[ACTIVITY DETAIL]

1 HOUR ACTIVITY

BAKING MINCE PIES

As an optional extension activity, with excellent links to the Design and Technology curriculum, each group of children is given a Mince Pie Recipe and works with adult to make mince pies. They focus on the scientific vocabulary and processes involved in baking to further their understanding of different types of change and make their own decisions about how to record changes over time.

TYPE OF ENQUIRY

Observing changes over time

OBJECTIVES

- To experience first-hand changes to ingredients when they are mixed and cooked
- To make systematic and careful observations over a period of time.

To be able to:

- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible

SCIENCE VOCABULARY

Mixture	Solid	Liquid
Ingredients	Change	Reversible
Irreversible	Permanent	

RESOURCES

Mince Pie Recipe
For a group of 4 children to make a batch of 24 mince pies

For home-made mincemeat

- 75g cooking apples
- 40g shredded suet
  (vegetarian alternatives can be used if desired)
- 140g dried fruit
  (such as raisins, currants, sultanas)
- 40g candied mixed peel
- 60g soft dark brown sugar
- ½ orange and ½ lemon
- 10g chopped almonds
- 1 teaspoon mixed spice
- OR 400g jar mincemeat

For pastry cases

- 300g self-raising flour
- 75g margarine
- 75g lard
  (vegetarian alternatives can be used if desired)
- Pinch of salt
- Cold water (to mix)
- Icing sugar (for light dusting)

RESOURCES

Utensils

- Peeler and corer
- Chopping board
- Chopping knife
- Weighing scales
- Grater
- Large mixing bowl
- Foil
- Sieve
- Tablespoon
- Teaspoon
- Rolling pin
- Baking tray
- Oven gloves
- Cooling rack

PRIOR KNOWLEDGE/EXPERIENCE

Children will have looked at what is in a mincemeat mixture and discovered that they can separate most of the ingredients from the mixture. They will have talked about pastry and that it would be difficult to get ingredients such as flour or margarine back from the mixture due to the changes that have occurred during baking.

An experience of mixing ingredients and using simple kitchen utensils to cut, mix, roll and cook would be helpful.

ACTIVITY NOTES

At any time during the nine activities in this resource, the Kitchen Chaos cartoon strip can be shared on-screen with the class.

Refer to Safety guidance and check for individuals with allergies before children collect the appropriate ingredients and utensils for their baking using the Mince Pie Recipe provided.

When making the pastry, focus discussion on what it looks and feels like and on predicting what will happen to it during baking. Children's descriptions can be compared with observations when the pies are baked and cooled. Keep leftover pastry cuttings and bake some of these alongside the pies so that children can handle and compare both baked and unbaked cuttings. Some children may be able to predict the brittle nature of the pastry once it comes out of the oven and the fact that it browns and the smells of fat and flour are not as distinct. Others (or perhaps all) may only appreciate this on handling both pastry types after baking.

Children should make their own decisions about how to record their mince pie making. Each step of the mince pie making process can be photographed by children and ordered chronologically in a multimedia presentation, flip book or photo album. They should think carefully about what commentary they might devise to accompany each photograph, including detailed descriptions of the changes that are taking place over time.

EXTENSION OR HOME-BASED ACTIVITIES

Children could carry out further research to find examples of the different types of changes that occur when things are mixed, such as:

- A chemical change is one that results in the formation of a new substance. Chemical changes often occur when food is cooked, such as boiling or frying an egg, making toast or baking bread. The changes are usually permanent.
- A permanent change occurs when the original substances cannot be recovered easily from the new substances, eg cooking, rusting, weathering and burning.
- A reversible change means that the original substances can be recovered in some way. Mincemeat is a reversible mixture as even the sugar can be separated from solution by gently evaporating the water. However, recovering the suet, which will have melted and been absorbed into the fruit, is much more complex.

QUESTIONS FOR THINKING

- What does the mincemeat mixture look, feel and smell like before it is cooked?
- How do you think the mincemeat will change when it comes out of the oven? Why?
- What does the pastry mixture look, feel and smell like before it is cooked?
- How do you think the pastry will change when it comes out of the oven? Why?
- What does the pastry mixture look, feel and smell like now it has been cooked?
- Can you describe the changes in as much detail as possible?
- What different types of changes have occurred during the making of a mince pie?

SAFETY GUIDANCE

Please use the following health and safety information to produce your own risk assessment for this activity:

- Prior to this activity, check for individuals who may be allergic to any of the ingredients used in the mince pie recipe, in particular those with nut allergies.
- Good food hygiene is fundamental in the safe preparation of food whether it be at home or in the classroom. It is essential that teachers are aware of the potential risks associated with the preparation and cooking of food in school.
- When working with sources of heat for cooking and baking activities, teachers should follow strict safety precautions. It is recommended that one adult should closely supervise a maximum of six children.

INDUSTRY LINKS AND AMBASSADORS

Mixing, heating and changing ingredients are core industrial processes. Links with the food industry will be most accessible to children, however, it should not be too difficult for them to appreciate that many non-food industries mix, heat and change ingredients to make non-food products. Some examples of this can be found at **www.industry-animated.org**, which demonstrates through animation:

- A reaction vessel which is an industrial cooking pan with a fixed lid into which ingredients are added through pipes
- An extruder which heats up and melts plastic pellets to shape them in to pipes, etc.

INDUSTRY LINKS AND AMBASSADORS

Children could visit **www.scienceofhealthyskin.org.uk** and have a go at the activity 'Lanolin Layers' which uses a series of photographs to demonstrate ovens being used to melt solid wool grease (washed from sheep fleeces) in order to pour it out of the large drums it is transported in.

If working with a STEM ambassador, links can be made with the company by providing a simple 'recipe' for their products, focusing on the mixing, heating and separating involved.

Note: The teacher should collaborate with the ambassador to ensure the recipe presented is at the correct level for understanding and that scientific vocabulary is used appropriately to reinforce the scientific concepts of melting, mixing, changing and heating etc.

CROSS CURRICULAR LINKS

English: opportunities to use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas. Also links to writing whereby pupils identify audience and purpose, as well as selecting the appropriate form.

Mathematics: links to sorting, classifying and grouping, mass and volume.

Design and Technology: the extension activity provides links to preparing and cooking a variety of dishes using a range of cooking techniques.