

THIRD AND FOURTH – MATERIALS AND CHANGE

Teacher Guidelines:

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Linkage:

- Living Things
- Properties and characteristics of materials
- Heat
- Environmental awareness and care

Integration:

- Geography: Natural Environments – Weather
- Oral Language Development – English and Gaeilge
- Visual Arts
- SPHE
- History
- Maths - sorting

HEATING AND COOLING

Content Objective:

EXPLORE THE EFFECTS OF HEATING AND COOLING ON A RANGE OF LIQUID, SOLIDS AND GASES

The effect of heating and cooling on water. Heat causing air to rise. Design, make and flavour ice cream

Some suggested activities:

- Discussion on heating and cooling various materials

Some suggested design and make:

- Ice-lollies.
- A dancing snake
- Explore the effects of the heat rising on the dancing snake

Content Objective:

INVESTIGATE THE SUITABILITY OF DIFFERENT KINDS OF CLOTHES FOR VARIATION IN TEMPERATURE

Recognize that some fabrics keep us warmer than others

Some suggested activities:

- Discuss clothes worn in summer. What are they made from, how are they different to clothes that you would wear in winter?
- Discuss ways of keeping warm in cold weather. Clothes we wear, wearing layers (air is trapped between the layers which helps to insulate our bodies)
- Discuss how animals keep warm in cold weather, birds fluff up feathers, some animals grow thicker coats etc.

Content Objective:

EXPERIMENT TO ESTABLISH WHICH MATERIALS ARE CONDUCTORS OF HEAT OR INSULATORS

Explore ways in which liquids and objects may be kept warm or cold

Design and make a tea-cosy or a cover for a hot-water bottle

Some suggested activities:

- Discuss ways of keeping the house/ school warm.
- Discuss the use of insulators around the house, tea-cosy, lagging jacket, hot water bottle cover, carpet etc.

Some suggested investigations:

- Which material is best for keeping my drink hot
- Which cups are the best for keeping my drink hot
- Which material would work best to **slow down** the melting of an ice cube/chocolate button?
- Which material works best to **speed up** the melting of an ice cube/ chocolate button?

Some suggested designing and making:

- A tea-cosy.
- A cover for a hot water bottle.
- A container to keep my soup warm.
- A container to keep my milk cold.

Content Objective:**INVESTIGATE HOW MATERIALS MAY BE CHANGED BY MIXING**

Design and make suitable refreshments for guests at a concert (e.g. iced tea, lemonade, adding fruit juices to water)

Some suggested activities:

- Discuss what happens to certain materials when they come into contact with each other? Water with food colouring/oil, water and milk, warm water and cold water, sugar and sand can you still see both? Sugar and tea, cornflakes and milk, soda and vinegar, soda and 7up and a variety of other household materials.

Some suggested investigations:

- Which substances dissolve best in warm water
- The effect of temperature when mixing
- The effect of stirring when mixing
- Which type of sugar will dissolve the quickest? (brown sugar, white sugar, icing sugar, sugar cubes, sugar crystals)

Content Objective:**INVESTIGATE THE CHARACTERISTICS OF DIFFERENT MATERIALS WHEN WET AND DRY**

Experiment with papier mache

Some suggested activities:

- Discuss the properties and characteristics of papier mache/clay.

Some suggested investigations:

- Where is the most suitable place to dry my clay papier mache/model? (sealed plastic bag, cardboard box, window sill, shelf and over a radiator)

MIXING AND OTHER CHANGES**Content Objective:****EXAMINE THE CHANGES THAT TAKE PLACE IN MATERIALS WHEN PHYSICAL FORCES ARE APPLIED**

When materials are beaten, whisked, mixed, squashed, pulled or bent

Some suggested activities:

- Whisk food to examine its effects e.g. Egg white, cream and angel delight.
- Experiment with clay, plasticine and dough.

Some suggested design and make:

- Models e.g. animals, letters etc from dough
- A smoothie
- A pizza

Content Objective:**EXPLORE SOME SIMPLE WAYS IN WHICH MATERIALS MAY BE SEPARATED**

Using sieves of varying meshes, using magnets, using ruler charged with static electric. Allowing sediments to settle in a jar of liquid. Separating water and salt through evaporation

Some suggested activities:

- Separate materials e.g. soil with sieves of various meshes/ iron filings and sand/ water and salt.
- Experiment with sieves of different sizes
- Filter mixtures, experiment with different mixtures eg. Clay and water, salt and water.
- Separate water and salt/sand etc through evaporation (leave the mixture to stand on the window sill)
- Separate pepper from salt using static electricity.
- Put some clay from garden into jar and add water. Shake and allow to settle. Examine the results

Some suggested design and make:

- Sieves