FEEDBACK

Feedback Issues for Science Teachers to Consider

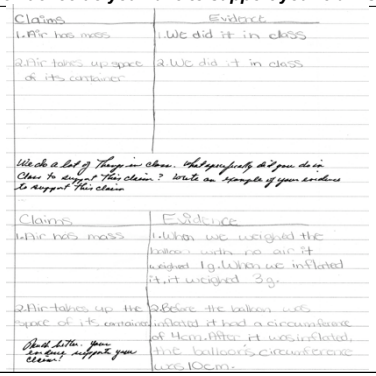
- *Where are you trying to go?*
  (identify and communicate the learning and performance goals or standards)
- *Where are you now?*
  (assess or self-assess current student levels of understanding)
- *How can you get there?*
  (help the student with strategies and skills to reach the goal)

GUIDING QUESTIONS TO CONSIDER

Feedback Guiding Questions

1. *What evidence do you have to support your claims?*
2. *What claims can you make from your evidence?*
3. *Is there another explanation for what happened?*

What evidence do you have to support your claims?



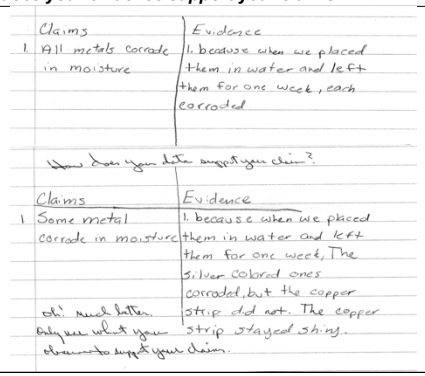
Claims	Evidence
1. Air has mass	1. We did it in class
2. Air takes up space of its container	2. We did it in class

We did a lot of things in class. What specifically did you do in class to support this claim? Write an example of your evidence to support this claim.

Claims	Evidence
1. Air has mass	1. When we weighed the balloon with no air it weighed 1g. When we inflated it, it weighed 3g.
2. Air takes up the space of its container	2. Before the balloon was inflated it had a circumference of 4cm. After it was inflated, the balloon's circumference was 10cm.

Could better evidence support your claim?

How does your evidence support your claims?



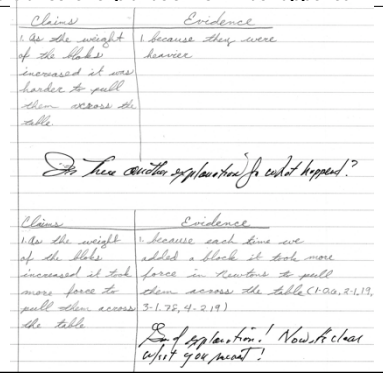
Claims	Evidence
1. All metals corrode in moisture	1. because when we placed them in water and left them for one week, each corroded

How does your data support your claim?

Claims	Evidence
1. Some metal corrode in moisture	1. because when we placed them in water and left them for one week, The silver colored ones corroded, but the copper strip did not. The copper strip stayed shiny.

oh! much better. Only use what you observed to support your claim.

Is there another explanation for what happened?



Claims	Evidence
1. As the weight of the blocks increased it took more force to pull them across the table	1. because each time we added a block it took more force in newtons to pull them across the table (1.0N, 2.1N, 3.1N, 4.2N)

Is there another explanation for what happened?

Lots of explanations! Now, it's clear what you meant!

Dr. Michael Klentschy
mpkdr@aol.com

FEEDBACK ON THE FLY

Day 19

	1	2	3	4
tall	13 cm	9 cm	10 cm	10 cm
flowers	2	0	0	0
leaves	5	5	10	7
buds	0	0	0	0
seed pods	3	2	3	2

I have a little plant that is 1 cm tall it is in quad #4.

How do your plants compare to the control plants?

the control plants either have fat or long seed pods. The experimental plants don't. Your charts are because we didn't clean and carry pollinate every day. to read.

FEEDBACK ON THE FLY

Conclusion:

Air has mass, takes the shape of its contuner and is clear. These are the properties of air.

How do you know these are the Properties of air?

When we did the investigation a deflated balloon had less mass than an inflated balloon. The air took we used to inflate the balloon took the shape of the balloon. When we let the air out of the balloon we could not see it.

Assessment Issues for Science Teachers to Consider

- *Where are you trying to go?*
  (identify and communicate the learning and performance goals or standards)
- *Where are you now?*
  (assess or self-assess current student levels of understanding)
- *How can you get there?*
  (help the student with strategies and skills to reach the goal)

GUIDING QUESTIONS TO CONSIDER

Formative Assessment

1. *What should all students learn in this unit?* (content skills and/or process skills)
2. *How do the student science notebooks reflect student learning?*
3. *What evidence should support their understanding?* (criteria)
4. *What are the implications for further instruction?*

Elements and Criteria	NA	Present	Lacking	Meets	Exceeds
Big Idea					
Question Purpose					
Student generated; in own words/ Relates to purpose/ Big Idea/ Clear and concise Investigable	COMMENTS:				
Prediction					
Connects to prior experience Is clear and reasonable Relates to question Gives an explanation/reason	COMMENTS:				
Planning					
Relates to investigable question Has clear sequence/direction Identifies variables/control Includes data organizer States materials needed	COMMENTS:				
Data/Observations					
Relates to question and plan Includes student generated drawings, charts, graphs, narrative Organized Accurate	COMMENTS:				
What Have You Learned?					
Student generated; in own words Clear statement of what was learned Based on question/planning/evidence Reflective Shows rigor in thinking	COMMENTS:				
Next Steps/New Questions					
Student generated Extension/new application of original question Researchable or investigable WOW factor Can be recorded throughout	COMMENTS:				
Remarks/Considerations					
Creativity in Evidence Growth over time (process and content)	COMMENTS:				

SCORING GUIDE

Student Self-Assessment	Teacher Assessment	
		ADVANCED (Expert)
✓		All items listed in proficient
✓		Plus: diagrams of each water clock trial
✓		Plus: diagrams and charts are completely labeled
✓		Plus: appropriate/advanced use of scientific language
		PROFICIENT
		4 of the following 5:
✓		Focus question relates to main idea of lesson
✓		A prediction that relates to the question
✓		A plan that relates to the question
✓		Data: Diagrams are clear and accurate
✓		Data: Diagrams of trials that worked/did not work
		All of the following=Claims and Evidence
✓		All claims are supported by evidence
✓		Descriptions/diagrams include correct labeling
✓		A chart with data from each trial
✓		What you learned
		PROGRESSING (Basic) 5-7 Proficient points
		DOES NOT MEET STANDARD (Far Below Basic) 4 or fewer Proficient Points

Dr. Michael Klentschy
mpkdr@aol.com

Feedback

Grade	Possible	Category Being Scored
	1	**Word Wall/Kit Inventory:** • Contains running vocabulary • Accurately names equipment
	2	**Focus Question:** • One question written clearly • Related to the problem in the engaging scenario
	3	**Prediction:** • One statement • Uses "because" to provide an explanation • Provides a possible answer to the Focus Question
	3	**Plan/Data Chart:** • Identifies experimental/control variables • Designs data collection device
	6	**Data:** • Drawings and data from testing mass and drop position • Drawings and t-chart from testing length variable • Picture graph • Two coordinate Graph
	6	**Claims and Evidence:** • Writes 3 complete claims and evidence statements using data from the investigation
	3	**Conclusion**: • Accurately shows if prediction was supported or not and explains why in the context of lesson goal and explains why.
	1	**Reflection:** • Accurately responds to one of the stems

EXPLANATION RUBRIC

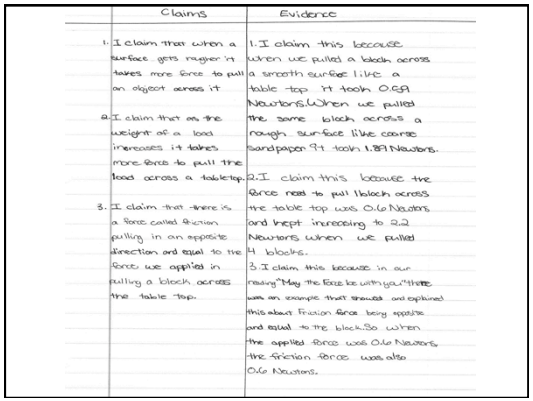
BASE EXPLANATION RUBRIC

Component	Level		
	0	1	2
Claim – A conclusion that answers the original question.	Does not make a claim, or makes an inaccurate claim.	Makes an accurate but incomplete claim.	Makes an accurate and complete claim.
Evidence – Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.	Does not provide evidence, or only provides inappropriate evidence (Evidence that does not support claim).	Provides appropriate, but insufficient evidence to support claim. May include some inappropriate evidence.	Provides appropriate and sufficient evidence to support claim.
Reasoning – A justification that links the claim and evidence. It shows why the data counts as evidence by using appropriate and sufficient scientific principles.	Does not provide reasoning, or only provides reasoning that does not link evidence to claim.	Provides reasoning that links the claim and evidence. Repeats the evidence and/or includes some scientific principles, but not sufficient.	Provides reasoning that links evidence to claim. Includes appropriate and sufficient scientific principles.

EXPLANATION RUBRIC

SCIENTIFIC EXPLANATION: FORCE OF SLIDING FRICTION

Component	Level		
	0	1	2
Claim – A conclusion that answers the original question.	Does not make a claim, or makes an inaccurate claim. --- States surface type and mass have no effect on sliding friction	Makes an accurate but incomplete claim. --- Vague statement, like "some variables have an effect on sliding friction."	Makes an accurate and complete claim. --- Explicitly states "Variables such as surface type and mass have an effect on sliding friction"
Evidence – Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.	Does not provide evidence, or only provides inappropriate evidence (Evidence that does not support claim). --- Provides inappropriate data, like "the force is the same" or provides vague evidence, like "we did it in class."	Provides appropriate, but insufficient evidence to support claim. May include some inappropriate evidence. --- Provides 1 of the following pieces of evidence: provides data showing force changes on the five different surfaces or as the mass of the load increases so did the frictional force. May also include inappropriate evidence.	Provides appropriate and sufficient evidence to support claim. --- Provides both of the following pieces of evidence: provides data showing force changes on the five different surfaces or as the mass of the load increases so did the frictional force.
Reasoning – A justification that links the claim and evidence. It shows why the data counts as evidence by using appropriate and sufficient scientific principles.	Does not provide reasoning, or only provides reasoning that does not link evidence to claim. --- Provides an inappropriate reasoning statement like "they are like the same on sandpaper and wood" or does not provide any reasoning.	Repeats evidence and links it to the claim. May include some scientific principles, but not sufficient. --- Repeats the data showing force changes on the five different surfaces or as the mass of the load increases so did the frictional force. Or provides an incomplete generalization about properties, like "mass is not a property so it does not count."	Provides accurate and complete reasoning that links evidence to claim. Includes appropriate and sufficient scientific principles. --- Includes a complete generalization that the smoother the surface, the less friction force and the greater the load the greater the frictional force. Uses data to compare and contrast.



Claims	Evidence
1. I claim that when a surface gets rougher it takes more force to pull an object across it	1. I claim this because when we pulled a block across a smooth surface like a table top it took 0.59 Newtons. When we pulled the same block across a rough surface like coarse sandpaper it took 1.89 Newtons.
2. I claim that as the weight of a load increases it takes more force to pull the load across a tabletop.	2. I claim this because the force need to pull 1 block across the table top was 0.6 Newtons and kept increasing to 2.2 Newtons when we pulled 4 blocks.
3. I claim that there is a force called friction pulling in an opposite direction and equal to the force we applied in pulling a block across the table top.	3. I claim this because in our reading "May the force be with you" there was an example that showed and explained this about Friction force being opposite and equal to the block. So when the applied force was 0.6 Newtons, the friction force was also 0.6 Newtons.

Dr. Michael Klentschy
mpkdr@aol.com