

New Product Development

Key Stage 2

Suggested presenter	Someone with a level of technical knowledge specifically around new product development with training skills that include presenting/facilitating a group
Lesson Information	This session is aimed at Key Stage 2 pupils (Years 3, 4, 5 and 6 – age range 7-11 years) This session is designed to follow one or both of the other shorter sessions – this session can be whole day or stopped at lunchtime if wished and the packaging design aspect missed out. Alternatively, it could be run over two shorter session. Given that all classes are different sizes and have different routines and length of session times, you will need to adapt this plan as necessary in terms of quantity of product and equipment and session times.
Duration	Up to a full day
Aim	The purpose is for the children to understand the process involved in New Product Development
Learning Outcomes	The students will be able to; <ul style="list-style-type: none"> • Describe the roles of sensory scientists and taste panels • Extend their taste vocabulary • Understand how to wash their hands properly and why it is important • Have a basic understanding of product packaging and marketing
Key Points	This lesson plan is a guide only. As the person delivering the lesson you are encouraged to adapt it to suit the class you are teaching. It is important to remember that the main point is to inspire and introduce young people to the food sector.

Please refer to the “How to guide – Preparing for the lesson”

Lesson Format

1. Introduction
 - a. Brief Intro
 - b. Visual Timetable
 - c. More detail about you and your company
2. Sensory Scientists and basic tastes
 - a. Talk
 - b. Activity 1
 - c. Mini plenary and tally
3. The Next Big Thing
 - a. Talk
 - b. Demonstration
4. Exploring new tastes
 - a. Introduction
 - b. Activity 2
 - c. Mini Plenary
5. Recap
6. Packaging and Logo design
 - a. Talk
 - b. Activity 3
 - c. Mini Plenary
7. Marketing
 - a. Talk
 - b. Activity 4
 - c. Plenary

Resources Required

- ✓ Visual Timetable (*downloadable*)
- ✓ Blu-tac
- ✓ Safety rules chart (*downloadable*)
- ✓ Pictures of basic tastes (*downloadable*)
- ✓ Hand washing poster (*downloadable*)
- ✓ Taste test tally chart (*downloadable*)
- ✓ Smiley scale slip for each child (*downloadable*)
- ✓ Hair nets for each child
- ✓ Any company products for demonstration or gifts
- ✓ Sample of products (see activities for quantities)
- ✓ Chosen ingredients to combine with product (see activities)
- ✓ Plates or dishes
- ✓ Forks, spoons and other useful equipment
- ✓ Paper, pencils, scissors, glue
- ✓ Branding Pictures (*downloadable*)
- ✓ Adapting the recipe worksheet (*downloadable*)
- ✓ Nutritional information extension sheet (*downloadable*)

See below for set up of activity resources

Set up beforehand on the tables

Activity 1: For each group: Samples of product. One *smiley scale chart* for each child (see downloadable resources) /pencils / one sample of product for each child.

Activity 2 : For each group: Samples of product, plates or dishes to combine ingredients in, forks for mashing and mixing, spoons for tasting and any other useful equipment that would help them to combine your chosen product with others
Ingredients that the children could combine with your chosen product to develop / redevelop it
Plates or dishes for your other ingredients to be taken back to their tables on.

Activity 3: ‘Adapting the recipe’ worksheet for each group (See downloadable resources)

Activity 4 and 5: plenty of paper, pencils, colouring pencils, scissors, glue in case they want to investigate in 3D (check beforehand that the teacher will have these ready)

Extension activities : Weighing scales. Nutritional information sheet (see downloadable resources)

Introduction

Introduce yourself and give your company name (only tell them where it is at this stage)

It’s really important for children to have the big picture/ overview of the session and what they can expect in the time that you are there. Putting up a *visual timetable* (see downloadable resources) on the board is a useful way to engage all children but particularly those with special needs such as Aspergers / Autism because they feel safe and are able to behave better when they know what is going to happen.

Giving the Big Picture (30 seconds!)

- **Stick up the visual timetable**
- First, I’m going to tell you about the exciting job I do and the company I work for. (Import or stick on a picture of your place of work or company logo onto the visual timetable)
- Then you are going to get into groups and do some tasting.
- Then we will explore some of the ways that food technologists invent new foods.
- Then it will be break time.
- After break you are going to design some new food of your own in groups
- Then we will share what we have done so far.
- Then lunch
- Then you will be designing the packaging for your new product.
- We will have a plenary at the end where you show the other groups what you have done.
- At the end you can also ask me any questions you have about what we have done today or about my job and where I work.
- By the end of our session you should know about and my factory and some of the things the Food Scientists do who work there.

Your job and your company - no more than 2 mins (Not required if this is your second or third visit.)

- Put it in context of where they might have seen or eaten your chilled product.
- Try to make everything you say relevant to the children. Take into consideration their age and possible life experiences but stay flexible and expand or reduce the information you give depending on the ability, level of understanding and concentration they are showing.
- If they appear to fidget and get restless, it’s probably time to stop talking even if you haven’t finished all of what you planned to say. Tell them you can see that they are excited to start and go on with the next bit. You can come back to anything important you needed to say later.

NOTE: Pupils you work with will be of different abilities. Key Stage 2 pupils range between the ages of 7 to 11 but you will need to assess their ability and possibly adapt how technical/scientific you make each session.

Sensory Scientists are go! 5-10 mins (You may get through this section more quickly if you have already delivered the previous session which covered this - but use it to recap accordingly)

- Do they know / remember what a Sensory Scientist does? If not, explain that there are different types of scientists who work in the food industry and that one of them is called a Sensory Scientist. They have a great job finding out about how things taste, smell, look and feel and whether customers, like you, would like to eat the things that other scientists in the factory have invented.
- In the first activity you are going to use your senses especially your sense of taste and smell.
- What part of our body do we taste with? The tongue is only partly true because we need our nose to help too.
- There are five basic tastes – one is ‘sweet’ can you name the others? Salty / bitter / sour / umami (If/when they start to name flavours rather than tastes explain that it is the nose that helps you to ‘taste’ flavours)
- Stick up the taste pictures in a prominent place as they name them and then explain the ones they don’t name.

Activity 1: ‘Consumer acceptance test’ tasting (10 mins)

- Ideally, it would be great if you were able to use your own product for this activity. If your product doesn’t lend itself to being mixed readily with other foods then please choose a product from one of the other CFA companies.
- Briefly talk about hygiene and hand washing and safety rules – if this is a return visit and they have already done the hygiene session they will hopefully remember what to do. Recap or teach importance of hygiene and the hand washing method, getting the children to do it with you with dry hands – put up the poster near the sink beforehand so they can refer to it.
- Tell the children they are going to taste the original product and be the testers for your Sensory Science department (say this even if you don’t have such a department!). They will need the taste pictures to refer to when they are thinking about how to describe the food later. Tell them you need them to think first about how it looks, then chew slowly and think about the taste, the flavour and the texture (what it feels like in the mouth). Then they need to think carefully about how much they liked it and mark it on the Smiley chart when they are sure.
- Ask the teacher to split them into their groups and send them to the tables where you have small samples of your chosen product and Smiley Scale charts for each child waiting.
- Children taste the product and circle the appropriate face on the scale.

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Mini Plenary (10 mins)

- When finished bring the children back together with their charts.
- Make a tally chart of the results (see downloadable resource and copy this onto A3 paper if possible or draw onto whiteboard in the classroom)
- Ask the children who didn't like it, why? Was it the taste, flavour, texture or the way it looked? How could the taste be made better? How could the texture be made better? etc.
- In answering your questions the children should come up with ideas to add or take away ingredients so now they are becoming Food Technologists!
- Explain that Food Technologists develop new recipes and change existing foods to keep the customers happy. Get them to think different types of ready meals and how many recipes there are- economy, standard, premium, healthy option, diet -as well as vegetarian or containing meat and how the recipe has been changed to make them different and to appeal to different groups of people. Show examples of boxes.

The next big thing! (10 mins)

- Tell the children you would like them to go back to their groups, compare the results of their taste tests with the other members of the group and think of some ideas as to how they could make the product more likeable, how they could improve it or simply just change it to make it different. They need to remember that if their new product is going to be made to sell to the public it has to pass a taste test like the one they have just done. Explain that Food designers think about who they are designing their product for and what age they are. They do lots of research into what those people buy and the sorts of things they like. Tell them that today they are going to be designing the food for other children because they know about what children like already.
- It would be useful if they could brainstorm their ideas on paper to make an ideas board – so it is important that the groups are mixed ability so that a more able child can scribe.
- When the time is up or they naturally seem to have finished, tell them that they are going to be returning to the carpet after the break to find out what ingredients you have that they can use to make a new product based on the original one.

~This would be an appropriate time for a break that fits in with the school routine~

During the break it would be useful to set up the tables with samples of product, forks for mashing and mixing, spoons for tasting and any other useful equipment that would help them to combine your chosen product with others. It may be useful to include things like graters, whisks and possibly a blender depending on your chosen product. Prepare the amounts of other ingredients that you are willing for them to have in their groups on plates or dishes.

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Talk 2: Exploring new tastes (10 mins)

- You will need to have thought about your chosen product and what ingredients it could be mixed or combined with in order to make it different. The children will obviously have to test samples on a small scale when they are designing the new product otherwise the cost of ingredients may become prohibitive.
- Choose 1 item from each of the five basic tastes groups that might combine with your chosen product if you can, plus a few others such as chocolate buttons (white and milk), honey, ketchup, spices, herbs etc. Be as adventurous as you think they would be but stay within the budget that's been agreed by your line manager for this!

Example –

- **Company product:** *Little gem lettuce*
- **Chosen added ingredients:** *Fresh nectarines / honey / white chocolate buttons / tomatoes / grated cheese / lemon juice / ketchup / tinned mandarins / tinned grapefruit segments / vinegar*
- **Outcome:** *In the class brainstorm when they thought of ideas for ingredients the children were sure that the best things to mix lettuce with were other savoury products and fruit – when they tried it with tomato it was 'ok', nectarine made it taste 'bitter'. With bacon bits on its own it was 'too dry' but with white chocolate buttons it seemed to taste 'crispier' and 'fresher'.*
- Show the children the range of ingredients you have brought with you for them to experiment with.
- Tell the children that they will be investigating the tastes in their groups and deciding on the one they would like to produce for other children. Suggest that they may want to try tasting them individually with the product or add more than one at a time i.e. they might combine and taste your product with chocolate, orange and honey together.
- Remind them that if they want to change the texture of the product there is equipment to help them available but they must ask you or their teacher before taking it. You obviously may need to supervise the use of certain equipment.

Activity 2 – Exploring New tastes

- Give them time to combine and taste ingredients. You might like to suggest various equipment to the groups, as you go round, if they are struggling.
- Tell them they will need to discuss and decide which final product they are going to choose as a group. They don't all have to like the choice but the majority need to if it is likely to pass a taste test.
- Get each group to bring a sample of their chosen new product back to the class for the plenary.

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Mini plenary (10 mins)

- Ask a rep from each group to show their new product and explain how they came up with the idea. Can they describe the taste of it? Who will be the likely end user and why do they think that?
- What do the other children think to each other's products? Are any the same or similar?
- Explain that after lunch they will be thinking more deeply about their product and how they can design packaging for it.

~Lunch break~ (You may need to miss out an activity depending on the length of the afternoon session)

Talk - Adapting the recipe (5 mins)

- After the teacher has registered the children, go over the visual timetable again, orally ticking off what you have already done and then tell them that this afternoon they will be thinking about the ingredients in their product and designing the packaging for it.
- Ask the children if they can name different types of consumer – i.e children in general being one category and diabetic people another.
- How could they adapt their new product to meet the needs of three other consumer groups?

Activity 3: Adapting the recipe (10 mins)

- Give the groups the worksheet to fill in with their ideas. Suggest that they have a look on the nutritional labels of the ingredients they have used to help them. Remind them that they can add ingredients that they don't have in the classroom too, as it is only a paper exercise this time.

Talk - Packaging (5mins)

- They will be working in the same groups to think about what size and shape their packet will be and brainstorm ideas first – what material will their packaging be made of? Cardboard / aluminium foil / plastic or a mixture? Can they make it recyclable? Does it need to be waterproof? Tell them when they have talked about it then each needs to draw what they think it should look like.

Activity 4: Packaging (20mins)

- After they have drawn individually, get them to discuss which they think is the best.
- When they have decided and agreed in their groups the shape and size of their packet, they need to come back together as a class.

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Talk - Logo design (5-10mins)

- Explain that now they have a packet they need to come up with a logo for their company or product to make it interesting to look at and to get people to buy it.
- Bring them back together to talk about the way that companies use their logo on all their products. Show them the examples of different types of ready meals again. Can they see how the brand logo remains the same even though the basic recipe is different? Explain that it is important for the logo to be clear and easy to remember and recognise.

Activity 5: Logo design (40 mins)

- Send them off to their groups again to brainstorm their ideas and then to work on sketching some out individually (remind them this is not the finished logo so doesn't need to be in best). Remind them they need to think about the font being clear if there is writing and also the colours they would use. If they choose to draw a symbol or picture does it represent their product?
- Again, they need to discuss them when they have finished as a group and choose the best one for their product.
- They can each then draw the logo 'in best' if there is time, leaving 15 minutes for the plenary and time to collect their things ready for home at the end of the day.

Extension activities

- Get the children to think about their group recipe and produce a storyboard for the manufacture of it (Fold A4 sheets of paper into quarters and draw pictures in each box)
- Can the children measure out and make a portion of their product and work out the total nutritional values from the individual ingredients? (see downloadable resource for template)

Plenary (15 mins)

- Each group share their finished design and the class evaluate each one. Can they say something positive and suggest an improvement? Ask each group for an example of how they adapted their recipe for another consumer group.
- What have they learned today about how we taste our food? (Tongue, taste buds, nose and saliva) Recap if they miss anything out.
- What did we learn about what Sensory Scientists do?
- What did we learn about the job Food Technologists do?
- Who would like to tell us which their favourite activity was?
- Ask for any questions. Remind them that a question is something that they want to know or find out - be prepared for younger children to ask irrelevant questions and don't feel you have to answer them. If you are not comfortable or don't have time, tell them that it's not a question about what you do and ask them to think of a question about that, if they can, and you'll come back to them. (Do try to remember to ask them again if you can)
- Thank them for working so hard and give them any appropriate company leaflets / stickers etc.

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