1. Growing mould

2 hours activity

The children are introduced to the activity through a fictitious newspaper article which promotes discussion of the type of conditions which might encourage mould growth. They then investigate these conditions.

OBJECTIVES

- Describe how living things are classified into broad groups according to common observable characteristics and based on similiarities and differences, including micro-organisms
- To appreciate that micro-organisms are living things that are too small to be seen
- To appreciate that micro-organisms may be either beneficial or harmful
- To plan and set up an investigation into mould growth

RESOURCES

(Per group of 4)

- Activity sheets 1- 5
- Clue cards
- 6 transparent seal-able freezer bags
- 6-8 slices of fresh bread
- Refrigerator or freezer compartment
- Scissors
- Sticky tape
- 2 water droppers
- 1 beaker of water
- Adhesive labels

OR

- 4 plastic Petri dishes for yogurt
- 2 pots of natural yogurt

INTRODUCING THE ACTIVITY (30 minutes)

Use the 'newspaper article' on Activity Sheet 1 to introduce the problem of finding the best conditions in which to grow moulds[1]. In this article, the firm wants details, backed up by evidence and measurement of the children's investigations. The illustration in the article shows bread going mouldy, but are these the only things to go mouldy? Questions to encourage discussion are suggested below.

- *Which other foods have you seen growing mould?*
- *Based on things you know can you suggest any conditions that might cause moulds to grow?*
- *Think about where the food is stored. Do you think it is warm or cold? Dry or moist? Light or dark?*
  Use words like 'micro-organism' and 'microbes', as well as the common 'germs' to familiarise the children with these terms.
- *Can you suggest/brainstorm how we could test which conditions produce the most mould?*
- *What 'medium' or material/foodstuff should we use to grow the moulds on?*

The teacher should also explain the safety implications of growing microbes. They may be beneficial, but equally they may not, so they will be contained in sealed freezer bags. Discuss how the tests can be kept 'fair', e.g. same sized pieces of bread, same loaf.

Safety note

Mouldy foods should be kept in sealed plastic bags.

MAIN ACTIVITY (70 minutes)

In groups of four, the children should decide the conditions they will test, and plan how to record their results. The clue cards (provided on Activity sheet 2) can be used to support the children's planning and setting up of their investigations. The teacher can provide the cards if groups request them, to give suggestions for setting up the method, and for recording results. Knowing which clue cards the group has requested can give the teacher an idea of how confident the children are in aspects of planning their investigatory work, and may even help provide an assessment tool for the teacher.

Key questions for the children to decide upon are:

- how the test is to be set up
- what will actually be done
- how the results are to be recorded.

Activity sheet 4 provides a more structured alternative or addition to the clue cards.

1 Moulds are visible, but other micro-organisms which cause food to decompose (e.g. bacteria) are not. Many micro-organisms release large amounts of spores into the air to which some people are allergic.

The experiments can be done using either fresh sliced bread or natural yogurt. Each slice of bread can be cut vertically so that the same slice of bread is used for each pair of conditions. They are then put into freezer bags and sealed, with details of the date and conditions marked on them.

If using yogurt it should be spread across the bottom of plastic Petri dishes so that the whole bottom surface is covered with a thin layer. The Petri dishes should be sealed with sticky tape. Teachers will need to be aware that mould will take a few days to grow, and quicker results are not likely with either bread or yogurt. Typically, it takes about six days for mould to grow.

Once the various test conditions have been decided, the groups set up the tests, clearly labelling their bags with the conditions, and date of commencement of the tests. However, even if 2-3 groups test each set of conditions, there will be scope for comparisons. Living things do not all do exactly the same thing, and these differences can be used to stress the variation in living things and their response to conditions.

PLENARY (20 minutes)

Encourage the children to explain what they expect to see happen in their investigation. In this case, ask the children:

- What do you think will happen to the pieces of bread in your test?
- Which one will grow the most mould?
- Are your predictions based anything else you have seen before?

Using Activity sheet 5 they can record their results and ideas in an organised format.