


SHADOW PLAY (LEVEL 1)

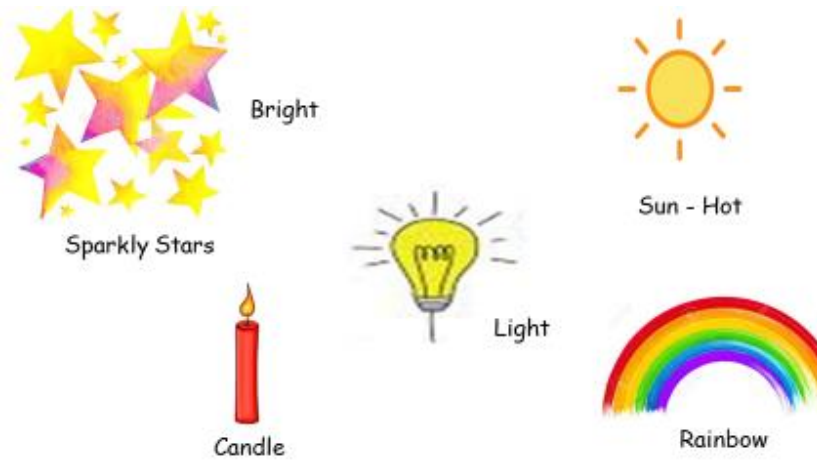









Ages 4 to 7 (Level 1)

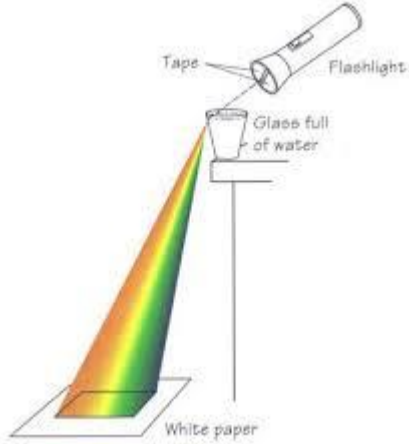
Description:	Learners will explore the qualities and characteristics of light and shadows. They will create their own shadow theatre by illustrating part of their story, illustrating and cutting their own puppets and setting up the stage
Leading question:	Can we create a show with shadows?
Age group:	4 – 7 years
Subjects:	Science, Literacy, Art and Design
Total time required:	5 hours over 5 days
Self-guided / Supervised activity:	Medium Supervision
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

Day	Time	Activity and Description
1	15 minutes	<p>Learners will explore the properties and qualities of light through this project</p> <p>Learners will explore the importance of light to provide heat and help us see. Learners will draw a scene in the daylight and night – they will think about the different things we do when it is light or dark.</p> <ul style="list-style-type: none"> - Prompts: Why do you think most people work in the day? Why would some people have to work at night? What does the sky look like in the day and night? <p>Learners will explore that most of their working time is in the day with the sunlight and most people sleep in the night in the darkness</p> 

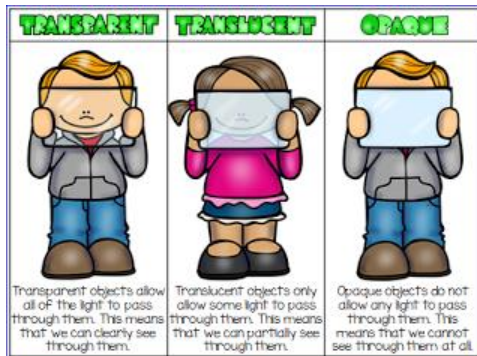
EAA welcomes feedback on its projects in order to improve, please use this link:

<https://forms.gle/LGAP9k17fMyJrKJN7>

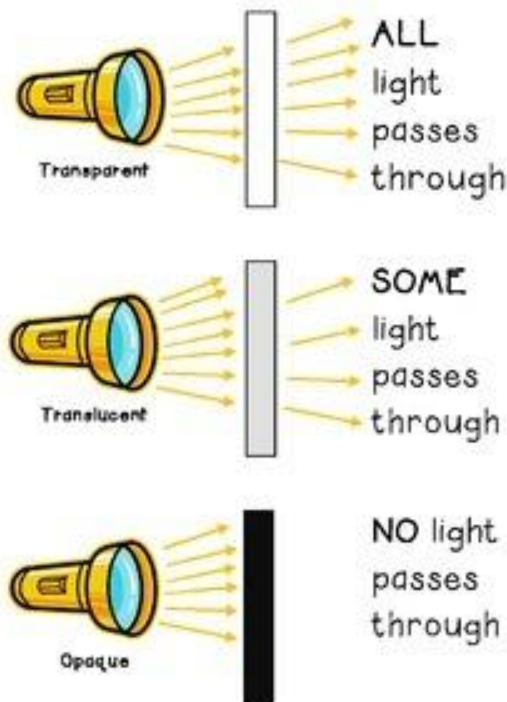
15 minutes	<p>Learners will draw at least 3 words they associate with light They will think of how they can draw and show light and draw this. Learners will think of all the words they associate with light. Learners will illustrate and label these answers in mind map for example: bright, sun, yellow etc.</p> 								
15 minutes	<p>Learners will identify all the sources of light and make a list illustrating their examples</p> <p>They will draw the different sources within each of the columns:</p> <table border="1" data-bbox="418 1192 682 1696"> <thead> <tr> <th colspan="2">Sources of Light</th> </tr> </thead> <tbody> <tr> <td>1. Sun</td> <td></td> </tr> <tr> <td>1. Fire</td> <td></td> </tr> <tr> <td>2. Bulb</td> <td></td> </tr> </tbody> </table>	Sources of Light		1. Sun		1. Fire		2. Bulb	
Sources of Light									
1. Sun									
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2. Bulb									
15 minutes	<p>Learners will explore what happens without lights and how the different senses work together. Learners can play a game of dark room. In this game, learners will turn off all the lights of the room and make it dark. The family members will call out</p>								

		and learners will try and find them based on their voice. Learners will think about how their different senses of sound and sight work together
2	20 minutes	<p>Learners will continue to explore the properties of light and color. Learners will test their assumption they made the day before of light usually being yellow or white</p> <p>Learners will conduct an experiment on how rainbows are formed. Learners will place a white paper or sheet on the ground or a table. They will 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</p>  <p>Learners will understand that sunlight has all the colors. They will paint over the reflected rainbow that is on the paper with colors and paints</p> <p>Learners will explore how colors mix to create new colors. Learners will experiment with mixing different colors to see what happens. Learner will start with the primary colors of red, blue and yellow</p> <ul style="list-style-type: none"> - Learners will then write the “math – equations” on the result as a list for example: <ol style="list-style-type: none"> 1. Red + Yellow = Orange 2. Red + Blue = Purple 3. Yellow + Blue = Green <p>Learners will explore how some things are transparent, translucent or opaque by holding up items against a source of light.</p> <p>Learners need to learn new terminology and explain:</p> <ul style="list-style-type: none"> - 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
	20 minutes	
	20 minutes	

- Opaque materials include a chair, a cardboard box, a book etc. that no light passes through and you cannot see anything through







Translucent, Transparent & Opaque

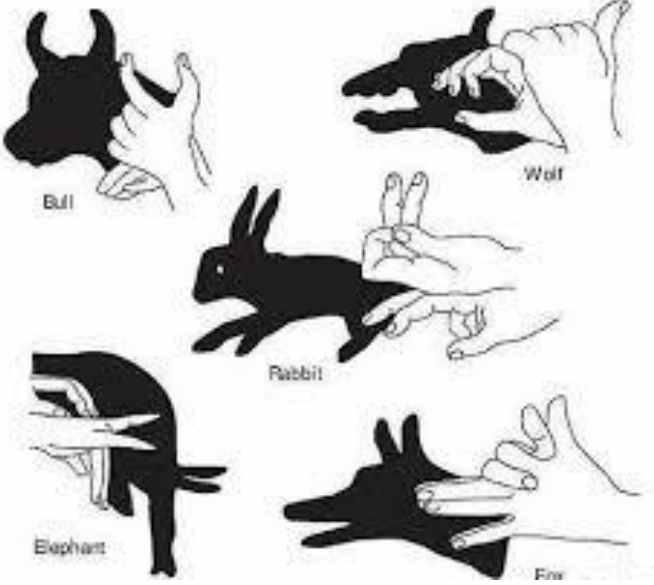


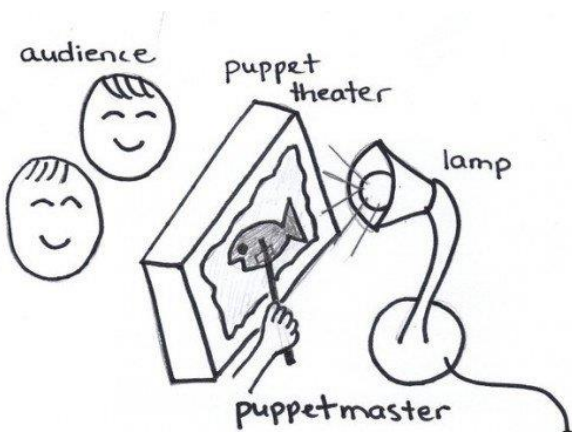
Learners will make a list writing or drawing the items within the three columns of transparent, translucent and opaque

3	30 minutes	Learners will explore the sun's patterns and the impact of shadows Learners will track their sun's movements through the day and see where it is from their window. They will illustrate this in a schedule answering the following questions
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		<p>Prompts include:</p> <ul style="list-style-type: none"> - Where do they see the sun from their window? - How bright is it? - How big is the sun? - What is the color of the sky around it? <p>Learners will draw and label images of sunrise, mid-day and sunset based on the above</p>   <p>5 minutes</p> <p>Numeracy extension: Learners will read the time and write that down for the different times of the day that they are illustrating e.g. sunrise (6 am), mid-day (12 pm) and sunset (6 pm). Learners will conduct subtraction to see how many hours it takes the sun from sunrise to mid-day</p> <p>30 minutes</p> <p>Learners will 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).</p> <p>Learners will place small toys or objects in the sun and place a paper underneath it. The learners will try and trace the shadows of their toys</p>
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		 <p>Learners will try and form shadows of their own body and move around to see how their shadows move – they will form a sundial to mark their own shadows at different times of the day standing at the same place. Learners will notice where their shadows move on the ground and the length of their shadows</p> 
4	10 minutes	<p>Learners will begin to plan for their shadow puppet theatre</p> <p>Learners will use a torch or the sun to form shadows with their hands and form different animals and characters and try and have their family guess what these different shadows are?</p>


	<p>20 minutes</p>	 <p>Learners will think of a basic story that they will tell the viewers through the shadow theatre – to make it easier they can adapt a section of a story that they already know. Learners should 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. Learners can illustrate or write out the story</p> <p>Example of a story: Hare and the Tortoise – The hare and the tortoise decided to have a race. The hare started running really 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.</p>
	<p>30 minutes</p>	<p>Learners will now design the main “characters and props” of shadow theatre as puppets. Learners will draw the main outline on paper or cardboard and color this inside with black crayon, paint or marker</p> <ul style="list-style-type: none"> - Learners will now cut out these characters or props and stick them using tape on toothpicks / chopsticks
<p>5</p>	<p>20 minutes</p>	<p>Learners will design the “stage” –</p> <ul style="list-style-type: none"> - They will need to 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 - The bottom half of the screen can have a desk or table so learners can hide behind it when they operate the puppets - They will need to 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











	<p>10 minutes</p> <p>10 minutes</p> <p>10 minutes</p> <p>10 minutes</p>	<p>Learners can use a doorframe – learners have to make the screen is pin a large sheet of paper on the frame or hang a sheet from the rod</p>  <p>Learners will play with light and experiment with it until learners discover its effects on the shadows your puppets make. Learners will quickly discover that the shadows grow larger when the puppets are close to the light source, and smaller when they are further away</p> <p>Learners will “act” out the story using these puppets and props and try and simultaneously narrate or tell the story. Learners can also add music or sound effects for e.g. a plastic bottle with little stones as a shaker for rain etc.</p> <p>Learners will now enact the play for their family</p> <p>Learners will ask 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?</p>
<p>Assessment Criteria:</p>	<ul style="list-style-type: none"> - Clarity of drawings, illustrations and labelling including the understanding demonstrated - 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 	
<p>Learning outcomes:</p>	<ul style="list-style-type: none"> - Identify sources of light as natural and artificial - Classify and name some everyday examples of opaque, translucent and transparent objects. - Investigate how opaque objects cast a shadow, and how the shadow appears. - Investigate how shadows change when the distance of a light source is altered 	

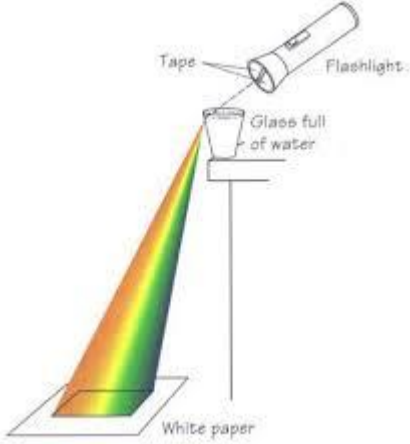
	- Storytelling through puppets
Additional enrichment activities:	- Learners can design more complex shadow puppet theatre
Modifications to simplify the project tasks if need be	- Learners can work on days 3 – 4 and 5 of the project to explore shadows and create their own shadow theatre


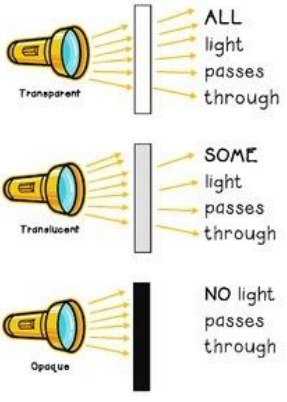
Ages 8 to 10 (Level 2)

Description:	Learners will explore the qualities of light and shadows. They will create their own shadow theatre by writing their own story, illustrating and cutting their own puppets and setting up the stage
Leading question:	Can we make our show with shadows?
Age group:	8 – 10 years
Subjects:	Science, Literacy, Art and Design
Total time required:	5 hours over 5 days
Self-guided / Supervised activity:	Medium Supervision
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


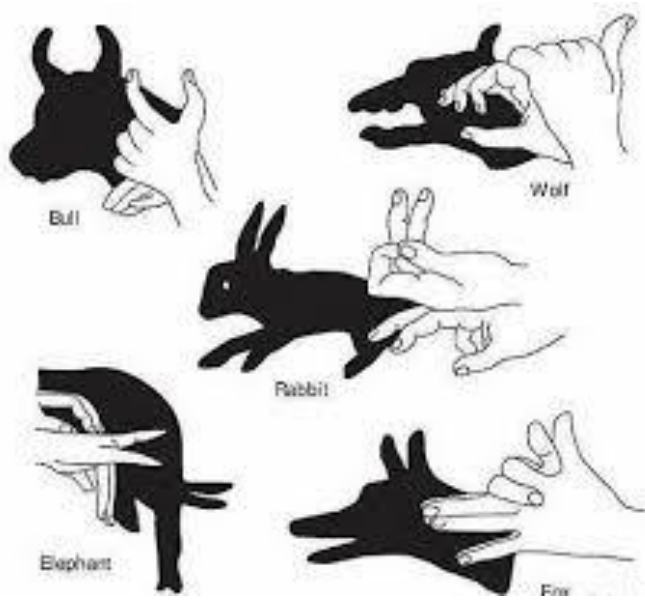
Day	Time	Activity and Description
1	15 minutes	<p>Learners will explore the properties and qualities of light through this project</p> <p>Learners will explore the importance of light so that we can see and to provide heat. Learners will draw a scene in the daylight and night – they will think about the different things we do when it is light or dark.</p> <p>Learners will explore that most of their working time is in the day with the sunlight and most people sleep in the night in the darkness</p> 
	15 minutes	<p>Learners will draw an image of “light”. They will think of how they can draw and show light and draw this. Learners will think of all the words they associate with light with the following questions:</p> <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?

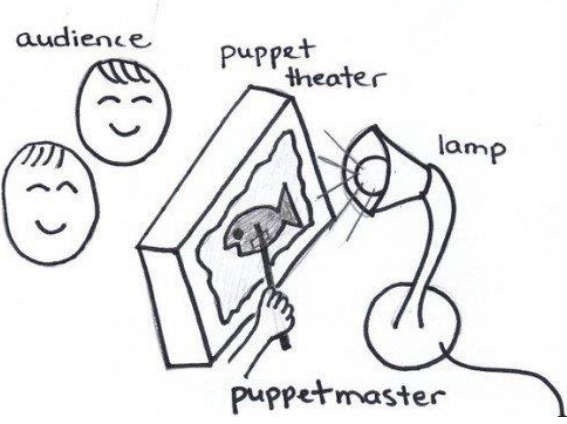
	15 minutes	<p>Learners will illustrate and label these answers in mind map with 5 adjectives they associate with light for example: bright, sun, yellow etc.</p>  <p>Learners will identify all the sources of light and make a list including characterizing these as natural or artificial (man-made):</p> <p>Input: Parents can support the learners with input on this including:</p> <ul style="list-style-type: none"> - Natural: Sun, Stars, Moon, Flame (Candles, Stove), Lightening etc. - Artificial: Light bulb, Torch etc. <p>They will draw the different sources within each of the columns:</p> <table border="1" data-bbox="414 1155 917 1543"> <thead> <tr> <th colspan="2">Sources of Light</th> </tr> <tr> <th>Natural</th> <th>Artificial</th> </tr> </thead> <tbody> <tr> <td>2. Sun </td> <td>3. Bulb </td> </tr> <tr> <td>4. Fire </td> <td></td> </tr> </tbody> </table>	Sources of Light		Natural	Artificial	2. Sun 	3. Bulb 	4. Fire 	
Sources of Light										
Natural	Artificial									
2. Sun 	3. Bulb 									
4. Fire 										
2	15 minutes	<p>Learners will explore what happens without lights and how the different senses work together. Learners can play a game of dark room. In this game, learners will turn off all the lights of the room and make it dark. The family members will call out and learners will try and find them based on their voice. Learners will think about how their different senses of sound and sight work together, there are animals like bats that are blind but follow sounds and echoes.</p>								
		<p>Learners will continue to explore the properties of light and color. Learners will test their assumption they made the day before of light usually being yellow or white</p>								

20 minutes	<p>Learners will conduct an experiment on how rainbows are formed. Learners will place a white paper or sheet on the ground or a table. They will 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</p>  <p>Input: 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.</p> <p>Learners will understand that sunlight has all the colors. They will paint over the reflected rainbow that is on the paper with colors and paints</p>
20 minutes	<p>Learners will explore how colors mix to create new colors. Learners will experiment with mixing different colors to see what happens. Learner will start with the primary colors of red, blue and yellow – but will then work on creating 3 – 4 other secondary colors e.g. pink, maroon etc.</p> <ul style="list-style-type: none"> - Learners will then write the “math – equations” on the result as a list for example: <ol style="list-style-type: none"> 1. Red + Yellow = Orange 2. Red + Blue = Purple 3. Yellow + Blue = Green
20 minutes	<p>Learners will explore how some things are transparent, translucent or opaque by holding up items against a source of light.</p> <p>Learners will explore new terminology including:</p> <ul style="list-style-type: none"> - Transparent materials include glass, windows, clear plastic etc. that you can clearly see through since all light passes through

		<ul style="list-style-type: none"> - 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 <div data-bbox="414 420 795 703" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>TRANSPARENT TRANSLUCENT OPAQUE</p>  <p>Transparent objects allow all of the light to pass through them. This means that we can clearly see through them. Translucent objects only allow some light to pass through them. This means that we can partially see through them. Opaque objects do not allow any light to pass through them. This means that we cannot see through them at all.</p> </div> <div data-bbox="430 745 714 1207" style="text-align: center;"> <p>Translucent, Transparent & Opaque</p>  <p>ALL light passes through SOME light passes through NO light passes through</p> </div>
3	30 minutes	<p>Learners will explore the sun's patterns and the impact of shadows</p> <p>Learners will track their sun's movements through the day and see where it is from their window. They will illustrate this in a schedule answering the following questions</p> <p>Prompts include:</p> <ul style="list-style-type: none"> - Where do they see the sun from their window? - How bright is it? - How big is the sun? - What is the color of the sky around it? <p>Learners will draw and label images of sunrise, mid-day and sunset based on the above</p>

		<div data-bbox="423 247 911 405" data-label="Image"> </div> <div data-bbox="410 499 659 869" data-label="Image"> </div> <p data-bbox="284 913 386 982">5 minutes</p> <p data-bbox="410 913 1417 1045">Numeracy extension: Learners will read the time and write that down for the different time of the day that they are illustrating e.g. sunrise (5:45 am), mid-day (12 pm) and sunset (6:15 pm). Learners will conduct subtraction to see how many hours it takes the sun from sunrise to mid-day.</p> <p data-bbox="284 1096 386 1165">30 minutes</p> <p data-bbox="410 1087 1385 1186">Learners will 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).</p> <p data-bbox="410 1228 1401 1297">Learners will place small toys or objects in the sun and place a paper underneath it. The learners will try and trace the shadows of their toys</p> <div data-bbox="505 1333 1094 1675" data-label="Image"> </div> <p data-bbox="410 1738 1401 1808">Learners will try and form shadows of their own body and move around to see how their shadows move – they will form a sundial to mark their own shadows at</p>
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		<p>different times of the day standing at the same place. Learners will notice where their shadows move on the ground and the length of their shadows</p> 
4	10 minutes	<p>Learners will begin to plan for their shadow puppet theatre</p> <p>Learners will use a torch or the sun to form shadows with their hands and form different animals and characters and try and have their family guess what these different shadows are?</p> 

	<p>20 minutes</p> <p>30 minutes</p>	<p>Learners will think of a basic story that they will tell the viewers through the shadow theatre – to make it easier they can adapt a section of a story that they already know. Learners should 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.</p> <ul style="list-style-type: none"> - Learners can illustrate or write out the story. Learners can think of a fairytale like the Hare and the Tortoise Race or Jack and the Beanstalk <p>Learners will now design the main “characters and props” of shadow theatre as puppets. Learners will draw the main outline on paper or cardboard and color this inside with black crayon, paint or marker</p> <p>Learners will now cut out these characters or props and stick them using tape on toothpicks / chopsticks</p>
<p>5</p> <p>10 minutes</p>	<p>20 minutes</p>	<p>Learners will design the “stage” –</p> <ul style="list-style-type: none"> - They will need to 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 or the musical instruments - The bottom half of the screen can have a desk or table so learners can hide behind it when they operate the puppets - They will need to 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 <p>Learners can use a doorframe – learners have to make the screen is pin a large sheet of paper on the frame or hang a sheet from the rod</p>  <p>Learners will play with light and experiment with it until learners discover its effects on the shadows your puppets make. Learners will quickly discover that the shadows grow larger when the puppets are close to the light source, and smaller when they are further away</p>

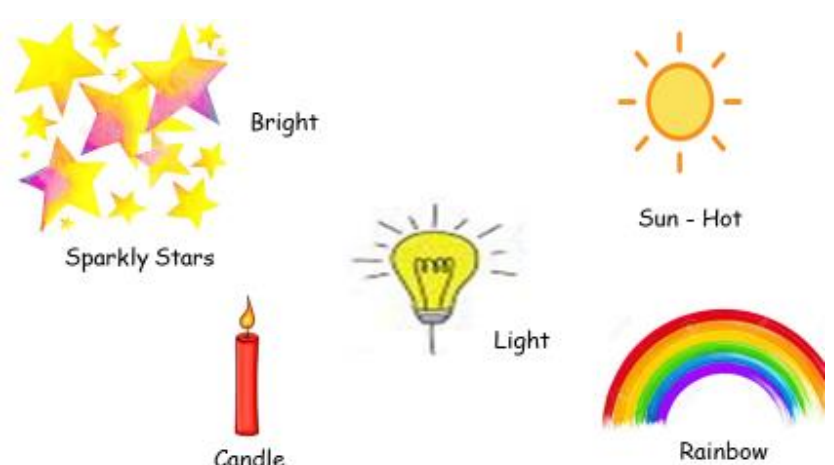









	10 minutes	Learners will “act” out the story using these puppets and props and try and simultaneously narrate or tell the story. Learners can also add music or sound effects for e.g. a plastic bottle with little stones as a shaker for rain etc.
	10 minutes	Learners will now enact the play for their family
	10 minutes	Learners will ask 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:		<ul style="list-style-type: none"> - Clarity of drawings, illustrations and labelling including the understanding demonstrated - 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
Learning outcomes:		<ul style="list-style-type: none"> - Identify sources of light as natural and artificial - Classify and name some everyday examples of opaque, translucent and transparent objects. - Investigate how opaque objects cast a shadow, and how the shadow appears. - Investigate how shadows change when the distance of a light source is altered - Storytelling through puppets
Additional enrichment activities:		Learners can design more complex shadow puppet theatre
Modifications to simplify the project tasks if need be		Learners can work on days 3 – 4 and 5 of the project to explore shadows and create their own shadow theatre

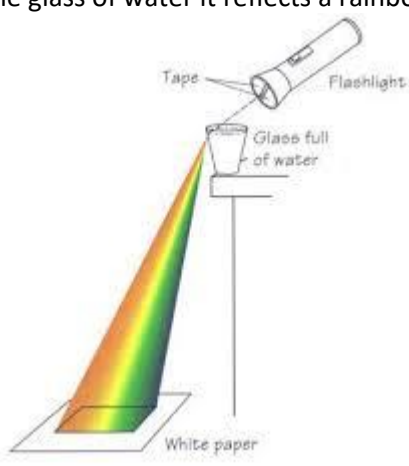
Ages 11 to 14 (Level 3)

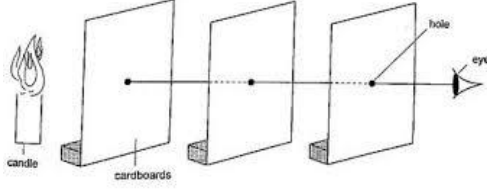
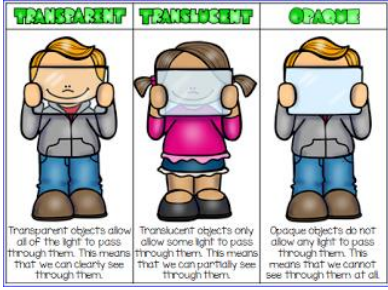









Description:	Learners will explore the qualities of light and shadows. They will create their own shadow theatre by writing their own story, illustrating and cutting their own puppets and setting up the stage
Leading question:	How can we use light and shadows put on a show?
Age group:	11 – 14 years
Subjects:	Science, Literacy, Art and Design
Total time required:	5 hours over 5 days
Self-guided / Supervised activity:	Low Supervision
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

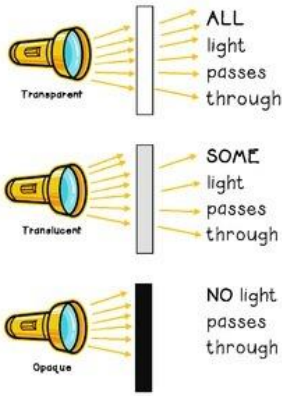


Day	Time	Activity and Description
1	20 minutes	<p>Learners will explore the properties and qualities of light through this project</p> <p>Learners will explore the importance of light so that we can see and to provide heat. Learners will draw a scene in the daylight and night – they will think about the different things we do when it is light or dark.</p> <ul style="list-style-type: none"> - Learners will illustrate nocturnal animals as those that stay awake at night and diurnal animals that are active in the day - Learners will also think of professions of people that work at night and those that work in the day. Hints: Doctors, Security Guards, Firefighters etc. work at night
	10 minutes	<p>Learners will draw an image of “light” with 5 relevant adjectives. They will think of how they can draw and show light and draw this. Learners will think of all the words they associate with light with the following questions:</p> <ul style="list-style-type: none"> - What color do you associate with light? - How would you describe light?





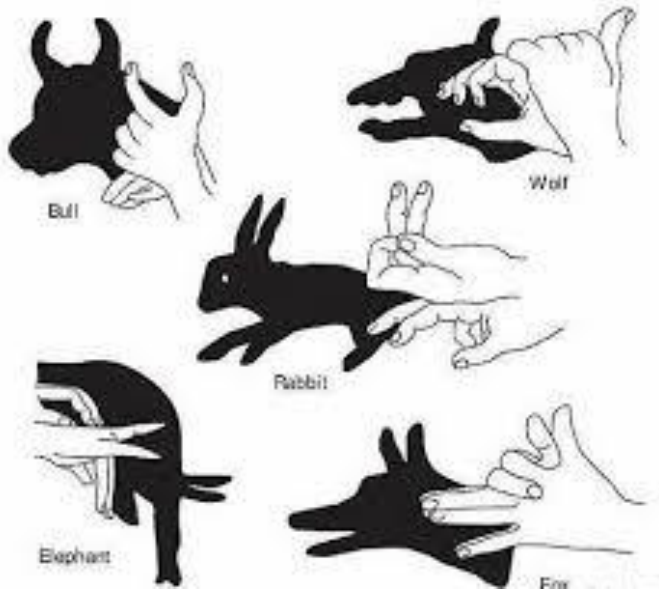
		<p>- What are the main sources of light? - Do you think of hot or cold when you think of light?</p> <p>Learners will illustrate and label these answers in mind map for example: bright, sun, yellow etc.</p> <div style="text-align: center;">  </div> <p>Learners will identify all the sources of light and make a list including characterizing these as natural or artificial (man-made):</p> <p>Input: Parents can support the learners with input on this including:</p> <ul style="list-style-type: none"> - Natural: Sun, Stars, Moon, Flame (Candles, Stove), Lightening etc. - Artificial: Light bulb, Torch etc. <p>They will draw the different sources within each of the columns:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Sources of Light</th> </tr> <tr> <th>Natural</th> <th>Artificial</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"> 1. Sun  </td> <td style="text-align: center;"> 2. Bulb  </td> </tr> <tr> <td style="text-align: center;"> 3. Fire  </td> <td></td> </tr> </tbody> </table>	Sources of Light		Natural	Artificial	1. Sun 	2. Bulb 	3. Fire 	
Sources of Light										
Natural	Artificial									
1. Sun 	2. Bulb 									
3. Fire 										
	15 minutes	<p>Learners will 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>								

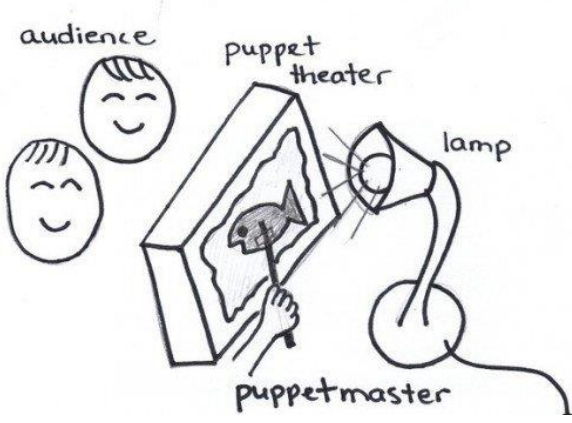
		<p>What happens without lights and how the different senses work together? Learners can play a game of dark room. In this game, learners will turn off all the lights of the room and make it dark. The family members will call out and learners will try and find them based on their voice. Learners will think about how their different senses of sound and sight work together, there are animals like bats that are blind but follow sounds and echoes.</p>
2	<p>20 minutes</p>	<p>Learners will continue to explore the properties of light and color and how light travels.</p> <p>Learners will test their assumption they made the day before of light usually being yellow or white</p> <ul style="list-style-type: none"> Learners will conduct an experiment on how rainbows are formed. Learners will place a white paper or sheet on the ground or a table. They will 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  <p>Input: 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</p> <ul style="list-style-type: none"> Learners will understand that sunlight has all the colors. They will paint over the reflected rainbow that is on the paper with colors and paints to understand how lights have spectrums of colors
	<p>20 minutes</p>	<p>Learners will explore how light travels in straight lines. They will cut out a small hole in three pieces of cardboard or thick paper. Learners will place a torch/candle in front of this and see if the light travels through and is visible from the back. These pieces will be put in a line one behind another and not in a straight line. Learners</p>

	<p>20 minutes</p>	<p>will explore that light can only travel through all three holes when the holes are in a straight. Learners will try and draw this experiment</p>  <p>Input: Fact light has a dual nature: that of a shower of particles, photons, which are believed to be packets of energy travelling as a straight stream; and a wave nature. When holes are larger than the lights wavelength, light appears to follow the classical view (travel in straight lines).</p> <p>Learners will explore how some things are transparent, translucent or opaque by holding up items against a source of light.</p> <p>Parents can explain to the learners:</p> <ul style="list-style-type: none"> - 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  <table border="1" data-bbox="418 1255 803 1543"> <thead> <tr> <th>TRANSPARENT</th> <th>TRANSLUCENT</th> <th>OPAQUE</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>Transparent objects allow all of the light to pass through them. This means that we can clearly see through them.</td> <td>Translucent objects only allow some light to pass through them. This means that we can partially see through them.</td> <td>Opaque objects do not allow any light to pass through them. This means that we cannot see through them at all.</td> </tr> </tbody> </table>	TRANSPARENT	TRANSLUCENT	OPAQUE				Transparent objects allow all of the light to pass through them. This means that we can clearly see through them.	Translucent objects only allow some light to pass through them. This means that we can partially see through them.	Opaque objects do not allow any light to pass through them. This means that we cannot see through them at all.
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		<p>Translucent, Transparent & Opaque</p>  <p>The diagram illustrates three types of light transmission: <ul style="list-style-type: none"> Transparent: A flashlight beam passes through a clear block, with all light rays continuing on the other side. Text: "ALL light passes through". Translucent: A flashlight beam passes through a semi-transparent block, with some light rays passing through and some being blocked. Text: "SOME light passes through". Opaque: A flashlight beam hits a solid black block, and no light rays pass through. Text: "NO light passes through". </p>
3	30 minutes	<p>Learners will explore the sun's patterns and the impact of shadows</p> <p>Learners will track their sun's movements through the day and see where it is from their window. They will illustrate this in a schedule answering the following questions</p> <p>Prompts include:</p> <ul style="list-style-type: none"> - Where do they see the sun from their window? - How bright is it? - How big is the sun? - What is the color of the sky around it? <p>Learners will draw and label images of sunrise, mid-day and sunset based on the above</p>  

	<p>30 minutes</p>	<p>Learners will 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).</p> <ul style="list-style-type: none"> - Learners will place small toys or objects in the sun and place a paper underneath it. The learners will try and trace the shadows of their toys  <ul style="list-style-type: none"> - Learners will try and form shadows of their own body and move around to see how their shadows move – they will form a sundial to mark their own shadows at different times of the day standing at the same place. Learners will notice where their shadows move on the ground and the length of their shadows - Learners will explain why the position of shadows move across different times of day. Assuming that students did not have a clock, they will try and identify what time of the day it was based on the shadows – this is how people in the past to tell the time.
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4	<p>10 minutes</p> <p>20 minutes</p>	<p>Learners will begin to plan for their shadow puppet theatre</p> <p>Learners will use a torch or the sun to form shadows with their hands and form different animals and characters and try and have their family guess what these different shadows are?</p>  <p>Learners will think of a basic story that they will tell the viewers through the shadow theatre. Learners should pick a story with a few characters: a wolf, a princess, a rabbit and props including the sun, a house, a cloud etc.</p> <ul style="list-style-type: none"> - Learners can illustrate and write out the story

	30 minutes	<p>Learners will now design the main “characters and props” of shadow theatre as puppets. Learners will draw the main outline on paper or cardboard and color this inside with black crayon, paint or marker</p> <ul style="list-style-type: none"> - Learners will now cut out these characters or props and stick them using tape on toothpicks / chopsticks
5	20 minutes	<p>Learners will design the “stage” –</p> <ul style="list-style-type: none"> - They will need to 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 or the musical instruments - The bottom half of the screen can have a desk or table so learners can hide behind it when they operate the puppets - They will need to 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 <p>Learners can use a doorframe – learners have to make the screen is pin a large sheet of paper on the frame or hang a sheet from the rod</p> 
	10 minutes	<p>Learners will play with light and experiment with it until learners discover its effects on the shadows your puppets make. Learners will quickly discover that the shadows grow larger when the puppets are close to the light source, and smaller when they are further away</p>
	10 minutes	<p>Learners will “act” out the story using these puppets and props and try and simultaneously narrate or tell the story. Learners can also add music or sound effects for e.g. a plastic bottle with little stones as a shaker for rain etc.</p>
	10 minutes	<p>Learners will now enact the play for their family</p>

	10 minutes	Learners will ask 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:		<ul style="list-style-type: none"> - Clarity of drawings, illustrations and labelling including the understanding demonstrated - 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
Learning outcomes:		<ul style="list-style-type: none"> - Know that light moves in straight lines - Identify sources of light as natural and artificial - Classify and name some everyday examples of opaque, translucent and transparent objects. - Investigate how opaque objects cast a shadow, and how the shadow appears. - Investigate how shadows change when the distance of a light source is altered - Storytelling through puppets
Additional enrichment activities:		Learners can design more complex shadow puppet theatre
Modifications to simplify the project tasks if need be		Learners can work on days 3 – 4 and 5 of the project to explore shadows and create their own shadow theatre