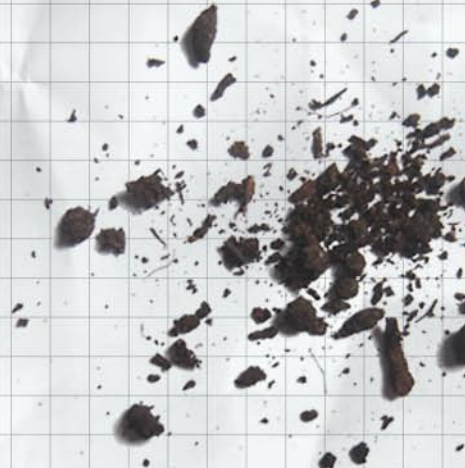


# The Potato Story

## Lesson Plan 1 Plant Growth



# The Potato Story

## National Curriculum Links

All lesson plans link to the National Curriculum for Science in England, Wales, Northern Ireland and Scotland. Specific Curriculum Links are as follows:

- Sc 2 Life Processes and Living Things
- Science – QCA Unit 3B Helping Plants Grow Well  
QCA Unit 5B Lifecycles

## Key Learning Objectives

By the end of this lesson children will learn that:

- Plants need a healthy stem, roots and leaves to grow well.
- Plants need light and water for healthy growth.
- Flowering plants reproduce.
- The lifecycle of flowering plants includes pollination, fertilisation, seed production, seed dispersal and germination.
- Plants can provide food for human consumption and some plants are grown for this purpose.

## Differentiation

The lesson plan has been designed for use with mixed ability groups and most students should be able to respond well to the suggested activities since much of the content involves student-centred, activity-based learning.

Below are some suggestions for making the lesson an effective learning tool for the whole class:

- Years 3 & 4 – Less able children should name the parts of the plant using the vocabulary list to help them. More able children should try to explain what each part of the plant does.
- Years 5 & 6 – Less able children should draw a simple diagram of a lifecycle (Activity Sheet 2a).
- More able children should consider each stage of the lifecycle carefully and write about what happens, using the vocabulary list as a prompt. (Activity Sheet 2b).

## Some Useful Websites

<http://www.food.gov.uk/healthiereating/>

<http://www.britishpotatoes.co.uk/>

<http://www.potatoesforschools.org.uk/>

<http://www.yearoffoodandfarming.org.uk>

<http://www.face-online.org.uk>

# The Potato Story

## Introduction (5 – 10 minutes)

Tell the children that today the class will be thinking and talking about plants – what a plant needs to become strong and healthy and about how each part of the plant has a different job. The children will also be thinking about how some plants are grown for humans to eat and how important plants like these are for us.

In their Science books or on paper, ask the children to draw or write any questions they have about this topic that they would like to find answers to.

First give the children a brief presentation that will help them start thinking about this topic and will start to answer some of their questions.

For the presentation, children will need whiteboards and pens and will need to sit with talk partners or in groups.

## The Basics of Plant Growth Animation (20 minutes)

Go through the animation 'Plant Growth' on the interactive whiteboard allowing time for the children to talk through the questions and share answers – in their groups or as a class. See teacher guidance sheet PDF for more information on how to use this resource.

## Follow-on Printable Activities (10 – 15 minutes)

After the presentation, give the children the activity sheets to extend and assess their learning.

Activity Sheet 1: 'The parts of a plant' Years 3 & 4.

Activity Sheet 2: 'The lifecycle of a flowering plant' Years 5 & 6.

Plenary (5 – 10 minutes)

Talk through what the children have learnt in this session. Look back at the questions they wrote at the beginning. Have any of them been answered? If so, which ones? Tell the children to keep the questions as they will be looking back at them through the topic and will be assessing what they have learnt at the end of the Helping Plants Grow / Lifecycles topic.

## Assessment and Extension

Interactive Multiple Choice Quiz

As the questions get progressively harder, this quiz can be used as an assessment tool at the end of the session to see what the children have understood. It can also be used as an extension activity for the more able children, or just for fun!

## VAK (Visual Auditory Kinesthetic) Opportunities

Drama really helps some children to understand difficult concepts because they are presented in a different way. For this activity, children could act out the lifecycle of a flowering plant by being the plant, flower, insect, seed, etc.

Once they have chosen the part of the plant they would like to be, the children can think about the processes that their plant part goes through in its lifecycle.

# The Potato Story

**How much do you know about plants and how they grow?**

**Check your knowledge and do the quiz.**

**Question 1. What is the job of the stem?**

- a) It takes water to all parts of the plant
- b) It attracts bees and butterflies
- c) It makes food for the plant

**Question 2. Where does a plant usually get its nutrients?**

- a) The air
- b) The water
- c) The soil

**Question 3. Plants grow from ...**

- a) Seeds
- b) Leaves
- c) Petals

**Question 4. What do the roots not do?**

- a) Help the plant to walk
- b) Anchor the plant
- c) Take up nutrients and minerals

**Question 5. What job does the flower do?**

- a) Holds the plant up
- b) Takes in water
- c) Attracts bees, butterflies and other insects

**Question 6. What does the leaf of a plant do?**

- a) Takes water to other parts of the plant
- b) Makes food for the plant
- c) Anchors the plant to the ground

# The Potato Story

## The Potato Story – Quiz: Growing Plants

**Question 7. What is the male part of the plant called?**

- a) Carpel
- b) Stigma
- c) Stamen

**Question 8. What is the female part of the plant called?**

- a) Stamen
- b) Carpel
- c) Filament

**Question 9. Which of these is not a method of dispersal of seeds?**

- a) Birds
- b) Wind
- c) Cars

**Question 10. What is the process called where plants make their own food?**

- a) Photosynthesis
- b) Germination
- c) Dispersal

# The Potato Story

**How much do you know about plants and how they grow?**

**Check your knowledge and do the quiz.**

**Question 1. What is the job of the stem?**

- a) It takes water to all parts of the plant
- b) It attracts bees and butterflies
- c) It makes food for the plant

Answer: a) Yes, the stem acts as a straw to take water to all parts of the plant.

**Question 2. Where does a plant usually get its nutrients?**

- a) The air
- b) The water
- c) The soil

Answer: c) Yes, the plant needs to get nutrients and minerals that usually come from the soil.

**Question 3. Plants grow from ...**

- a) Seeds
- b) Leaves
- c) Petals

Answer: a) Yes, plants grow from seeds.

**Question 4. What do the roots not do?**

- a) Help the plant to walk
- b) Anchor the plant
- c) Take up nutrients and minerals

Answer: a) A plant will move a little bit over time, but plants do not walk!

**Question 5. What job does the flower do?**

- a) Holds the plant up
- b) Takes in water
- c) Attracts bees, butterflies and other insects

Answer: c) Yes, flowers are often brightly coloured or perfumed to attract insects.

# The Potato Story

**Question 6. What does the leaf of a plant do?**

- a) Takes water to other parts of the plant
- b) Makes food for the plant
- c) Anchors the plant to the ground

Answer: b) Yes, the leaf uses sunlight and carbon dioxide from the air to make food for the plant.

**Question 7. What is the male part of the plant called?**

- a) Carpel
- b) Stigma
- c) Stamen

Answer: c) Yes, the stamen is the male part of the plant – its job is to make pollen.

**Question 8. What is the female part of the plant called?**

- a) Stamen
- b) Carpel
- c) Filament

Answer: b) Yes, the carpel is the female part of the plant, where the seeds are formed. There are 3 parts to it, the stigma, style and ovary.

**Question 9. Which of these is not a method of dispersal of seeds?**

- a) Birds
- b) Wind
- c) Cars

Answer: c) Yes, of course cars do not disperse seeds!

**Question 10. What is the process called where plants make their own food?**

- a) Photosynthesis
- b) Germination
- c) Dispersal

Answer: a) Yes, the leaves use sunlight and carbon dioxide to make their own food. This is called photosynthesis.

# The Potato Story

**This information sheet gives guidance on how to take your pupils through the presentation in Module 1 of the Student Section.**

See resources PDF for plant diagrams.

## Introduction

Tell the children that today they will be thinking about the following questions to do with plants and plant growth:

- How do plants grow?
- What job does each part of the plant have?
- Why are plants important to humans?
- Why is it important to find out about the food that we eat?

Hand out the labeled picture of the plant to the class. See resources PDF for plant diagrams. As you show the class the hand-out of the plant, go through each part one by one and explain its function as follows:

- **Root** – the root anchors the plant in the ground and takes in nutrients, usually from the soil. Nutrients are like vitamins and minerals that help the plant fight off diseases and stay healthy.
- **Stem** – the stem carries water and nutrients to different parts of the plant.
- **Leaf** – the leaves use light from the sun to make food for the plant.
- **Flower** – the flower is brightly coloured to attract insects such as bees and butterflies.
- **A plant** needs healthy roots, leaves and stem to grow well.

Explain how a seed starts to germinate and then becomes a growing, then flowering plant.

**Tell the children that:**

- When a seed starts to germinate it sends out new shoots.
- With the right amount of light, water, warmth and nutrients it will grow into a healthy plant.

Next show the class an apple and explain that after a plant has flowered it can produce fruit and seeds that we can eat.

# The Potato Story

## Discussion Break:

**Take a Discussion Break with your class.**

Ask the children to talk with their partner / group about what they think a plant will need to grow well.

Take time to share the children's ideas within the class.

### Plant Growth:

Return to the image of the plant that you used in the introduction and tell the class that to grow well plants need the right amount of light and warmth, water and nutrients, usually from the earth.

Show each of the above on the picture while you are presenting it.

Explain that with too much or too little of these the plant will not grow well and could die.

## Discussion Break:

**Take a Discussion Break with your class.**

Ask the children to discuss what plants are grown for people to eat and name some fruits and seeds that they like to eat.

Take time to share the children's ideas within the class.

Encourage the children to think of fruit, vegetables or seeds that they have eaten or like to eat. You could ask them to think about what part of the plant they eat – the root (eg potato, carrot), the fruit (tomato, apple, etc), the stem (rhubarb, celery), the leaf (cabbage, lettuce) or the seed (bread, pasta). Ask them to think of favourites or ones that they hate!

Use the potato as an example to illustrate how vegetables can be versatile in the way that they are prepared, but that the way in which food is prepared makes a big difference to how healthy they are. For example you can boil, roast, bake, sauté, mash or fry potatoes.

### The importance of our diet:

Now ask the children if they know why it is important to think about the foods that we eat and discuss any ideas with the class.

Explain that we should always think about what we eat in order to stay healthy and that it is important for everyone to have a balanced and varied diet.

**Hand out Activity Sheet 1 and explain how to fill it in.**

# The Potato Story

**This information sheet gives guidance on how to take your pupils through the presentation in Module 1 of the Student Section.**

If ICT is unavailable it can be adapted for use in the classroom with visual aids.

## Introduction:

Tell the children that today they will be thinking about the following questions to do with plants and plant growth:

- How do plants grow?
- What job does each part of the plant have?
- Why are plants important to humans?
- Why is it important to find out about the food that we eat?

Hand out the labeled picture of the plant. See resources PDF for plant diagrams.

As you show the class the hand-outs of the plant, go through each part one by one and explain its function as follows:

- **The sepals** – these are the special leaves that protect the flower while it is still a bud.
- **The nectaries** – these make nectar – they are right at the centre of the flower so the insect has to climb right in, brushing against the pollen as it does so.
- **The carpel** – is the female part of the plant, where the seeds are made. It is made up of three parts:
  1. The stigma – is sticky and catches the grains of pollen.
  2. The style – a stalk which holds the stigma up.
  3. The ovary – contains the eggs. After fertilisation, the ovary becomes the fruit.
- **The stamen** – is the male part of the plant. Its job is to make the pollen and it is made up of two parts:
  1. The anther – contains the pollen.
  2. The filament – holds up the anther.
- **The receptacle** – is the top part of the flower stalk. All parts of the flower are attached to it.
- **The petal** – sometimes brightly coloured to attract insects to the plant.

Tell the children that all living things change through their lives and this is what we call a lifecycle.

Germination happens when the seed starts to spread out new shoots and a new plant is made. It grows from a young plant to an adult plant with flowers.

When the plant flowers, pollen is made in the male part of the plant. This pollen is then carried by insects or blown by the wind to a new flower. In the new flower, the pollen fertilises the egg cells in the ovary to make seeds.

# The Potato Story

When the time is right, the seeds are then dispersed in a number of ways. Explain how the wind can disperse them (show sycamore helicopter seeds and conkers). Birds and insects might eat them and the seeds come out in their droppings (show strawberries or raspberries). Sometimes they can be sticky or have hooks that catch onto animals.

Lots of seeds are lost but many will find a place that has enough light, water, nutrients and warmth to begin germination and then become a new plant. The lifecycle starts again.

## Discussion Break:

Take a Discussion Break with your class.

Ask the children to talk with their partner / group about what they think a plant will need to grow well.

Take time to share the children's ideas within the class.

### Plant Growth:

Return to the image of the plant that you used in the introduction and tell the class that to grow well plants need the right amount of light and warmth, water and nutrients, usually from the earth.

Show each of the above on the picture while you are presenting it.

Explain that with too much or too little of these the plant will not grow well and could die.

## Discussion Break:

Take a Discussion Break with your class.

Ask the children to discuss what plants are grown for people to eat and name some fruits and seeds that they like to eat.

Take time to share the children's ideas within the class.

Encourage the children to think of fruit, vegetables or seeds that they have eaten or like to eat. You could ask them to think about what part of the plant they eat – the root (eg potato, carrot), the fruit (tomato, apple, etc), the stem (rhubarb, celery), the leaf (cabbage, lettuce) or the seed (bread, pasta). Ask them to think of favourites or ones that they hate!

Use the potato as an example to illustrate how vegetables can be versatile in the way that they are prepared, but that the way in which food is prepared makes a big difference to how healthy they are. For example you can boil, roast, bake, sauté, mash or fry potatoes.

### The importance of our diet:

Now ask the children if they know why it is important to think about the foods that we eat and discuss any ideas with the class.

Explain that we should always think about what we eat in order to stay healthy and that it is important for everyone to have a balanced and varied diet.

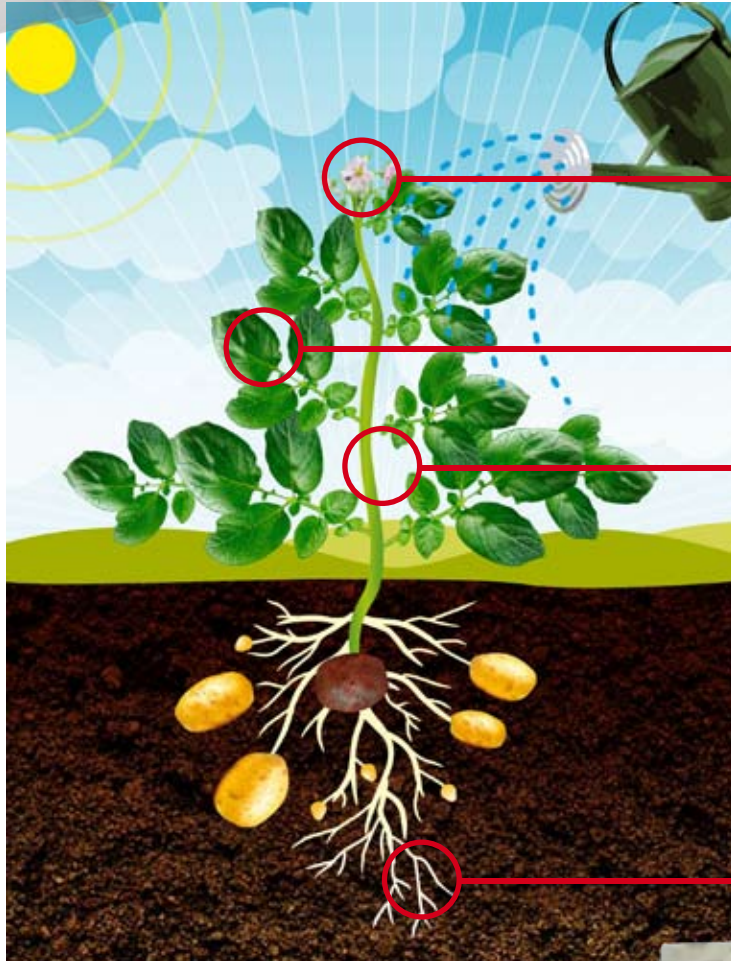
**Hand out Activity Sheet 2a or 2b and explain how to fill it in.**

# The Potato Story

## Parts of a Plant

### Learning Objective

To know the different parts of a flower and label them correctly



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Activity sheet 1: Years 3 and 4

Write down what each part of the plant does.

The root: .....

.....

The leaf: .....

.....

The stem: .....

.....

The flower: .....

TA1

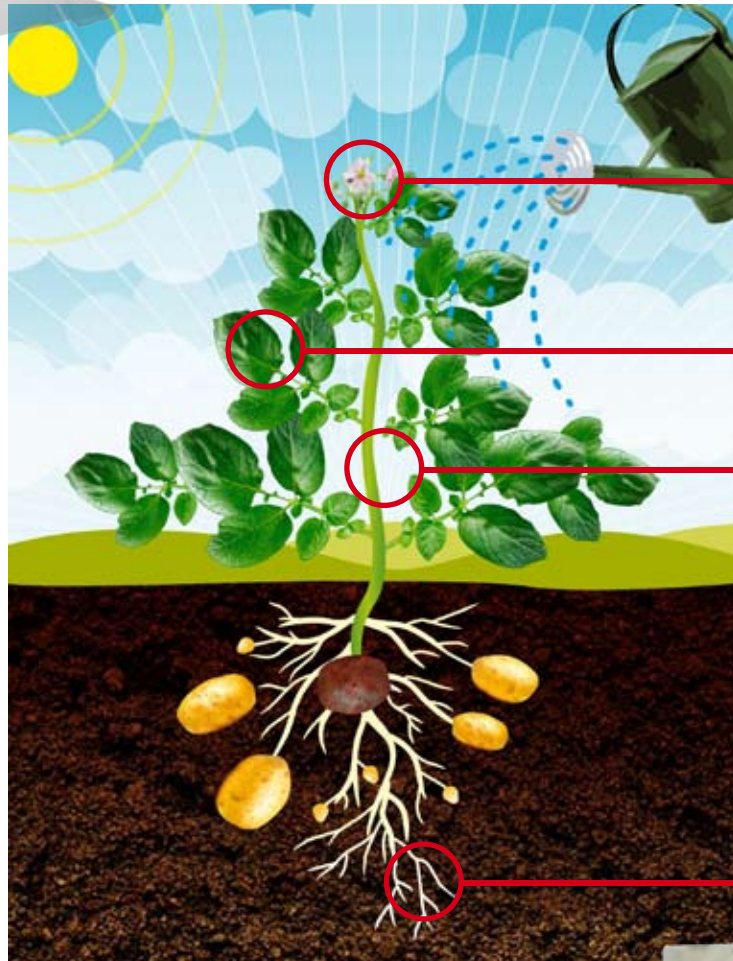


# The Potato Story

## Parts of a Plant

### Learning Objective

To know the different parts of a flower and label them correctly



Flower

Leaf

Stem

Root

Write down what each part of the plant does. (Suggested Answers)

- The root:** Takes up water and nutrients from the soil and also anchors the plant in the ground.
- The leaf:** Plants make food in their leaves. To make food plants need sunlight, water and the gas carbon dioxide from the air.
- The stem:** The stem supports the flower and the leaves and holds them up to the sunlight. Water travels from the roots through the stem to all the other parts of the plant.
- The flower:** The flower is brightly coloured to attract insects such as bees and butterflies. It is the part of the plant that is used for reproduction.

TA1



## The Lifecycle of a flowering plant

### Learning Objective

To show understanding of the lifecycle of a flowering plant through labelling and drawings.

Flowering plants produce fruits and seeds from their flowers.

These grow into new plants. Fill in the blanks in the diagram below to show this cycle.

Use these words to help you:

Adult plant with flowers, seed, seed dispersal, new plant (germination), young plant, fertilisation, seed production, pollination.



2a



## The Lifecycle of a flowering plant

### Learning Objective

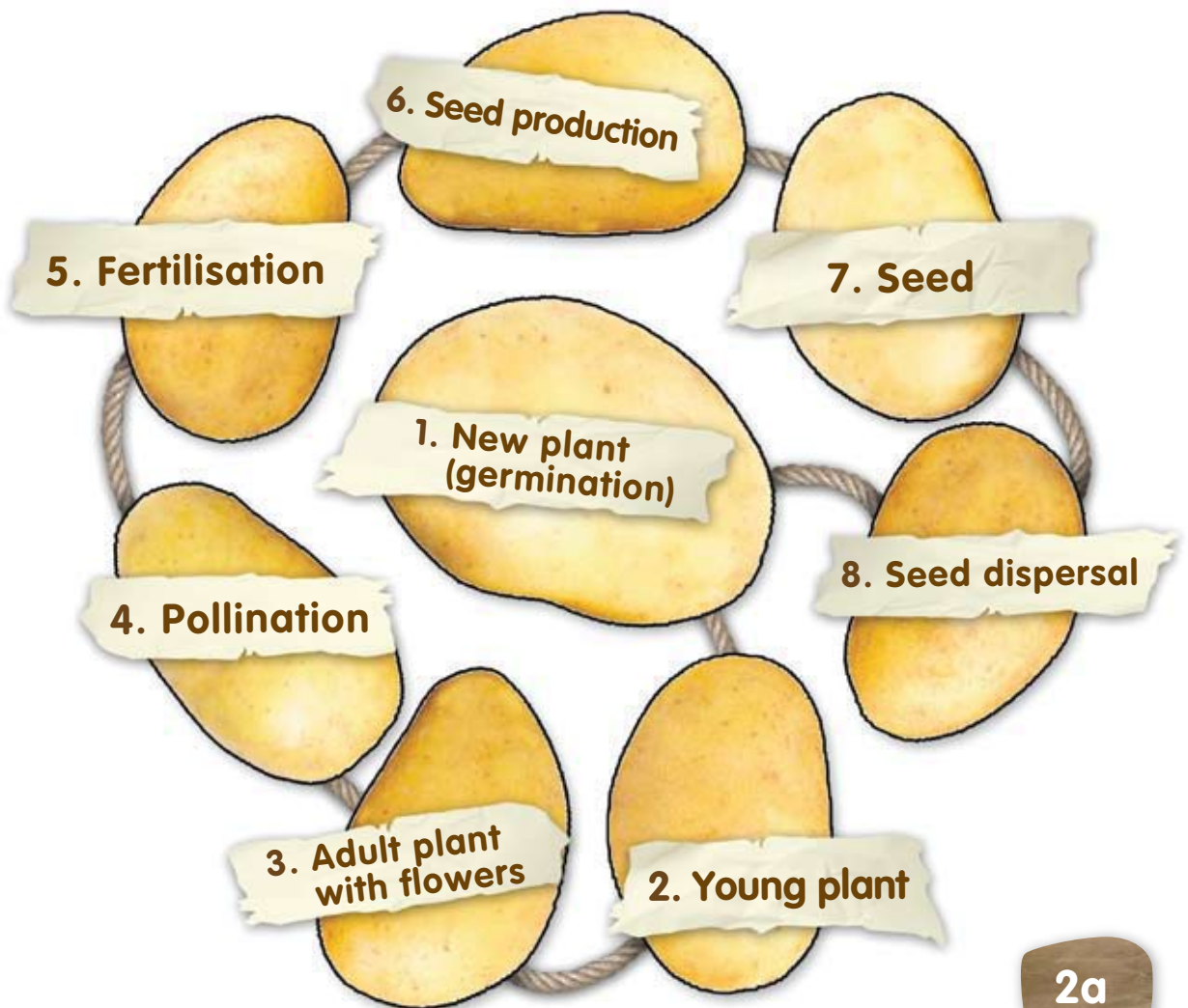
To show understanding of the lifecycle of a flowering plant through labelling and drawings.

Flowering plants produce fruits and seeds from their flowers.

These grow into new plants. Fill in the blanks in the diagram below to show this cycle.

Use these words to help you:

Adult plant with flowers, seed, seed dispersal, new plant (germination), young plant, fertilisation, seed production, pollination.



2a



## The Lifecycle of a flowering plant

### Learning Objective

To show understanding of the lifecycle of a flowering plant through labelling and drawings.

Flowering plants produce fruits and seeds from their flowers.  
These grow into new plants. Draw a diagram to show this cycle.

Use these words to help you:

Adult plant with flowers, seed, seed dispersal, new plant (germination),  
young plant, fertilisation, seed production, pollination.

Activity sheet 2b: Years 5 and 6

2b



## The Lifecycle of a flowering plant

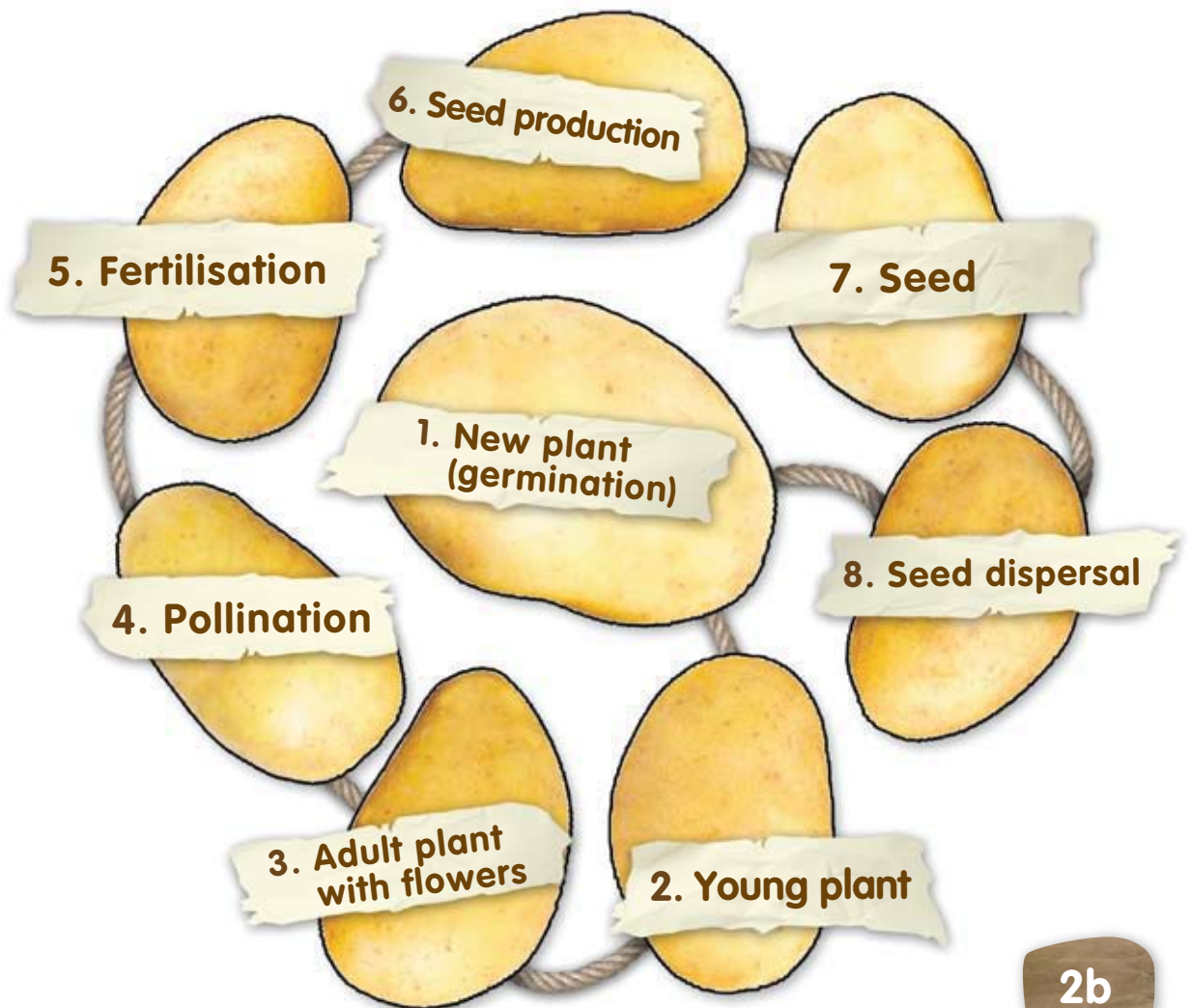
### Learning Objective

To show understanding of the lifecycle of a flowering plant through labelling and drawings.

Flowering plants produce fruits and seeds from their flowers. These grow into new plants. Draw a diagram to show this cycle.

Use these words to help you:

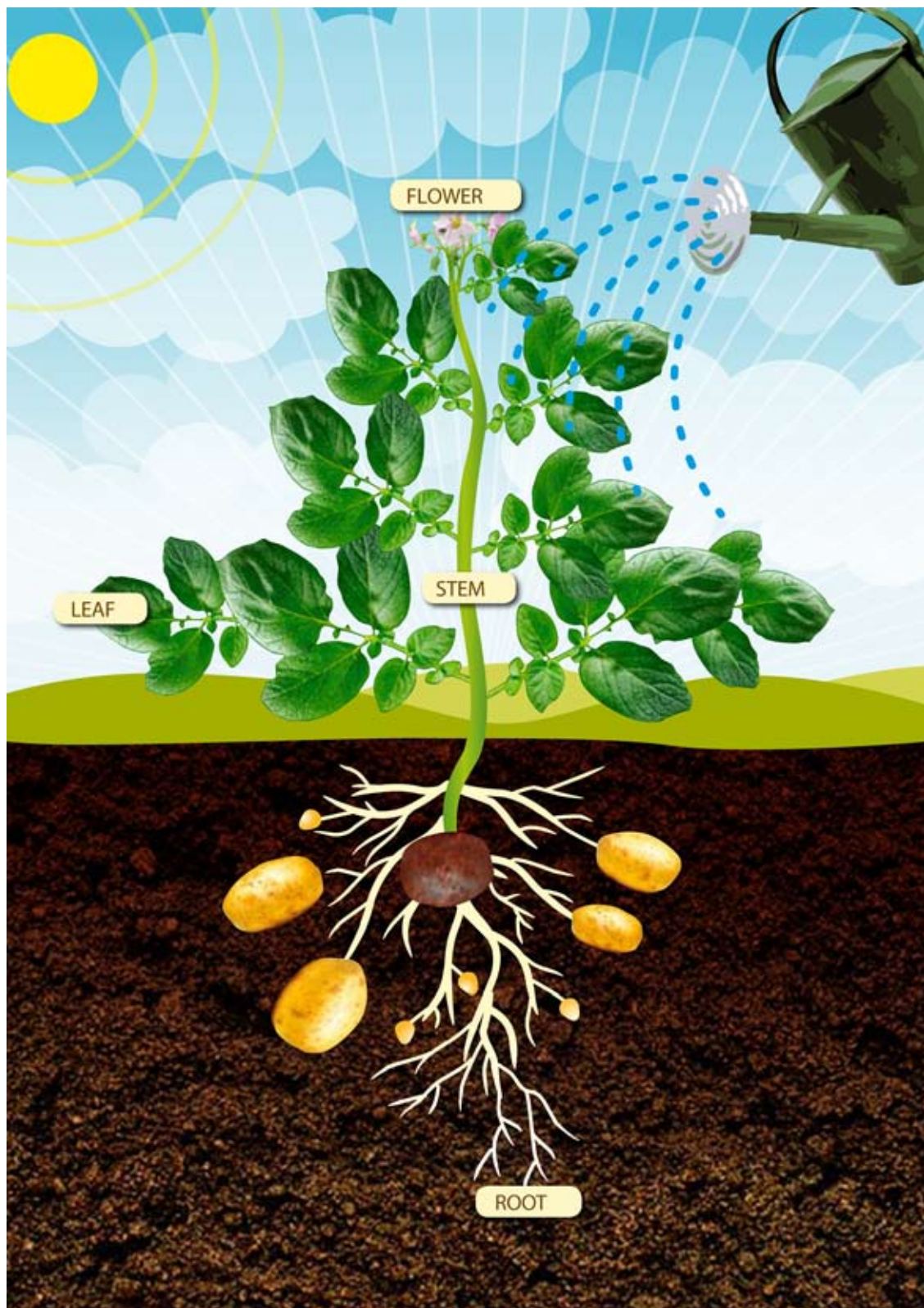
Adult plant with flowers, seed, seed dispersal, new plant (germination), young plant, fertilisation, seed production, pollination.



2b



# The Potato Story



Module 1 – Teaching aid 1

# The Potato Story

Module 1 – Teaching aid 2

