THIRD AND FOURTH CLASSES – LIGHT
Teacher Guidelines: ○ Pp. 86-91
Linkages: ○ Living Things – Plants and animals ○ Materials - Properties and characteristics of materials
Integration: ○ Oral Language Development – English and Gaeilge ○ Geography ○ History ○ SPHE ○ Visual Arts ○ Maths - symmetry

THIRD AND FOURTH CLASSES – LIGHT
Content Objective: • **LEARN THAT LIGHT IS A FORM OF ENERGY.**
Some suggested activities: • Discuss with children how we could heat water • Discuss lasers used in CD players and in shop check-outs. Be aware of the dangers of laser torches**.** • Fill small plastic bottles with water. Record the temperature of the water. Place the bottles in sunny and shady areas around the school. Record the temperatures over a period of time. Why has the temperature changed? • Discuss remote control toys, TV etc. **Some suggested investigations:** • Does wrapping the bottles with different materials affect the temperature the water reaches? **Some suggested designing and making:**

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **RECOGNISE THAT LIGHT COMES FROM DIFFERENT NATURAL AND ARTIFICIAL SOURCES.**

Some suggested activities:

- Discuss and list all sources of light including TVs, computers etc. Why do we need light?
- Sort light sources as natural or artificial.
- Discuss which light sources make the best shadows.
- Discuss the differences between the objects in any one colour set.
- Use the O.H. projector to draw pictures on wall/screen. How can we change the size of the shadow?

Some suggested investigations:

- Which is the best torch?
- How can we make shadows longer/shorter?
- How do shadows change during the day?

Some suggested designing and making:

- Make a sun-dial using a shadow stick.
- A shadow puppet theatre

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **INVESTIGATE THAT LIGHT CAN BE BROKEN UP INTO MANY DIFFERENT COLOURS**

Use prism to create spectrum.

Some suggested activities:

- Discuss the colour of sunlight. Where do we find different coloured lights, why are they different colours? What colour is a rainbow? What makes a rainbow?
- Use various methods to make and observe rainbows (colour spectrum) e.g.:

- blow bubbles and look at the spiralling colours on the surface.
- hold a prism in a direct beam of light (use a torch or the light from a projector) and direct it onto a white surface (wall, ceiling or sheet of paper)
- place a mirror in a shallow container of water outside on a sunny day and reflect the sunlight from the mirror onto a sheet of white paper
- observe the rainbow on a CD or shine a torch onto a CD and reflect the beam onto a white surface
- alert children to colours on films of oil on the roads

- How many colours can the children see? Can they identify them? Can they think of other ways to create a spectrum e.g. using a transparent plastic ruler, glass face from children's own watches etc?
- Chromatography to separate colours: Use blotting or filter paper strips 10cm.x 3cm approx. Put large dot (5-10mm. diameter) in centre with various water based markers. Allow to stand in tumbler with a little water in the bottom. Watch what happens as the colours separate. Dry the papers and use to make book marks.
  As above with colour from Smarties or M and Ms.

Some suggested investigations:

- Do the colours of the spectrum always appear in the same order?

Some suggested designing and making:

- Use motor to spin wheel with spectrum of colours, to show white light

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **INVESTIGATE THE RELATIONSHIP BETWEEN LIGHT AND MATERIALS**

Sort materials according to the degree to which they allow light through (transparent, translucent, opaque)
Explore materials that do not allow light to pass through (opaque) and thus form shadows
Design and make a light shade for bedroom.

Some suggested activities:

- Predict and test a range of materials to see if they let light through. Introduce greaseproof paper, bubble wrap, kitchen towel etc. What is the

difference between these materials and the transparent materials? Where do we use translucent glass, why?
- Predict and test a range of materials to see which make the best shadows.
- Look at classroom objects through coloured cellophane or light paddles. What do the children notice?

Some suggested investigations:
- Are all liquids transparent?
- How can we make shadows longer or shorter?
- How do shadows change during the day?
- Which material would be best for the bedroom blinds of somebody who works nights?

Some suggested designing and making:
- Shadow theatre: Make shapes of animals etc on pieces of paper and attach to sticks. Create a shadow puppet theatre. Explore the effect that various light sources and paper have on the effectiveness of the puppets.
- Lampshade: Examine lampshades from home. Discuss and assess the properties of the lampshades. Design and make a lampshade using these criteria.
- Sun dial or a shadow clock, outside /or inside.

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **INVESTIGATE HOW MIRRORS AND OTHER SHINY SURFACES ARE GOOD REFLECTORS OF LIGHT.**

Effects of flat shiny surface, curved shiny surface

Some suggested activities:

- Discuss where and when we use mirrors. Can we see mirrors in the dark?
- What happens when we shine a torch at a mirror? What other objects in the classroom work like a mirror? Which objects best reflect light? Which objects can you see your face best in? What do these objects have in common?
- Children write their name and look at the name in the mirror. Write the name so it looks normal in the mirror**.** Find the letters of the alphabet that look normal in the mirror (place the mirror horizontally and then vertically over the letters). Make words using these letters. Send a secret message in mirror writing to a friend.

- Play mirror image games: Face a mirror and ask a partner to give directions such as close your left eye, touch your right ear etc.
- Children should look at their face in flat, concave (curves in) and convex (curves out) mirrors. Note differences. What happens if the mirror is pulled closer to your face?
- How useful is kitchen foil as a mirror?
- Place two plane mirrors opposite each other with a marble between. Look over one mirror into the other. What can you see?

Some suggested investigations:

- How many images of a toy can I make using 2 mirrors? Hinge them using sellotape, as the angle changes what is the effect?

Some suggested designing and making:

- Kaleidoscope

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **RECOGNISE THAT THE SUN GIVES US HEAT AND LIGHT WITHOUT WHICH PEOPLE AND ANIMALS COULD NOT SURVIVE**

Some suggested activities:

- Explore and discuss with the children what they think would happen if the sun disappeared. How might this affect us?
- Ask the children to write down all the food they ate yesterday and trace back the origin of those foodstuffs.
- Compare the effects of different coloured transparent and opaque covers on growing plants

Some suggested investigations:

- Do plants grow towards light?
- Does the colour of the glasshouse affect the growth of plants?

Some suggested designing and making:

- Glasshouses with different coloured ‘glass’.

THIRD AND FOURTH CLASSES – LIGHT

Content Objective:

- **BEWARE OF THE DANGERS OF LOOKING DIRECTLY AT THE SUN**

Some suggested activities:

- Discuss how we protect our bodies from the sun especially during the summer.

Some suggested investigations:

Some suggested designing and making:

- Design a poster to illustrate the point that we should ‘Never look directly at the Sun’