

Cause and Effect

What Is It?

A cause and effect analysis is an attempt to understand why things happen as they do. People in many professions—accident investigators, scientists, historians, doctors, newspaper reporters, automobile mechanics, educators, police detectives—spend considerable effort trying to understand the causes and effects of human behavior and natural phenomena to gain better control over events and over ourselves. If we understand the causes of accidents, wars, and natural disasters, perhaps we can avoid them in the future. If we understand the consequences of our own behavior, perhaps we can modify our behavior in a way that will allow us to lead happier, safer lives.

Cause	Effect
Earthquakes Erosion Heavy Rain Poor Drainage Deforestation Steep Terrain	Mudslides
Mudslides	Flooding Property Loss Injury and Death

Why Is It Important?

One of the primary goals of education is to create empowered, analytic thinkers, capable of thinking through complex processes to make important decisions.

Whether students recognize cause-and-effect relationships or not, they are affected by them every day. Students experience them in their own lives, see them occur in the lives of others, read about them in both narrative and expository texts, and are asked to write about them. To be successful, students need to be able to clearly recognize these relationships so that they are able to think analytically in their personal and academic lives. Without the ability to identify these relationships, students are at risk socially and academically. They will not understand actions and consequences or be able to understand or describe phenomena at a deep level.

How Can You Make It Happen?

Helping students develop the ability to think and talk intelligently about causes and effects will grow naturally over time, as students take part in multiple conversations about why things happen as they do, how one thing leads to another, how a single event can have multiple causes—and multiple consequences—and how some consequences are intended and some are not. It is not a strategy that can be mastered in a few lessons. It all begins with how you structure classroom discussions.

Here are some general guidelines for introducing cause and effect into discussions:

1. Always ask why. Why did the fish in the classroom aquarium die? Why were slaves more important in the South than in the North? Why do people continue to commit crimes after being released from prison? What are the causes and effects of bullying in schools?
2. After students answer the Why questions, ask them, "How do you know? What is your evidence?" Have students find research or texts to justify their position.
3. Encourage students to consider multiple causes of events. Make lists of possible causes of events, and then try to determine which are more likely, or important, than others.

4. Encourage students to consider multiple consequences. How did World War II change life in America? What happens when we waste electricity? What are some of the likely consequences of global warming? What consequences does the behavior of a character in a story have on the lives of other characters?
5. Use graphic organizers, such as cause-and-effect chains, flow charts, and feedback loops, to help students think about complex cause-and-effect relationships.
6. Help students develop the vocabulary of cause and effect. Teach power words such as *consequence*, *consequently*, *influence*, and *as a result*. Also teach qualifiers such as *partly responsible for* and *largely because of*. Encourage students to qualify cause-and-effect statements with words such as *possibly*, *probably*, or *almost certainly*. Explain that whenever there is doubt (as there often is in matters of cause and effect), qualifying words actually strengthen an argument. Compare the following sentences, and ask students to consider which statement is easier to agree with.
 - The author created a happy ending in order to please the reader.
 - The author probably created a happy ending in order to please the reader.
7. Connect students' understanding of cause-and-effect relationships to their writing. Point out that writers use the language of cause and effect to inform, to persuade, and to provide their readers with an understanding of order. Help students describe cause-and-effect relationships in their writing. Encourage them to use graphic organizers to illustrate their ideas.

How Can You Stretch Students' Thinking?

Often the cause-and-effect relationship in a reading passage is implied and not clearly stated. Students need to make inferences about these relationships. Encourage students to use vocabulary clues in the text (*so that*, *accordingly*, *therefore*, and *later*) and their prior knowledge to determine the relationships. Begin by having students make inferences about information that is in close proximity. Direct students to make an inference based on the first sentence of a reading passage and their prior knowledge. Then have them evaluate the inference based on their reading of the rest of the passage (Johnson and Johnson, 1986). Explain that this is like building a theory from existing evidence and then testing it against additional evidence as it becomes available.

Analyzing causes and effects is just like developing a theory. It is important to provide evidence that supports the analysis and to entertain the possibility that, in many cases, there may be other equally valid explanations. Encourage students to consider that proximity of events in space or time does not necessarily imply causality. Being in the same room when a crime occurs does not necessarily make you a criminal.

Teach students that making generalizations based on cause-and-effect sequences can be applied to a number of situations. For example, people who do not take care of themselves get sick more often than people who do take care of themselves. Generalizations are important organizing ideas because they give students a broad knowledge base that they can apply in different situations. According to the authors of *Classroom Instruction that Works*, teachers need to provide many examples of generalizations to students. They also should support each generalization with several cause-and-effect sequences, make sure students can clearly state their own generalizations as well as ones presented to them, and discuss generalizations with students and encourage them to argue against them if they disagree (Marzano, et al. 2001).

When Can You Use It?

The ability to understand and discuss cause and effect relationships is central to the study of literature, science, and the social sciences. Following are some suggestions for studying cause and effect in the content areas.

Reading/English

Have students create visual maps representing cause-and-effect relationships in the books they are reading, whether narrative texts or history books.

For example, in the book *Ira Sleeps Over* by Bernard Waber, Ira makes a decision about taking his teddy bear to Reggie's house. Have students discuss how each conversation in the book results in a new decision.

Another example is in the book *Tuck Everlasting* by Natalie Babbitt. Have students discuss the effect of Winnie wandering in the woods (meeting Jesse Tuck), and the effect of meeting Jesse (finding out about the magic water).

Writing

Make sure students have plenty of practice writing about increasingly complex cause-and-effect relationships. Encourage students to use graphic organizers to organize their ideas and to illustrate their writing. Encourage students to consider multiple causes and multiple consequences. Stress the importance of using appropriate qualifiers such as probably and possibly, when the true nature of cause and effect is in doubt.

Math

Cause and effect is most clearly relevant to mathematics in the area of probability, which provides a way of quantifying the likelihood that certain outcomes will occur given a certain triggering event such as tossing a pair of dice. Statistics is also useful in determining whether a given outcome is something other than a random occurrence. At the high school level, students can develop stochastic models (involving chance, probability, or a random variable) of real-world events, such as traffic jams, that can aid in understanding cause-and-effect relationships at a formal level.

Social Studies

Cause-and-effect thinking is central to all of the social sciences, including history, economics, sociology, and psychology. When teaching history, have students analyze the causes and effects of a historical event such as the Civil War. Ask students to use a graphic organizer to outline the political, social, and economic causes of the war and its effects on the United States, and then have them write up the analysis using the graphic organizer as an illustration.

Science

Cause and effect can be related to climate changes in science. The variations of climate and the effect on mortality rates and the human body can be studied. For example, increased humidity levels affect the body's ability to cool itself, and decreased humidity levels contribute to dehydration and infections.