

SHADOW PLAY (LEVEL 3)

Description	Learners will explore the qualities and characteristics of light and shadows. They will create their own shadow theatre by illustrating part of their story, illustrating and cutting their own puppets and setting up the stage
Leading Question	What stories can shadows tell us?
Total Time Required	5 hours over 5 days
Supplies Required	White Sheet Straws / Skewers / Toothpicks Light source: Lamp, Torch, Sun etc. Tape, Paper, Black Marker / Crayon, Scissors Paint and Paintbrush Paper and Pen
Learning Outcomes	<ol style="list-style-type: none"> 1. Understand how light moves and how it creates shadows 2. Understand the differences between natural and artificial 3. Understand the differences between opaque, translucent and transparent objects. 4. Investigate how opaque objects cast a shadow, and how the shadow appears. 5. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
Previous Learning	None
Topics Covered	<ul style="list-style-type: none"> ● Natural and artificial ● Light ● Shadows ● Nocturnal and diurnal animals ● Sun's patterns ● Transparent, translucent and opaque ● Prism effect ● Experiment ● Storytelling

	<ul style="list-style-type: none"> Acting
--	--

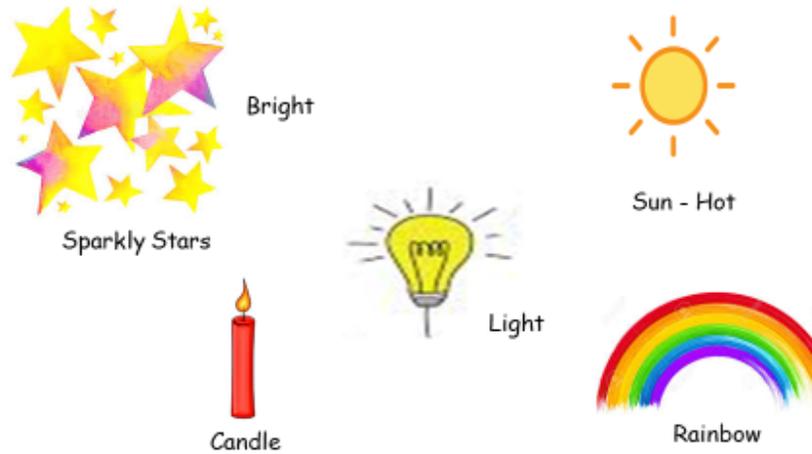
DAY 1

Today you will explore the properties and qualities of light through this project!

Suggested Duration	Activity and Description
15 minutes	<ul style="list-style-type: none"> To explore the importance of light in our lives, draw a scene in the daylight and night (you can choose to draw a scene of your house, a landscape, of yourself, etc.). Prompts: What does the sky look like in the day and night? What are people or animals doing in each case? What are things that we only see at night? What are things that we only see during the day? Are the same animals active during the day and at night? <div style="text-align: center;">  </div>
10 minutes	<ul style="list-style-type: none"> After drawing, think about the different things we do when it is light or dark. Why do you think most people work during the day? Why would some people have to work at night? Those that work in the day. Hints: Doctors, Security Guards, Firefighters etc Draw an image of "light". They will think of how they can draw and show light and draw this. In order to do this, learners will think of all the words they associate with light with the following questions: <ul style="list-style-type: none"> What color do you associate with light? How would you describe light? What are the main sources of light? Do you think of hot or cold when you think of light?

15 minutes

Illustrate and label these answers in mind map for example: bright, sun, yellow etc.



15 minutes

- Identify sources of light and make a list of five different ones. Characterize these as natural or artificial (man-made):
- Input: Parents may support the learners with input on this including:
 - Natural: Sun, Stars, Moon, Flame (Candles, Stove), Lightening etc.
 - Artificial: Light bulb, Torch etc.
- Draw the different sources within each of the columns:

Sources of Light	
Natural	Artificial
1. Sun 	2. Bulb 
3. Fire 	

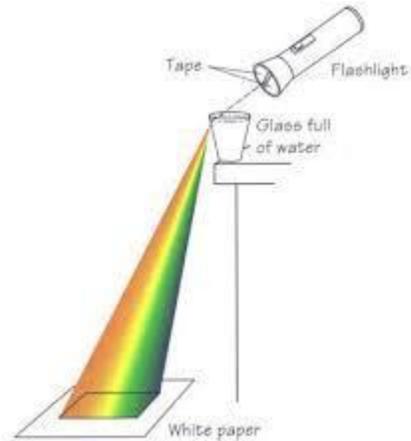
10 minutes	<p>Share your table of natural and artificial sources of light with family members for feedback (if in a classroom setting, this activity can be done in partners or small groups). Family feedback will include:</p> <ul style="list-style-type: none"> • Other possible sources of light • What does this list make you wonder about the difference between natural and artificial? Is a bonfire natural or artificial? <p>Use the feedback to include additional sources of light in your table and write down your own definition of “natural” and “artificial.”</p>
15 minutes	<p>Explore the concept of sight.</p> <p>Input: Our eyes have light receptors which receive light and form an image on our retina. So, if there is no light reflected from an object, we cannot see the object.</p> <p>Prompt: What happens without lights? Why do we need light to see? Play a game in a dark room. In this game, turn off all the lights of the room and make it dark. The family members will call out and you will try to find them based on their voice. Think about how your different senses of sound and sight work together, there are animals like bats that are blind but follow sounds and echoes.</p>

DAY 2

Today you will continue to explore the properties of light and colour.

Suggested Duration	Activity and Description
20 minutes	<ul style="list-style-type: none"> • Test your assumption you made the day before of light usually being yellow or white. • Conduct an experiment on how rainbows are formed. Place a white paper or sheet on the ground or a table. Fill a glass with water and hold this against the sun – as the light goes through the glass of water it reflects a rainbow on the white sheet of paper. Paint over the reflected rainbow

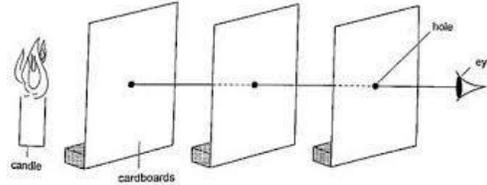
that is on the paper with colors and paints to understand how lights have spectrums of colors.



- Input for educators: This is called the “prism effect”. When different colors of light hit a prism, or an object with 2 sides that are not parallel, they leave at different angles (refraction) so they separate. Different colors of light have different wavelengths and therefore bend differently. For example red turns slower and therefore appears on the top and violet turns faster and appears on the bottom.

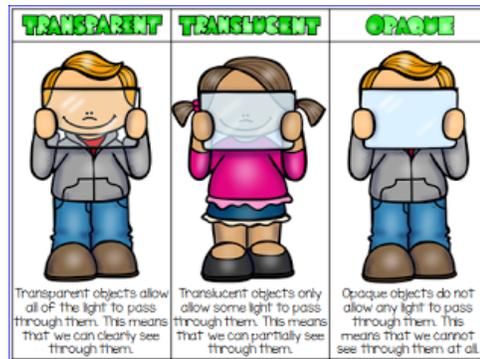
20 minutes

- Explore how light travels in (they will use this when designing their stage and puppets).
 - o Cut out a small hole in three pieces of cardboard or thick paper.
 - o Place a torch/candle in front of this and see if the light travels through and is visible from the “back.”
 - o The pieces of cardboard with the holes will be put in a line one behind another. First, the holes will be in a straight line. Discuss what you notice.
 - o Then, the holes, and thus, the pieces of cardboard will not be aligned. Discuss what you notice.
 - o What did you notice? What was the difference between the two experiments? (Guide students to conclude that light can only travel through all three holes when the holes are in a straight line.



10 minutes

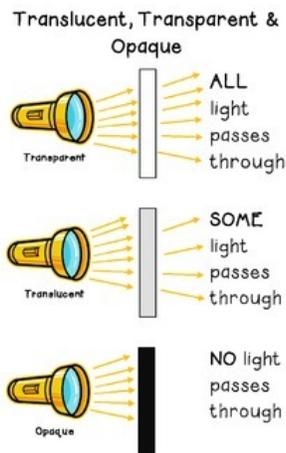
- Explore how some things are transparent, translucent or opaque by holding up items against a source of light.
- Explore new terminology including:
 - Transparent materials include glass, windows, clear plastic etc. that you can clearly see through since all light passes through
 - Translucent materials include sunglasses, white shirt, paper towel, white sheet etc. that you can partially see through since some light passes through
 - Opaque materials include a chair, a cardboard box, a book etc. that no light passes through and you cannot see anything through



10 minutes

- Explore (hold against direct sunlight, a lantern, or a lightbulb) different materials or objects and sort them out as transparent, translucent or opaque. Brainstorm a list of at least five objects or materials that they would like to explore. To record their observations, learners will write the items across three columns in a chart like the following:

Transparent	Translucent	Opaque



List or draw transparent, translucent and opaque items. Family members give feedback indicating ideas of other things that they could explore.

DAY 3

Today you will explore the sun's patterns and the impact of shadows.

Suggested Duration	Activity and Description								
30 minutes	<ul style="list-style-type: none"> Track their sun's movements through the day and see where it is from their window. Illustrate this in a schedule answering the following questions: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Sunrise</th> <th style="text-align: center;">Mid-day</th> <th style="text-align: center;">Sunset</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Where do you see the sun from their window?</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Sunrise	Mid-day	Sunset	Where do you see the sun from their window?			
	Sunrise	Mid-day	Sunset						
Where do you see the sun from their window?									

How bright is the sun?			
How big is the sun?			
What is the color of the sky around it?			

- Draw and label images of sunrise, mid-day and sunset based on the above.



- Share your drawings with family members for feedback. Family feedback may include:
 - What details you see in the drawings
 - What is the most original or creative thing that you see in the drawings?
- Use the feedback to revise your drawing

30 minutes

- Explore the concept of shadows – a shadow is made when an object blocks the light – this is for opaque objects. A shadow can show an object's shape, but it cannot show colors or details (like a smile or a frown).
- Place small toys or objects in the sun and place a paper underneath it. Try and trace the shadows of their toys

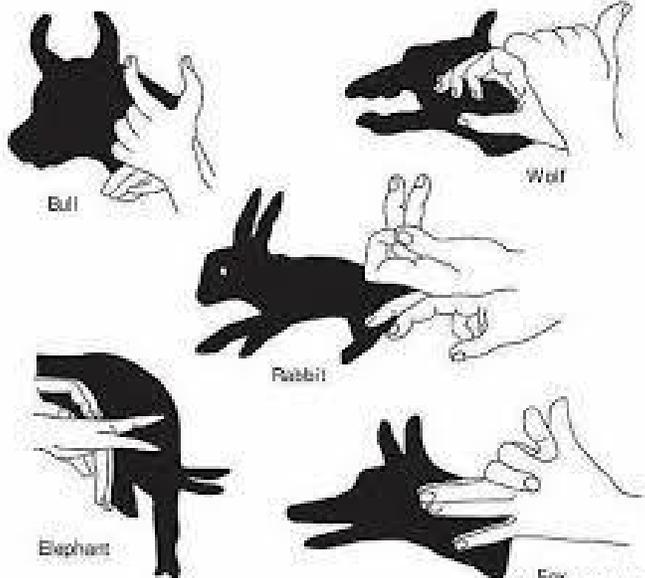


- Try to form shadows of your own body and move around to see how your shadows move – you will form a sundial to mark your own shadows at different times of the day standing at the same place. Notice where your shadows move on the ground and the length of their shadows
- Explain why the position of shadows changes across different times of day. Assuming that you do not have a clock, try to identify what time of the day it is based on the shadows – this is how people in the past used to tell the time.



DAY 4

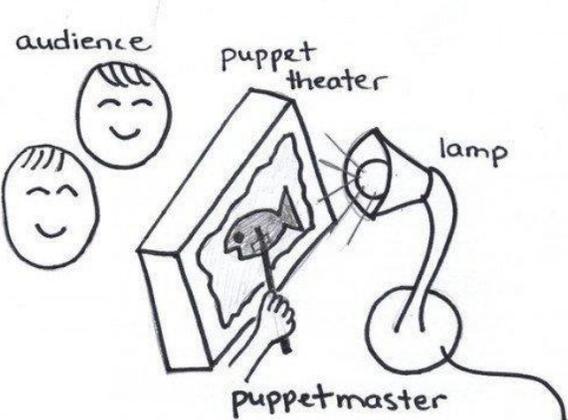
Today you will begin to plan for your shadow puppet theatre!

Suggested Duration	Activity and Description
<p>30 minutes</p>	<ul style="list-style-type: none"> Use a torch or the sun to form shadows with your hands and form different animals and characters and try to have your family guess what these different shadows are.  <p>The image shows five hand-drawn illustrations of hand positions to create shadows of different animals. Each illustration includes a black silhouette of the animal and a line drawing of the hand position that creates it. The animals are labeled: Bull, Wolf, Rabbit, Elephant, and Fox.</p>
<p>20 minutes</p>	<ul style="list-style-type: none"> Think of a basic story that you will represent for an audience through the shadow theatre – to make it easier they can adapt a section of a story that you already know. Make puppets whose shadows will represent the characters of the story. Pick a story with not more than 2 or 3 characters: a wolf, a princess, a rabbit and props including the sun, a house, a cloud etc. Illustrate or write out the story.
<p>30 minutes</p>	<ul style="list-style-type: none"> Now design the puppets that will represent the main “characters and props” of shadow theatre. Draw the main outline on paper or cardboard and colour this inside with black crayon, paint or marker

- Cut out these characters or props and stick them using tape on toothpicks / chopsticks

DAY 5

Today you will begin to set up and present your shadow puppet theatre!

Suggested Duration	Activity and Description
30 minutes	<ul style="list-style-type: none"> • Learners will design the “stage”. <ol style="list-style-type: none"> 6. Find a place to hang a large white bedsheet or shadow screen – it can be hung on a door frame (it is better if the screen is straight) 7. There needs to be space behind the screen for the learners to stand and hold the puppets 8. The bottom half of the screen can have a desk or table so learners can hide behind it when they operate the puppets 9. Find a good source of light e.g. sunlight or a lamp / torch behind the screen 10. There needs to be space in front of the screen for audience to sit • Use a doorframe to make the screen: pin a large sheet of paper on the frame or hang a sheet from the rod. 
10 minutes	<ul style="list-style-type: none"> • Play with light and experiment, guided by insights from the first part of the project, until you discover its effects on the shadows your puppets

	make. You will quickly see that the shadows grow larger when the puppets are close to the light source, and smaller when they are further away.
10 minutes	<ul style="list-style-type: none"> ● Add music or sound effects for e.g. a plastic bottle with little stones as a shaker for rain etc.
10 minutes	<ul style="list-style-type: none"> ● Now act the play for your family.
10 minutes	<ul style="list-style-type: none"> ● Ask your family about their opinion about the play: Did they understand the characters based on the shadows? Did the family members like the story? Did the family members enjoy any additional effects of sound or the narration of the story?

ASSESSMENT CRITERIA

- Clarity of drawings, illustrations and labelling including the understanding demonstrated
- Creativity and simplicity of the story and character puppets
- Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
- Ability to distinguish between objects as opaque, translucent or transparent

ADDITIONAL ENRICHMENT ACTIVITIES

Learners can design more complex shadow puppet theatre

MODIFICATIONS TO SIMPLIFY

Learners can work on days 3 – 4 and 5 of the project to explore shadows and create their own shadow theatre