

Grade Three			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Heredity and Diversity: AMSTI Resources: Structures of Life, FOSS</b>			
Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Buzzing About Bees/Wasps</li> <li>• Deep Sea Creatures</li> <li>• Exploring Ocean's Depths</li> </ul>	<ul style="list-style-type: none"> <li>• Bee Bee-havior (A)</li> <li>• Tigers and Lions! (A)</li> <li>• Why Dandelions Are Dandy (A)</li> <li>• Antarctic Krill (V)</li> <li>• Beluga Whales (V)</li> <li>• Emperor Penguins (V)</li> <li>• Make Way for Ducklings (V)</li> <li>• Polar Bears (V)</li> <li>• Sea Turtles (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-2 The Marabou Stork)</li> </ul>
Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Buzzing About Bees and Wasps</li> <li>• Deep Sea Creatures</li> <li>• Invasive Species</li> <li>• Exploring Ecosystems</li> <li>• How We Learn</li> <li>• Life and Death in the Wild</li> <li>• Our Gross World</li> <li>• The Secret Languages of Animals</li> <li>• Smarter than you think</li> <li>• Spider Stories</li> <li>• Weird and Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Water Bear (A)</li> <li>• Bee Bee-havior (A)</li> <li>• Beneath the Fin (A)</li> <li>• Carnivorous Dinosaurs (A)</li> <li>• Cicada Swarm (A)</li> <li>• Friendship - Goby &amp; Shrimp (A)</li> <li>• Hair Time! (A) Head Lice - Don't Bug Me! (A)</li> <li>• How Spiders Catch Prey (A) Spitting Spiders• (A)</li> <li>• Tigers and Lions (A) Interesting and Funny Animal Relationships(A)</li> <li>• Venus Flytrap-Meat-Eating Plant (A)</li> <li>• Antlers, Shells, &amp; Beaks (V)</li> <li>• Antarctic Krill (V)</li> <li>• Bird Brains (V)</li> <li>• Emperor Penguins (V)</li> <li>• How Do We Think?(V)</li> <li>• Leaf Cutter Ants (V).Monkey Business(V)</li> <li>• Picking Your Brain (V)..Orangutan Copycats(V)</li> <li>• Polar Bears (V)</li> <li>• Sea Turtles (V)</li> <li>• Social Insects (V)</li> <li>• Walruses (V)Science Pirates - Bacteria(v)</li> <li>• Why Dandelions Are Dandy (A)Science Pirates - Wash Your Hands(V)</li> </ul>	<ul style="list-style-type: none"> <li>• Questioning (CL-1, A-2 Agoutis)</li> <li>• Questioning (CL-1, A-3 Sloths)</li> <li>• Word Learning (CL-2, A-1 What Makes a Bird a Bird)</li> <li>• Word Learning (CL-2, A-2 What is a Waterfowl?)</li> <li>• Word Learning (CL-2, A-3 Webbed Wonders)</li> <li>• Text Organization (CL-2, A-1 Inside Your Body)</li> <li>• Text Organization (CL-2, A-2 Disease Database )</li> <li>• Text Organization (CL-2, A-3 All About Asthma)</li> <li>• Creating Sensory Images (CL-3 A-2 An Afternoon Rain)</li> <li>• Inferring (CL-2, A-1 Sloth Stories)</li> </ul>

		<ul style="list-style-type: none"> <li>• Wonder Fabrics-Can't Get Wet! (A)</li> <li>• Walruses (V) Tardigrades.. AKA Water Bears(A)</li> <li>•Optical Illusions(A)</li> <li>•Looks like an Ant... Or Does It?(A)</li> </ul>	
Support an argument that plants get the materials they need for growth chiefly from air and water	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Weird and Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Splash(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Features (CL-1, A-2 Greenhouse Effect)</li> </ul>
Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms	<ul style="list-style-type: none"> <li>• Inheritance, It's All in the Genes</li> </ul>	<ul style="list-style-type: none"> <li>• Biotechnology (A)</li> <li>• Hair Time!(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Main Idea/Details (CL-4, A-3 Why Does Hair Turns Grey?</li> <li>• Monitor for Meaning (CL-2, A-2 Is that Popcorn? No, it's a Binturaong!)</li> </ul>
Use evidence to support the explanation that traits can be influenced by the environment	<ul style="list-style-type: none"> <li>• Deep Sea Creatures</li> <li>• Invasive Species</li> <li>• Life and Death in the Wild</li> <li>• Our Gross World</li> <li>• Spider Stories</li> <li>• The Weird and Wonderful World of Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Breathe Easier: Understanding Asthma (A)</li> <li>• Monkey Business (V)</li> <li>• Orangutan Copycats (V)50 Amazing Animal Facts(A)Crime-Solving Insects(A)</li> </ul>	
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Dependency of Life, The Exploring Ecosystems</li> <li>• Invasive Species</li> <li>• Spider Stories</li> <li>• Weird and Wonderful World of Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Water Bear (A)</li> <li>• Fireflies of the Ocean: Noctiluca Scintillans (A)</li> <li>• Head Lice - Don't Bug Me! (A)</li> <li>• How Spiders Catch Prey (A)</li> <li>• Tigers and Lions (A)</li> <li>• Weird Animal Defense Mechanisms(A)</li> <li>• Make Way for Ducklings (V)</li> <li>• Antarctic Krill (V)</li> <li>• Beluga Whales (V)</li> <li>• Emperor Penguins (V)</li> <li>• Polar Bears (V)</li> <li>• Sea Turtles (V)</li> <li>• Walruses (V)</li> <li>A Spider with Deadly Aim(A).Batty for Bats(V)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-1 Invasive Species)</li> <li>• Questioning (CL-1, A-3 Sloths</li> <li>• Word Learning (CL-2, A-3 Webbed Wonders)</li> <li>• Text Organization (CL-2, A-1 Inside Your Body)</li> <li>• Text Organization (CL-2, A-2 Disease Database )</li> <li>• Text Organization (CL-2, A-3 All About Asthma)</li> </ul>
Make a claim about the	<ul style="list-style-type: none"> <li>• Invasive Species</li> </ul>		

merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.			
<b>Weather and Climate: AMSTI Resources: Water and Climate, FOSS</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season	<ul style="list-style-type: none"> <li>Weather Around the World</li> </ul>	<ul style="list-style-type: none"> <li>Aurora Borealis: The Glowing Lights(A)</li> <li>The Biggest Shadow of All: A Solar Eclipse(A)</li> <li>When Lightning Strikes (V)</li> </ul>	<ul style="list-style-type: none"> <li>Author's Purpose (CL-1, A-1 Weather Scientist)</li> <li>Inferring (CL-1, A-1 What Causes Seasons?)</li> </ul>
Obtain and combine information to describe climates in different regions of the world.	<ul style="list-style-type: none"> <li>Exploring Ocean's Depths</li> <li>Weather Around the World</li> </ul>	<ul style="list-style-type: none"> <li>Our Own Star, the Sun(A)</li> </ul>	<ul style="list-style-type: none"> <li>Graphic Features (CL-1, A-3 Climate Changing)</li> <li>Graphic Features (CL-1, A-1 Global Climate Change)</li> </ul>
Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	<ul style="list-style-type: none"> <li>Natural Hazards that Shape the Earth</li> </ul>	<ul style="list-style-type: none"> <li>Earthquakes (V)</li> <li>Tsunami Research (V)</li> </ul>	<ul style="list-style-type: none"> <li>Author's Purpose (CL-1, A-3 Tornado)</li> </ul>
Develop a model to describe that matter is made of particles too small to be seen.	<ul style="list-style-type: none"> <li>Good Vibes-Making Waves with Sound</li> <li>Food Chemistry</li> <li>Making Movie Magic</li> </ul>	<ul style="list-style-type: none"> <li>Matter Matters! (A)</li> <li>Science of Jelly Beans (A)</li> <li>Biotechnology (A)</li> <li>Virtual Reality Scientists (V)</li> <li>A Sweet Treat (A)</li> <li>Make a Volcano: Coke &amp; Mentos (A)</li> <li>Make Your Own Slime (A)</li> <li>Make Elephant Toothpaste (A)</li> <li>Things That Go BOOM!: (A)</li> </ul>	
Define a simple design problem reflecting a need or a want that includes specified criteria for	<ul style="list-style-type: none"> <li>Computer Revolution</li> <li>Deep Space</li> <li>Earth's Systems</li> <li>Exploring Ocean's Depths</li> </ul>	<ul style="list-style-type: none"> <li>Our Debris Filling the Ocean(V)</li> </ul>	<ul style="list-style-type: none"> <li>Word Learning (CL-1, A-1 Introduction to Archeology)</li> <li>Word Learning (CL-1, A-2 How Archeologists Work)</li> <li>Word Learning (CL-1, A-3 The Archeology Lab)</li> </ul>

success and constraints on materials, time, or cost.	<ul style="list-style-type: none"> <li>• Improving Lives with Assistive Tech</li> <li>• Living in Space</li> <li>• Making Movie Magic</li> <li>• Olympic Champs - it's Not Just Luck, it's Physics</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Technology Changes Medicine</li> </ul>		
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.	<ul style="list-style-type: none"> <li>• Improving Lives-Assistive Tech</li> <li>• Living in Space</li> <li>• Olympic Champs - it's Not Just Luck, it's Physics</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Science-What's it All About?</li> <li>• Solving Crime with Forensics</li> <li>• Tech Changes Medicine</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Teen Scientist(A)</li> <li>• A Computer's Best Friend(A)</li> <li>• Why Are Some Hands More "Handy" Than Others?(A)</li> <li>• Mysteries of the Common Cold(A)</li> <li>• Breathe Easier - Understanding Asthma(A)</li> <li>• All About Recycling(A).Cloning: The More the Merrier(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Features (CL-2, A-1 War Machines-Siege Engines)</li> </ul>
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.	<ul style="list-style-type: none"> <li>• Science-What's it All About?</li> </ul>	<ul style="list-style-type: none"> <li>• Biotechnology (A)</li> <li>• Virtual Reality Scientists (V)</li> <li>• Cancer: Cells Out of Control</li> <li>• RoboBees (V)</li> <li>• Twin Fascination(A)</li> <li>• Robotic Arms (V)</li> <li>• The SpelBots (V)</li> <li>Bones Tell the Story(A)</li> </ul>	
<b>Weather and Climate: AMSTI Resources: Max/Min Temperature, Globe</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Represent data in tables and graphical displays to describe typical weather conditions expected	<ul style="list-style-type: none"> <li>• Weather Around the World</li> </ul>	<ul style="list-style-type: none"> <li>• The Water Cycle (A)</li> <li>• Aurora Borealis; The Glowing Lights (A)</li> <li>• The Biggest Shadow of All: A Solar Eclipse (A)</li> <li>• When Lightning Strikes (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Main Idea/Details (CL-3, A-2 Can You Tell the Temperature by Listening to a Cricket Chirp?)</li> <li>• Author's Purpose (CL-1, A-! Weather Scientist</li> <li>• Inferring (CL-1, A-1 What Causes the Seasons?)</li> </ul>

during a particular season			
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and or atmosphere interact	<ul style="list-style-type: none"> <li>• Earth's Systems</li> <li>• Polluting Our Earth</li> </ul>	<ul style="list-style-type: none"> <li>• The Water Cycle (A)</li> <li>• All About Recycling</li> <li>• Rocks Rock (A)</li> <li>• When Lightning Strikes (V)</li> <li>• What is Sea Ice and Why is it Shrinking? (V)</li> <li>• Earthquakes(V)</li> </ul>	
Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions	<ul style="list-style-type: none"> <li>• Weather</li> <li>• Form Mountains and Deserts</li> </ul>		
<b>Weather and Climate: AMSTI Resources: Precipitation, Globe</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season	<ul style="list-style-type: none"> <li>• Weather Around the World</li> </ul>	<ul style="list-style-type: none"> <li>• Aurora Borealis: The Glowing Lights (A)</li> <li>• The Biggest Shadow of All: A Solar Eclipse (A)</li> <li>• When Lightning Strikes (V)</li> </ul>	
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and or atmosphere interact	<ul style="list-style-type: none"> <li>• Earth's Systems</li> <li>• Polluting Our Earth</li> </ul>	<ul style="list-style-type: none"> <li>• The Water Cycle (A)</li> <li>• All About Recycling</li> <li>• Rocks Rock (A)</li> <li>• When Lightning Strikes (V)</li> <li>• What is Sea Ice and Why is it Shrinking? (V)</li> <li>• Earthquakes(V)</li> </ul>	
Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	<ul style="list-style-type: none"> <li>• Weather</li> <li>• Total Lunacy</li> </ul>		
<b>Weather and Climate: AMSTI Resources: Wind Direction, GLOBE</b>			
Represent data in tables and graphical displays to	<ul style="list-style-type: none"> <li>• Weather Around the World</li> </ul>	<ul style="list-style-type: none"> <li>• Aurora Borealis: The Glowing Lights (A)</li> <li>• The Biggest Shadow of All: A Solar Eclipse (A)</li> </ul>	

describe typical weather conditions expected during a particular season		• When Lightning Strikes (V)	
Obtain and combine information to describe climates in different regions of the world.	• Exploring Ocean's Depths • Weather Around the World	• Our Own Star, the Sun(A)	
<b>Forces and Interactions: AMSTI Resources: Motion and Design, STC</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	• Amusement Park Physics • Olympic Physics! • Unbalanced Forces • Deep Space	• Making Hovercrafts (A). • Robotic Arms(V). • Science Pirates - Hypothesis (V)	
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	• Amusement Park Physics • Changing Face of Earth • Olympic Physics! • Unbalanced Forces	• A River of Ice (A) • Making Hovercrafts (A)	
<b>Forces and Interactions: AMSTI Resources: The Attraction is Obvious: Designing Maglev Systems, EiE</b>			
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	• Food Chemistry • Solving Crimes with Forensics	• Crime Scene Science (A) • Matter Matters!(A) • Wonder Fabrics(A) • Cool Beams!(A) • How Do We Think?(A) • Making Volcanoes: Coke & Mentos (A) • Making Your Own Slime (A)	
Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with	• Unbalanced Forces • Deep Space • Powering our Lives with Energy • Food Chemistry		

each other			
Define a simple design problem that can be solved by applying scientific ideas about magnets	<ul style="list-style-type: none"> <li>• Unbalanced Forces</li> </ul>		
Make observations and measurements to identify materials based on their properties	<ul style="list-style-type: none"> <li>• Food Chemistry</li> <li>• Solving Crimes with Forensics</li> </ul>	<ul style="list-style-type: none"> <li>• Crime Scene Science (A)</li> <li>• Matter Matters!(A)</li> <li>• Wonder Fabrics(A)</li> <li>• Cool Beams!(A)</li> <li>• How Do We Think?(A)</li> <li>• Making Volcano from Coke and Mentos (A)</li> <li>• Making Your Own Slime (A)</li> </ul>	

Grade Four			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Energy and Waves: AMSTI Resources: Electric Circuits, STC</b>			
Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	<ul style="list-style-type: none"> <li>• Unbalanced Forces</li> <li>• Deep Space</li> </ul>		
<b>Energy and Waves: AMSTI Resources: Energy Works, BBS</b>			
Use evidence to construct an explanation relating the speed of an object to the energy of that object	<ul style="list-style-type: none"> <li>• Amusement Park Physics</li> <li>• Olympic Champs: It's Not Just Luck – It's Physics!</li> </ul>		<ul style="list-style-type: none"> <li>• Main Idea and Details (CL-2, A-1, The History of Flight)</li> <li>• Text Organization (CL-1, A-1, Satellites)</li> <li>• Text Organization (CL-1, A-2 Satellites in Outer Space)</li> <li>• Text Organization (CL-1, A-3, How Satellites Work)</li> </ul>
Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric current	<ul style="list-style-type: none"> <li>• Good Vibes – Making Waves with Sound</li> <li>• Improving Lives with Assistive Technology</li> <li>• Making Movie Magic</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Science of Music, The</li> </ul>	<ul style="list-style-type: none"> <li>• Making Hovercrafts (A)</li> </ul>	
Ask questions and predict outcomes about the changes in energy that occur when objects collide	<ul style="list-style-type: none"> <li>• Good Vibes – Making Waves with Sound</li> <li>• Powering Our Lives with Energy</li> </ul>	<ul style="list-style-type: none"> <li>-Things That Go BOOM!: The History and Chemistry of Explosives (A)</li> </ul>	
Apply scientific ideas to design, test, and refine a device that converts energy from one form to	<ul style="list-style-type: none"> <li>• Good Vibes – Making Waves with Sound</li> </ul>	<ul style="list-style-type: none"> <li>• Raise Your Voice (A)</li> <li>• Making Hovercrafts (A)</li> <li>• Pig Poop Fuel (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Main Idea and Details (CL-2, A-1, The History of Flight)</li> <li>• Graphic Features (CL-2, A-1 War Machines-Siege Engines)</li> </ul>



another			• Questioning (CL-2, A1 Crazy Careers in Science)
Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate	<ul style="list-style-type: none"> <li>• Lights Sound Action</li> <li>• Olympic Physics</li> </ul>	<ul style="list-style-type: none"> <li>• Voyager Space Probes (A)</li> <li>• A Computer's Best Friend (A)</li> <li>• Biotechnology (A)</li> </ul>	
Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	<ul style="list-style-type: none"> <li>• Good Vibes – Making Waves with Sound</li> <li>• Improving Lives with Assistive Technology</li> <li>• Making Movie Magic</li> <li>• On the Move with Transportation Technology</li> <li>• Powering Our Lives with Energy</li> <li>• Science of Music, The</li> </ul>	<ul style="list-style-type: none"> <li>• Making Hovercrafts (A)</li> </ul>	

**Energy and Waves: AMSTI Resources: Land and Water, STC**

<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Use information from several sources to provide evidence that Earth events can occur quickly or slowly	<ul style="list-style-type: none"> <li>• Natural Hazards</li> <li>• Weather Around the World</li> </ul>		
Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land	<ul style="list-style-type: none"> <li>• Changing Face of Earth</li> </ul>		
Develop a model to represent the shapes and kinds of land and bodies of water in an area	<ul style="list-style-type: none"> <li>• Exploring Ocean Depths</li> </ul>		
Obtain information to	<ul style="list-style-type: none"> <li>• Exploring Ocean Depths</li> </ul>	<ul style="list-style-type: none"> <li>• A River of Ice (A)</li> </ul>	

identify where water is found on Earth and that it can be solid or liquid			
<b>Energy and Waves: AMSTI Resources: Soil Characterization, GLOBE</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact	<ul style="list-style-type: none"> <li>• Earth's Systems</li> <li>• Polluting Our Earth</li> </ul>	<ul style="list-style-type: none"> <li>• The Water Cycle (A)</li> <li>• All about recycling (A)</li> <li>• Rocks Rock! (A)</li> <li>• When Lightning strikes (V)</li> <li>• What is Sea Ice and Why's it Shrinking? (V)</li> <li>• Earthquakes (V)</li> <li>• Invasion of the Earthworms! (V)</li> </ul>	
Analyze and interpret data on the properties of substances before and after they interact to determine if a chemical reaction has occurred	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 1</li> <li>• Chemical and Physical Properties of Matter 2</li> </ul>	<ul style="list-style-type: none"> <li>• Make your own Rock Candy (A)</li> <li>• Matter Matters! (A)</li> <li>• All About Recycling (A)</li> <li>• Rocks Rock! (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-3 Cafeteria Chemistry)</li> </ul>
Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	<ul style="list-style-type: none"> <li>• Pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Crime Scene Science(A)</li> <li>• Matter Matters! (A)</li> <li>• Wonder Fabrics (A)</li> <li>• Cool Beams (A)</li> <li>• How Do We Think?(A)</li> </ul>	
Develop and use a model to describe how the total number of atoms doesn't change in a chemical reaction and thus mass is conserved	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 1</li> <li>• Chemical and Physical Properties of Matter 2</li> </ul>		
<b>Animal Studies: AMSTI Resources: Animal Studies, STC</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Construct an argument that some animals form	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> </ul>	<ul style="list-style-type: none"> <li>• Bee Bee-havior (A)</li> <li>• How Spiders Catch Prey (A) .Pirate</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-1 Invasive Species)</li> <li>• Questioning (CL-1, A-3 Sloths)</li> </ul>

<p>groups that help members survive</p>	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Exploring Ecosystems</li> <li>• Invasive Species</li> <li>• Spider Stories</li> <li>• Weird and Wonderful Plants</li> <li>• The Secret Languages of Animals</li> </ul>	<p>Spiders(A)</p> <ul style="list-style-type: none"> <li>• Rocks Rock (A)</li> <li>• Symbiotic Friendship: Goby &amp; Shrimp (A)</li> <li>• Tigers and Lions!(A)</li> <li>• Weird Animal Defense Mechanisms(A)</li> <li>• Antarctic Krill (V)</li> <li>• Beluga Whales (V)</li> <li>• Emperor Penguins (V)</li> <li>• Make Way for Ducklings (V)</li> <li>• Polar Bears (V)..Leaf Cutter Ants(V)</li> <li>• Sea Turtles (V).Just by a Whisker(V)</li> <li>• Walruses (V)</li> <li>• Dreams (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Word Learning (CL-2, A-3 Webbed Wonders)</li> <li>• Main Idea/Details (CL-1, A-1 Mantled Howler Monkeys)</li> <li>• Main Idea/Details (CL-3, A-3 Why do Geese Fly in a V-Shape?)</li> <li>• Questioning (CL-1, A-1 White-Throated Capuchins)</li> </ul>
<p>Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago</p>	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Birds of a Feather</li> <li>• Powering Our Lives with Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Carnivorous Dinosaurs</li> <li>• Herbivorous Dinosaurs• Rocks Rock (A)</li> <li>• Core on the Floor(V)</li> </ul>	
<p>Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all</p>	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Dependency of Life, The</li> <li>• Exploring Ecosystems</li> <li>• Invasive Species</li> <li>• Spider Stories</li> <li>• Weird and Wonderful World of Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Water Bear (A)</li> <li>• Bee Bee-havior (A)</li> <li>• Fireflies of the Ocean: Noctiluca Scintillans (A)</li> <li>• Head Lice (A)</li> <li>• How Spiders Catch Prey (A)</li> <li>• Rocks Rock(A)Life Inside Deep Caves(A)</li> <li>• Weird Animal Defense Mechanisms(A)</li> <li>• Why Dandelions Are Dandy (A)</li> <li>• Make Way for Ducklings (V)</li> <li>• Antarctic Krill (V).The Very Peculiar Anglerfish(A)</li> <li>• Sea Turtles (V)</li> <li>• Beluga Whales (V)</li> <li>• Emperor Penguins (V)</li> <li>• Walruses (V)</li> <li>• Polar Bears (V)</li> <li>• Walruses (V).The Venus Flytrap: A Meat-</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-1 Invasive Species)</li> <li>• Questioning (CL-1, A-3 Sloths)</li> <li>• Word Learning (CL-2, A-3 Webbed Wonders)</li> <li>• Text Organization (CL-2, A-1 Inside Your Body)</li> <li>• Text Organization (CL-2, A-2 Disease Database )</li> <li>• Text Organization (CL-2, A-3 All About Asthma)</li> </ul>

<p>Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change</p>	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Dependency of Life</li> <li>• Exploring Ecosystems</li> <li>• Invasive Species</li> <li>• Spider Stories</li> <li>• Weird and Wonderful Plants</li> </ul>	<p>Eating Plant(A)</p> <ul style="list-style-type: none"> <li>• Bee Bee-havior (A)Invasive Species(A)</li> <li>• How Spiders Catch Prey (A)</li> <li>• Rocks Rock(A)</li> <li>• Weird Animal Defense Mechanisms(A)</li> <li>• Make Way for Ducklings (V)</li> <li>• Antarctic Krill (V).Our Debris Filling the Ocean(V)</li> <li>• Sea Turtles (V)</li> <li>• Beluga Whales (V)</li> <li>• Emperor Penguins (V)</li> <li>• Walruses (V)</li> <li>• Polar Bears (V)</li> <li>• Walruses (V)Parasites: Nature's Thieves(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-1 Invasive Species)</li> <li>• Questioning (CL-1, A-3 Sloths)</li> <li>• Word Learning (CL-2, A-3 Webbed Wonders)</li> <li>• Text Organization (CL-2, A-1 Inside Your Body)</li> <li>• Text Organization (CL-2, A-2 Disease Database )</li> <li>• Text Organization (CL-2, A-3 All About Asthma)</li> </ul>
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Grade Five			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Dynamics of Ecosystems: AMSTI Resources: Ecosystems, STC</b>			
Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Weird Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Splash (A) • Biotechnology( A)</li> <li>• Sweet Treat (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Features (CL-1, A-2 Greenhouse Effect)</li> <li>• Main Idea/Details (CL-2, A-2 Animals of Barro Colorado, Panama)</li> <li>• Main Idea/Details (CL-3, A-1 Camels)</li> </ul>
Support an argument that plants get the materials they need for growth chiefly from air and water	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Weird Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• The Amazing Water Bear</li> <li>• Splash (A) The Symbiotic Friendship of a Goby and a Shrimp(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Graphic Features (CL-1, A-2 Greenhouse Effect)</li> </ul>
Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Buzzing About Bees and Wasps</li> <li>• Dependency of Life</li> <li>• Deep Sea Creatures</li> <li>• Exploring Ecosystems</li> <li>• Exploring the Ocean's Depths</li> <li>• Life and Death in the Wild</li> <li>• Our Gross World</li> <li>• Weird Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Bee Bee-havior (A)</li> <li>• Fireflies of the Ocean(A)</li> <li>• Splash(A)</li> <li>• Core on the Floor(V)</li> <li>• Invasion of the Earthworms! (V)</li> <li>• Just by a Whisker (V)</li> <li>• Leaf Cutter Ants (V)Beneath the Fin(A)</li> <li>• Virtual Reality Scientists (V)</li> <li>• Garbage Island(A)Vampires in Nature(A)</li> <li>• The Humongous Megafish (A)</li> <li>• The Venomous Sea Wasp(A)</li> <li>• Buried Alive!(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Questioning (CL-1, A-2 Agoutis)</li> <li>• Questioning (CL-2, A2 Vampires in Nature)</li> <li>• Questioning (CL-2, A3 Parasites: Nature's Thieves)</li> </ul>
<b>Dynamics of Ecosystems: AMSTI Resources: A Slick Solution, EiE</b>			
Use a model to represent the relationship between the needs of different plants or animals (including humans) and places they live	<ul style="list-style-type: none"> <li>• Invasive Species</li> <li>• Buzzing About Wasps and Bees</li> <li>• Deadliest Creatures</li> <li>• Dependency of Life</li> <li>• Spider Stories</li> </ul>		<ul style="list-style-type: none"> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> </ul>
Plan and conduct an investigation to describe	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 1</li> </ul>		

and classify different kinds of materials by their observable properties	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 2</li> </ul>		
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose		<ul style="list-style-type: none"> <li>• How to Make a Hovercraft</li> </ul>	
Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change	<ul style="list-style-type: none"> <li>• Invasive Species</li> <li>• Buzzing About Wasps and Bees</li> <li>• Deadliest Creatures</li> <li>• Dependency of Life</li> <li>• Spider Stories</li> </ul>		
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all	<ul style="list-style-type: none"> <li>• Beetlemania</li> <li>• Birds of a Feather</li> <li>• Dependency of Life</li> <li>• Exploring Ecosystems</li> <li>• Invasive Species</li> <li>• Spider Stories</li> <li>• Weird Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>• Amazing Water Bear (A)</li> <li>• How Spiders Catch Prey (A)</li> <li>• Tigers and Lions (A)</li> <li>• Weird Animal Defense Mechanisms(A).</li> </ul> <p>What Happens When Something Goes Extinct?(A)  The Marabou Stork: (A)  Animal Cannibals(A)  • Make Way for Ducklings (V)  • Antarctic Krill (V)  • Beluga Whales (V)  • Emperor Penguins (V)  • Polar Bears (V)  • Sea Turtles (V)  • Walruses (V)</p>	<ul style="list-style-type: none"> <li>• Click or Clunk (CL-2, A-3 The Venomous Sea Wasp)</li> </ul>
Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body	<ul style="list-style-type: none"> <li>• Dependency of Life</li> <li>• Weird Wonderful Plants</li> </ul>		

warmth) was once energy from the sun			
<b>Dynamics of Ecosystems: AMSTI Resources: Earth System Interactions, GLOBE</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact	<ul style="list-style-type: none"> <li>• Earth's Systems</li> </ul>	<ul style="list-style-type: none"> <li>• Spirit and Opportunity on Mars(A)</li> </ul>	
Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem	<ul style="list-style-type: none"> <li>• Coral Reefs</li> <li>• Desert Biomes</li> <li>• Life in the Tundra</li> <li>• Prairie Ecosystems</li> <li>• Scientific Method</li> </ul>	<ul style="list-style-type: none"> <li>• Treasures in the Sky</li> </ul>	
Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process	<ul style="list-style-type: none"> <li>• Prairie Ecosystems</li> <li>• Rainforests</li> <li>• Weather</li> </ul>		
<b>Matter and Interactions: AMSTI Resources: Mixtures and Solutions, FOSS</b>			
Develop a model to describe that matter is made of particles too small to be seen	<ul style="list-style-type: none"> <li>• Good Vibes – Making Waves with Sound</li> <li>• Food Chemistry</li> <li>• Making Movie Magic</li> </ul>	<ul style="list-style-type: none"> <li>• Matter Matters! (A)</li> <li>• Science of Jelly Beans (A)</li> <li>• Biotechnology (A)</li> <li>• How to Make Your Own Slime (A)</li> <li>• How to Make Elephant Toothpaste (A)</li> <li>• Making a Volcano-Coke and Mentos (A)</li> <li>• Splash (A)</li> <li>• Sweet Treat (A)</li> <li>• Wonder Fabrics (A)</li> <li>• Virtual Reality Scientists (V)</li> </ul>	
Measure and graph quantities to provide		<ul style="list-style-type: none"> <li>• Make Your Own Rock Candy(A)</li> <li>• Matter Matters!(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-3 Cafeteria Chemistry)</li> </ul>

evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, total weight of matter is conserved		<ul style="list-style-type: none"> <li>• All About Recycling (A)</li> <li>• Rocks Rock!(A)</li> </ul>	
Make observations and measurements to identify materials based on their properties	<ul style="list-style-type: none"> <li>• Food Chemistry</li> <li>• Solving Crimes with Forensics</li> </ul>	<ul style="list-style-type: none"> <li>• Cool Beams!(A)</li> <li>• Crime Scene Science (A)</li> <li>• How Do We Think?(A)</li> <li>• Make a Volcano: Coke and Mentos(A)</li> <li>• How to Make Your Own Slime (A)</li> <li>• Matter Matters!(A)</li> <li>• Wonder Fabrics(A)</li> <li>• Look a Rainbow! (A)</li> </ul>	
Conduct an investigation to determine whether the mixing of two or more substances result in new substances	<ul style="list-style-type: none"> <li>• Food Chemistry</li> <li>• Solving Crimes with Forensics</li> </ul>	<ul style="list-style-type: none"> <li>• Excuse Me, But Burping is Natural(A)</li> <li>• How to Make Elephant Toothpaste(A)</li> <li>• How to Make Your Own Slime (A)</li> <li>• Make a Volcano: Coke and Mentos (A)</li> <li>• Making a Potato Battery (A)</li> <li>• Make Your Own Rock Candy (A)</li> <li>• The Science of Movie Stunts (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Inferring (CL-2, A-3 Cafeteria Chemistry)</li> </ul>
Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment	<ul style="list-style-type: none"> <li>• Changing Face of Earth</li> <li>• Earth's Systems</li> <li>• Exploring the Ocean's Depths</li> <li>• Invasive Species</li> <li>• Natural Hazards that Shape Earth</li> <li>• Our Planet Earth</li> <li>• Polluting Our Earth</li> <li>• Powering Our Lives with Energy</li> </ul>	<ul style="list-style-type: none"> <li>• All About Recycling (A)</li> <li>• A Computer's Best Friend (A)</li> <li>• The Illegal Wildlife Trade</li> <li>• Earthquakes (V)</li> <li>• Robotic Arms (V)</li> <li>• Debris Filling the Ocean(V)</li> </ul>	<ul style="list-style-type: none"> <li>• Click or Clunk (CL-1, A-1 Why Save Rainforests?)</li> <li>• Click or Clunk (CL-2, A-1 Illegal Wildlife Trade)</li> <li>• Click or Clunk (CL-2, A-2 Garbage Island)</li> </ul>
<b>Earth: Gravity and Space: AMSTI Resources: A Long Way Down: Designing Parachutes, EiE</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Plan and conduct an investigation to describe and classify different kinds of materials by	<ul style="list-style-type: none"> <li>• Food Chemistry</li> <li>• Solving Crimes with Forensics</li> </ul>	<ul style="list-style-type: none"> <li>• 50 Fun Facts That Will Amaze Your Friends( A)</li> <li>• Deadly Mushrooms(A)</li> </ul>	



their observable properties			
Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose		<ul style="list-style-type: none"> <li>Girls in Chemistry (A)</li> </ul>	
Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	<ul style="list-style-type: none"> <li>Amusement Park Physics</li> </ul>	<ul style="list-style-type: none"> <li>The Challenge of Gravity</li> </ul>	<ul style="list-style-type: none"> <li>History of Flight: How Did We Learn to Fly Like Birds?</li> </ul>
Support an argument that the gravitational force exerted by Earth on objects is directed down	<ul style="list-style-type: none"> <li>Amusement Park Physics</li> <li>Living in Space</li> <li>Making Movie Magic</li> <li>Our Planet Earth</li> <li>Science Girls</li> </ul>	<ul style="list-style-type: none"> <li>Amazing Teen Scientist(A)</li> <li>Challenge of Gravity (A)</li> <li>Science of Movie Stunts(A)</li> <li>Making Hovercrafts(A)</li> <li>How to Make a Cartesian Diver(A)</li> <li>Treasures in the Sky(A)</li> <li>Girls in Science Series: Part 1(A)</li> <li>Lab Safety,(A)</li> <li>Girls in Physics(A)</li> <li>Girls in Chemistry(A)</li> <li>Girls in Biology(A)</li> <li>Girls in Computer Science (A)</li> </ul>	<ul style="list-style-type: none"> <li>Inferring (CL-1, A-2 What is a Planet?)</li> </ul>
<b>Earth: Gravity and Space: AMSTI Resources: Sundial, GLOBE</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Investigate the movement of the Sun through the day	<ul style="list-style-type: none"> <li>Deep Space</li> </ul>	<ul style="list-style-type: none"> <li>The Search for Life on Mars(A)</li> <li>A Trip to Mars(A)</li> <li>Spirit and Opportunity on Mars(A)</li> </ul>	<ul style="list-style-type: none"> <li>Main Idea/Details (CL-1, A-2 Galaxies)</li> <li>Text Organization (CL-1, A-2 How do Satellites Stay in Space?)</li> <li>Inferring (CL-1, A-3 Why Is the Sky Blue? )</li> </ul>
Define the criteria &	<ul style="list-style-type: none"> <li>Artificial Satellites</li> </ul>	<ul style="list-style-type: none"> <li>Inventor of the Toughest Stuff (A)</li> </ul>	<ul style="list-style-type: none"> <li>Context Blues (CL-3 A-1 Things That Go Boom!)</li> </ul>

<p>constraints of a design problem w/ sufficient precision to ensure a successful solution, taking into account relevant scientific principles &amp; potential impacts on people &amp; the natural environment that may limit possible solution.</p>	<ul style="list-style-type: none"> <li>• Character Traits of a Good Scientist</li> <li>• Learning from Natural Disaster</li> <li>• Pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Antlers, Beaks, Geckos and Us (V)</li> <li>• Safe from Tsunamis (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Determining Importance (CL-2, A-1. Dragonflies: Flying Aces)</li> </ul>
<p>Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem</p>	<ul style="list-style-type: none"> <li>• Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>• Things That Go Boom!: The History of Chemistry of Explosives (A)</li> <li>• Crazy Careers in Science (A)</li> <li>• Space Psychologist (A)</li> <li>• From Waste to Energy: Bacteria Give a Boost (V)</li> <li>• Hydrogen Power (V)</li> <li>• Wave of the Future-Green Gasoline (V)</li> <li>• Pig Poop and Other Energy Sources (V)</li> <li>• Getting Ready for Earthquakes (V)</li> <li>• Chores Don't Have to be a Pain in the But...ler (V)</li> <li>• Musical Computer (V)</li> <li>• Robots of Your Dreams (V)</li> <li>• Robots with Whiskers (V)</li> <li>• Sensible Sensors (V)</li> <li>• Signing Made Simple (V)</li> <li>• Smart Cars! (V)</li> <li>• The Ins and Outs of the Brain (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-3 A-1 Things That Go Boom!)</li> </ul>
<p>Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to</p>	<ul style="list-style-type: none"> <li>• Microscopes</li> <li>• Space Race</li> <li>• Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>• Do Scientists Cheat? (A)</li> </ul>	

better meet the criteria for success			
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	<ul style="list-style-type: none"> <li>• Microscopes</li> <li>• Space Race</li> <li>• Scientific Method</li> </ul>		<ul style="list-style-type: none"> <li>• Graphic Features (CL-2, A-1 High School Track)</li> </ul>

Grade Six			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (A) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Weather and Climate: AMSTI Resources: Understanding Weather and Climate, STC Secondary</b>			
Obtain information to identify where water is found on Earth and that it can be solid or liquid	<ul style="list-style-type: none"> <li>Weather Around the World</li> </ul>		<ul style="list-style-type: none"> <li>Author's Purpose (CL-1,A-2 Weather Folklore-Africa/Asia)</li> </ul>
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all	<ul style="list-style-type: none"> <li>Caves</li> </ul>		<ul style="list-style-type: none"> <li>Graphic Features (CL-3, A-1 Rainforest Precipitation)</li> </ul>
Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects	<ul style="list-style-type: none"> <li>Natural Disasters</li> </ul>	<ul style="list-style-type: none"> <li>Getting Ready for Earthquakes (V)</li> <li>Safe from Tsunamis (V)</li> <li>Twist and Shout: Tornado Trouble (V)</li> </ul>	<ul style="list-style-type: none"> <li>Print Features (CL-3 A-2 Flying Into a Hurricane)</li> </ul>
<b>Weather and Climate: AMSTI Resources: Surface Temperature, GLOBE</b>			
Understand land and water heat and cool at different rates and that the properties of soil and water influence the heating of air above them	<ul style="list-style-type: none"> <li>Weather Around the World</li> </ul>	What is Sea Ice and Why is it Shrinking?(V)	
Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century	<ul style="list-style-type: none"> <li>The Problem of Climate Change</li> </ul>		
<b>Weather and Climate: AMSTI Resources: Barometric Pressure, GLOBE</b>			
Collect data to provide evidence for how the motions and complex interactions of air	<ul style="list-style-type: none"> <li>Weather Around the World</li> </ul>		

masses results in changes in weather conditions			
<b>Weather and Climate: AMSTI Resources: Relative Humidity, GLOBE</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (A) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact	<ul style="list-style-type: none"> <li>• Weather Around the World</li> <li>• Earth's Systems</li> <li>• Polluting our Earth</li> </ul>	<ul style="list-style-type: none"> <li>• Water Cycle (A)</li> <li>• All About Recycling (A)</li> <li>• Rocks Rock!</li> <li>• When Lightning Strikes (V)</li> <li>• What is Sea Ice and Why is it Shrinking? (V)</li> <li>• Earthquakes (V)</li> </ul>	
Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	<ul style="list-style-type: none"> <li>• Weather</li> <li>• Total Lunacy</li> </ul>		
Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions	<ul style="list-style-type: none"> <li>• Weather</li> <li>• Form Mountains and Deserts</li> </ul>		
<b>Exploring Plate Tectonics: AMSTI Resources: Exploring Plate Tectonics, STC Secondary</b>			
Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion year old history	<ul style="list-style-type: none"> <li>• Big Delicious Earth</li> </ul>	<ul style="list-style-type: none"> <li>• Rocks Rock (A)</li> </ul>	
Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales	<ul style="list-style-type: none"> <li>• Inner and Outer Planets</li> <li>• Caves</li> <li>• Formation of Mountains and Desserts</li> <li>• Learning from Natural Disasters</li> <li>• Volcanic Expeditions</li> </ul>	<ul style="list-style-type: none"> <li>A River of Ice (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> </ul>

Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions	<ul style="list-style-type: none"> <li>• Continental Drift</li> <li>• Plate Tectonics</li> <li>• Sea Floor Spreading</li> <li>• Big Delicious Earth</li> <li>• Caves</li> <li>• Continental Drift</li> <li>• Earthquakes</li> <li>• Formation of Mountains &amp; Deserts</li> <li>• Plate Tectonics</li> <li>• Sea Floor Spreading</li> </ul>	<ul style="list-style-type: none"> <li>• Rocks Rock (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> </ul>
<b>Space Exploration: AMSTI Resources: Researching the Sun-Earth-Moon System, STC Secondary</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (A) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases eclipses of the sun and moon, and seasons	<ul style="list-style-type: none"> <li>• Inner and Outer Planets</li> <li>• Lives of Stars</li> <li>• Space Race</li> <li>• Space Rocks</li> <li>• Superstition or Science?</li> <li>• Total Lunacy</li> </ul>	<ul style="list-style-type: none"> <li>• Strange Stars (A)</li> </ul>	
Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	<ul style="list-style-type: none"> <li>• Total Lunacy</li> <li>• Earth in Motion</li> <li>• Inner and Outer Planets</li> <li>• Artificial Satellites</li> <li>• Character Traits of Good Scientists</li> <li>• Inner and Outer Planets</li> <li>• Space Rocks</li> <li>• Lives of Stars</li> </ul>	<ul style="list-style-type: none"> <li>• Biggest Shadow of All: A Solar Eclipse</li> <li>• Voyager Space Probes (A)</li> <li>• Space Junk: Are We Trashing our Solar System?(A)</li> <li>• Deep Mystery of Black Holes (A)</li> <li>• Our Own Star, the Sun (A)</li> <li>• Sparkling Sunspots (V)</li> <li>• Catching a Comet(A)</li> <li>• Gaps in the Galaxies (V)</li> <li>• Black Holes(V)</li> </ul>	
Analyze and interpret data to determine scale properties of objects in the solar system	<ul style="list-style-type: none"> <li>• Earth in Motion</li> <li>• Inner and Outer Planets</li> <li>• Lives of Stars</li> </ul>	<ul style="list-style-type: none"> <li>• Our Galactic Neighborhood (A)</li> </ul>	
<b>Space Exploration Continued: AMSTI Resources: Exploring Planetary Systems, STC Secondary</b>			
Support an argument that the	<ul style="list-style-type: none"> <li>• Big Delicious Earth</li> </ul>	<ul style="list-style-type: none"> <li>• How Can You Become an</li> </ul>	

gravitational force exerted by Earth on objects is directed down	<ul style="list-style-type: none"> <li>• Space Race</li> <li>• Space Rocks</li> <li>• Superstition or Science?</li> </ul>	Astronaut? (A) <ul style="list-style-type: none"> <li>• Space Junk: Are We Trashing our Solar System?(A)</li> </ul>	
Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth	<ul style="list-style-type: none"> <li>• Lives of Stars</li> </ul>	<ul style="list-style-type: none"> <li>• Our Own Star, the Sun (A)</li> <li>• Sparkling Sunspots (V)</li> </ul>	
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	<ul style="list-style-type: none"> <li>• Total Lunacy</li> <li>• Earth in Motion</li> </ul>	<ul style="list-style-type: none"> <li>• The Biggest Shadow of All: A Solar Eclipse (A)</li> <li>• The Challenge of Gravity (A)</li> <li>• The Future of the Sun (A)</li> <li>• Aurora Borealis: (A)</li> <li>• Strange Stars(A)</li> </ul>	

Grade Seven			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Development and Reproduction of Organisms: AMSTI Resources: Studying the Development and Reproduction of Organisms, STC Secondary</b>			
Use argument based on empirical evidence and scientific reasoning to support and explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively	<ul style="list-style-type: none"> <li>Genetics: Why We Look the Way We Do</li> <li>Scientists Who Changed the World</li> <li>Getting DNA Out of Ancient Fossils(A)</li> </ul>	<ul style="list-style-type: none"> <li>Why Are Some Hands More "Handy" Than Others? (A)</li> <li>The Warrior Gene (A)</li> <li>Selective Breeding, Genetic Engineering, and Pedigrees (A)</li> <li>Twin Fascination (A)</li> <li>The Limits of the Human Body(A)</li> <li>The Science of Laughter(A)</li> <li>How Do We Think?(A)</li> <li>Do Scientists Cheat?(A)</li> <li>The Tiny World of Cells(A)</li> </ul>	<ul style="list-style-type: none"> <li>Making Connections/Synthesizing (CL-3, A-2 The Limits of the Human Body)</li> <li>Print Features (CL-2, A-2 How Plants that Trick Animals!)</li> </ul>
Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms	<ul style="list-style-type: none"> <li>Genetics: Why We Look the Way We Do</li> </ul>	<ul style="list-style-type: none"> <li>The Teenage Brain - Why Teens Act so Twisted (A)</li> <li>Getting DNA Out of Ancient Fossils(A)</li> <li>Babies and Learning (V)</li> </ul>	<ul style="list-style-type: none"> <li>Making Connections/Synthesizing (CL-1, A-2 The Warrior Gene)</li> <li>Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> </ul>
Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral affects to the structure and function of the organism	<ul style="list-style-type: none"> <li>Desert Biomes</li> <li>Surviving in Nature</li> </ul>	<ul style="list-style-type: none"> <li>How Video Games Affect Your Personality (A)</li> <li>Strange Medical Conditions (A)</li> </ul>	
Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and	<ul style="list-style-type: none"> <li>Formation of Growth: Mitosis and Meiosis</li> <li>Genetics</li> </ul>		



sexual reproduction results in offspring with genetic variation			
<b>Development and Reproduction of Organisms: AMSTI Resources: Studying: Soil Fertility, GLOBE</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop models to describe the atomic composition of simple molecules and extended structures	<ul style="list-style-type: none"> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>		
Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	<ul style="list-style-type: none"> <li>• Pollution</li> </ul>		<ul style="list-style-type: none"> <li>• Creating Sensory Images (CL-2, A-2 Gold: A Magnificent Metal)</li> </ul>
<b>Development and Reproduction of Organisms: AMSTI Resources: Modeling Mendel's Laws, HAIB</b>			
Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	<ul style="list-style-type: none"> <li>• Genetics: Why We Look the Way We Do</li> </ul>	<ul style="list-style-type: none"> <li>• Strange Medical Conditions (A)</li> <li>• The Warrior Gene (A)</li> <li>• The Tiny World of Cells (A)</li> <li>• Behind the Scenes at the Hospital: Pathology(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Making Connections/Synthesizing (CL-1, A-2 The Warrior Gene)</li> </ul>
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	<ul style="list-style-type: none"> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>		
Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of	<ul style="list-style-type: none"> <li>• Our Bodies: The Most Marvelous Machines</li> </ul>	<ul style="list-style-type: none"> <li>• The Tiny World of Cells (A)</li> </ul>	

cells			
Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exist in a group of similar organisms	<ul style="list-style-type: none"> <li>Genetics: Why We Look the Way We Do</li> </ul>		<ul style="list-style-type: none"> <li>Inferring (CL-1, A-1 In the Night)</li> <li>Inferring (CL-3 A-2 A Memorable Reptile)</li> </ul>
Use evidence to support the explanation that traits can be influenced by the environment	<ul style="list-style-type: none"> <li>Genetics: Why We Look the Way We Do</li> </ul>		
<b>Development and Reproduction of Organisms: AMSTI Resources: Chromosocks Meiosis, HAIB</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Construct an argument that plants and animals have internal and external structures that support survival, growth, behavior, & reproduction	<ul style="list-style-type: none"> <li>Mitosis and Meiosis- The Formation and Growth of Human Life</li> </ul>		<ul style="list-style-type: none"> <li>Print Features (CL-1, A-1 Bats)</li> <li>Print Features CL-3 A-1 Home Sweet Home: Dens and Other Shelters)</li> </ul>
Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways	<ul style="list-style-type: none"> <li>Buzzing About Bees and Wasps</li> <li>How We Learn</li> <li>Improving Lives with Assistive Technology</li> <li>Making Movie Magic</li> <li>Secret Languages of Animals</li> <li>Weird and Wonderful Plants</li> </ul>	<ul style="list-style-type: none"> <li>Bird Brains (V)</li> <li>The Brain...What's in There? (A).</li> <li>The Surprising Intelligence of Birds(A)</li> <li>A Weird Animal: The Binturong(A)</li> <li>Beneath the Fin (A)</li> <li>Fireflies of the Ocean (A)</li> <li>How Do We Think? (A)</li> <li>Interesting Animal Relationships (A)</li> <li>Raise Your Voice (A)</li> <li>Invasion of Earthworms! (V)</li> <li>Sweet Treat (A)</li> <li>Twin Fascination (A)</li> <li>Why Are Some Hands More "Handy" Than Others? (A)</li> <li>Venus Flytrap: Meat Eating Plant (A)</li> <li>Babies and Learning (V)</li> </ul>	<ul style="list-style-type: none"> <li>Context Clues (CL-1, A-2 Making Memories)</li> <li>Main Idea and Details (CL-4, A-1, Does Your Heart Stop When You Sneezes?)</li> <li>Main Idea and Details (CL-4, A-2, Why Do We Yawn?)</li> </ul>

		<ul style="list-style-type: none"> <li>• Picking Your Brain (V)</li> <li>• Leaf Cutter Ants (V)</li> <li>• Sea Turtles (V)</li> <li>• Social Insects (V)</li> <li>• Batty for Bats (V)</li> <li>• Beluga Whales (V)</li> <li>• Bird Brains (V)</li> <li>• Tigers and Lions! (A)</li> <li>• Robo Bees (V)</li> <li>• The SpelBots (V)</li> </ul>	
Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exist in a group of similar organisms	• Scientists Who Changed the World		
Use evidence to support the explanation that traits can be influenced by the environment	• Surviving in Nature		
<b>Development and Reproduction of Organisms: AMSTI Resources: Genetics and Biotechnology, HAIB</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment	• Genetics: Why We Look the Way We Do	<ul style="list-style-type: none"> <li>• Cloning: The More the Merrier (A)</li> <li>• How Video Games Affect Your Personality (A)</li> <li>• Selective Breeding, Genetic Engineering, and Pedigrees (A)</li> <li>• Warrior Genes (A)</li> </ul>	• Making Connections/Synthesizing (CL-1, A-2 The Warrior Gene)
Gather and synthesize information about the technologies that have changed the way humans	<ul style="list-style-type: none"> <li>• Genetics</li> <li>• Surviving in Nature</li> <li>• Pollution</li> </ul>		• Making Connections & Synthesizing (CL-3, A-2 The Limits of the Human Body)

influence the inheritance of desired traits in organisms			
Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	<ul style="list-style-type: none"> <li>• Scientists Who Changed the World</li> <li>• Surviving Nature</li> </ul>		<ul style="list-style-type: none"> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> </ul>
<b>Biodiversity and Interdependence: AMSTI Resources: Investigating Biodiversity and Interdependence, STC Secondary</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms	<ul style="list-style-type: none"> <li>• Desert Biomes</li> <li>• Life in the Tundra</li> <li>• Life on a Research Ship</li> <li>• Nature’s Weird Surprises</li> <li>• Prairie Ecosystems</li> <li>• Rainforests</li> <li>• Surviving in Nature</li> <li>• Importance of Coral Reefs</li> </ul>	<ul style="list-style-type: none"> <li>• Beneath the Fin (A)</li> <li>• Crime-Solving Insects (A)</li> <li>• The World's Most Disgusting Animal: The Hagfish</li> <li>• How Plants Trick Animals(A)</li> <li>• Parasites: Nature's Thieves (A)</li> <li>• What Happens When Something Goes Extinct? (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Print Features CL-2, A-1 Symbiosis: Living Together and Loving It)</li> <li>• Monitor for Meaning (CL-3 A-1 Sharing the Sun)</li> </ul>
Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 1</li> <li>• Our Bodies</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Blood! (A)</li> <li>• Deadly Mushrooms (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Creating Sensory Images (CL-1, A-2 Kitchen Chemistry)</li> </ul>
Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem	<ul style="list-style-type: none"> <li>• The Importance of Coral Reefs</li> <li>• Desert Biomes</li> <li>• Life in the Tundra</li> <li>• Prairie Ecosystems</li> <li>• Scientific Method</li> </ul>	<ul style="list-style-type: none"> <li>• Why do Some Animals Eat their Own Kind? (A)</li> <li>• Invasive Species (A)</li> <li>• Pirate Spiders(A)</li> <li>• Animal Cannibals (A)</li> <li>• A Spider with Deadly Aim (A)</li> <li>• Spitting Spiders (A)</li> <li>• Looks like an Ant... Or Does It? (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues CL-3 A-2 What Happens When Something Goes Extinct?)</li> <li>• Determining Importance (CL-1, A-1 A Place with Many Levels)</li> <li>• Graphic Features (CL-1, A-1 What is Happening to the Bluefin Tuna?)</li> <li>• Inferring (CL-1, A-2 Animal Cannibals)</li> </ul>

		<ul style="list-style-type: none"> <li>• The Venomous Sea Wasp (A)</li> <li>• The World's Most Disgusting Animal: The Hagfish (A)</li> <li>• The Adventure of Keeping an Aquarium} (A)</li> <li>• A Weird Animal: The Binturong (A)</li> <li>• Carnivorous Dinosaurs (A)</li> <li>• Bones Tell the Story (A)</li> <li>• Getting DNA Out of Ancient Fossils (A)</li> <li>• Selective Breeding, Genetic Engineering, and Pedigrees (A)</li> <li>• Ant Activists (V)</li> <li>• Birds Strut their Stuff(V)</li> <li>• Make Way for Ducklings(V)</li> <li>• Orangutans See, Orangutans Do?(V)</li> <li>• Snaking Around(V)</li> <li>• Squid: Underwater Masters of Disguise (V)</li> <li>• Taking the Bite Out of Mosquito Bites (V)</li> <li>• Totally Batty(V)</li> </ul>	<ul style="list-style-type: none"> <li>• Making Connections &amp; Synthesizing (CL-3, A-1 The Lynx and the Hare: Predator-Prey Relationships)</li> <li>• Inferring (CL-1, A-2 Animal Cannibals)</li> <li>• Print Features CL-3 A-1 Home Sweet Home: Dens and Other Shelters) • Monitor for Meaning (CL-1, A-1 Lizard Lifestyles)</li> <li>• Monitor for Meaning CL-2, A-1 Great Barrier Reef)</li> <li>• Monitor for Meaning (CL-2, A-2 Is that Popcorn? No, it's a Binturaong!</li> <li>• Inferring (CL-3 A-1 Meet a Scientist)</li> </ul>
Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem	<ul style="list-style-type: none"> <li>• Prairie Ecosystems</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Reefs: How and Why We Build Them (A)</li> <li>• Garbage Island (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor for Meaning (CL-1, A-2 Reflections on Dead Wood)</li> <li>• Determining Importance (CL-2, A-2 Garbage Island)</li> </ul>
Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations	<ul style="list-style-type: none"> <li>• Prairie Ecosystems</li> <li>• Desert Biomes</li> <li>• Rainforests</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Reefs: How and Why We Build Them (A)</li> <li>• Crime-Solving Insects (A)</li> <li>• Garbage Island (A)</li> <li>• How Plants Trick Animals (A)</li> <li>• Life Inside Deep Caves (A)</li> <li>• Parasites: Nature's Thieves (A)</li> <li>• The Illegal Wildlife Trade (A)</li> <li>• What Happens When Something Goes Extinct? (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> <li>• Context Clues CL-3 A-2 When Something Goes Extinct)</li> <li>• Determining Importance (CL-2, A-2 Garbage Island)</li> <li>• Graphic Features (CL-1, A-1 What is Happening to the Bluefin Tuna?)</li> <li>• Making Connections &amp; Synthesizing (CL-3, A-1 The Lynx and the Hare: Predator-Prey Relationships)</li> <li>• Monitor for Meaning (CL-3 A-2 A Wildlife Trade)</li> <li>• Print Features CL-2, A-1 Bats)</li> <li>• Print Features (CL-2, A-2 Plants that Trick</li> </ul>

			Animals!) (CL-2, A-2 Garbage Island)
Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	<ul style="list-style-type: none"> <li>• Our Bodies: The Most Marvelous Machines</li> <li>• Microscopes</li> <li>• Nature's Weird Surprises</li> <li>• Genetics: Why We Look the Way We Do</li> <li>• The Formation and Growth of Human Life - Mitosis and Meiosis</li> </ul>	<ul style="list-style-type: none"> <li>• 25 Fascinating Facts About Humans(A)</li> <li>• 25 Scrumptious Facts About Food (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Making Connections &amp; Synthesizing (CL-1, A-2 The Warrior Gene)</li> </ul>
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	<ul style="list-style-type: none"> <li>• Microscopes: Seeing the Tiny World</li> <li>• Genetics: Why We Look the Way We Do</li> </ul>		
<b>Biodiversity and Interdependence: AMSTI Resources: Project Learning Tree, Alabama Forestry Association</b>			
<b>Standards</b>	<b>Readorium Books that Meet These Standards</b>	<b>Readorium Magazine Articles (MA) and Videos (V) Meet These Standards</b>	<b>Readorium Classroom Lessons</b>
Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (e.g., deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations.	<ul style="list-style-type: none"> <li>• Prairie Ecosystems</li> <li>• Nature's Weird Surprises</li> <li>• Rainforests</li> <li>• Surviving in Nature</li> <li>• The Importance of Coral Reefs</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Reefs: How and Why We Build Them (A)</li> <li>• Garbage Island (A)</li> <li>• Illegal Wildlife Trade (A)</li> <li>• Invasive Species (A)</li> <li>• The Adventure of Keeping an Aquarium(A)</li> </ul>	<ul style="list-style-type: none"> <li>• Determining Importance (CL-2, A-2 Garbage Island)</li> <li>• Monitor for Meaning (CL-3 A-2 A Wildlife Trade)</li> <li>• Graphic Features (CL-1, A-1 What is Happening to the Bluefin Tuna?)</li> <li>• Graphic Features (CL-1, A-2 What Happened to the Blue Whale?)</li> <li>• Monitor for Meaning CL-2, A-1 Great Barrier Reef)</li> <li>• Context Clues (CL-1, A-1 Life Inside Deep Caves)</li> <li>• Determining Importance (CL-2, A-2 Garbage Island)</li> </ul>
<b>Exploring Body Systems: AMSTI Resources: Investigating Digestion and Motion, STC Secondary</b>			
Use argument supported by evidence for how the body is a system of	<ul style="list-style-type: none"> <li>• Our Bodies: The Most Marvelous Machines</li> <li>• Becoming and Staying</li> </ul>	<ul style="list-style-type: none"> <li>• Excuse Me, But Burping is Natural (A)</li> <li>• Artificial Blood! (A)</li> <li>• Artificial Limbs(A).How Do We Think?</li> </ul>	

interacting subsystems composed of groups of cells	Healthy	<ul style="list-style-type: none"> <li>• Breathe Easier - Understanding Asthma</li> <li>• Cancer: Cells Out of Control</li> <li>• From Blinking to Thinking: The Amazing Human Brain (A)</li> <li>• Mysteries of the Common Cold(A)</li> <li>• The Tiny World of Cells (A)</li> <li>• The Teenage Brain (A)</li> <li>• The Tiniest Killers (A)</li> <li>• Bones Tell the Story(A)</li> <li>• Your Brain at Sleep (A)</li> <li>• The Black Death (A)</li> <li>• The Brain!...What's in There? (A)</li> <li>• Sounds and Hearing (A)</li> <li>• Raise Your Voice (A)</li> <li>• Teeth (A)</li> <li>• Limits of the Human Body (A)</li> <li>• Teeth (A)</li> </ul>	
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**Exploring Body Systems: AMSTI Resources: Exploring Respiration and Circulation, STC Secondary**

Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells	<ul style="list-style-type: none"> <li>• Seeing the Tiny World through Microscopes</li> <li>• Our Bodies: The Most Marvelous Machines</li> <li>• Scientists Who Changed the World</li> </ul>	<ul style="list-style-type: none"> <li>• Artificial Blood! (A)</li> <li>• Artificial Limbs(A).</li> <li>• How Do We Think? (A)</li> <li>• Breathe Easier: Understand Asthma (A)</li> <li>• Cancer: Cells Out of Control (A)</li> <li>• From Blinking to Thinking: The Amazing Human Brain (A)</li> <li>• Mysteries of the Common Cold(A)</li> <li>• The Tiny World of Cells (A)</li> <li>• The Teenage Brain (A)</li> <li>• The Tiniest Killers (A)</li> <li>• Bones Tell the Story(A)</li> <li>• Your Brain at Sleep (A)</li> <li>• The Black Death (A)</li> <li>• The Brain!...What's in There? (A)</li> <li>• Sounds and Hearing (A)</li> <li>• Raise Your Voice (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Making Connections/Synthesizing (CL-3, A-2 Limits of the Human Body)</li> </ul>

		<ul style="list-style-type: none"> <li>• Teeth (A)</li> <li>• Limits of the Human Body (A)</li> </ul>	
Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	<ul style="list-style-type: none"> <li>• Seeing the Tiny World through Microscopes</li> <li>• Scientists Who Changed the World</li> <li>• Our Bodies: The Most Marvelous Machines</li> </ul>		
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	<ul style="list-style-type: none"> <li>• Seeing the Tiny World through Microscopes</li> <li>• Our Bodies: The Most Marvelous Machines</li> </ul>	<ul style="list-style-type: none"> <li>• The Tiny World of Cells (A)</li> <li>• Nanoparticles: Tiny Glowing Cancer Killers (V)</li> </ul>	



Grade Eight			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
<b>Forces and Motion: AMSTI Resources: Experimenting with Forces and Motion, STC Secondary</b>			
Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects	<ul style="list-style-type: none"> <li>• Newton's Laws</li> <li>• Sports Physics</li> </ul>		
Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced force on the motion of an object	<ul style="list-style-type: none"> <li>• Newton's Laws</li> <li>• Sports Physics</li> </ul>		
Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	<ul style="list-style-type: none"> <li>• Unbalanced Forces</li> <li>• Deep Space</li> </ul>		
Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object	<ul style="list-style-type: none"> <li>• Newton's Laws</li> <li>• Scientists who Changed the World</li> <li>• Space Rocks!</li> </ul>		
<b>Forces and Motion: AMSTI Resources: Electricity, Waves, and Information Transfer, STC Secondary</b>			
Ask questions about data to determine the factors that affect the strength of electric and magnetic forces	<ul style="list-style-type: none"> <li>• Light, Sound, Action</li> <li>• Sea Floor Spreading</li> </ul>	<ul style="list-style-type: none"> <li>• A Computer's Best Friend</li> <li>• The Many Uses of Submarines (A)</li> </ul>	
Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Lights, Sound, Action</li> </ul>		<ul style="list-style-type: none"> <li>• Context Clues (CL-3 A-1 Things That Go Boom!)</li> </ul>

Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	<ul style="list-style-type: none"> <li>• Sports Physics</li> <li>• Lights, Sound, Action</li> </ul>		<ul style="list-style-type: none"> <li>• Context Clues (CL-3 A-1 Things That Go Boom!)</li> </ul>
Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave	<ul style="list-style-type: none"> <li>• On the Move: Plate Tectonics</li> </ul>	<ul style="list-style-type: none"> <li>• Sounds and Hearing</li> </ul>	
Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials	<ul style="list-style-type: none"> <li>• Light, Sound, Action</li> <li>• Space Rocks!</li> </ul>		
Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals			
Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories	<ul style="list-style-type: none"> <li>• Our Bodies: the Most Marvelous Machines</li> </ul>		
Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential	<ul style="list-style-type: none"> <li>• Character Traits of a Good Scientist</li> <li>• Learning from Natural Disasters</li> <li>• Pollution</li> <li>• Artificial Satellites</li> </ul>	<ul style="list-style-type: none"> <li>• Antlers, Beaks, Geckos and Us (V)</li> <li>• Safe from Tsunamis (V)</li> <li>• Inventor of the Toughest Stuff (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-3 A-1 Things That Go Boom!)</li> <li>• Determining Importance (CL-2, A-1. Dragonflies: Flying Aces)</li> </ul>

impacts on people and the natural environment that may limit possible solutions			
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem	<ul style="list-style-type: none"> <li>• Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>• Things That Go BOOM!: The History and Chemistry of Explosives (A)</li> <li>• Crazy Careers in Science (A)</li> <li>• Space psychologist (A)</li> <li>• From Waste to Energy: Bacteria Gives a Boost(V)</li> <li>• Hydrogen Power(V)</li> <li>• Wave of the Future-Green Gasoline (V)</li> <li>• Pig Poop and Other Energy Sources (V)</li> <li>• Getting Ready for Earthquakes (V)</li> <li>• Don't Have to be a Pain in the But...ler (V)</li> <li>• Musical Computer (V)</li> <li>• of Your Dreams( V)</li> <li>• with Whiskers (V)</li> <li>• Sensible Sensors (V)</li> <li>• Signing Made Simple (V)</li> <li>• Smart Cars!(V)</li> <li>• The Ins and Outs of the Brain (V)</li> <li>• Strong but Sensitive: Metal Foam (V)</li> <li>• Smart Helicopters (V)</li> <li>• X-Ray Vision: Beyond the Bones (V)</li> <li>• Your Brain ( V)</li> <li>• The Creative Brain (V)</li> <li>• The Good, the Bad, and the Baby (V)</li> <li>• What Makes Us Tick (V)</li> <li>• Locked-in Syndrome: Finding a Way Out (V)</li> <li>• Nanoparticles: Tiny Glowing Cancer Killers (V)</li> <li>• Tongue Driven (V)</li> <li>• Vision for Blind People - Fact or Fiction(V)</li> <li>• Extreme Bacteria (V)</li> <li>• Lord of the Tree Rings (V)</li> <li>• Coral Corrosion (V)</li> <li>• Disappearing Frogs (V)</li> <li>• Earthworm Invasion (V)</li> <li>• ESP: A Lab in a Can (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Context Clues (CL-3 A-1 Things That Go Boom!)</li> </ul>

		<ul style="list-style-type: none"> <li>• Flowing Free (V)</li> <li>• Virtual Wildfires (V)</li> <li>• Women Powered Robots (V)</li> <li>• Wave of the Future: Clean Ocean Energy (V)</li> </ul>	
Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success	<ul style="list-style-type: none"> <li>• Microscopes</li> <li>• Space Race</li> <li>• Superstition or Science</li> </ul>	<ul style="list-style-type: none"> <li>• Do Scientists Cheat? (A)</li> </ul>	
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved	<ul style="list-style-type: none"> <li>• Microscopes</li> <li>• Space Race</li> <li>• Scientific Method</li> </ul>		<ul style="list-style-type: none"> <li>• Graphic Features (CL2, A-1 High School Track)</li> </ul>
<b>Exploring Properties of Matter: Exploring the Properties of Matter, STC Secondary</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop a model to describe that matter is made of particles too small to be seen	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>	<ul style="list-style-type: none"> <li>• Cafeteria Chemistry: How to Play with Your Food and Astound Your Friends (A)</li> <li>• Cool World of Chemistry (A)</li> <li>• Crystals (A)</li> <li>• Kitchen Chemistry (A)</li> <li>• Matter Matters! (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Determining Importance (CL-3, A-2 Crystals)</li> </ul>
Measure and graph quantities 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	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> </ul>		

Make observations and measurements to identify materials based on their properties	<ul style="list-style-type: none"> <li>• Scientific Method</li> </ul>	<ul style="list-style-type: none"> <li>• The Many Uses of Submarines(A)</li> </ul>	
Conduct an investigation to determine whether the mixing of two or more substances results in new substances	<ul style="list-style-type: none"> <li>• Scientific Method</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> </ul>		
<b>Exploring Properties of Matter: Mixtures, Compounds, Elements, and Electricity: Experimenting with Mixtures, Compounds, and Elements, STC Secondary</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Develop models to describe the atomic composition of simple molecules and extended structures	<ul style="list-style-type: none"> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 1</li> <li>• Fizz, Pop, Boom, and Beyond: Understanding Chemistry 2</li> </ul>	<ul style="list-style-type: none"> <li>• Cool World of Chemistry (A)</li> <li>• Kitchen Chemistry (A)</li> <li>• Inventor of the Toughest Stuff(A)</li> </ul>	
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred	<ul style="list-style-type: none"> <li>• Pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Cafeteria Chemistry: How to Play with Your Food and Astound Your Friends (A)</li> <li>• Crystals (A)</li> <li>• Kitchen Chemistry (A)</li> <li>• The Cool World of Chemistry (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Creating Sensory Images (CL-1, A-2 Kitchen Chemistry)</li> <li>• Determining Importance (CL-3, A-2 Crystals)</li> </ul>
Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	<ul style="list-style-type: none"> <li>• Scientific Method</li> </ul>	<ul style="list-style-type: none"> <li>• Crystals (A)</li> </ul>	
Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 1</li> <li>• Chemical and Physical Properties of Matter 2</li> <li>• Formation of Volcanoes</li> <li>• Lights Sound Action</li> <li>• Plate Tectonics</li> </ul>	<ul style="list-style-type: none"> <li>• Kitchen Chemistry (A)</li> </ul>	<ul style="list-style-type: none"> <li>• Creating Sensory Images (CL-1, A-2 Kitchen Chemistry)</li> </ul>

	<ul style="list-style-type: none"> <li>• Weather</li> </ul>		
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved	<ul style="list-style-type: none"> <li>• Chemical and Physical Properties of Matter 2</li> </ul>	<ul style="list-style-type: none"> <li>• Machines of Ancient War: The Physics and History of Siege Engines (A)</li> </ul>	
Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	<ul style="list-style-type: none"> <li>• The Formation of Volcanoes</li> </ul>		
<b>Exploring Properties of Matter: Mixtures, Compounds, Elements, and Electricity: Electrical Conductivity, GLOBE</b>			
Standards	Readorium Books that Meet These Standards	Readorium Magazine Articles (MA) and Videos (V) Meet These Standards	Readorium Classroom Lessons
Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms	<ul style="list-style-type: none"> <li>• Formation of Growth: Mitosis and Meiosis</li> <li>• Genetics</li> <li>• Scientists who Changed the World</li> <li>• Surviving in Nature</li> </ul>	<ul style="list-style-type: none"> <li>• The Teenage Brain - Why Teens Act so Twisted! (A)</li> <li>• The Tiniest Killers (A) Picking Your Brain(V)</li> <li>• How Video Games Affect Your</li> <li>• Pimples, Whiteheads, and Blackheads, Oh No! (A)</li> <li>• The Warrior Gene (A)</li> <li>• The Brain!...What's in There? (A)</li> <li>• Strange Medical Conditions (A)</li> <li>• The Black Death (A)</li> <li>• Life Near Undersea Vents (A)</li> <li>• Cloning: The More the Merrier (A)</li> <li>• Animal Magnetism! (V)</li> <li>• Bird Brains (V)</li> <li>• Fascinating Flights (V)</li> <li>• Insects and Team Work (V)</li> </ul>	<ul style="list-style-type: none"> <li>• Determining Importance (CL-1, A-1, A Place with Many Levels)</li> <li>• Graphic Features (CL-1,A-1 What is Happening to the Bluefin Tuna?)</li> <li>• Making Connections &amp; Synthesizing (CL-1, A-1 A Marsupial for Every Occasion)</li> <li>• Making Connections/Synthesizing (CL-3, A-2 The Limits of the Human Body)</li> <li>• Print Features (CL-2, A-1 Bats)</li> <li>• Context Clues (CL-1, A-2 Making Memories)</li> </ul>