Stage 7: Making butter

Learning objectives:

- To understand how dairy products are made
- To make a dairy product

Stage overview:

In this stage, the children have the opportunity to learn about how dairy products are produced and make their own dairy ingredient that they will use in the recipes they have designed and budgeted for. If you have chosen to make a breakfast drink, you may wish to miss out making the butter and just teach the content to explain how the yoghurt you will use in your recipes in made.

Materials needed for each pair:

- Plastic food container/ jar with lid
- Double cream that has been out of the fridge for 30 minutes

Presentation notes:

Slide 2: Introduction	- Quickly, activate prior learning by asking the children to think of as many dairy products as they can. - Remind the children that dairy products are products made from milk and milk comes from dairy cows. We can also get milk from goats and sheep.
Slide 3: Nutritional benefits of dairy products	- Milk is high in protein helps our body grow. - It is high in calcium and vitamin D which help keep our bones and teeth healthy. - Share the fun fact: To get the same amount of calcium that is in one glass of milk, we would have to eat 11 portions of spinach, 4 portions of broccoli and 63 brussel sprouts!
Slide 4: Processing milk	- Dairy cows produce milk and have to be milked twice a day. - Share the video to show how cows are milked: http://www.foodafactoflife.org.uk/VideoActivity.aspx?siteId=15&sectionId=66&contentId=163&titleId=170 - The milk has to be quickly stored at a low temperature to keep it fresh. It is then taken to a dairy to be processed. - At the dairy, the milk is pasteurised which involves it being heated up very quickly and cooled down again to kill any harmful bacteria. - After that, the milk is separated into its cream and liquid components before being standardised (re-blended so that the milk contains the amount of fat required e.g. semi-skimmed). - Milk is processed in different ways to turn it into different dairy products

Slide 5: Cream	- The fat and liquid content of fresh unpasteurised milk quickly separates and the fat rises to the top. This fat layer is known as cream. - Once the cream has been separated from the milk, it is pasteurised.
Slide 6: Butter	- Once the cream has been separated from the milk, it can be turned into butter by continuously churning it to separate the solid milk fat from the liquid buttermilk. - Explain to the children that today, we will be completing this process for ourselves and making our own butter to use to make our food products.
Slide 7: Making our own butter	- Use the power point to take the children through each stage of making their butter. 1. Explain that we will be shaking the cream so we need to fill our containers until they are approximately a third full. Ask the children to think of solutions for how we could do this using Maths. We could estimate using our knowledge of fractions to remember that if we divide the container into thirds it will be divided into three equal parts. Or, if we wanted to measure the cream accurately, we could find out the capacity of our container by filling it with water and then pouring the water into a measuring jug/ cylinder to measure it, then we could divide the total capacity by 3 to find how much cream we need to measure out to fill up a third of the container. 2. Once the measured or estimated cream has been added to the container, screw the lid on tightly. 3. Ask the children to take turns to shake the container for up to half an hour. 4. While the children are continuously shaking their containers, you could complete a 'Dairy Olympics' activity by asking them to complete running races outside while shaking (but not if you are using glass jars!) 5. Ask the children to notice the changes that their cream goes through, it should stop sloshing around and become whipped cream before turning into a solid lump of butter and a separate liquid- this is called buttermilk. 6. Pour the buttermilk out of the container and refrigerate your butter, ready to use in your recipe in a later stage of the project.
Slide 8: Yoghurt	- To make yoghurt, harmless bacteria are added to pasteurised milk. - The bacteria produce lactic acid, which thickens the milk and turns it into yoghurt.

Links to the National Curriculum:

Design and Technology	Cooking and nutrition	- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.