuring volume, weight, length or width.</p> <p>Classify measuring tools to measure matter based on its property.</p> <p>Collect and display examples of mixtures and solutions.</p>
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<p><b>W.5.7</b> Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.</p> <p><b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources.</p> <p><b>W.5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p><b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p><b>RI.5.7</b> Draw on information from multiple print or digital sources.</p> <p><b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.</p> <p><b>SL.5.5</b> Include multimedia components (e.g., graphics, sound)</p>	<p>because its parts are mixed evenly.</p> <p>Plants need light to grow and survive. Plants use energy from sunlight to produce energy. Animals obtain energy and matter by feeding on organisms.</p> <p>Organisms and animals consume matter from non food sources, including air and water.</p> <p><b>KEY TERMS:</b> matter, conservation of matter, boiling</p>	<p>Compare properties of mixtures and solutions.</p> <p>Prove whether the mixing of substances results in new substances.</p> <p>Infer information from diagrams, models or images that demonstrate how plants use energy.</p> <p>Show that energy in food was once energy from the sun.</p> <p>Compare ways in which producers and consumers get energy.</p> <p>Connect relationships between matter and plants, animals, decomposers or the environment.</p> <p>Design a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p>Prove that plants get the materials they need for growth from air and water.</p>
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<p>and visual displays in presentations when appropriate.</p> <p><b><u>Mathematics</u></b></p> <p><b>MP.2</b> Reason abstractly and quantitatively.</p> <p><b>MP.4</b> Model with mathematics.</p> <p><b>MP.5</b> Use appropriate tools strategically.</p> <p><b>5.MD.A.1</b> Convert among different-sized standard measurement units within a given measurement system use these conversions in solving multi-step, real-world problems.</p> <p><b>5.MD.C.3</b> Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p> <p><b>5.MD.C.4</b> Measure volumes by counting unit cubes.</p>	<p>point, melting point, chemical change, mixture, physical change, freezing point, physical properties, solution, photosynthesis, producers, consumers</p>	
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**ASSESSMENT EVIDENCE: Students will show their learning by:**

- Designing an ecosystem by building a model (*i.e. Build a terrarium that replicates a habitat for a frog*)

**KEY LEARNING EVENTS AND INSTRUCTION:**

- Analyze photographs to identify examples of matter; distinguish between items that are and are not made of matter (*i.e. Food vs. time*)
- Design and execute an experiment to demonstrate that matter is conserved during physical or chemical changes (*i.e. Slicing bread or frying an egg*)
- Graph results of experiment in a chart, table or graph.
- Measure matter in various states using a variety of tools to investigate volume, weight and length (*i.e. Using unit cubes to measure volume of rectangular prisms*)
- Illustrate a comic strip to demonstrate a physical and chemical change of the same substance (*i.e. Freezing juice into popsicles or finding mold on bread*)
- Compare effects of light on plant growth by collecting data about how light is related to plant growth and survival (*i.e. Creating a bar graph or chart to show plant growth*)
- Analyze diagrams, models or images that demonstrate how plants use energy (*i.e. Examine a food chain*)
- Create a table, chart or graph to show where producers and consumers get their energy (*i.e. Draw a web to show that sunlight feeds corn, which feeds chicken*)
- Assess diagrams, models or videos that demonstrate relationships between the sun, plants, and animals.
- Compose and perform a skit to illustrate the relationship between and roles of the sun, plants, and animals as it relates to energy transfer.

**RANDOLPH TOWNSHIP SCHOOL DISTRICT**  
**Science ~ Grade 5**  
**UNIT II: Matter**

<b>SUGGESTED TIME ALLOTMENT</b>	<b>CONTENT-UNIT OF STUDY</b>	<b>SUPPLEMENTAL UNIT RESOURCES</b>
7 Weeks	UNIT II: Matter	<p><b><u>Suggested Resources</u></b></p> <p><b>DK Find Out! Search Engine for Kids</b>  <a href="https://www.dkfindout.com/us/">https://www.dkfindout.com/us/</a></p> <p><b>Kiddle- Visual Search Engine for Kids</b>  <a href="http://www.kiddle.co/">http://www.kiddle.co/</a></p> <p><b>Matter Changing States- BrainPOP</b>  <a href="https://www.brainpop.com/science/matterandchemistry/matterchangingstates/">https://www.brainpop.com/science/matterandchemistry/matterchangingstates/</a></p> <p><b>States of Matter- BrainPOP</b>  <a href="https://www.brainpop.com/science/matterandchemistry/statesofmatter/">https://www.brainpop.com/science/matterandchemistry/statesofmatter/</a></p> <p><b>Measuring Matter- BrainPOP</b>  <a href="https://www.brainpop.com/science/matterandchemistry/measuringmatter/">https://www.brainpop.com/science/matterandchemistry/measuringmatter/</a></p>

		<p><b>Property Changes- BrainPOP</b> <a href="https://www.brainpop.com/science/matterandchemistry/propertychanges/">https://www.brainpop.com/science/matterandchemistry/propertychanges/</a></p> <p><b>Conservation of Mass- BrainPOP</b> <a href="https://www.brainpop.com/science/matterandchemistry/conservationofmass/">https://www.brainpop.com/science/matterandchemistry/conservationofmass/</a></p> <p><b>TrueFlix: Experiments with Solids, Liquids and Gases</b> <a href="http://tfx.grolier.com/p/node-33966/10010391">http://tfx.grolier.com/p/node-33966/10010391</a></p> <p><b>TrueFlix: Experiments with Motion</b> <a href="http://tfx.grolier.com/p/node-33966/10010382">http://tfx.grolier.com/p/node-33966/10010382</a></p> <p><b>Matter- StudyJams!</b> <a href="http://studyjams.scholastic.com/studyjams/jams/science/index.htm">http://studyjams.scholastic.com/studyjams/jams/science/index.htm</a></p> <p><b>Graphic for Energy Transfer</b> <a href="http://ecoplexity.org/?q=node/132">http://ecoplexity.org/?q=node/132</a></p> <p><b><u>Ecology - The Study of Ecosystems - TruFlix</u></b> <a href="http://tfx.grolier.com/p/node-34642/10011352">http://tfx.grolier.com/p/node-34642/10011352</a></p> <p><b>Safari Montage (Use video chapters as needed)</b></p> <p><b>Science Dimensions</b></p>
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		<p>Unit 2, Lesson 1 Unit 2, Lesson 2 Unit 2, Lesson 3 Unit 3, Lesson 1 Unit 3, Lesson 2</p> <p><b>Literary Resources</b></p> <p><i>Mixtures &amp; Compounds</i> by Phillip Clarke <i>Gravity</i> by Matthew Mullins <i>Food Chain Frenzy</i> by Anne Capeci <i>Food Chains</i> by Peter D. Riley <i>Pass the Energy, Please!</i> by Barbara Shaw McKinney</p>
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**RANDOLPH TOWNSHIP SCHOOL DISTRICT**

**Science ~ Grade 5**

**UNIT III: Earth's Systems**

<b>TRANSFER:</b> Connect relationships between Earth's systems.		
<b>STANDARDS / GOALS:</b>  <b>5-ESS2-1.</b> Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.  <b>5-ESS2-2.</b> Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.  <b>5-ESS3-1.</b> Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.  <b>5-PS2-1.</b> Support an argument that	<b>ENDURING UNDERSTANDINGS</b>	<b>ESSENTIAL QUESTIONS</b>
	By observing patterns in the sky, scientists can understand our relationship to the sun, moon and stars.	<ul style="list-style-type: none"> <li>• What patterns in the sky can be observed?</li> </ul>
	The gravity of Earth pulls objects toward the planet's center.	<ul style="list-style-type: none"> <li>• What is gravity?</li> </ul>
	Earth's systems are interdependent; the sustainability of one depends on another.	<ul style="list-style-type: none"> <li>• How do Earth's systems interact?</li> </ul>
	<b>KNOWLEDGE</b>	<b>SKILLS</b>
	<b>Students will know:</b>  The sun's height in the midday sky changes according to the seasons.	<b>Students will be able to:</b>  Observe changes in the sun's height throughout the day.  Illustrate that the apparent brightness of the sun

<p>the gravitational force exerted by Earth on objects is directed down.</p> <p><b>5-ESS1-1.</b> Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.</p> <p><b>5-ESS1-2.</b> Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p> <p><b><u>ELA/Literacy</u></b></p> <p><b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.</p> <p><b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</p> <p><b>RI.5.9</b> Integrate information from</p>	<p>The sun rises in the east and sets in the west because the Earth's rotates on its axis.</p> <p>All objects are pulled downward because gravity draws everything toward the Earth's center.</p>	<p>and stars is due to their relative distances from the Earth.</p> <p>Record variations of the sun's height at different times throughout the day.</p> <p>Identify patterns in the sun's height at different times throughout the day.</p> <p>Organize data to reveal patterns of daily changes in length and direction of shadows and the seasonal appearance of stars.</p> <p>Draw conclusions from data to support a claim.</p> <p>Investigate the cause and effect relationship between objects and gravity.</p> <p>Design and construct a model to demonstrate the gravitational pull of an object.</p> <p>Create a data table to illustrate results.</p> <p>Evaluate results of the model drop.</p> <p>Develop a logical argument that the gravitational force exerted by Earth on objects is directed down.</p>
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<p>several texts on the same topic in order to write or speak about the subject knowledgeably.</p> <p><b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources.</p> <p><b>W.5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research.</p> <p><b><u>Mathematics</u></b></p> <p><b>SL.5.5</b> Include multimedia components and visual displays in presentations when appropriate.</p> <p><b>MP.2</b> Reason abstractly and quantitatively.</p> <p><b>MP.4</b> Model with mathematics.</p> <p><b>5.G.A.2</b> Represent real world and mathematical problems by graphing.</p>	<p>Earth’s major systems, or spheres, interact to support life on Earth.</p> <p>The majority of Earth’s water is salt water and found in the oceans.</p>	<p>Differentiate the individual roles of each major Earth system.</p> <p>Investigate the relationships between Earth’s systems.</p> <p>Describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>Create a model to illustrate a relationship between two systems.</p> <p>Interpret data from a chart, graph or map about the distribution of water on Earth.</p> <p>Assess the amounts and percentages of saltwater and freshwater in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p>Draw conclusions to illustrate the amounts of water is distributed on the Earth’s surface.</p> <p>Create a mathematical representation to show the distribution of Earth’s saltwater and freshwater.</p>
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	<p><b>KEY TERMS:</b> axis, constellation, gravity, hemisphere, orbit, revolution, rotation, system, biosphere, atmosphere, geosphere, hydrosphere, salinity</p>	<p>Research the environmental impact humans have on the planet.</p> <p>Analyze a problem related to an environmental impact caused by humans.</p> <p>Design a solution to help protect Earth’s resources or spheres.</p> <p>Synthesize ways that communities protect the Earth’s resources and environment.</p>
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**ASSESSMENT EVIDENCE: Students will show their learning by:**

- Developing and proposing a campaign to protect Earth’s resources or spheres (*i.e. Identify a problem with food packaging and create solution to reduce wasteful packaging. Create a public service announcement to communicate the importance of conserving a sphere*)

**KEY LEARNING EVENTS AND INSTRUCTION:**

- Observe and record patterns of the sun’s height (*i.e. In “Evidence Notebook”*)
- Create a graph, table or chart to illustrate patterns in the sun’s height throughout the day (*i.e. Line plot or bar graph*)
- Construct a device to track the movements of the sun throughout the sky (*i.e. Connect shadow’s movement with a sundial*)
- Graph data to prove that shadows change with the position of the sun (*i.e. Line plot or bar graph*)
- View videos that demonstrate cause and effect relationships (*i.e. Lumberjacks cutting trees, water falling from Niagara Falls*)
- Build a device to demonstrate gravitational pull (*ie. Design a parachute that allows a plastic figure to be dropped on a target point from three meters*)



- Research information about the role of Earth's major systems (*i.e. Examine photos of the biosphere*)
- Research information about the interactivity between Earth's major systems (*i.e. The hydrosphere and the geosphere interact when plants take in water through roots*)
- Create a model to illustrate the relationship between two spheres (*i.e. Develop a model to show how the sun's energy strikes Earth, affecting the climate of a given area*)
- Read information from graphs, charts and maps to understand how water is distributed on Earth.
- Communicate to explain how fresh and salt water is distributed on Earth (*i.e. Small group "table talk"*)
- Create a mathematical representation to model the distribution of Earth's water (*i.e. Shade a hundreds square grid with different colors if the whole grid represents 100% and each square represents 1%*)

**RANDOLPH TOWNSHIP SCHOOL DISTRICT**

Science ~ Grade 5

**UNIT III: Earth's Systems**

<b>SUGGESTED TIME ALLOTMENT</b>	<b>CONTENT-UNIT OF STUDY</b>	<b>SUPPLEMENTAL UNIT RESOURCES</b>
7 Weeks	UNIT III: Earth's Systems	<p><b><u>Suggested Resources</u></b></p> <p><b>DK Find Out! Search Engine for Kids</b>  <a href="https://www.dkfindout.com/us/">https://www.dkfindout.com/us/</a></p> <p><b>Kiddle- Visual Search Engine for Kids</b>  <a href="http://www.kiddle.co/">http://www.kiddle.co/</a></p> <p><b>Gravity - TruFlix</b>  <a href="http://tfx.grolier.com/p/node-44545/10538875">http://tfx.grolier.com/p/node-44545/10538875</a></p> <p><b>Gravity- Study Jams!</b>  <a href="http://studyjams.scholastic.com/studyjams/jams/science/forces-and-motion/fgravity-and-inertia.htm">http://studyjams.scholastic.com/studyjams/jams/science/forces-and-motion/fgravity-and-inertia.htm</a></p> <p><b>Gravity- BrainPOP</b>  <a href="https://www.brainpop.com/science/motionsforcesandtime/gravity/">https://www.brainpop.com/science/motionsforcesandtime/gravity/</a></p> <p><b>Forces- BainPOP</b>  <a href="https://www.brainpop.com/science/energy/forces/">https://www.brainpop.com/science/energy/forces/</a></p>

**Safari Montage (Use video chapters as needed)**

**Science Dimensions**

- Unit 5, Lesson 1
- Unit 5, Lesson 2
- Unit 5, Lesson 4
- Unit 6, Lesson 1
- Unit 6, Lesson 2
- Unit 6, Lesson 3
- Unit 7, Lesson 1
- Unit 7, Lesson 2

**Literary Resources –**

- Exploring Our Sun*, Mae Jemison
- First Encyclopedia of Space*, Paul Dowsell
- Galaxies*, Howard K. Trammel
- Stars*, Ker Than
- The Sun*, Elaine Landau
- The Book of Planet Earth*, Clint Twist
- Oceans*, Emily K. Green
- The Water Cycle*, Trudi Strain Trueit