Fridgy things

Key Stage 3 CFA Bacteria Lesson

Suggested presenter	Someone with a level of technical knowledge specifically around hygiene with training skills that include presenting/facilitating a group
Lesson Information	This session is aimed at Key Stage 3 pupils (Year 7, 8 and 9 ages 11 – 14 years)
Duration	1 Hour excluding breaks
Aim	The purpose is to introduce pupils to typical bugs and bacteria that can be found in and around food products.
Learning Outcomes	The students will be able to; • Understand how bacteria grows • Understand why it is important to reduce the number of bacteria • Understand how to store food in a fridge to reduce risk of bacteria
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
2. Bacteria
   a. Discussion
   b. Activity
   c. Plenary
3. Growing Pains
   a. Discussion
   b. Activity
   c. Plenary
4. Finish

Resources Required

- ✓ Bacteria on food Worksheet
- ✓ Temperature Sheet
- ✓ Fridge Worksheet

Introduction (10 minutes)

Most students like to have an overview of what they are about to participate in, so spend a minute explaining the session you are about to deliver, the activities and key points they will be learning.

Aim to spend about 8 minutes talking about yourself, your role and the company you work for. Consider using some pictures to show the place you work, or bringing in some produce that the students may have seen before.

This introduction is the opportune time to demonstrate real enthusiasm for your role and sector; enthusiasm is infectious.

***NOTE**: Pupils you work with will be of different abilities. Key Stage 3 pupils range between the ages of 11 to 14 but you will need to gauge their ability and possibly adapt how technical/scientific you make each session.*

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Bacteria

Discussion (10 minutes)

What does the class know about bacteria?

- Bacteria are small living things
- It would take a million to cover a pin head (another way to think about a million of something is to think of the characters (letters & punctuation) in a 500 page book, or that it would take you 12 days to count to a million non-stop)
- Bacteria live on/around; water, air, people, food, soil, animals
- Some bacteria are good and some are bad
- Bacteria grow best when they have food, warmth, water and time
- Bacteria grow best within a temperature of 8°C and 63°C – Food stored at these temperatures are at a high risk of being contaminated – what does this mean?

Bacteria grow well on certain types of food such as;

- ✓ Meat
- ✓ Chicken
- ✓ Fish
- ✓ Cooked Rice
- ✓ Cooked Pasta
- ✓ Milk
- ✓ Cheese
- ✓ Eggs
- ✓ Meat pies
- ✓ Cream
- ✓ Gravy

Activity (5 minutes)

Hand out the Bacteria on Food sheets and ask the class to shade in the food areas that they think bacteria does not grow so well on.

Plenary (5 minutes)

Did anyone struggle?

Has everyone made the same choices?

Are there other things in their homes that they thought about?

Growing Pains

Discussion (20 minutes)

Show the students the temperature poster – this tells us the ideal temperatures that bacteria need to grow and what temperatures kill bacteria. Ask the students what happens to bacteria at temperatures below 8°C – Bacteria get sleepy and don't grow and at -18°C they are asleep.

So what do students think is happening when bacteria are growing?

In the right conditions (food, water, warmth) bacteria grow by dividing themselves into two every 20 minutes.

Using a white board work with the students to produce a growth table like this;

Time	Bacteria	Multiplication	Number of Bacteria
12:00	1 bacteria		1
12:20	1	X2	2
12:40	2	X2	4
13:00	4	X2	8

How many bacteria would there be by 3pm or 6pm?

The dangers of bacteria

Bacteria can cause food poisoning, Salmonella and Staphylococcus aureus are just two types of food poisoning bacteria.

Salmonella is found in chickens, pets, eggs, rats, mice, people and turkey. Staphylococcus aureus is found on humans in their noses, skin, throat and cuts. These areas are danger areas and tell us we need to be extra careful around food to ensure a low risk of bacteria. How do students think bacteria could be spread?

How do students think you could reduce the risk? – Hygiene, not sneezing or coughing near food, hand washing, keeping cuts covered, keeping animals away from food, don't use raw eggs, and keep raw meat away from ready to eat foods. Good maintenance of fridge/freezers, keeping food cool once you have brought it before you get it home.

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Activity (10 minutes)

The fridge can be a risky place, we store a mix of raw and ready to eat foods, the temperature is not always optimum and sometimes they are not always as clean as they should be. The optimum temperature for a fridge is between 3° and 5° and -18° for freezers.

Hand out to each student the fridge worksheet and ask them to complete the task. If there is time you can ask them to add/draw in things that they would find in their own fridges at home.

Plenary (5 minutes)

- How did they get on, do they store food properly at home?
- Talk to the students about the jobs roles in your company and who would be responsible for reducing bacteria in a food factory. Why is it important?

Finish (5 minutes)

- Ask for any questions - be prepared for some in the younger year groups (especially Year 7) to ask irrelevant questions and don't feel you have to answer them. If you are not comfortable with a question or don't have time, tell them you'll come back to them. (Do try to remember to ask them again if you can.)
- Thank the pupils for working so hard and listening well and if possible leave them something that reminds them of you, your company and your products.

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