Changing Minds

Explaining: Claim, Evidence, Reasoning

- Claim: statement that answers the original question
- Evidence: raw data, results from data experiments
- Reasoning: explanation that connects the claim to the evidence

Scientific Argumentation: When the answer isn't known…yet

What makes arguing different from explaining…

Explaining

- The question has already been answered.
- The goal is to inform others
- Need to use scientific theories in your reasoning

Arguing

- The question has not been answered yet.
- The goal is to persuade others and build knowledge
- May or may not have scientific theory in your reasoning

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How is 2022 different than 1854?

    2022: We have the "germ theory of disease" - EXPLAIN

    1854: No established scientific theory explaining how diseases spread - ARGUE

Anatomy of a good argument

- Clearly state the question/problem
- State your claim
- Provide data and visuals (evidence)
- Explain your reasoning
- Provide a critique of the alternative explanation(s) including:
    - How it may not be supported by the data
    - How the data that supports it is not good

Persuade the Londoners

- Develop a poster to make your argument
- Mentors will revert back to their 19th Century selves and will be supporters of one of six theories
- Londoners will meet individually with each group and rotate between posters every 3 minutes.

Directions

- Each group will be give the following:
  - Printouts of data and visualizations from the notebooks
- Advice
  - The poster is just a visual aid.
  - Sketch the layout of your poster beforehand
  - Present your argument clearly and concisely
  - Be prepared to counter arguments from the Londoners:
    - Have data and the appropriate reasoning ready
    - Find the flaws and weaknesses in their arguments