Revitalize your rubrics

Streamline Grading and Elevate Feedback

Presented by Elise Naramore
Pascack Hills High School

Today's Goals

- To enhance the effectiveness of our rubrics, facilitating learning and growth
- To share, reflect, and build upon our collective expertise.
- To simplify grading
- To foster student engagement and achievement.
- To provide fast, constructive, actionable feedback that drives improvement and facilitates student growth

Copy of this Presentation, plus more!

Learn more at my other presentations at NSTA 2024:

- **Embracing Growth & Creativity** Thursday 1 - 2 pm Mile High Ballroom 1B
- **Revitalizing Your Rubrics** Thursday 2:20 - 3:20 pm Mile High Ballroom 4A
- **Assessment 3.0** Friday 1 - 2 pm Mineral Hall B

The Scoring Rubric as a Roadmap

- clearly delineating expectations and criteria for performance
- using a structured framework for evaluating a student's work
- providing transparency in grading
- promoting self-assessment and peeramong learners
- inclusive, flexible, and reflective of the learning process
- illuminating the path to success
- encouraging creativity
- providing opportunities for growth

The Pitfalls, Challenges, and Issues with Rubrics

1. Assesses skills that I don't teach.
2. Uses quantitative achievement levels
3. Puts the highest levels first (the left) and the lowest levels to the right.
4. Uses deficit language.
5. Uses vague or soft language.
6. Written from the teacher's point of view.
7. Can only be used for one specific assignment.
8. Assesses a mixture of content, skills, and behaviors.
9. Is rigid and prescriptive.
10. Is repetitive.
11. Has no point of entry for students unsure of how to start.
12. Has no level that challenges students who are ready to stretch.
13. Performance on one row depends on performance in another (double jeopardy).
14. Requirements seem unrelated or very complex. (Avoid a laundry list.)

Possible Solutions

1. Eliminate criteria that I don't teach.
2. Use qualitative, non-judgmental level names.
3. Reorder to read from low to highest levels, left to right.
4. Use strength-based language.
5. Use specific and descriptive language.
6. Student-centered language.
7. Consider generalizing the rubric so it can be reused for similar assignments.
8. Focus on criteria that spirals throughout your curriculum, preferably skills-based.
9. Add flexibility to the achievement levels.
10. Eliminate repetition for clarity.
11. Ensure that there is a Low Floor.
12. Ensure that there is a High Ceiling.
13. Eliminate dependencies.
14. Streamline requirements for clarity.

Example 1: A Project Rubric from a Physics Class

Mastery (5 points) means that you have met the criteria at a superlative expectation, thoroughly and completely.
Satisfactory (3 points) means that you have met the criteria with only a minor omission or error.
Novice (1 point) means that you have several minor or one significant omission(s) or error(s).
Missing (0 points) means that you haven't addressed the criteria at all.

Criteria	Mastery (5)	Satisfactory (3)	Novice (1)	Missing (0)
• Accurately describes the relationship between good driving and reaction time, following distance, braking distance, and the total stopping distance, AND • Fully explains yellow-light analysis, AND • Accurately describes the connection between speed, friction, and radius of the curve when turning.				
• General relationships between variables are qualitatively described AND, • Graphs and charts are used appropriately and explained, AND • Class experiments are used to back up statements (and explained), AND • Uses several correct estimates of the magnitude of physical quantities (such as reaction time, following distance, speed, acceleration) to enrich the presentation, AND • Cites sources of these estimates (investigations, text, websites…)				
• Integrates the physics concepts in correct context. • Uses easy-to-understand and conversational terms, NOT textbook format. • No section breaks or headings. • Correctly uses formal physics terminology.				
• Easy to follow and understand, organized and clear. • Length of presentation adequate to explain all without dragging on or abruptly ending. Pacing overall is great. • Technical Aspects are done well: smooth transitions, focus, lighting, sound quality, integration of video clips and still pictures, text size/font… • Professional-looking, in terms of layout, fonts, graphics, etc.				
• Storyline is novel and coherent. • Ties in clearly to the Driving Academy premise. • Entertainment: dramatic and/or funny, uses multiple settings and appropriate costumes, use of music, music lyrics are relevant				

Why did this have to change?

Possible Alternative: A Project Rubric

	Not Enough Evidence	Beginning	Developing	Proficient	Advanced	Expert
LP9 Engaging with Content	I do not explain my thinking about this assignment.	I explain my thinking about this assignment.	I overtly use terminology and Big Ideas from this unit when discussing my thinking about this assignment.	I correctly state the Big Ideas to explain my decision-making, experimental design, data analysis, and/or performance (good and poor).	I correctly apply the Big Ideas from this unit to explain my decision-making, experimental design, data analysis, and performance (good and poor).	I fully integrate the Big Ideas appropriately and correctly throughout my discussion. I use Big Ideas from this unit as well as other relevant units.
LP10 The Engineering Design Process	I do not present any relevant product and/or evidence of using the EDP.	I build the base model. I use some steps of the engineering design process (EDP). There is evidence of the product.	I produce a product that addresses the assigned task. I present evidence the steps from the EDP were used to evolve my product. I present evidence of the product.	I produce a product that meets all listed criteria. I document the evolution of my product so that my use of the Engineering Design Process is easy to follow. I worked through the EDP multiple times.	My final product is the best possible model based on the collected data. I provide convincing evidence to link the collected data to the final design. My presentation documents the methodical and iterative* steps of the engineering design cycle to show how I developed my product.	The efficient use of resources is a driving factor in the design process. My final presentation completely documents my understanding of the essential steps of the engineering design cycle by highlighting the details without being repetitive or off-topic.

Example 2: Critiquing a CER Rubric

Descriptor	5	3	1
Heading	Name, date, and title are at the top of the CER. Objective/Question is provided.	May have a minor error or omission.	May have a significant error or omission.
Claim	Makes a testable statement in response to the question asked. The statement is both accurate and complete.	Makes a statement in response to the question asked. The statement may be either accurate or complete.	Makes a statement about the activity. The statement may be inaccurate or incomplete.
Evidence	Outlines the specific data that supports the claim.	Outlines data that supports the claim. May have a minor error or omission.	Mentions data from the activity. May have a significant error or omission.
Reasoning	Provides a justification for how the evidence supports the claim. Accurate and complete.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Makes a statement about the activity. May have a significant error or omission.
Writing	Uses formal writing standards of spelling, grammar, and format. Paragraph/essay format.	May have an error or omission in writing standards. Sections are not unified into a single response.	May have several errors or omissions in writing standards.

Issues I want to address:

1. Assesses skills that I don't teach.
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

Critiquing a CER Rubric

Descriptor	5	3	1
Heading	Name, date, and title are at the top of the CER. Objective/Question is provided.	May have a minor error or omission.	May have a significant error or omission.
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Evidence	Outlines the specific data that supports the claim.	Outlines data that supports the claim. May have a minor error or omission.	Mentions data from the activity. May have a significant error or omission.
Reasoning	Provides a justification for how the evidence supports the claim. Accurate and complete.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Makes a statement about the activity. May have a significant error or omission.
Writing	Uses formal writing standards of spelling, grammar, and format. Paragraph/essay format.	May have an error or omission in writing standards. Sections are not unified into a single response.	May have several errors or omissions in writing standards.

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Critiquing a CER Rubric

Descriptor	Proficient	Developing	Beginning
Claim	Makes a testable statement in response to the question asked. The statement is both accurate and complete.	Makes a statement in response to the question asked. The statement may be either accurate or complete.	Makes a statement about the activity. The statement may be inaccurate or incomplete.
Evidence	Outlines the specific data that supports the claim.	Outlines data that supports the claim. May have a minor error or omission.	Mentions data from the activity. May have a significant error or omission.
Reasoning	Provides a justification for how the evidence supports the claim. Accurate and complete.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Makes a statement about the activity. May have a significant error or omission.

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Evidence	Outlines the specific data that supports the claim.	Outlines data that supports the claim. May have a minor error or omission.	Mentions data from the activity. May have a significant error or omission.
Reasoning	Provides a justification for how the evidence supports the claim. Accurate and complete.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Makes a statement about the activity. May have a significant error or omission.

Issues I want to address:

1. Assesses skills that I don't teach.
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Critiquing a CER Rubric

Descriptor	Beginning	Developing	Proficient
Claim	Makes a statement about the activity. The statement may be inaccurate or incomplete.	Makes a statement in response to the question asked. The statement may be either accurate or complete.	Makes a testable statement in response to the question asked. The statement is both accurate and complete.
Evidence	Mentions data from the activity. May have a significant error or omission.	Outlines data that supports the claim. May have a minor error or omission.	Outlines the specific data that supports the claim.
Reasoning	Makes a statement about the activity. May have a significant error or omission.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Provides a justification for how the evidence supports the claim. Accurate and complete.

Issues I want to address:

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Claim	Makes a statement about the activity. The statement may be inaccurate or incomplete.	Makes a statement in response to the question asked. The statement may be either accurate or complete.	Makes a testable statement in response to the question asked. The statement is both accurate and complete.
Evidence	Mentions data from the activity. May have a significant error or omission.	Outlines data that supports the claim. May have a minor error or omission.	Outlines the specific data that supports the claim.
Reasoning	Makes a statement about the activity. May have a significant error or omission.	Provides a justification for how the evidence supports the claim. May have a minor error or omission.	Provides a justification for how the evidence supports the claim. Accurate and complete.

Issues I want to address:

1. Assesses skills that I don't teach.
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Claim	Makes a statement about the activity.	Makes a statement in response to the question asked. The statement is accurate or complete.	Makes a testable statement in response to the question asked. The statement is both accurate and complete.
Evidence	Mentions data from the activity. ~~May have a significant error or omission.~~	Outlines data that supports the claim. ~~May have a minor error or omission.~~	Outlines the specific data that supports the claim.
Reasoning	Makes a statement about the activity. ~~May have a significant error or omission.~~	Provides a justification for how the evidence supports the claim. ~~May have a minor error or omission.~~	Provides a justification for how the evidence supports the claim. Accurate and complete.

Issues I want to address:

1. Assesses skills that I don't teach.
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
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6. Teacher-centered

Critiquing a CER Rubric

Descriptor	Beginning	Developing	Proficient
Claim	Makes a statement about the activity.	Makes a statement ~~in response to~~ that answers the question asked. The statement is scientific, accurate or complete.	Makes a testable statement ~~in response to~~ that answers the question asked. The statement is ~~both~~ scientific, accurate and complete.
Evidence	Mentions data ~~from the activity.~~ obtained from the investigations as support.	~~Outlines data that~~ The data or analysis is derived from the experimental results and supports the claim.	~~Outlines the specific data that supports the claim.~~ Presents the most convincing, valid and reliable evidence obtained from the investigation as support for the claim.
Reasoning	~~Makes a statement about the activity.~~ States a science concept or theory as reasoning.	~~Provides a justification for how the evidence supports the claim.~~ The chosen science concept, theory is clearly related to the variables in the claim.	~~Provides a justification for how the evidence supports the claim. Accurate and complete.~~ Accurately ties physics theory correctly, directly, and tightly to the most sophisticated supporting evidence available, so that the claim is clearly justified.

Issues I want to address:

1. Assesses skills that I don't teach.
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

Critiquing a CER Rubric

Descriptor	Beginning	Developing	Proficient
Claim	I make a statement about the activity.	I make ~~Makes~~ a statement that answers the question asked. The statement is scientific, accurate or complete.	I make ~~Makes~~ a testable statement that answers the question asked. The statement is ~~both~~ scientific, accurate and complete.
Evidence	I mention ~~Mentions~~ data obtained from my investigations as support.	The data or analysis is derived from my experimental results and supports the claim.	I present ~~Presents~~ the most convincing, valid and reliable evidence obtained from the investigation as support for the claim.
Reasoning	I state ~~States~~ a science concept or theory as reasoning.	The chosen science concept, theory is clearly related to the variables in the claim.	I accurately tie ~~Accurately ties~~ physics theory correctly, directly, and tightly to the most sophisticated supporting evidence available, so that my ~~the~~ claim is clearly justified.

Issues I want to address:

1. Assesses skills that I don't teach.
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

Critiquing a CER Rubric

Descriptor	Beginning	Developing	Proficient
Claim	I make a statement about the activity.	I make a statement that answers the question asked. The statement is scientific, accurate or complete.	I make a testable statement that answers the question asked. The statement is ~~both~~ scientific, accurate and complete.
Evidence	I mention data obtained from my investigations as support.	The data or analysis is derived from my experimental results and supports the claim.	I present the most convincing, valid and reliable evidence obtained from the investigation as support for the claim.
Reasoning	I state a science concept or theory as reasoning.	The chosen science concept, theory is clearly related to the variables in the claim.	I accurately tie physics theory correctly, directly, and tightly to the most sophisticated supporting evidence available, so that my claim is clearly justified.

Now, the rubric uses:

1. Skills that I teach.
2. Descriptive, non-judgmental achievement levels
3. Lowest levels first
4. Positive, strength-based language
5. Specific language
6. Student-centered

Example #3: One Row from a 4th Grade Project Rubric

Level 4	Level 3	Level 2	Level 1
Data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. Visuals relate the topic, are large enough to see and have captions.	Data is clearly and neatly displayed. Visuals relate to the topic, are large enough to see, and have captions.	Data is neither clear nor neatly displayed. Visuals don't relate the topic or aren't large enough or lacking captions.	Data is neither clear nor neatly displayed. Visuals don't relate the topic or aren't large enough or lacking captions.

Revisions to make:

1. Strength-based
2. Rename levels
3. Lowest levels first
4. Student-centered
5. Add Flexibility

Reframe language from deficit-focused to strengths-based

Provide guidance on how students can progress to the next level of achievement.

Essentially, rather than highlighting deficiencies or inadequacies at a particular level, the rubric articulates the positive attributes present at the next level.

4th Grade Project Rubric (just one row of several)			
Level 4	Level 3	Level 2	Level 1
Data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. Visuals relate the topic, are large enough to see and have captions.	Data is clearly and neatly displayed. Visuals relate to the topic, are large enough to see, and have captions.	Data is ~~neither clear nor neatly~~ displayed. *There are* visuals ~~don't relate the topic or aren't large enough or lacking captions~~.	Data is ~~neither clear nor neatly~~ displayed. ~~Visuals don't relate the topic or aren't large enough or lacking captions.~~

Rename achievement levels with non-judgmental descriptors

Focuses on growth.

Removes the tendency to convert to a percent.

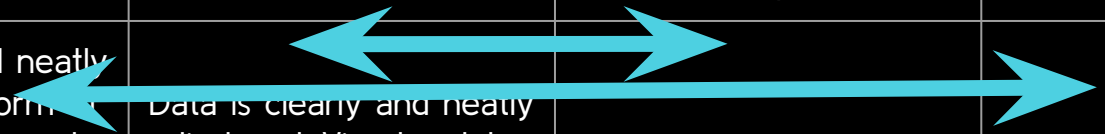
4th Grade Project Rubric (just one row of several)			
Butterfly	Chrysalis	Caterpillar	Pupa
Data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. Visuals relate the topic, are large enough to see and have captions.	Data is clearly and neatly displayed. Visuals relate to the topic, are large enough to see, and have captions.	Data is displayed. There are visuals.	Data is displayed.

Reverse the order of the achievement levels

Focuses on development from easy to challenging.

Encourages reading ALL requirements, since we read left to right.

4th Grade Project Rubric (just one row of several)			
Butterfly	Chrysalis	Caterpillar	Pupa
Data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. Visuals relate the topic, are large enough to see and have captions.	Data is clearly and neatly displayed. Visuals relate to the topic, are large enough to see, and have captions.	Data is displayed. There are visuals.	Data is displayed.



Reverse the order of the achievement levels

Focuses on development from easy to challenging.

Encourages reading ALL requirements, since we read left to right.

4th Grade Project Rubric (just one row of several)			
Pupa	Caterpillar	Chrysalis	Butterfly
Data is displayed.	Data is displayed. There are visuals.	Data is clearly and neatly displayed. Visuals relate to the topic, are large enough to see, and have captions.	Data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. Visuals relate the topic, are large enough to see and have captions.

Use Student-Centric Language

Employ "I" statements to ensure the rubric serves as a tool *for students,* communicating essential performance aspects.

4th Grade Project Rubric (just one row of several)			
Pupa	Caterpillar	Chrysalis	Butterfly
I include data. ~~Data is displayed.~~	I include data and visuals in my project. ~~Data is displayed.~~ ~~*There are* visuals.~~	*My* data is clearly and neatly displayed. *My* visuals relate to the topic, are large enough to see, and have captions.	*My* data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. *My* visuals relate the topic, are large enough to see and have captions.

Add Flexibility

Incorporate words like "When appropriate" and "and/or" to allow for adaptability in meeting criteria. Avoid excessive rigidity, which may limit the rubric's applicability.

4th Grade Project Rubric (just one row of several)			
Pupa	Caterpillar	Chrysalis	Butterfly
I include data and/or visuals.	I include data and visuals in my project.	My data is clearly and neatly displayed. My visuals relate to the topic, are large enough to see, and/or have captions.	My data is clearly and neatly displayed in the form of a table, graph, journal sheet or pictures. My visuals relate the topic, are large enough to see and have captions.

Example 4: A final project in 9th grade biology

Omit redundant criteria by ensuring that each level builds upon the previous one. Focus on introducing new or modified expectations at each achievement level.

	Not Enough Evidence	Emerging	Relevant	Explicit	Extending	Expert
Reflection of Understanding	I did not show that a characteristic of life was learned.	My project does not reflect knowledge gained from this year in biology. I have not included descriptions, explanations, or a summary.	My project reflects knowledge gained from my biology class this year. I have included descriptions, explanations, or a summary that lacks detail and thought.	My project reflects knowledge gained from my biology class this year. I have included descriptions, explanations, or a summary of the concept but lacks enough detail to show complete understanding.	My project reflects knowledge gained from my biology class this year. I have Included descriptions, explanations, or a summary of the concept in enough detail that my understanding of the concept is fully portrayed.	The project reflects knowledge learned in class and outside of class. Interviews, research, connections made with someone outside of the school.

Eliminate Repetition

Omit redundant criteria by ensuring that each level builds upon the previous one. Focus on introducing new or modified expectations at each achievement level.

	Not Enough Evidence	Emerging	Relevant	Explicit	Extending	Expert
Reflection of Understanding	I did not show that a characteristic of life was learned.	My project does not reflect knowledge gained from this year in biology. I have not included descriptions, explanations, or a summary.	My project reflects knowledge gained from my biology class this year. I have included descriptions, explanations, or a summary that lacks detail and thought.	My project reflects knowledge gained from my biology class this year. I have included descriptions, explanations, or a summary of the concept but lacks enough detail to show complete understanding.	My project reflects knowledge gained from my biology class this year. I have Included descriptions, explanations, or a summary of the concept in enough detail that my understanding of the concept is fully portrayed.	The project reflects knowledge learned in class and outside of class. Interviews, research, connections made with someone outside of the school.

Eliminate Repetition

Omit redundant criteria by ensuring that each level builds upon the previous one. Focus on introducing new or modified expectations at each achievement level.

	Not Enough Evidence	Emerging	Relevant	Explicit	Extending	Expert
Reflection of Understanding	I did not ~~show that a characteristic of life was Learned~~ *submit a project about a characteristic of life.*	*I submit a project about a characteristic of life.* ~~My project does not reflect knowledge gained from this year in biology. I have not included descriptions, explanations, or a summary.~~	~~My project reflects knowledge gained from my biology class this year.~~ I have included *relevant* descriptions, explanations, or a summary. ~~that lacks detail and thought.~~	~~My project reflects knowledge gained from my biology class this year.~~ I have included accurate descriptions, explanations, or a summary of *one or more* concepts. ~~but lacks enough detail to show complete understanding.~~	My project reflects accurate and complete knowledge gained from my biology class this year. I have included detailed and thorough descriptions, explanations, or a summary of *multiple* concepts ~~in enough detail that my understanding of the concept is fully portrayed.~~	The project reflects knowledge learned in class and outside of class through interviews, research, and/or connections made with someone outside of the school.

Eliminate Repetition

Omit redundant criteria by ensuring that each level builds upon the previous one. Focus on introducing new or modified expectations at each achievement level.

	Not Enough Evidence	Emerging	Relevant	Explicit	Extending	Expert
Reflection of Understanding	I did not submit a project about a characteristic of life.	I submit a project about a characteristic of life.	I have included relevant descriptions, explanations, or a summary.	I have included accurate descriptions, explanations, or a summary of one or more concepts.	My project reflects accurate and complete knowledge gained from my biology class this year. I have included detailed and thorough descriptions, explanations, or a summary of multiple concepts	The project reflects knowledge learned in class and outside of class through interviews, research, and/or connections made with someone outside of the school.

Consider Reusability

Rubrics can used for a single assignment or categories of assignments.

Try to generalize the rubric so you can use it on multiple assignments. You then include specifics in the assignment handout instead of in the descriptors.

Example 5: 9th grade biology “The Cell project” (one part)

Category	Excellent (3)	Satisfactory (2)	Needs Work (1)
Cell Parts Total ____/25	Heading: Type of cell, students names and block are found on both the model and the 2 column table.	Some heading components are missing	Many heading components are missing
	Labels and 2 column table easy to use and identify the cell parts.	Labels and 2 column table difficult to use and identify	Labels and 2 column table are missing
	Accurate descriptions of the function of all cell organelles are provided	Accurate description of the function of most cell organelles are provided	Accurate description of the function of some cell organelles are provided
	Appropriate material is used (term used looks like ALL organelles)	Appropriate material is used (term used looks like most organelles)	Appropriate material is used (term used looks like some organelles)
	Ccll shape corresponds to the type of cell (animal/plant)	Cell shape corresponds to the other type of cell (wrong cell made)	Cell shape corresponds to something not resembling a cell.

Step 1: Create assignment with specific details.

Category	Excellent (3)	Satisfactory (2)	Needs Work (1)
Cell Parts Total ____/25	Heading: Type of cell, students names and block are found on both the model and the 2 column table.	Some heading components are missing	Many heading components are missing
	Labels and 2 column table easy to use and identify the cell parts.	Labels and 2 column table difficult to use and identify	Labels and 2 column table are missing
	Accurate descriptions of the function of all cell organelles are provided	Accurate description of the function of most cell organelles are provided	Accurate description of the function of some cell organelles are provided
	Appropriate material is used (term used looks like ALL organelles)	Appropriate material is used (term used looks like most organelles)	Appropriate material is used (term used looks like some organelles)
	Cell shape corresponds to the type of cell (animal/plant)	Cell shape corresponds to the other type of cell (wrong cell made)	Cell shape corresponds to something not resembling a cell.

Assignment Task: Construct a model of a cell.

Requirements:

1. Pick a specific cell.
2. Use materials that look like the organelle.
3. Label and describe the function of the organelles that are found in that cell.
4. Design a legend to go with your model.
5. The model must be 3D.
6. Materials used must be non-toxic.

Step 2: What do these *types of assignments* have in common?

Category	Beginning	Developing	Proficient	Advanced
Developing Scientific Models	I develop a model that represents concepts visually.	I develop a model that contains relevant parts.	My model is accurate and easily understood.	My model is complete.
Product Design	I create the model.	I produce a product that addresses the assigned task.	I produce a product that meets multiple requirements..	I produce a product that meets all listed criteria.
Using Terminology	I use words from this unit.	I use relevant terminology and/or Big Ideas from this unit.	I use accurate vocabulary and Big Ideas from this unit.	I correctly define and apply the vocabulary and Big Ideas from this unit.

Note: I also changed the order and names of the levels, added a “low floor”, and used strengths-based language.

Assignment Task: Construct a model of a cell.

Requirements:

1. Pick a specific cell.
2. Use materials that look like the organelle.
3. Label and describe the function of the organelles that are found in that cell.
4. Design a legend to go with your model.
5. The model must be 3D.
6. Materials used must be non-toxic.

Identify Dependencies

Assess if the successful completion of one criterion relies on skills assessed in another.

If so, merge these two rows into one, with the dependent skill at the higher achievement levels.

Category	Beginning	Developing	Proficient	Advanced
Claim	Makes a general claim.	Makes a specific claim and reasoning for the claim is offered.	Makes a specific accurate claim and some reasoning for the claim is offered.	Makes a specific accurate claim supported by valid reasoning.
Evidence	Provides some evidence which doesn't support the claim.	Provides some evidence which supports a partial aspect of the claim.	Provides some evidence which supports the claim.	Provides ample evidence which supports the claim.
Using Reasoning	Provides reasoning that partially links the claim to the evidence.	Provides reasoning that partially links the claim to the evidence but does not use adequate content specific vocabulary.	Provides reasoning that partially links the claim to the evidence using content specific vocabulary.	Provides reasoning that adequately links the claim. Includes appropriate and sufficient scientific principles.

Identify Dependencies

Assess if the successful completion of one criterion relies on skills assessed in another.

If so, merge these two rows into one, with the dependent skill at the higher achievement levels.

Category	Beginning	Developing	Proficient	Advanced
Claim	Makes a ~~general~~ claim.	Makes a relevant ~~specific~~ claim ~~and reasoning for the claim is offered.~~	Makes a specific ~~accurate~~ claim ~~and some reasoning for the claim is offered.~~	Makes a specific accurate claim *using scientific language* ~~supported by valid reasoning.~~
Evidence	Provides some evidence which doesn't support the claim.	Provides some evidence which supports a partial aspect of the claim.	Provides some evidence which supports the claim.	Provides ample evidence which supports the claim.
Using Reasoning	Provides reasoning that partially links the claim to the evidence.	Provides reasoning that partially links the claim to the evidence but does not use adequate content specific vocabulary.	Provides reasoning that partially links the claim to the evidence using content specific vocabulary.	Provides reasoning that adequately links the claim. Includes appropriate and sufficient scientific principles.

Add Detail to the Descriptions, avoiding "soft" language

Elaborate on descriptors to provide clarity.

Instead of vague instructions like "make a good graph," specify requirements such as including axis labels, units, plotted points, title, and a scale. rather than a prescriptive checklist.

Refrain from using ambiguous or subjective terms that are difficult to measure.

Opt for precise and measurable descriptors to maintain clarity and objectivity.

Category	Beginning	Developing	Proficient	Advanced
Claim	Makes a claim.	Makes a relevant claim	Makes a specific claim	Makes a specific accurate claim using scientific language.
Evidence	Provides some evidence which doesn't support the claim.	Provides some evidence which supports a partial aspect of the claim.	Provides some evidence which supports the claim.	Provides ample evidence which supports the claim.
Using Reasoning	Provides reasoning that partially links the claim to the evidence.	Provides reasoning that partially links the claim to the evidence but does not use adequate content specific vocabulary.	Provides reasoning that partially links the claim to the evidence using content specific vocabulary.	Provides reasoning that adequately links the claim. Includes appropriate and sufficient scientific principles.

Add Detail to the Descriptions, avoiding "soft" language

Elaborate on descriptors to provide clarity.

Instead of vague instructions like "make a good graph," specify requirements such as including axis labels, units, plotted points, title, and a scale. rather than a prescriptive checklist.

Refrain from using ambiguous or subjective terms that are difficult to measure.

Opt for precise and measurable descriptors to maintain clarity and objectivity.

Category	Beginning	Developing	Proficient	Advanced
Claim	Makes a claim.	Makes a relevant claim	Makes a specific claim	Makes a specific accurate claim using scientific language.
Evidence	Provides ~~some~~ evidence ~~which doesn't support the claim~~ from the investigation..	Provides ~~some~~ *specific* evidence *from the observations or analysis* which supports ~~a partial aspect of~~ the claim.	Provides ~~some~~ *specific* evidence *from the observations or analysis* which *correctly* supports the claim.	Provides ~~ample~~ *the most sophisticated* evidence which persuasively supports the claim.
Using Reasoning	Provides reasoning ~~that partially~~ to link~~s~~ the claim to the evidence.	Provides reasoning *to* ~~that partially~~ link~~s~~ the claim to the evidence ~~but does not use adequate content-specific vocabulary~~. *uses relevant content-specific vocabulary.*	Provides reasoning *to* ~~that~~ ~~partially~~ link~~s~~ the claim to the evidence using correct content-specific vocabulary.	Provides reasoning that ~~adequately~~ links the claim *to the evidence by using the most applicable and correct* ~~includes appropriate and sufficient~~ scientific principles.

Streamline Requirements

Simplify criteria with multiple requirements by creating common threads.

Consider using color-coding or separating them into distinct rows for enhanced clarity.

	Not Enough Evidence	Beginning	Developing	Proficient	Advanced	Expert
Arguing a Scientific Claim	I did not write a conclusion.	I write a conclusion.	I present a claim regarding the relationship between relevant dependent and independent variables. I present evidence obtained from my investigations as support.	I present a scientific claim that accurately describes the relationship derived from my experimental results. I present convincing evidence. I state a physics concept, theory, or equation as reasoning.	I present the most convincing, valid, and reliable evidence obtained from my investigations as support for my claim. I clearly state a relevant physics concept, theory, or equation as reasoning. The reasoning is clearly related to the variables in the claim. There is no extra/irrelevant information.	I effectively tie physics theory correctly, directly, and tightly to the most sophisticated supporting evidence available, so that my claim is clearly justified. I justify my claim by providing quantitative proof that the results reflect the theory.

Avoid a Laundry List

	Not Enough Evidence	Beginning	Developing	Proficient	Advanced	Expert
LP10 – The Engineering Design Cycle	I do not present any relevant product.		I produce a product that seems to meet all criteria. I document the construction of my prototype.	I produce a product that overtly meets all criteria. I clearly document the development of my ideas, communicating the problem, needs,	I can produce a product that	
			documenting with photos and/or video. I include evidence in the form of qualitative or quantitative observations. Progress is updated and shared periodically.	when appropriate, data analysis. Data collection is correctly done. Reasoning is presented in which physics is applied to explain performance (good and poor). Progress is updated and shared after setup and then at least once during each prototype.	I choose and present a final prototype design based on my testing results. My log/journal communicates what was done, any problems and achievements, current thinking, and next steps.	design cycle by highlighting the details without being repetitive or off-topic.

	Not Enough Evidence	Beginning	Developing	Proficient	Advanced	Expert
LP10 The Engineering Design Process	I do not present any relevant product and/or evidence of using the EDP.	I build the base model. I use some steps of the engineering design process (EDP).** There is evidence of the product.	I produce a product that addresses the assigned task. I present evidence the steps from the EDP were used to evolve my product.*** I present evidence of the product.	I produce a product that meets all listed criteria. I document the evolution of my product so that my use of the Engineering Design Process is easy to follow. I worked through the EDP multiple times.	My final product is the best possible model based on the collected data. I provide convincing evidence to link the collected data to the final design. My presentation documents the methodical and iterative* steps of the engineering design cycle to show how I developed my product.	The efficient use of resources is a driving factor in the design process. My final presentation completely documents my understanding of the essential steps of the engineering design cycle by highlighting the details without being repetitive or off-topic.

Ensure Low Floor/High Ceiling

Define what constitutes "not enough evidence" and outline the minimum effort required to demonstrate engagement. Define “Exceeding Expectations” to provide challenge to those who are ready. This ensures clear delineation between levels of achievement.

	Developing	**Proficient**	**Advanced**
Solving Problems	I attempt to solve scientific problems and show some relevant supporting work.	I solve scientific problems, showing my supporting work so that someone can follow my thought processes. This means that I show the work required to document the problem-solving process.	I select and apply the correct mathematical process to solve physics problems correctly in a familiar context, including all steps of the problem-solving process. Givens, variables, and answer(s) all include correct units. I use my calculator properly.

Ensure Low Floor/High Ceiling

How do we get students to try? What is the very first step they need to take?

What constitutes a challenge for my students? What would allow them to really show their mastery?

	Not Enough Evidence	Beginning	Developing	Proficient	Advanced	Expert
Solving Problems	I did not attempt to solve the problem described.	I attempt to solve the problem.	I attempt to solve scientific problems and show some relevant supporting work.	I solve scientific problems, showing my supporting work so that someone can follow my thought processes. This means that I show the work required to document the problem-solving process.	I select and apply the correct mathematical process to solve physics problems correctly in a familiar context, including all steps of the problem-solving process. Givens, variables, and answer(s) all include correct units. I use my calculator properly.	When presented with a complex context, I fully apply the problem-solving methodology to independently solve the problem correctly.

Q&A

Conclusion

The true test is when you use it to score student work.

Revitalizing Your Rubrics
by Elise Naramore

reimaginedschools.com

Please use me as a resource.

Email me at edutransformationgrp@gmail.com.

Loads of resources at

https://reimaginedschools.com/