Shadow Play (Level 1)

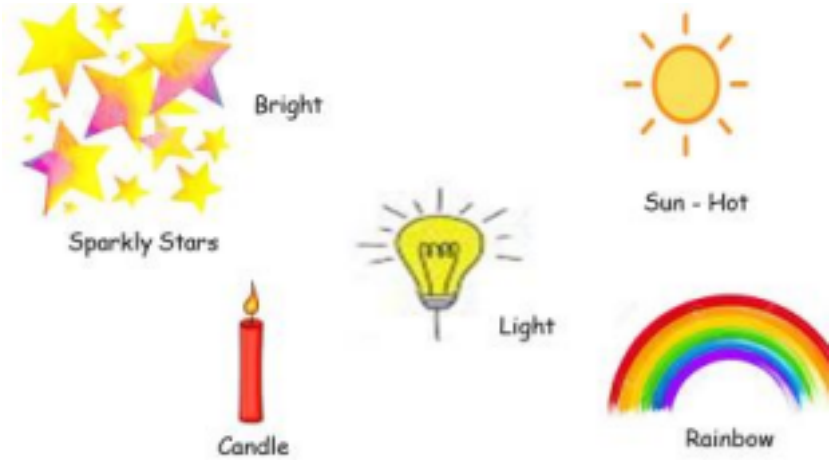
Description	Learners will explore the qualities and characteristics of light and shadows. They will create their own shadow theatre by illustrating part of their story, illustrating and cutting their own puppets and setting up the stage.
Leading question	What stories can shadows tell us?
Subjects covered	Science, Literacy, Art and Design
Total time required	5 hours over 5 days
Resources 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:	By the end of this project, learners will be able to: 1. Identify sources of light as natural and artificial. 2. Classify and name some everyday examples of opaque, translucent and transparent objects. 3. Understand how opaque objects cast a shadow, and how the shadow appears. 4. Understand how shadows change when the distance of a light source is altered 5. Use puppets to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened. 6. Speak audibly and express thoughts, feelings, and ideas clearly.
Previous Learning	NA
Supervision required	Medium

Day 1 -

Today you will explore the properties and qualities of light through this project! On Day 1, you will explore questions related to the nature of light and the role it plays in our lives.

Time	Activity and Description
15 minutes	Explore the importance of light to provide heat and help us see. Draw a scene in the daylight and night (choose to draw a scene of your house, a landscape, 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?

EAA welcomes feedback on its projects in order to improve. For feedback please use this link
https://forms.gle/pVXs3vQEufuzSShs7

	- What are things that we only see during the day? 
15 minutes	After drawing, think about the different things we do when it is light or dark. If the project is conducted in a classroom setting or with a group of learners, look at what the others drew to scaffold this reflection. Most of your working time is in the day with the sunlight and most people sleep in the night in darkness. - Why do you think most people work during the day? Why would some people have to work at night?
15 minutes	What is light? Brainstorm at least 3 ideas or things that you associate with light. Think of how you can draw and show light and draw. Reflection Prompts: is it difficult to draw light? Why or why not? Illustrate and label these answers. Here are some examples of ideas that you can come up with: 
15 minutes	Where does light come from? Identify sources of light and make a list illustrating their examples. Prompts: What, if anything, do these sources have in common? (for instance, they burn, or they are used by people for different purposes, etc.). What are some differences between them? (for example, the difference between natural and artificial can come up in the conversation).

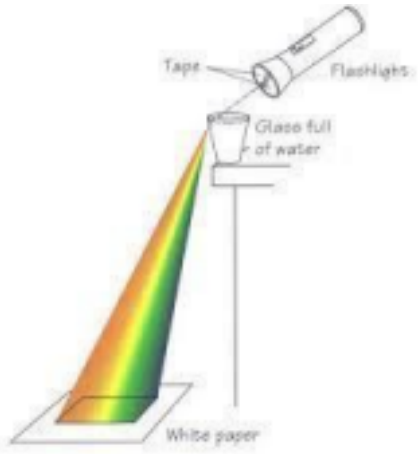
EAA welcomes feedback on its projects in order to improve. For feedback please use this link https://forms.gle/pVXs3vQEufuzSShs7

	For this, you can design a worksheet where learners will draw the different sources within each of the rows: Sources of Light 1. Sun  2. Fire  3. Bulb 
15 minutes	How do we experience light or its absence? Explore what happens without lights and how the different senses work together. Play a “dark room game.” In this game, turn off all the lights in the room (if you play it during the night) or make it dark (if you are playing during the day). The family members will call out and you will try and find them based on their voice. Think about how your different senses of sound and sight work together.

Day 2

Today you will continue to explore the properties of light and its relation to color. Test the assumption made on Day 1 about light usually being yellow or white.

Time	Activity and Description
20 minutes	Part 1 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 will reflect a rainbow on the white sheet of paper

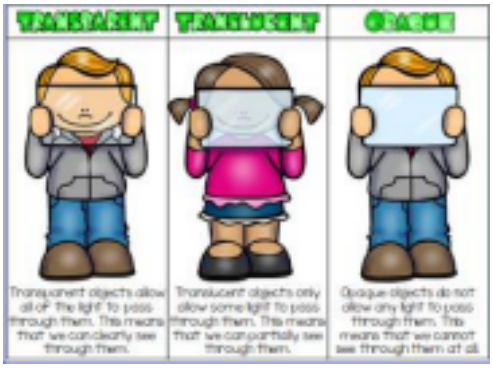
	
	- Paint over the reflected rainbow that is on the paper with colors and paints
	- Answer the following:
	  - Where did the colors come from?
	  - What does this tell us about light?
	After they've had time to explore some answers to these questions, learners will understand that sunlight has all the colors.
	
	Learners will explore how colors mix to create new colors.
	Learners will experiment with mixing different colors of paint to see what happens.
	Learners will start mixing combinations of the primary colors (red, blue and yellow) following this order:
	- What happens if we mix red and yellow?
	- What happens if we mix red and blue?
	- What happens when we mix yellow and blue?
	- What other combinations can you think of?
	- Can you make your favorite color?
	- How would you name your favorite color?

20 minutes	Explore how colors mix to create new colors. Experiment with mixing different colors to see what happens. Start with the primary colors of red, blue and yellow - Then write the "math – equations" on the result as a list for example: 1. Red + Yellow = Orange 2. Red + Blue = Purple 3. Yellow + Blue = Green 4. Favorite color= [quantity]_____+ [quantity] _____+ [quantity] _____
20 minutes	Part 2 Explore how some things are transparent, translucent or opaque by holding up items

EAA welcomes feedback on its projects in order to improve. For feedback please use this link
https://forms.gle/pVXs3vQEufuzSShs7

against a source of light.

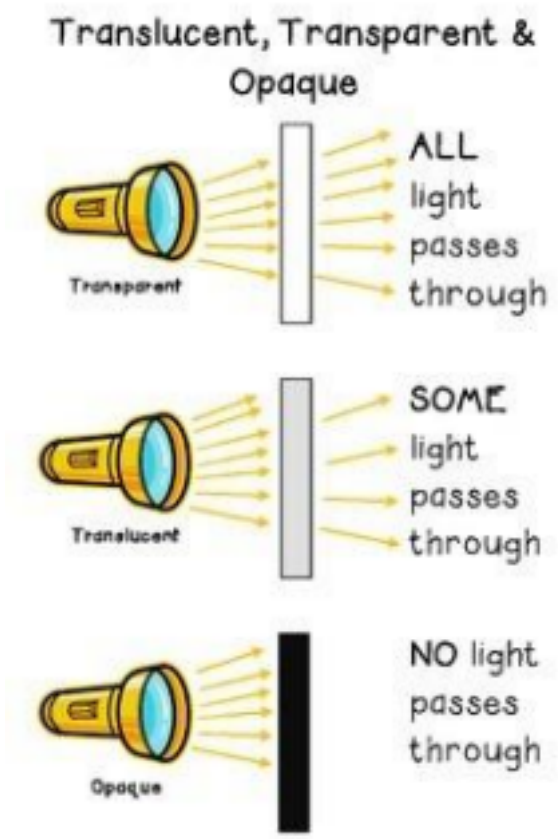
- Learn new terminology and explain:
- Transparent materials include glass, windows, clear plastic etc. that you can clearly see through since all light passes through.
- Translucent materials include sunglasses, white shirts, paper towels, white sheets etc. that you can partially see through since some 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.



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 you would like to explore. Record your observations, write or draw the items across three columns in a chart like the following:

Transparent	Translucent	Opaque

	 Share the list or drawings of transparent, translucent and opaque items. Family members give feedback indicating what you have got right, and what you need to explore again, and ideas of other things that you could explore.

Day 3

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

Time	Activity and Description
30 minutes	Track the sun's movements throughout the day and see where it is from your window. Illustrate this in the following schedule answering the following questions:

	Sunrise	Midday	Sunset
Where do you see the sun from your window?			

EAA welcomes feedback on its projects in order to improve. For feedback please use this link https://forms.gle/pVXs3vQEufuzSShs7

	<table><tr><td>How bright is the sun?</td><td></td><td></td><td></td></tr><tr><td>How big is the sun?</td><td></td><td></td><td></td></tr><tr><td>What is the color of the sky around the sun?</td><td></td><td></td><td></td></tr></table> Draw and label images of sunrise, mid-day and sunset based on the above.  
5 minutes	Numeracy extension: read the time and write that down for the different times of the day that you are illustrating e.g. sunrise (6 am), mid-day (12 pm) and sunset (6 pm). Conduct subtraction to see how many hours it takes the sun from sunrise to mid-day. Learners will share their drawings and paintings with the family members for feedback. Feedback from family members will include: - What details do they see in the drawings? - What is the most original or creative thing that they see in the drawings?
30 minutes	Now, 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.

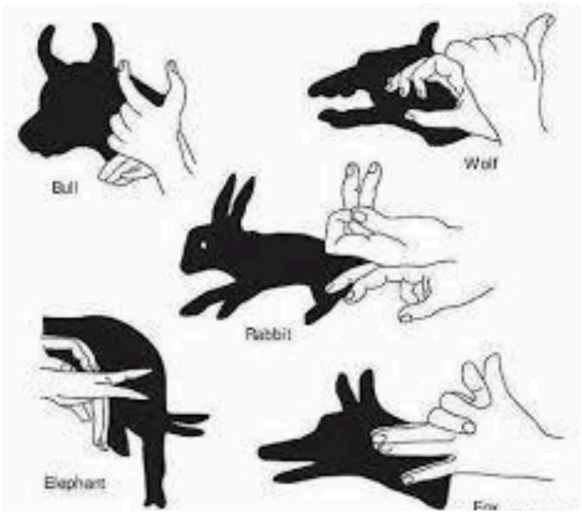
	 Try and form shadows of their own body and move around to see how your shadows move – form a sundial to mark your own shadows at different times of the day standing at the same place. Notice where your shadows move on the ground and the length of your shadows Notice where your shadows move on the ground and the length of your shadows. Prompts: Is your shadow always the same? How does it change? What are some reasons that can explain why it changes? 

Day 4

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

Time	Activity and Description
10 minutes	Use a torch or the sun to form shadows with your hands. Form different animals and characters, while your family may guess what these different shadows are.

EAA welcomes feedback on its projects in order to improve. For feedback please use this link https://forms.gle/pVXs3vQEufuzSShs7

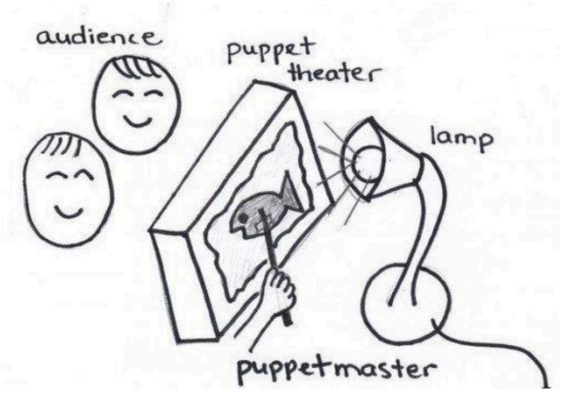
	
20 minutes	Think of a basic story that you will tell the viewers through the shadow theatre – to make it easier they can adapt a section of a story that they already know. Pick a story with not more than 2 or 3 characters: a wolf, a princess, a rabbit and props including the sun, a house, a cloud etc. Example of a story: Hare and the Tortoise – The hare and the tortoise decided to race. The hare started running fast and saw how much ahead he was and stopped for a snack and a nap. The tortoise kept moving slowly ahead and he won the race. Illustrate or write out the story. Beginning → Middle → End
30 minutes	Design the main "characters and props" of shadow theatre as puppets. Draw the main outline on paper or cardboard and colour this inside with black crayon, paint or marker. Now 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!

Time	Activity and Description
10 minutes	Design the stage. - 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) - There needs to be space behind the screen for the learners to stand and hold the puppets

EAA welcomes feedback on its projects in order to improve. For feedback please use this link
https://forms.gle/pVXs3vQEufuzSShs7

	- The bottom half of the screen can have a desk or table so learners can hide behind it when they operate the puppets. - Find a good source of light e.g. sunlight or a lamp/ torch behind the screen - 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	Play with light and experiment with it, based on what you learnt in the project, until you discover its effects on the shadows your puppets make. You will quickly discover that the shadows grow larger when the puppets are close to the light source, and smaller when they are further away.
10 minutes	"Act" out the story using these puppets and props and try and simultaneously narrate or tell the story. Enhance the play by adding music, translucent materials or sound effects e.g. a plastic bottle with little stones as a shaker for rain etc.
10 minutes	Now act the play for your family.
10 minutes	Ask your family 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? What would they change in order to make it more entertaining?

Additional enrichment activities:	- Learners can design more complex shadow puppet theatre
Modifications for simplification	- Learners can work on days 3 – 4 and 5 of the project to explore shadows and create their own shadow theatre.

ASSESSMENT CRITERIA

A majority of my learners were able to:

- ☐ Clarity of drawings, illustrations and labelling
- ☐ Creativity and simplicity of the story and character puppets
- ☐ Narration and retelling of the story
- ☐ Ability to distinguish between objects as opaque, translucent or transparent

EAA welcomes feedback on its projects in order to improve. For feedback please use this link
https://forms.gle/pVXs3vQEufuzSShs7