

The Scientific Method

Lesson 2 - Hypotheses

L.O. To conduct an investigation using the scientific method.

Direct Instruction:

What Is a Hypothesis?

Doing science experiments can be fun! But before you start your experiment, you need to make a hypothesis. In this lesson, you'll learn what a hypothesis is and how you can make one as we begin our investigation into the best growing environment for potatoes.

Have you ever noticed old potatoes in the corner of the cupboard starting to grow little spouts, in the dark, despite the lack of sunlight? We are going to try and answer the question of:

How much sunlight do potatoes really need to grow?

We have been learning about plants at school for years, and have been taught that they need earth, water and sunlight in order to grow. How do you explain potatoes starting to grow in the dark then? Following the scientific method, we will find out by putting a potato seed in full sun, half sun and no sun – which will grow the most? The least?

When you answer questions about what you think will happen in a science experiment, you're making a **hypothesis** (another word for **prediction**).

hypothesis: an educated guess, or a guess you make based on information you already know.

After you make a hypothesis, then comes the really fun part: doing the science experiment to see what happens! This lets you discover if your hypothesis was correct or incorrect.

Watch the following video clip for further discussion:

<https://study.com/academy/lesson/hypothesis-lesson-for-kids-definition-examples.html>

Guided Practice:

How Do You Develop a Hypothesis?

Before we start our investigation, we each need to make a hypothesis about what we think will happen, in this case, which environment (full, half or no sun) will grow the tallest potato plant. So, we need to think about what we already know about the subject. This helps us make our prediction, or hypothesis, about which environment is best for growing potatoes.

Jessica doesn't think the potato seed will grow without sunlight in the dark cupboard because of what's she's learnt in her science lessons. She's never seen a potato start to sprout in the cupboard, but she did find a spider in there once. Yikes! Since potatoes grow outside in farmer's fields in the sun, she thinks the dark cupboard will be a bad environment for them to grow in.

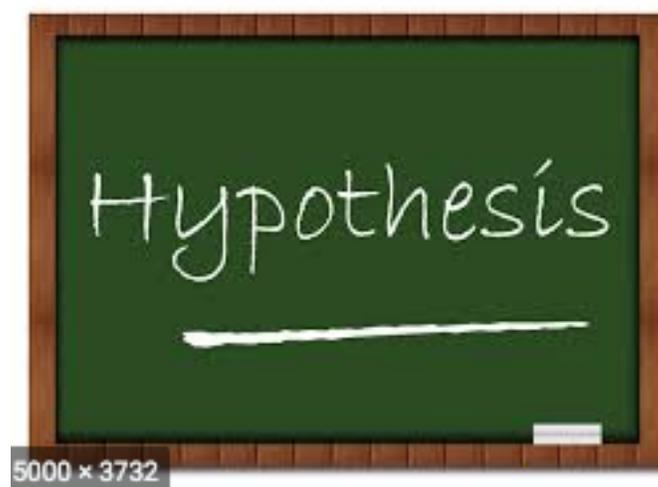
After thinking about everything she knows about growing plants for her experiment, Jessica makes her hypothesis:

'I predict that the potato seed will grow the most in full sunlight.'

Now it's Roman's turn to make his hypothesis! Roman thinks the potato seed will grow in the dark cupboard because he's seen an onion start to grow big sprouts at his grandma's house! He thinks if an onion can grow in a dark cupboard, why not a potato. As he thinks about why plants need sunlight to grow, he looks out his window to the night sky and wonders how plants grow when it's dark?.

After giving it some careful thought about the best environment for growing potatoes, night and day, Roman finally makes his hypothesis:

'I hypothesize that the potato seed will grow the most in half sunlight.'



Quiz

1. Which of the following is NOT part of making a hypothesis?

- Thinking about everything you know about the items in the experiment
- Comparing the results of your experiment to your hypothesis
- Avoiding the dark so you don't get scared
- Making a prediction about what you think will happen

2. When should you make a hypothesis?

- While you do an experiment
- After you do the experiment
- Before you do an experiment
- There is no good time to make a hypothesis

3. What is a hypothesis?

- An easy guess about how many candies are in a jar
- A disease spread by insect bites
- An educated guess about what you think will happen in an experiment
- The results of a science experiment

4. In which situation is it important to make a hypothesis?

- When you're studying for a science test
- When you're baking a cake
- When you're learning about insects
- When you're getting ready to do a science experiment

Independent Practice:

Now it's your turn to develop your hypothesis. After giving it some thought, write your hypothesis (prediction), for example (look at Jessica and Roman's hypotheses above too):

'I hypothesize that the potato seed will grow the most in _____ sunlight.'
full / half / no

The Investigation – Additional Information

Once you've made your hypothesis and predicted what you think is going to happen, it's time to set up for the science experiment there at home if you can – ask a parent/carer first (or you can follow along with me at my house via YouTube!).

You will need the following equipment ready for our next lesson:

- soil
- pots (same size)
- 3 potato seeds
- water
- measuring cup

Think of the three places in your house you could use (ask a parent/carer first) to create the three different environments: full sunlight, half sunlight (maybe sun just in the morning) and no sunlight (perhaps inside a shoe box?).

You only need to have this ready for our next lesson, but don't jump ahead as we need to ensure it is a fair test (which we'll also look at in our next lesson).