

The Scientific Method
Lesson 5 – Cause and Effect

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

Quiz!

Identify the following variables in our experiment.

independent variable: _____

dependent variable: _____

controlled variables (name one): _____

Direct Instruction:

Following the scientific method, we are investigating the question:

How much sunlight do potatoes really need to grow?

To find the answer, we need to make observations about the effects of our independent variable (amount of sunlight) on our dependent variable (amount of plant growth).

What Is Cause?

Have you ever sat back and wondered about why something happens? Why is the sky blue? Why does my stomach hurt? The answers to these questions are specific reasons that led to the occurrence, also known as a **cause**. For example, your stomach can hurt due to a variety of different causes. Maybe you ate something bad. Maybe you are getting sick. Maybe you are nervous about something.

Scientists study causes all the time. There are many events that take place in the world with causes that generate observable patterns. Think about it - when it is hot outside, what tends to happen? You sweat, and plants shrivel up. These are patterns that are caused by heat.

What Is Effect?

So, if the cause is the 'why' then the **effect** is the 'what.' The effect is an event that happens because of a cause. If you have ever asked yourself a question that starts with, 'What will happen if I...', then you are questioning the effects of your actions. For example, 'What will happen if I choose not to brush my teeth?' Possible effects would be tooth decay, gum disease and the worst of all - stinky breath.

Watch the video clip for more information:

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

Real-World Examples

Cause and effect relationships are happening all around you. In science, these relationships are constantly being identified, examined and used to explain changes that occur in the world. For example:

- Winter time will cause bears to hibernate.
- A mix of rain and sun can cause a rainbow.
- The movement of plate tectonics can cause an earthquake.

Something important to know is that two events may be related, but may not have a direct cause and effect relationship. For example, people who eat a lot of fruit may be healthy. Eating fruit might be one cause for good health, but it's probably not be the *only* cause. Healthy people also probably drink a lot of water and exercise, and do not eat a lot of chocolate or fried food.

Examples in Scientific Texts

In science lessons, you will often have to read scientific texts with scientific vocabulary. It is important that you know how to identify cause and effect relationships in scientific texts. One strategy for doing this is to look for **signal words** that will tell you that this is a cause and effect relationship. It is also important that you use this vocabulary in your writing too! For example:

- **because** (It snowed because the temperature was below 32 degrees.)
- **therefore** (Hunters and poachers killed many pandas; therefore, they became an endangered species.)
- **as a result** (The light bulbs were dead. As a result, the electric circuit did not work.)
- **due to** (A full day on Earth is 24 hours due to the amount of time it takes the planet to complete one rotation.)
- **so** (Chameleons need to be able to hide from their predators, so they have the adaptation of camouflage.)
- **then** (If you smoke cigarettes, then you will have a higher chance of developing lung cancer.)
- **in order to** (There needs to be freezing temperatures in order to turn water into ice.)

Guided Practice

Tick the best answer to each question.

1. Cause is _____ something happened.

- what
- who
- why
- when

2. What is a possible effect of coughing on someone else?

- getting healthy
- taking medicine
- spreading illness
- having a cough drop

3. What is a possible effect of littering?

- Harm to the environment
- Oil spills
- Recycling
- People throwing away trash

4. What is a possible cause of a sunburn?

- wearing a sweater
- not wearing sunscreen
- wearing too much sunscreen
- being afraid of the sun

5. What is NOT a signal word for cause and effect in a scientific text?

- so
- then
- my
- therefore

Independent Practice

Use the words to fill in the blanks in the text below:

signal words

cause

what

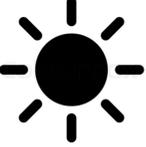
why

effect

In a _____ and _____ relationship, one event causes another to happen. The cause is _____ it happened, and the effect is _____ happened. You can look for _____ to identify cause and effect in text.

Don't forget to make your observations for Week 2 in your observation table:

Potato Plant Growth Observation Table

	Week 1	Week 2	Week 3
 Full Sun	 <ul style="list-style-type: none"> No growth/change 	 <ul style="list-style-type: none"> 	
 Half Sun	 <ul style="list-style-type: none"> No growth/change 	 <ul style="list-style-type: none"> 	
 No Sun	 <ul style="list-style-type: none"> 	 <ul style="list-style-type: none"> 	

	<ul style="list-style-type: none">• No growth/change	<ul style="list-style-type: none">•	
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