CERC Graphic Organizer

Question:		
Claim: a statement that expresses the answer or conclusion to a question or problem.	• The problem is restated in your claim. • Include whether your hypothesis is correct or incorrect.	
Evidence: scientific data that supports a claim (observations, measurements, results of an experiment, prior knowledge)	• Include accurate (correct) evidence. • Include sufficient (enough) evidence.	
Reasoning: an argument that explains why certain evidence supports a certain claim	• Explain what your evidence means and how it relates to the claim. • Include scientific principles	

Closure: Options include	• Conclusion sentence – wrap up
	• Connection to real world – why does this matter…
	    o To you?
	    o To scientists?
	    o To the real world?
	• Counterpoint
	• Continue – further investigate	

A scientific explanation has three parts:

1. Claim – a conclusion to a question or problem
2. Evidence – scientific data that supports the claim
3. Reasoning – a justification that links the evidence to the claim (use scientific principles to make that claim)
4. *Connection – 4Cs*

Claim: a statement that expresses the answer or conclusion to a question or problem. A restatement of the testable question

Evidence: the scientific data that supports the claim. Data are information such as observations and measurements that come from natural settings (eg., behavior of birds) and results from controlled experiments (e.g., speed of objects falling). One of the key characteristics of science is its use of scientific data as evidence to understand the natural world. The accuracy of reliability of scientific data are often checked through multiple trials or by comparing different types of data. Data can also be secondhand (data that the teacher gives because it's not possible for students to collect it on their own). Once they have their data, the students need to make sense of it. Students should use their data as evidence to come up with and support their claim to the original question or problem. Evidence is not opinions, beliefs, everyday experiences. Any conclusion or claim they make about the natural world should be linked to specific and systematic evidence.

Appropriate data need to be scientifically relevant for supporting the claim.

Sufficient data means a student has gathered enough data to support his or her claim. Typically in science, we collect, analyze, and use multiple pieces of data to answer a particular question or problem, but in reality the number of pieces of evidence required will depend on the particular situation.

Reasoning: provides a justification the links the evidence to the claim. Explains why the evidence supports the claim, providing a logical connection between the evidence and claim. Typically, the reasoning requires the discussion of appropriate scientific principles to explain that link, because when you are picking or using scientific data you make your decisions based on your understanding of the scientific principles. The reasoning should articulate the logic behind that choice.

Connection: various possibilities encompass this requirement

Conclusion sentence – wrap it up; restate the question and claim
Connection to real world – why does this matter…
- To you?
- To scientists?
- To the real world?

Counterpoint (goal for end of eighth grade)- recognizes and describes alternative explanations and provides counter evidence and reasoning for why the alternative is not the appropriate explanation for the question or problem. In constructing their final scientific explanation, they will explain not only why they believe claim 1 is correct, but also why they believe alternative claim 2 is incorrect.

Continue – what work could be done to further investigate your claim or the original question?