

Light and Shadow Puppet Theater

Topic: Learn to use light to design a shadow puppet theater.

Suggested grades 1 – 3

Target standards – Grade 1

Materials/Resources needed:

- Plastic 8 ounce cups with wide opening and base
- Large binder clips
- LED flashlights, from discount store
- 11 x 17 cardstock, white paper
- Tray, cafeteria style
- Cardboard
- Cardstock, any color
- Matte, plastic document holder
- Transparency film
- Aluminum foil
- Wax paper
- Set of student worksheets
- Craft materials for puppet show
 - Scrap cardboard and/or cardstock any color
 - Pencils
 - Scissors
 - Craft sticks
 - Glue sticks
- Puppet Scene Design Poster (sample provided in appendix)
- Light Cause and Effect Poster (sample provided in appendix)
- Simple storybook with lots of interesting scenery, teacher choice

Prep time: 15 minutes

Lesson time: 15 minutes

Teacher-guided student worksheets: 40 minutes

Story time art and language activity: 1 – 2 hours

Outcome: Students investigate and learn about the nature of light. They apply what they learn to designing shadow scenery into a puppet show.

Standards:

In appendix

Vocabulary:

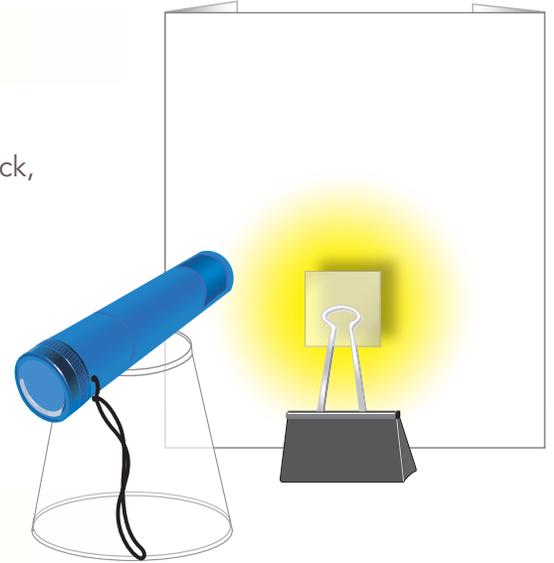
In appendix



Prep



- Set up each tray / group.
- Plastic cup, flashlight, office binder clip, folded white cardstock, variety of 1 square inch samples of wax paper, cardboard, transparency film, foil, matte document holder.
- Set up additional craft materials.
- Provide one set of student worksheets for each student.



Engage



- Read a story of your choice which will be used later as the storyline for students to create their puppet theater. Use a simple story, that is already familiar to the students with a variety of scenery.
 - Examples
 - Goldilocks and the Three Bears
 - The Three Little Pigs
 - Little Red Riding Hood
- Ask if students have seen a shadow puppet show?
 - Using Youtube, show a shadow puppet shows made by 7–9 year old children.
 - [youtube.com/watch?v=iCmFWJjc4RA](https://www.youtube.com/watch?v=iCmFWJjc4RA)
- Ask the students if they would like to take the story you read and make it into a puppet show.

Teach



- Ask students, “What are sources of light?”
 - Write/draw the responses on the board (encourage students to notice light sources in the room).
 - Help the students complete the *Sources of Light worksheet*.
- Ask the students if they know what a shadow is?
 - Have students respond with examples of shadows.
 - Slightly darken the room and use your hand to demonstrate how to make a hand shadow puppet using a steady light source like an overhead projector or strong flashlight.
 - Help the students complete the *Make a Shadow worksheet*.
- Tell the students they will be studying shadows using their own light engineering testing kit.
- Using the materials which have already been set up on a tray, demonstrate how to use the light source and sample squares to “test” the shadow effect.

Explore



- Distribute a tray to each group and have them set up a light engineering station to play with the shadow effect for a few minutes.
- Help the students complete *Testing Materials worksheet*.
- Help the students complete *Materials that Do Not Block All of the Light worksheet*.

Activity



- Put up the two informational posters which you have created to be visible by all students.
 - Puppet Scene Design Poster
 - What We Know About Light Poster
- Discuss the story to be retold in the Shadow Puppet Theater.
 - Give each group a scene to create for the story read in class.
 - i. (*Tip*) You may want to create the main character(s) in advance and glued on craft sticks, and have students work on the scenery and/or additional characters or props.
- Help students draw their group scenes on the Student Worksheet.
- Give each group access to craft sticks, glue, variety of foil, wax paper, cardstock etc. and let them create their scenery/props/ characters for the scene using craft sticks to hold up the character and props.
- In the front of the class, have each group act out their scene as you read the story.

Assessment



- Students apply their learning in a skit or storytelling lesson using the interaction of light and materials.

Crossover



- Have students read the story or their part of the story.
- Have students create another puppet show for family science night.

Accommodations and Extensions



- Have students “tell” a common story in another language. Shadow puppetry is common in many Asian cultures.
- Take students outside and explore shadows in the natural world.
- Have students experiment with changing the size of shadows.

Anticipated Misconceptions



- Students may think that a source of light comes from a reflective surface.
- Students may think eyes produce light.
- Only shiny objects reflect light.

Safety



Students should never shine bright objects such as flashlights in their eyes.

Front Loading



Read one or more of the following books.

I Love My Shadow/Me Gusta Mi Sombra by Hans Wilhelm

My Shadow by Robert Louis Stevenson

Moonbear’s Shadow by Frank Asch

What Makes a Shadow? by Clyde Robert Bulla

References



mass.edu/stem/documents/preschoolcurricular/CEES%20Curriculum%20Light%20and%20Shadows.pdf
millriverschools.org/documents/drivesync/Curriculum%20Website/Science/GL%201/mcu-SCIg1-Light%20Shadows.pdf

Additional References and Digital



Kids make their own shadow puppet theater

youtube.com/watch?v=-hL28SkHf1g

Hallmark Channel How to make a puppet theater

youtube.com/watch?v=BHw-4UOcj40

Shadow puppet tutorial

youtube.com/watch?v=pSVd_0AKTKc

Use a cereal box for a stage

kixcereal.com/kix-cereal-shadow-puppets-in-a-cereal-box-theater/

Exploring Light and Shadows in Pinterest

pinterest.com/pin/160863017916690972/

Appendix



Standards

1-PS4 Waves and their applications in technologies for information transfer.

1-PS4-2 Make observations to construct an evidence based account that objects can be seen only when illuminated.

1-PS4-4 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

1-PS4-4 Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

Common Core State Standard Connection

w.1.2 Write informative/explanatory texts in which they supply some facts about the topic and provide some sense of closures.

w.1.7 Participate in shared research and writing projects.

w.1.8 With guidance and support from adults, recall information from experience or gather information.

SL.1.1 Participate in the collaborative conversations with diverse partners about grade 1 topics and texts with peers in small and larger groups.

Mathematics

MP.5 Use appropriate tools strategically.

1.MD.A.1 Order three objects by length compare the lengths.

1.MD.A.2 Express the length of an object as a whole number of length units by layering multiple copies.

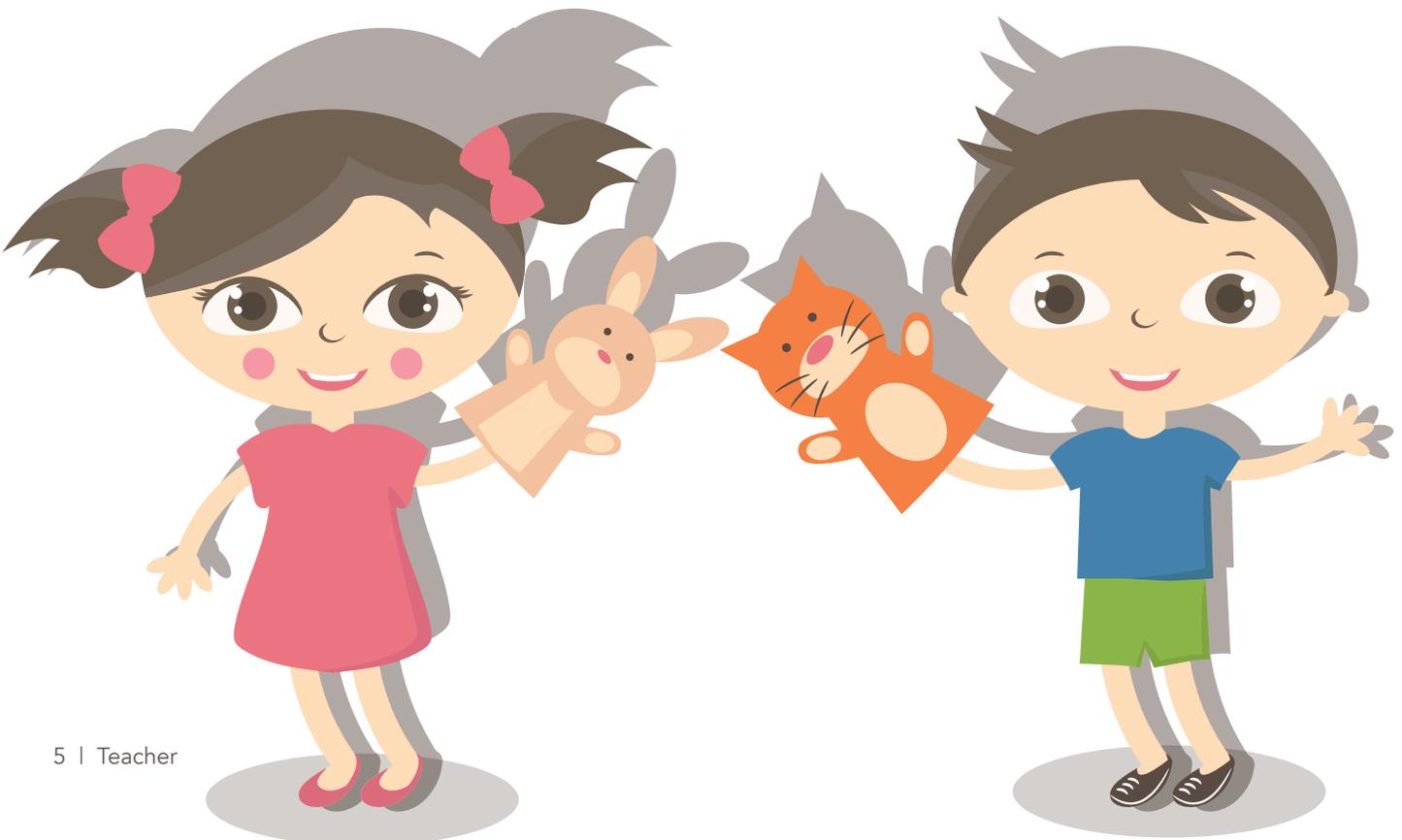
Vocabulary

Reflectors of light – Shines the light back.

Shadow – Dark area caused by an object placed in between the light source and a surface.

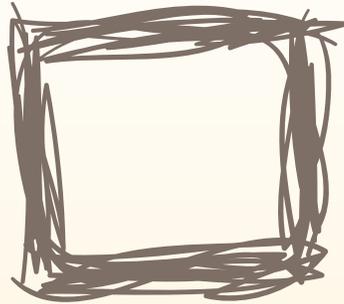
Sources of light – Light emitters.

Transparent – Partially allow light to pass through.



Puppet Scene Design Poster

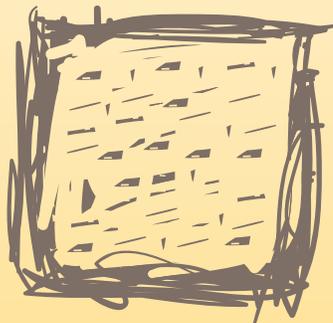
This scene should have a bright area.



This scene should have a dark area.



This scene should have a medium area.

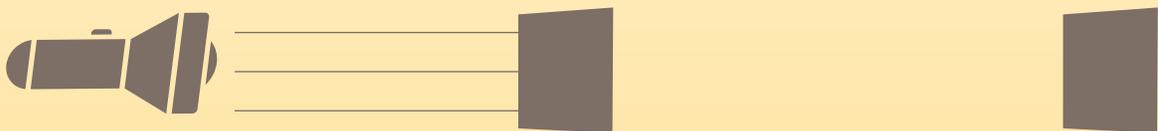
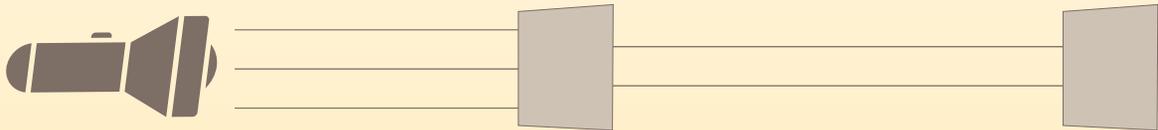
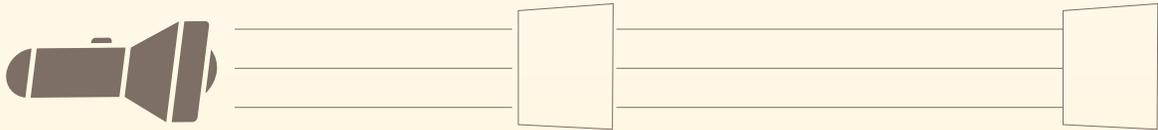


What We Know About Light Poster

Light source

Material

Surface



Cause

Effect