TuVa

The Data Literacy Company

Data & Claim-Evidence-Reasoning

Claim-Evidence-Reasoning Framework. The CER Framework supports students in developing their skills to construct scientific explanations of their understanding (McNeill & Martin 2010). Data, being the currency of science, therefore is the linchpin of developing claims through evidence and reasoning.

- **Claims** are how we articulate what we understand or found as we explored the world. As humans, we observe the world around us; we naturally tend to make claims about what we see.
    - *Why with Data?* - But how likely is it that our claim will always hold true? That's where data comes in. We must collect data to see how true our claim about the topic we are exploring. Claims are based on observations; observations that are collected systematically are data. Thus data, as observations, are the basis for making stronger claims.
    - *How with Data?* - When students use data in their learning or investigations, they should use the data to make their claim about what they understand about the topic or what they found in their investigation.
- **Evidence** comes from data.
    - *Why with Data?* - When we use data to support our claim, that turns it into evidence. But making the transition from looking at data to sorting it, graphing it, and/or discerning what aspects of data can be used as evidence to support a claim is challenging.
    - *How with Data?* - When our students explicitly explain the data to demonstrate what they see in the data that supports their claim, they learn to use data as evidence.
- **Reasoning** is the logic of how we think about the data as evidence of our claim.
    - *Why with Data?* - Reasoning is how we communicate with one another how we arrived at our claim based on our data as evidence, so that they can follow the logic and support our claim.
    - *How with Data?* - Students need to explicitly explain why their data as evidence supports their claim from the data and not another claim. Communicating the logic helps convince someone else of the strength of your claim from the data.

Reference:

McNeill, K.L., and D. Martin. (2010, March). *Strengthening science writing and inquiry: Helping students develop claims with evidence and reasoning*. Workshop presented at the annual national meeting of National Science Teachers Association. Philadelphia, PA