4. Nutrient test and report to company

1 hour

Children explore the function of roots to anchor or draw up water and nutrients. They create a model root system and explore the nutrients that help a root stay healthy and link this to roots in an industrial context.

OBJECTIVES

- Y3 Identify and describe the functions of different parts of flowering plants, roots, stem's trunk, leaves and flowers
- Y3 Explore the requirements of plants for life and growth (air, light, water, nutrients from the soil and room to grow).

APPROXIMATE DURATION:

1 hour (plus 3 weeks of observations + measurements)

RESOURCES

(Per group of 4 children unless otherwise stated)

- Activity sheet 2a
- Activity sheet A (per child)
- Plant nutrient product (from garden centre or DIY store)
- Radish, geranium or sunflower seedlings
- Equal-sized plant pots containing equal amounts of compost

ADVANCE PREPARATION

Decide whether you are going to carry out the investigation as a class activity or as group activities and revise the resource amounts appropriately.

Priory to photocopying, you may wish to complete aspects of Activity sheet A for lower ability children.

If you use a sandy soil containing few nutrients or nutrient gel, the investigation results will be more pronounced. Some garden centres provide nutrient gel this would mean you could observe root growth.

INTRODUCING THE ACTIVITY

Re-read the letter from the company (Activity sheet 2a). Discuss the findings over the last few sessions. Ask the children:

Have the industry's queries been answered?

Discuss different ways in which the information could be reported back.

MAIN ACTIVITY

The children plan and carry out parallel plant investigations to test the effect of nutrient products on the health of the plant.

Work through the investigative process with the children providing the appropriate support or opportunity for independent work as you see fit using planning frame (Activity sheet A).

All children should have the opportunity to plan the investigation. However you could either set up one class investigation or each group could set up their own. The following steps of the investigation can provide a focus, or direction given by the teacher.

- Consider the investigation question, e.g. What is the effect of a nutrient product on the growth of the plant? Or, How does the concentration of a nutrient product effect the height of a plant? Or, Which parts of the plant are affected most by a given nutrient product?
- Think about what they will change in order to test the question e.g. the amount (volume) of the nutrient product, or the concentration of the nutrient product. They should record this on the planning sheet.
- Think about what they will measure or observe in order to find out the effect of the nutrient on the plant, e.g. measure the height of each plant in millimetres, or the number of leaves on the plant, or observe the colour and size of the leaves. They could explore the growth of all the plant organs by measuring them all. Record this on that planning sheet.
- Fair Test: Think about the factors they will keep the same in order to make it fair. Discuss possibilities, e.g. amount and type of soil, plant pot, amount of water/ liquid the plants are given, the time they are fed, etc.
- Consider the time period of the experiment, e.g. three weeks; the times to water or feed the plant, e.g. once every 3 or 4 days; and the times to measure or observe the plant, e.g. once or twice a week at the same time every day. Record these in the appropriate sections on the sheet.
- Children set up the parallel investigation using at least three different plants. Each plant should be the same type, in the same conditions (soils, pot size, amount of light etc.), and roughly the same size. Geranium, radishes or sunflower seedlings are appropriate.

When the experiment is completed, children should graph numerical data (they could use an ICT data- handling package).

Children then need to draw a conclusion by returning to the investigation question and answering it using the results. If a pattern has been found try and ask the children to write the conclusion in a sentence using comparative adjectives, e.g. the more nutrients, the taller the plant.

PLENARY

The children reply to the company e-mail (Activity sheet 2a), answering the questions and explaining what they have discovered in one of the following ways:

- Power point presentation
- Writing a letter or e-mail
- A written report
- An individual or group poster
- A cartoon strip
- A video presentation.

Depending on the class, they could be given the freedom to choose one of the above methods, or the choice could be limited. This provides an ideal opportunity for assessment.

The children compile a list of questions that they would like to find out about nutrition products, plant growth/research industries and the role of scientists in these companies.

A site visit could be arranged to a plant nutrition product company, research organisation or cultivating industry. Here the children could observe the manufacturing process, find out what the scientists do in the company, and compare these to the plant investigations they set up and carried out in the classroom. The children could try and find the answers to the questions. Or, if this is not possible, a representative from a company could visit the school to describe the manufacturing and testing of nutrient products, the growing of healthy plants for commercial sale and the jobs of scientists. Some of the children's work could be passed on to the company.

If a link with an industry is not possible, the children could research answers to their questions on the internet or in the library.