# 9 Dough Babies

## 1 Unit summary

**Most Early Years teachers regularly make play-dough for their classroom. Involving children in making their own play-dough gives them an exciting and motivating opportunity to understand a relevant application of science.**

### Science learning

This unit will give children the opportunity to closely observe what happens when the raw ingredients of play-dough are mixed together and heated. They will be able to use their senses to compare the mixture at different stages of the process and begin to communicate their observations using simple scientific language.

### Science for practitioners

It is common that children do not always realise that they are 'doing science'. Making cooked play-dough relies on an irreversible chemical change that occurs when a liquid containing starch is heated. Children do not need this level of understanding; however, for all of the activities in this unit they will benefit from being reminded that this is science, by modelling language such as observe, compare, change, predict, similar and different.

### Science progression

In Key Stage 1 children will learn about the properties of a variety of everyday materials and to distinguish between an object and the material from which it is made. They will also learn how the shapes of some solids can be changed by squashing, squeezing, bending, twisting and stretching. In Key Stage 2 children will learn that some changes (such as freezing and melting) are reversible and that others (such as when the ingredients are changed during the baking of a cake) are irreversible and that, whatever they do, they will never be able to get the flour back out of the cake!

### Switched on Science links

- Key Stage 1, Year 1, Topic 1 – Who am I?
- Key Stage 1, Year 2, Topic 6 – Little Masterchefs

## Prime areas

### Communication and Language

An important part of this activity is being able to talk about the process. Children can find it difficult to recount in the correct order and to include the relevant details. Hearing the language modelled by adults and other children, and then being given lots of opportunities to use it themselves, will support them to develop this important skill.

### Personal, Social and Emotional Development

The cooked dough offers a fabulous opportunity for children to learn to share and negotiate as new children join the activity. Model giving up some of your own dough, and noticing when children do share (even if it is only a tiny piece) will help children to develop this important, but difficult, skill.

### Physical Development

Cooking and then playing with the finished play-dough is a valuable way for children to develop their fine motor skills. Encourage children to squeeze, push and pull the dough.

## Specific areas

### Literacy

Following a printed recipe card when making the dough will support children to understand about following written instructions; this will also give them an opportunity to apply their reading for a purpose. Even reluctant writers might enjoy the opportunity to add captions, or speech bubbles, to photographs taken during the different stages of play-dough making.

### Mathematics

Following the instructions to make dough is a motivating context for weighing, measuring and counting. Waiting for a minute while the dough cooks in the microwave is also a chance for children to begin to understand that a minute is an exact unit of time.

### Understanding the World

Children need to learn to recognise that a wide range of technology is used at home and school. This activity gives them an opportunity to experience how a microwave oven works.

### Expressive Arts and Design

Combining play-dough with other resources, such as feathers and pipe cleaners, enhances the opportunity for making interesting models and sculptures. The provision of a variety of mark-making tools, such as Lego bricks or forks means that texture and pattern can be added.

## 2 Getting ready

### Resources

- Ensure that there is enough equipment and ingredients for each child to make their own batch of dough. Essential resources are: Cream of Tartar, Food colouring, Measuring jug, Measuring spoons, Microwave oven, Mixing bowls, Mixing spoons, Plain flour, Salt, Vegetable oil.
- Optional resources include: Baby oil, Bird seed, Cocoa powder, Essential oils, (e.g. lavender, rose), Food colouring, Glitter, Herbs, Spices (e.g. cinnamon, nutmeg), Vanilla, Various flours such as self-raising or wholemeal.
- Online resources via My Rising Stars.

### Websites and books

Play dough recipe 1 weblink

Play dough recipe 2 weblink

Making play dough video

### Key Vocabulary

- Words to describe the finished dough and what is done to it include: Pliable, Soft, Squash, Squeeze, Stretch, Twist.
- Words to describe the process of making the dough and the scientific changes that take place include: Change, Cook, Heat, Liquid, Lumpy, Powder, Solid, Sticky, Thicken.

Although they will not need to know the words 'reversible' and 'irreversible' until KS2, children may delight in learning the word 'irreversible' to describe the fact that the play-dough cannot be changed back into its original ingredients.

### Home science links

You could encourage parents to make dough at home with their children by providing a pictorial instruction sheet and some suggestions for how they might choose to play with it.

### Health and safety

Children should:

- know not to eat the play-dough
- not handle the newly cooked dough until it has cooled in the centre.

Adults should:

- be present throughout the cooking process
- be aware of allergies, e.g. nuts.

## 3 Explorations

**When you are making dough with the children you might tell them that the making area is a 'play-dough factory'. This will help children make the connection between industry, science and their everyday lives.**

## Introductory activity

This activity is best done in small groups with enough bowls and spoons so that each child can make their own batch of dough. Give children time to explore and talk about the individual ingredients. Model how to follow the instructions on the sheet until everything is combined into a smooth thick liquid. While the first batch of dough is cooking in the microwave encourage the children to talk about what they think will happen to it. When taking it out after the first minute to stir, show it to the children and support them to describe the changes that they observe. Although children need to be protected from the risk of burning themselves, make sure that they have the chance to realise how hot the mixture had to become in order for the change to happen.

## Focussed exploration

### Activity 1 – Making Choices

Once they have made play-dough for the first time it can be valuable to give children the opportunity to make some changes. Thinking out loud is a way to introduce the idea of trying different ingredients, rather than always following the exact recipe, e.g. the adult might say '*I wonder what would happen if I used a different flour to make the play-dough?*' '*I wonder what would happen if I put some herbs in the play-dough when I mix it?*'.

Provide a variety of different ingredients including self-raising and wholemeal flour, baby oil and spices and other scented ingredients such as cinnamon, turmeric, cocoa powder, mixed herbs and essential oils. Children are likely to want to make several changes, but it is worth supporting them to make just one or two, so that they are more likely to produce a useable dough. Encourage children to predict what they think will happen before they make the change – and to evaluate the results afterwards. '*How is the new dough different from the original recipe?*' '*Does it have different properties?*'.

### Activity 2 – Dough Babies

A 'dough baby' is a little person made out of dough. They can provide a context for comparing dough made to different recipes, e.g. children could choose to make three dough babies, one each of bread dough, salt dough and play-dough. To begin with, they could be encouraged to notice how different the babies feel to each other, e.g. do they have the same texture or are they equally malleable? They could then be encouraged to speculate what would happen to them in different circumstances. '*Will they all behave the same way if they are baked or frozen?*' '*What will happen to them in water?*' '*Will they float?*' '*What will happen to them if we leave them outside overnight, or on a window sill?*'. Encourage the children to observe closely and to talk about what they see.

## Free-flow exploration

### Activity 1 – Making patterns

Provide a wide range of textured objects for making patterns in the dough and encourage children to find interesting textures of their own. During an adult-guided activity, encourage children to talk about the feel of the different textures and to describe the patterns that they make. Encourage children to guess which object made which pattern, e.g. a selection of autumn leaves, sea shells or tree bark could be used.

### Activity 2 – Sculptures

Found objects, both natural and man-made, can be used to enhance children's play-dough sculptures. Again, planning some adult-led sessions is likely to lead to more productive child-initiated experimentation. Encourage children to describe the models that they have made and to explain their choices. Objects to provide might include feathers, shells, pine cones, pipe cleaners, nuts and bolts, string and discarded pencil stubs.

## Taking it further

Making dough for bread is an alternative activity that children could experience, enjoy and learn from. This time the dough is a soft and pliable solid before it is cooked and heating produces a different kind of change. Help them to notice how the action of the yeast upon the sugar in the liquid creates bubbles, and how the dough increases in size when it is proving.

## 4 Characteristics of effective learning

### Playing and exploring

- Children are excited to make their own play-dough.
- Children are able to make sensible suggestions of their own, e.g. perhaps collecting autumn leaves to add to their sculptures or asking if they can use the toy cars to make tyre tracks in their dough.

### Active learning

- Children are able to cope with the initial disappointment if their experimental dough does not result in a useable batch of dough, and are keen to have another go.

### Creating and thinking critically

- Children choose how they play with their dough. Occasionally they will make choices that adults know are unlikely to work, e.g. using their dough to make a boat for the water tray. Supporting children to evaluate what happened and to find out for themselves that play-dough will not make a waterproof boat is a productive approach.

## Early learning goals

**ELG 1 Listening & Attention**: All activities; **ELG 2 Understanding**: Focussed exploration 2; **ELG 3 Speaking**: Focussed exploration 2; **ELG 4 Moving & Handling**: All activities; **ELG 5 Health & Self-care**: Introductory activity; **ELG 6 Self-confidence & Self-awareness**: All activities; **ELG 7 Managing Feelings & Behaviour**: All Free-flow explorations; **ELG 8 Making Relationships**: All Free-flow explorations; **ELG 9 Reading**: Introductory activity; **ELG 10 Writing**: Free-flow exploration 1; **ELG 11 Numbers**: Introductory activity, Focussed exploration 1; **ELG 12 Shape, Space & Measure**: Introductory activity, Focussed exploration 2; **ELG 13 People & Communities**: Taking it further; **ELG 14 The World**: Introductory activity; **ELG 15 Technology**: Introductory activity, Taking it further; **ELG 16 Exploring & Using Media & Materials**: Focussed exploration 2; **ELG 17 Being Imaginative**: Free-flow exploration 2.