
Claim, Evidence and Reasoning

How to write a scientific explanation.

Today's Goal & Targets

Goal:

Students will develop the skills necessary to facilitate deeper meaning in regards to scientific writing.

Targets:

The student will:

- Identify Claim, Evidence and Reasoning
 - Use evidence and reasoning to support a claim
 - Plan for classroom implementation
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What is CER?

<https://www.teachingchannel.org/videos/support-claims-with-evidence-getty>

Sham Wow



WHAT does Vince want you to do?

HOW do you know that?

WHY does his evidence support his claim?

<https://www.youtube.com/watch?v=Ns4mnmNBk1Y>

CER

Claim Evidence Reasoning is a framework for constructing scientific explanations.

- **C**laim – **W**hat do you know? The main idea
 - **E**vidence – **H**ow do you know that? The facts that support the claim.
 - **R**easoning – **W**hy does your evidence support the claim?
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Claim

The claim is the concluding statement that answers your original question.

- A statement
 - Must be accurate, specific and answer the question (hypothesis).
 - The answer to a multiple choice question.
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Evidence

The evidence is all of the scientific data that supports your claim.

- Observations
 - Experimental evidence
 - Facts that led you to make the claim
 - Evidence must be sufficient and relevant to your claim. Not all data is considered evidence.
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Reasoning

Reasoning is the explanation that connects your claim to the evidence that supports it.

- Uses logic to tie evidence to the claim.
 - Detailed explanation for why the evidence led you to make the claim.
 - Deep explanation of the science concepts:
 - Why do the facts support the statement?
 - Why did my experiment turn out the way it did?
 - The scientific background knowledge that justifies why a multiple choice answer is the best answer.
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Sham Wow CER

Claim:

Evidence:

Reasoning: *Next Page*

Sham Wow CER

Things to think about:

- What more could vince do to convince you that you should buy Sham Wow?
(hint: think like a scientist)
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Sham Wow CER

Reasoning

The Sham Wow towel works so well because it contains microfibers. Microfiber towels are made from two synthetic (man made) materials, usually nylon and polyester. The fibers are treated with chemicals and mechanically changed to make them very small, smaller than 1/100th the diameter of a human hair. This gives the towel a lot of surface area to make contact with the spill and absorb the liquid. The tiny fibers get into small places where most towel fibers cannot reach.

Source:

<http://www.cleanlink.com/cp/article/Microfiber-101-The-Science-of-Tiny-Threads--3488>

Real World Claims

- People make claims all of the time.
 - Friends, parents and just about every commercial on TV is making a claim about something.
 - Discuss some claims you have heard recently at your table.
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Real World Claim Examples

- Smoking gives you cancer
 - Energy drinks (Red Bull gives you wings)
 - Get the flu shot so you don't get the flu
 - Organic food
 - Medications
 - Diets
 - Flow (Progressive Car Insurance)
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THE DEEPEST SIN AGAINST THE HUMAN MIND IS TO BELIEVE THINGS
WITHOUT EVIDENCE. SCIENCE IS SIMPLY COMMON SENSE AT ITS BEST.

Thomas Huxley

UMMAGUMMA.CO

Practice Identifying CER

Activity

1. Use one of the sentence starters below to make a claim.

A) The greatest (choose one) football / hockey / baseball / basketball player is _____.

B) The best movie is _____.

C) The greatest musical artist (solo or group) is _____.

Homework

2. Write down at least 3 pieces of evidence that support your claim.

- **This data must be accurate!**

3. Provide reasoning that explains why you used the evidence you did to determine the "best".

Tomorrow in Class

1. You will sit with all other students who chose the same category. (example: best movie)
 2. Share your claim, evidence, and reasoning with the other students.
 3. Have a debate.
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