

PROJECT DESIGN: OVERVIEW				page 1
Name of Project: The Forestry Food Chain Lantern Festival			Duration: 8 weeks	
Subject/Course: Life/Physical Science		Teacher(s):		Grade Level: 4th
Other subject areas to be included, if any: Visual Art, Technology, Engineering, Math				
Key Knowledge and Understanding (CCSS or other standards)				
<p>S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.</p> <p>a. Develop a model to describe the roles of producers, consumers, and decomposers in a community. (Clarification statement: Students are not expected to identify the different types of consumers – herbivores, carnivores, omnivores and scavengers.)</p> <p>b. Develop simple models to illustrate the flow of energy through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers.</p> <p>S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects.</p> <p>Plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent.</p> <p>Plan and carry out investigations to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles.</p> <p>Plan and carry out an investigation utilizing everyday materials to explore examples of when light is refracted. (Clarification statement: Everyday materials could include prisms, eyeglasses, and a glass of water.)</p> <p>VA4.CR.2 Create works of art based on selected themes.</p> <p>Create works of art emphasizing multiple elements of art and/or principles of design.</p> <p>MGSE4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</p>				
Success Skills (to be taught and assessed)				
Critical Thinking/Problem Solving		X	Self-Management	
Collaboration		X	Other: Communication	
Project Summary (include student role, issue, problem or challenge, action taken, and purpose/beneficiary)				
<p>Students will ultimately design and create a lantern that models the role of producers, consumers, and decomposers to show the flow of energy within this group (food chain/web). Initially, students will take a field trip to a forest or park. The teacher will provide a basic explanation of producers, consumers, and decomposers pointing a few out on the trip. Students will then identify their own. Students will conduct research to understand the roles of the producer, consumer, and decomposer. Individually, students will draw examples of each showing their role in the food chain and then pick one of the drawings to develop further. Students will learn about the structure necessary for the inside of the lantern by studying how skyscrapers are built. Next, students will conduct labs with various materials to understand how light behaves and to discover the best way to make the light glow all over the lantern (reflection and refraction). Individually, students will generate build plans for the lanterns that illustrate interior structure, ideas for lighting, and that show a recognizable producer/consumer/decomposer. The six best plans are chosen and the class is divided into build teams. Each team builds a giant lantern that requires multiple hands to hold in the air (approximately 3ft long or wide). Students should calculate the perimeter and area of one of the sheets of tissue paper and then make note of the number of sheets of tissue paper that are used as one way to calculate the approximate area of the lantern. The students then organize (with the help of the teacher and possibly the PTA) a Lantern Parade. Students should organize their lanterns to best showcase the flow of energy through the food chain as they parade.</p>				

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Driving Question	How might we model the role of producers, consumers, and decomposers and show the flow of energy within this group?	
Cross-Cutting Concept	Energy and Matter	
Disciplinary Core Idea	Energy moves from producers to consumers and producers and consumers both created decomposers.	
EQ	How does energy flow within the food chain?	
Entry Event	Day 1: Students will take a field trip to a forest or park. While on the trip teacher will provide a basic explanation of producers, consumers, and decomposers pointing a few out on the trip. Students will identify their own drawing examples and making notes in their Science Journal. Students will then return to class and conduct research to understand the roles of the producer, consumer, and decomposer.	
Products	<p>Individual: Students will draw examples of producers, consumers, and decomposers showing their role in the food chain.</p> <p>Students will generate build plans for the lanterns that illustrate interior structure, ideas for lighting (<i>ideal internal reflection—learned in labs</i>), and that show a recognizable producer/consumer/decomposer.</p>	<p>Specific content and competencies to be assessed: S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem. a. Develop a model to describe the roles of producers, consumers, and decomposers in a community. (<i>Clarification statement: Students are not expected to identify the different types of consumers – herbivores, carnivores, omnivores and scavengers.</i>) b. Develop simple models to illustrate the flow of energy through a food web/ food chain beginning with sunlight and including producers, consumers, and decomposers. S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects. Plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent. Plan and carry out investigations to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles. Plan and carry out an investigation utilizing everyday materials to explore examples of when light is refracted. (<i>Clarification statement: Everyday materials could include prisms, eyeglasses, and a glass of water.</i>)</p>
	<p>Team/Class: Each team builds a giant lantern based on an element of the food chain that requires multiple hands to hold in the air (<i>approximately 3ft long or wide</i>). Class should organize their lanterns to best showcase the flow of energy through the food chain as they parade.</p>	<p>Specific content and competencies to be assessed: S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem. a. Develop a model to describe the roles of producers, consumers, and decomposers in a community. (<i>Clarification statement: Students are not expected to identify the different types of consumers – herbivores, carnivores, omnivores and scavengers.</i>) b. Develop simple models to illustrate the flow of energy through a food web/ food chain beginning with sunlight and including producers, consumers, and decomposers. VA4.CR.2 Create works of art based on selected themes. Create works of art emphasizing multiple elements of art and/or principles of design.</p>

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Making Products Public <i>(include how the products will be made public and who students will engage with during/at end of project)</i>	Students will present their projects at the end of the project to the school and community during a Lantern Parade. The Lantern Parade must happen at dark, so an ideal setting would be after a P.T.A. meeting in the late fall or winter.			
Resources Needed	On-site people, facilities: outdoor access to park lands/ forest/ nature preserve, art teacher			
	Equipment: laptops, iPads or tablets, Internet access			
	Materials: science journals, bamboo, tissue paper, glue, cardboard strips, masking tape, LEDs, coin batteries, plastic wrap			
	Community Resources: forestry outreach representative(s), structural engineer			
Reflection Methods <i>(how individual, team, and/ or whole class will reflect during/at end of project)</i>	Journal/Learning Log	X	Focus Group	
	Whole-Class Discussion	X	Fishbowl Discussion	
	Survey		Other: Digital Portfolio	X
Notes: Georgia has 24 million acres of land providing 133,000 jobs and generating a \$32.2 billion economic impact. As a result, forestry is Georgia's second largest industry. Prior to starting the PBL lesson, contact your local environmental agency's (<i>i.e. forestry, conservation, nature centers, 4-H, etc.</i>) outreach program to request a guest speaker who will discuss the important role that forests play in the food chain.				