















Topic: Investigating light

Examining light

Lesson concepts

-   Light is produced by a range of sources and can be sensed
-  Science involves asking questions and describing changes
-  People use science in their daily lives
-   Questions can be responded to and predictions made
-   Investigations can explore and answer questions
-   Observations can be collected and recorded
-  Observations can be compared with predictions
-  Observations can be compared with others
-   Observations and ideas can be represented and communicated

Today students will:

- ▶ understand that light from different sources can have different properties
- ▶ understand how light from a source can be changed.

Resources

Digital

Video — The wizard, the fairy and the magic chicken (2:58)

Slideshow — Shadow puppets

Find and prepare

Torches (at least one bright one to make shadow puppets)

Sheet or blank wall to make backdrop for shadow puppets

Coloured cellophane pieces (two or three colours, larger than the faces of the torches)

Tracing paper / baking paper (semi-transparent)

Sheet

Sheet 4 — Analysing light

Sunglasses or cardboard tubes to make cellophane glasses

Adhesive tape

Scissors

Cardboard to make shapes to use as a shadow puppet

Iceblock sticks to use as puppet stick

Exercise book

Key terms

observe, property, science, senses

For definitions and explanations of terms, please see the [Glossary](#).

Learning alerts

Be aware of:

- students thinking that when they see things, the light is coming from their eyes on to the object
- students thinking that the effect of light is always bright and white.

Suggested next steps for learning:

- Explain to students that light comes to their eyes from a light source.
- Demonstrate and explain to students that light may be bright or dull, and have different light effects for different uses.

Lesson

Revise learning about light

Say to students

“ In science, we have been learning about light. We know that light comes from a source and that it can have different properties that we can describe. ”

Focus questions

Q. *Can you name some properties that light can have?*

A. For example: Bright, dull, coloured, focused, stationary, flashing, flickering, glowing

Q. *What properties of light are important for traffic lights?*

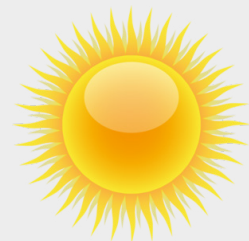
A. They need to be coloured red, orange and green, they need to be reliable so they always work. They need to be able to switch on and off all the time.

Q. *What properties of light are important for car headlights?*

A. For example: Bright, focused, can be turned on and off, tough, shine a fair distance

Q. *What properties of light are important for a night-light in a bedroom?*

A. For example: Dull, stationary, can be turned off during the day, small



i. Clipart: <http://www.clipart.com/clipart-sun-2.html>

Say to students

“ We can see that science knowledge about light helps people use different properties of light to suit different situations. ”

Explore how light can be changed

Say to students

- ☞ We are now going to explore how light can be changed. You probably don't even think about it but there are simple ways we change light in our everyday lives. For example, every time you turn a light on or off you are changing the property of that light for a particular reason. ☞

Focus question

Q. *What other ways do we change light in our everyday lives?*

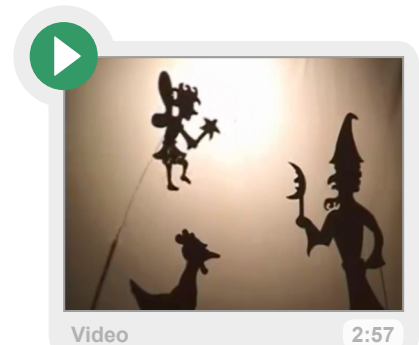
A. For example: Using dimmer switches to increase and decrease brightness, using bright light bulbs in some situations and less bright ones in others, pointing a spotlight in a particular direction to find something, using coloured lights for a party and lighting a candle or using a torch when there is a blackout.

Say to students

- ☞ There is another way we can change light and that is by blocking it in certain spots. The video we are now going to view shows how a man uses light, and shapes that block the light, to help tell a story. ☞

1. Display and view the **Video — The wizard, the fairy and the magic chicken.**

This video demonstrates how shadow puppets work. The creator narrates the story and uses the puppets to tell a humorous story to his audience.



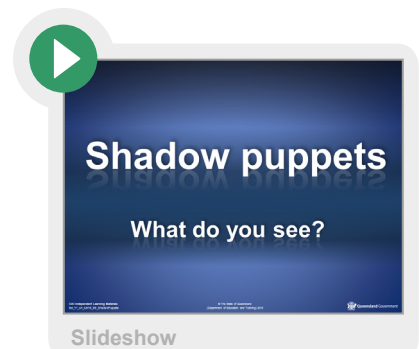
nappyspuppets. *The wizard, the fairy and the magic chicken*
<http://www.youtube.com/watch?v=ivvySRWGD0s> CC BY 3.0
creativecommons.org/licenses/by/3.0/

Say to students

- ☞ We can also make shadow puppets using parts of our body. ☞

2. Display and view the **Slideshow — Shadow puppets.**

This slideshow demonstrates some simple ideas for making shadow puppets.



Say to students

☞ You are now going to investigate ways we can change light and think about the different effects we can create.

When we are investigating in science, we must learn to ask ourselves ‘What will happen if’ questions and then make predictions about what we think is the most likely thing to happen. This helps scientists think carefully about what happens and to know if they have discovered something new.

So before you try to make a change in your investigations, first ask yourself a question and then make a prediction. For example, what will happen if I put blue cellophane over the torch? I think it will make the light blue, because the light will shine through the cellophane but will look blue. Then we make the change and compare what happens with our prediction. ☞

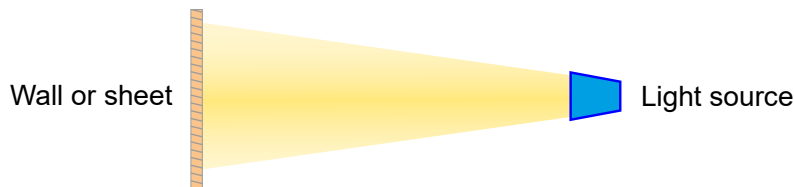
Say to students

☞ You are now going to have some time to investigate making shadow puppets and other effects by changing light. There are different materials you can use but remember at all times:

- to follow safe procedures with light
- to ask questions and make predictions before you make a change.

I will help you set up the shadow puppet screen. ☞

3. Provide materials and equipment for students and help them set up the shadow puppet space like this:



- a. While students are investigating, prompt them to:
 - i. ask ‘What will happen if?’ questions and make a prediction
 - ii. compare observations with predictions
 - iii. share observations with another person.
- b. Pack up materials and equipment.

Record observations about light

Say to students

☞ To finish this lesson, you are going to record your understanding on **Sheet 4 — [Analysing light](#)**. ☞

4. Open **Sheet 4**. Read the questions so that the students knows what is required, but the answers must reflect the student’s understanding, even if scribed.

