



artsNOW

Integrated learning solutions

EXPLORING LIFE SCIENCE THROUGH SHADOW PUPPETS

Grade Band: 4-5

Content Focus: Visual Arts & Science



LEARNING DESCRIPTION

In this lesson, students will learn about the properties of light by creating shadow puppets. Students will observe how light interacts differently with translucent, transparent, and opaque materials. They will use the design process to plan, experiment, and refine their shadow puppet designs, culminating in a shadow puppet performance that demonstrates a life science concept they are learning.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can shadow puppetry be used to demonstrate concepts in life science?	I can demonstrate a life science concept I am learning about through puppetry.
How does light interact with different materials?	I can create a shadow puppet using the materials and design I planned.



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	I can explain how light interacts with different materials to create shadows.
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GEORGIA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4 S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects. a. 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>S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.</p> <p>Grade 5 S5L1. Obtain, evaluate, and communicate information to group organisms using scientific classification procedures.</p>	<p>Grade 4 VA4.CR.1 Engage in the creative process to generate and visualize ideas by using subject matter and symbols to communicate meaning.</p> <p>VA4.CR.3 Understand and apply media, techniques, processes, and concepts of two dimensional art.</p> <p>Grade 5 VA5.CR.1 Engage in the creative process to generate and visualize ideas by using subject matter and symbols to communicate meaning.</p> <p>VA5.CR.3 Understand and apply media, techniques, processes, and concepts of two dimensional art.</p>

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4 4-PS4-2. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p> <p>4-LS1-1. Construct an argument that plants and animals have internal and external structures that function together in a system to support survival, growth, behavior, and reproduction.</p> <p>Grade 5 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>	<p>Anchor Standard 1: I can use the elements and principles of art to create artwork.</p> <p>Anchor Standard 2: I can use different materials, techniques, and processes to make art.</p> <p>Anchor Standard 7: I can relate visual arts ideas to other arts disciplines, content areas, and careers.</p>

KEY VOCABULARY



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Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none"> ● <u>Shadow</u> - A dark area that forms when an object blocks light ● <u>Light</u> - A form of energy that travels in waves and can be seen by our eyes ● <u>Design process</u> - A process of revising work ● <u>Organism</u> - Any individual living entity that can carry out life processes independently ● <u>Ecosystem</u> - A community of living organisms (plants, animals, and microorganisms) interacting with each other and their non-living environment (such as air, water, and mineral soil) ● <u>Adaptations</u> - Special characteristics or behaviors that help organisms survive and thrive in their environment ● <u>Producers</u> - Organisms in an ecosystem that are capable of photosynthesis or chemosynthesis, enabling them to produce their own food ● <u>Consumers</u> - Organisms in an ecosystem that obtain energy by consuming other organisms ● <u>Decomposers</u> - Organisms in an ecosystem that break down dead organic matter into simpler substances, such as minerals and nutrients 	<ul style="list-style-type: none"> ● <u>Shadow puppet</u> - A shadow puppet is a form of storytelling where cut-out figures are manipulated behind a screen to create shadowy images visible to the audience ● <u>Shape</u> - One of the seven Elements of Art; a two-dimensional figure ● <u>Silhouette</u> - The outline or shape of an object or person that appears dark against a lighter background ● <u>Contrast</u> - One of the Principles of Design; the difference between two visual elements put side by side

MATERIALS

- Overhead projector or flashlight
- White sheets or large sheet of white paper
- Cardstock or stiff paper
- Scissors
- Tape or glue
- Variety of translucent, transparent, and opaque materials (e.g., tissue paper, cellophane,



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cardboard, plastic sheets)

- Brads
- Hole punch or awl
- Bamboo skewers/popsicle sticks
- Masking tape

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Discuss the properties of light and the difference between translucent, transparent, and opaque materials.
- Introduce the concept of shadow puppetry and its history by watching a short video or demonstration of shadow puppet storytelling (Video: [Introduction to Shadow Puppetry](#); Video: [The Legend of the Chinese Zodiac](#) (Alternative: [The Three Little Pigs](#)).
- Ask students to make observations on how the puppets looked and how that differs from other puppets they may have seen.
 - Discuss silhouettes and contrast.
- Explore light and materials with students.
 - Divide the students into small groups.
 - Provide students with different materials such as translucent paper, transparent plastic, opaque cardstock and a light source such as a flashlight.
 - Tell students to experiment with the materials to see how they affect the transmission of light and shadows by shining a light on them.
 - Discuss the findings as a class.
 - Have students sort materials into transparent, translucent, and opaque.

Work Session

- Tell students that they will be using transparent, translucent, and opaque materials to create shadow puppets that demonstrate one of the life science concepts they are learning about, such as the interdependence of organisms in an ecosystem.
- Introduce the design process by showing students the image below.
 - Explain to students that artists use this process to revise and improve their artwork; students will use this process in planning, designing and creating their puppets.



- Divide students into small groups. Assign each group a life science concept.



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- Remind students that in a shadow puppet performance, there are characters that tell a story. Ask students to identify who the “characters” will be in their life science concept.
- Allow students time to brainstorm and sketch out their plans for their shadow puppet characters. Circulate and assist students with their designs.
- Introduce the materials students will use to create shadow puppets (cardstock, scissors, tape, brads, colored theater gels, bamboo skewers) and demonstrate how to use them safely to create their shadow puppets. *Teacher tip: Pre-cut shapes out of cardstock so that students can simply assemble pieces together to create their shadow puppets.*
 - *Optional: Show students a video of how to make shadow puppets (Video: [How to Make Shadow Puppets | Full-Time Kid | PBS](#)).*
 - As students begin creating their puppets, remind them of the design process. They may need to revise their designs as they translate their sketch to their puppet.
- After creating their shadow puppets, students will collaborate with their groups to plan their performances.
 - Remind students that in a shadow puppet performance, there will be a beginning, middle, and an end. Ask students to consider what the beginning, middle, and end should be in their life science concept.
 - Have students write out narration (can include dialogue if desired) for their shadow puppet performance using the vocabulary from the science unit. Students’ narration should explain the scientific process that they show through their performance.
- Provide time for groups to practice and refine their performances before presenting to the class.

Closing/Reflection

- Groups will present their shadow puppets to the class. Model how to celebrate students’ creativity and teamwork in presenting.
- Facilitate a discussion that focuses on how students demonstrated the life science concept through their shadow puppet performance.
- At the end of the lesson, have students complete a written 3-2-1 ticket out the door—three things they learned, two things they found interesting, and one question that they have. Provide time for students to share with a partner, small group, or the class.

ASSESSMENTS

Formative

Teacher will assess student learning by:

- Observing students’ engagement and participation during the exploration and experimentation phase.
- Checking students’ understanding of life science concepts through questioning and discussions.
- Providing feedback on students’ initial puppet designs to guide them in the revision process.
- Reviewing students’ 3-2-1 tickets out the door.

Summative



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CHECKLIST:

- Students can demonstrate a concept in life science through a shadow puppet performance.
- Students can use creativity to design and create shadow puppets that demonstrate a concept in life science.
- Students can explain the properties of light and shadow.

DIFFERENTIATION

Accelerated:

- Students can create a backdrop for their shadow puppet show to enhance their storytelling.
- Allow students to explore the history and significance of shadow puppetry in different cultures around the world.

Remedial:

- Provide a sequencing guide or graphic organizer for students to organize their ideas for their performances. This can be used as a substitute for written narration.

ADDITIONAL RESOURCES

- Video: [Introduction to Shadow Puppetry](#)
- Video: [How to Make Shadow Puppets | Full-Time Kid | PBS](#)
- Video: [How to Make Shadow Puppets](#)
- Video: [How To Make Shadow Puppets Using the Cricut Maker](#)
- Video: [How to Create Puppets with the Glowforge](#)
- Video: [The Legend of the Chinese Zodiac](#)
- Video: [The Three Little Pigs](#)

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*

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