



What's the difference between causation and correlation? How can knowing that help us navigate all the information we encounter on a daily basis? Join Dr. B to find out!



<https://www.youtube.com/watch?app=desktop&v=GbxshaQ6BVs>

Quick Questions

1. Name one surprising piece of news or headline that you heard in the past month. Did you take it at face value or were you skeptical?
2. What have you heard about correlation and causation before?
3. Does this show make you rethink anything you've always assumed to be causation? Could it actually be just correlation?

DEEP DIVES

1. What problems arise when correlation is misunderstood to be causation? Could there be financial or other motivations for researchers, reporters, politicians, or others to blur the lines between causation and correlation?
2. Does one thing in a correlation have to happen before the other? For example, taking medicine is sometimes correlated with feeling better, but taking the medicine would come first. Give one more example of a correlation – any two things or events that might be correlated. Does one event have to happen first? Could it be the other way around? Could they both happen at the same time?
3. Why is it important to understand the difference between causation and correlation? For example, businesses try to understand which products sell best due to marketing methods, and medical researchers test new drugs. Come up with an imaginary scenario in which someone must determine whether two things are correlated or causal.
4. Imagine someone tells you about a causative relationship they just heard about. What could you do to uncover more information about whether it is only a correlation, or actually causation?
For example: Imagine a study shows that people with larger homes, on average, live longer. Your friend tells you that more living space must cause you to live longer. You point out that it could be a coincidence, or there could be other variables involved. Make a list of two to three other variables that may have an effect on this result. How might you design a study to better understand the connection between larger homes and lifespan?
5. Imagine you are a journalist. You know that you can write dramatic but misleading headlines that attract attention, which brings in money for you. But you also know that they can be very misleading and cause misinformation to spread in society. People may even lose trust in you as a journalist. What will you do? How will you go about writing your headlines, and why?

Engaging in Science Discussions



Recommended Grade Level: Middle and High School

Objective: To engage in open-ended discussions about critical science topics. While leading these discussions, it is important to ensure that everyone is heard, and everyone is treating one another with respect. There is no “right answer” during these discussions, and it’s okay to respectfully disagree.

Additional Notes: We recommend having these discussions multiple times with the same group of participants. This provides the opportunity to explore different topics and improve one’s abilities to have successful conversations about STEM topics. Quick Questions are optional and are recommended to be used as warm-up questions.

Materials: TV or projector Paper and writing utensils

TIMELINE (30 – 40 MINUTES)

5 min	10 min	5 min	10 min	10 min <i>(optional)</i>
Intro + prompts	Watch segment	Think/write time	Share with partner	Small groups

Intro (5 min) Before starting, select one Deep Dive question. Tell the group you will be asking them a question that has no right or wrong answer. After they watch the clip, they will have time to think about and write their response. They will share their response with a partner or small group. Now share the question you selected.

If participants are new to these sorts of discussions, you may want to review the following concepts:

- When you are sharing your responses, provide reasoning and evidence. Reasoning is your own thinking behind your answer. Evidence is facts that support your answer, such as historical facts or scientific facts. You may also have experiences from your own life that support your answer.
- When listening to your classmates, ask questions. The purpose of questions is to better understand their thought process, not to challenge them. Some ways to frame questions are: “I didn’t understand X.” “Could you explain Y again?” “What do you mean by Z?”
- If someone asks you questions, provide clarification. Explain your reasoning and evidence. Remember that there are no right or wrong answers.

Watch the segment (10 minutes)

Think/write time (5 minutes): Participants write down their answers

Share with a partner (10 minutes): Pair up participants. Each person has 5 minutes to share their response and answer questions from their partner. Then switch so each partner gets a turn.

(Optional) Small groups (10 minutes): Put participants in groups of 4 for share-outs and conversations.

(Optional) Homework prompts: Expand your response into a report, picture, poem, essay, short story, song, or performance. Or, write your own discussion question for the group.