# Revitalize your rubrics

## Streamline Grading
## and
## Elevate Feedback

Presented by Elise Naramore

A copy of this Presentation, plus many more resources!

# Say hi to your neighbor! then, discuss any or all of the following:

- What do you think does not work regarding using rubrics?
- What attracted you to a presentation called *Revitalizing your Rubrics*?
- What is one issue you're grappling with regarding your rubrics?

# I want this to be useful to you.

**If possible, Please take out a rubric that you use to score an assessment.**

**Share with your neighbor:**

- **What is the rubric for?**
- **Do you have any specific questions or concerns about it?**

# What I would like to do today:

- Discuss the challenges of traditional analytical rubrics
- Demonstrate ten strategies to enhance rubric effectiveness.
- Transform a rubric into learning progressions.

(Resources are available for a deeper dive.)

# The Scoring Rubric as a Roadmap

- Clarifying expectations and performance criteria
- Providing a structured framework for evaluation
- Ensuring transparency in grading
- Fostering self-assessment and peer feedback
- Embracing inclusivity, flexibility, and the learning process
- Guiding students on the path to success
- Encouraging creativity and critical thinking
- Creating opportunities for meaningful growth

Which issues do you want to work on? Put a check in the middle column.

| Common pitfalls, challenges, and issues | ✅ | Possible Solutions |
|---|---|---|
| 1. Assesses skills that aren't explicitly taught | | 1. Assess only what is explicitly taught |
| 2. Relies on rigid numerical achievement levels | | 2. Use qualitative, non-judgmental level names |
| 3. Prioritizes the highest levels on the left, lowest on the right | | 3. Order levels from lowest to highest, left to right |
| 4. Uses deficit-based language | | 4. Adopt strength-based language |
| 5. Includes vague or overly soft descriptors | | 5. Use precise, descriptive criteria |
| 6. Written from the teacher's perspective, not the learner's | | 6. Frame language from the student's perspective |
| 7. Designed for a single, specific assignment only | | 7. Make rubrics adaptable for similar assignments |
| 8. Blends content, skills, and behaviors in a confusing way | | 8. Prioritize skills that spiral throughout the curriculum |
| 9. Overly rigid and prescriptive, limiting flexibility | | 9. Build flexibility into achievement levels |
| 10. Repetitive, making distinctions unclear | | 10. Eliminate redundancy for clarity |
| 11. Lacks an accessible entry point for struggling students | | 11. Ensure an accessible entry point ("Low Floor") |
| 12. Fails to provide challenge for students ready to stretch | | 12. Include a challenging extension ("High Ceiling") |
| 13. Creates "double jeopardy" where success in one area depends on another | | 13. Remove dependencies between criteria |
| 14. Overloads with unrelated or overly complex criteria ("laundry list" effect) | | 14. Streamline requirements to enhance clarity |

# Example 1: 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 wanted 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. |
| **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 (*nor really care about*).
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

# 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. |

Issues I want to address:

1. Assesses only skills that I teach.
2. Quantitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

# 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. |

Issues I want to address:

1. Assesses only skills that I teach.
2. Qualitative achievement levels
3. Highest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

# 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:

1. Assesses only skills that I teach.
2. Qualitative achievement levels
3. Lowest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

# 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:

1. Assesses only skills that I teach.
2. Qualitative achievement levels
3. Lowest levels first
4. Deficit language
5. Vague language
6. Teacher-centered

# Critiquing a CER Rubric

| Descriptor | Beginning | Developing | Proficient |
|---|---|---|---|
| **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 only skills that I teach.
2. Qualitative achievement levels
3. Lowest levels first
4. Strength-based language
5. Vague language
6. Teacher-centered

# Critiquing a CER Rubric

| | 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 only skills that I teach.
2. Qualitative achievement levels
3. Lowest levels first
4. Strength-based language
5. Vague language
6. Teacher-centered

# Critiquing a CER Rubric

| | 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 only skills that I teach.
2. Qualitative achievement levels
3. Lowest levels first
4. Strength-based language
5. Specific, descriptive language
6. Teacher-centered

| | 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 isscientific, 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:

1. Assesses only skills that I teach.
2. Uses qualitative achievement levels
3. Puts lowest levels first
4. Uses strength-based language
5. Has specific, descriptive language
6. Is student-centered

# Example 2: CER

## 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. |

# Example 2: CER

## 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.

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

| 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. |

# Finished CER Rubric

| 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 evidence from the investigation.. | Provides specific evidence from the observations or analysis which supports the claim. | Provides specific evidence from the observations or analysis which correctly supports the claim. | Provides the most sophisticated evidence which persuasively supports the claim. |
| Using Reasoning | Provides reasoning to link the claim to the evidence. | Provides reasoning to link the claim to the evidence. I use relevant content-specific vocabulary. | Provides reasoning to link the claim to the evidence using correct content-specific vocabulary. | Provides reasoning that links the claim to the evidence by using the most applicable and correct scientific principles. |

# ARE YOU ABLE TO REVISE YOUR RUBRIC?

**Try any or all of the following.**

1. Omit skills that you do not overtly teach.
2. Use qualitative achievement levels
3. Put lowest levels first
4. Use strength-based language
5. Use specific, descriptive language
6. Use student-centered language

If you don't have a particular rubric to work with, try revising this one for "Modeling" @ t.ly/vAQ3h

# Developing and Using Models

from www.sciencepracticesleadership.com

| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Students do not create or use models. | Students create or use models. | The models focus on describing natural phenomena rather than predicting or explaining the natural world.<br><br>Students do not evaluate the merits and limitations of the model. | Students create or use models focused on predicting or explaining the natural world.<br><br>Students do not evaluate the merits and limitations of the model. | Students create or use models focused on predicting or explaining the natural world.<br><br>Students do evaluate the merits and limitations of the model. |

# Modeling

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| I do not develop, or revise a model. | I develop and/or revise a model. | I develop and/or revise a model that contains components (relevant parts) and Interactions (how the components interact) | All components and interactions are labeled.<br><br>My model includes mechanisms (helps to answer why or how the phenomena is happening) by connecting to big ideas, processes, theories or laws.<br><br>and/or<br><br>I can use a model to make a prediction. | My scientific model is accurate and easily understood.<br><br>I analyze the accuracy of a model.<br><br>My model connects to correct big ideas.<br><br>and/or<br><br>I can use a model to correctly describe and explain phenomena and make a correct prediction. | I develop a complex scientific model based on evidence/concepts.<br><br>My model is used to generate data, support explanations, predict phenomena, analyze systems and/or solve problems.<br><br>I explicitly consider the weaknesses of the model. |

# Modeling

This practice is for modeling that is the end in and of itself. When the models are specifically used to support mathematical representations, they will be scored using Problem Solving.

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| I do not create or revise a model. | I create and/or revise a model (diagrams, tables, charts, schematics, qualitative and/or quantitative graphs.) | I create and/or revise a relevant model.<br><br>I use the model to identify the relevant characteristics of a system (components) or phenomenon (interactions between components). | I create and/or revise the correct model.<br><br>The model identifies the correct characteristics of a system and/or phenomenon.<br><br>I explicitly state the relevant big idea(s), process(es), theories, and/or law(s). | The model is correctly made and includes all required features.<br><br>The big idea(s), process(es), theories, and/or law(s) is correctly stated, used, and/or modeled.<br><br>When appropriate, I use advanced analysis methods (see Note 1).<br><br>When appropriate, I use my model(s) to generate data, support explanations, make predictions, analyze systems and/or reconcile divergent outcomes (see Note 2). | When appropriate, the model is complex (e.g. integrates content from multiple units).<br><br>Correctly applied big idea(s), process(es), theories, and/or law(s) are drawn from multiple units.<br><br>When appropriate, I correctly use advanced analysis methods.<br><br>When appropriate, I correctly use my model(s) to generate data, support explanations, make predictions, analyze systems and/or reconcile divergent outcomes. |

NOTE 1: Advanced analysis methods include linearization of the graph and/or interpretation of the mathematical model

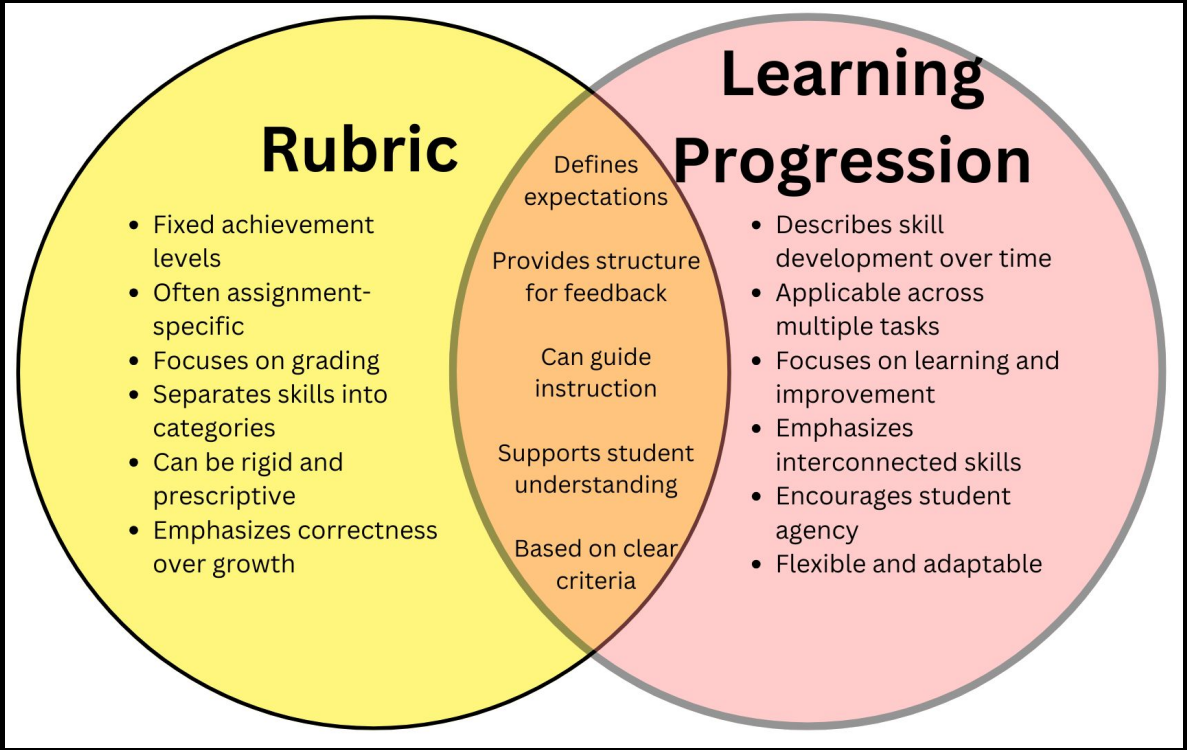
NOTE 2: There are many possible applications of the representations, including but not limited to generating data, supporting explanations, making predictions, analyzing

# Were you able to revise your rubric?

**Share with your neighbor:**

- **What were you able to do?**
- **What questions do you have?**
- **What are you happy about?**

# What is the difference between a rubric and a learning progression?



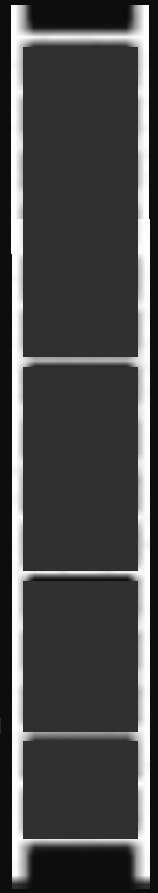
# My CER Learning Progression

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| I did not write a conclusion. | I write a conclusion. | I present a claim regarding the relationship between relevant dependent and independent variables.<br><br>I present evidence obtained from my investigations as support. | I present a scientific claim that accurately describes the relationship derived from my experimental results.<br><br>I present convincing evidence.<br><br>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.<br><br>I clearly state a relevant physics concept, theory, or equation as reasoning.<br><br>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.<br><br>I justify my claim by providing quantitative proof that the results reflect the theory. |

# Ensure consistency

| Achievement Levels | |
|---|---|
| Not Enough Evidence | |
| Beginning | ***Trying*** to respond with some defined minimum |
| Developing | Responding with some ***relevant*** information |
| Proficient | The student ***explicitly*** uses physics in their response |
| Advanced | The response is ***accurate*** |
| Expert | The response is ***complex*** (or sophisticated), usually tying in multiple concepts |

Low Floor → High Ceiling



EXPERT

ADVANCED

PROFICIENT

DEVELOPING

BEGINNING

NOT ENOUGH EVIDENCE

# Critiquing a Problem solving Rubric

| *Category* | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|
| *Strategic Approach* | No attempt was made to understand the problem. | Did not attempt the problem, or approach is unclear. | Attempts the problem, but approach is unclear or disorganized. | Has a structured approach, but implementation is inconsistent. | Has a structured approach with minor mistakes. |
| *Physics Concepts* | Could not identify physics elements in the problem. | Displays little to no understanding of physics concepts but attempted. | Can identify relevant concepts but applies them incorrectly. | Can apply physics concepts but applies them with some errors. | Can apply physics concepts correctly with minor errors. |
| *Mathe-matical Concepts* | Cannot identify any mathematical equations or concepts. | Misuses mathematical equations in the problem. | Can identify the correct equation but cannot execute. | Correctly identified the correct equation and executed it with errors. | Correctly identified and used the correct equation with minor errors. |
| *Answer* | No answer was given, and no attempt was made. | Answer attempted but is completely incorrect. | The answer given is incorrect due to a conceptual error. | The answer is mostly correct but contains minor errors. | The answer is correct with proper justification and little to no errors. |

| *Category* | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|
| *Strategic Approach* | No attempt was made to understand the problem. | Did not attempt the problem, or approach is unclear. | Attempts the problem, but approach is unclear or disorganized. | Has a structured approach, but implementation is inconsistent. | Has a structured approach with minor mistakes. |
| *Physics Concepts* | Could not identify physics elements in the problem. | Displays little to no understanding of physics concepts but attempted. | Can identify relevant concepts but applies them incorrectly. | Can apply physics concepts but applies them with some errors. | Can apply physics concepts correctly with minor errors. |
| *Mathema - tical Concepts* | Cannot identify any mathematical equations or concepts. | Misuses mathematical equations in the problem. | Can identify the correct equation but cannot execute. | Correctly identified the correct equation and executed it with errors. | Correctly identified and used the correct equation with minor errors. |
| *Answer* | No answer was given, and no attempt was made. | Answer attempted but is completely incorrect. | The answer given is incorrect due to a conceptual error. | The answer is mostly correct but contains minor errors. | The answer is correct with proper justification and little to no errors. |

Issues I want to address:

1. Deficit language
2. Creates "double jeopardy" where success in one area depends on another.
3. Define “not enough evidence”
4. Vague language
5. Teacher-centered
6. Fails to provide challenge

| *Category* | **Not Enough Evidence** | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|---|
| *Strategic Approach* | No attempt was made to understand the problem. | An attempt was made to understand the problem. | Attempt the problem. | Attempts the problem, ~~but approach is unclear or disorganized.~~ | Has a structured approach, ~~but implementation is inconsistent.~~ | Has a structured approach~~ with minor mistakes~~. |
| *Physics Concepts* | Could not identify physics elements in the problem. | Identify physics elements in the problem. | ~~Displays little to no understanding of physics concepts but attempted.~~ Attempt the problem. | Can identify relevant concepts ~~but applies them incorrectly.~~ | Can apply physics concepts ~~but applies them with some errors.~~ | Can apply physics concepts correctly ~~with minor errors.~~ |
| *Mathema-tical Concepts* | Cannot identify any mathematical equations or concepts. | Identify any mathematical equations or concepts. | ~~Misuses~~ Uses mathematical equations in the problem. | Can identify the correct equation ~~but cannot execute.~~ | Correctly identified the correct equation and ~~executed it with errors.~~ | Correctly identified and used the correct equation ~~with minor errors.~~ |
| *Answer* | No answer was given, and no attempt was made. | Answer was given. | Answer attempted ~~but is completely incorrect.~~ | The answer is given ~~is incorrect due to a conceptual error.~~ | The answer is ~~mostly~~ correct ~~but contains minor errors.~~ | The answer is correct with proper justification ~~and little to no errors.~~ |

| *Category* | **Not Enough Evidence** | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|---|
| *Strategic Approach* | No attempt was made to understand the problem. | An attempt was made to understand the problem. | Attempt the problem. | Attempts the problem. | Has a structured approach | Has a structured approach |
| *Physics Concepts* | Could not identify physics elements in the problem. | Identify physics elements in the problem. | Attempt the problem. | Can identify relevant concepts | Can apply physics concepts | Can apply physics concepts correctly |
| *Mathematical Concepts* | Cannot identify any mathematical equations or concepts. | Identify any mathematical equations or concepts. | Uses mathematical equations in the problem. | Can identify the correct equation | Correctly identified the correct equation | Correctly identified and used the correct equation |
| *Answer* | No answer was given, and no attempt was made. | Answer was given. | Answer attempted | The answer is given | The answer is correct | The answer is correct with proper justification. |

| *Category* | **Not Enough Evidence** | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|---|
| *Strategic Approach* | ~~No attempt was made to understand the problem.~~ | ~~An attempt was made to understand the problem.~~ | Attempt the problem. | ~~Attempts the problem.~~ | Has a structured approach *so that it is easy to follow your thought processes.* | ~~Has a structured approach~~ |
| *Physics Concepts* | Could not identify physics elements in the problem. | Identify physics elements in the problem. | Attempt the problem. | Can identify relevant concepts | Can apply correct physics concepts | Can apply physics concepts correctly |
| *Mathematical Concepts* | Cannot identify any mathematical equations or concepts. | Identify any mathematical equations or concepts. | Uses relevant mathematical equations in the problem. | Can identify the correct equation | ~~Correctly identified the correct equation~~ | Correctly identified and used the correct equation |
| *Answer* | No answer was given, ~~and no attempt was made.~~ | ~~Answer was given.~~ | Answer attempted | ~~The~~ An answer is given | The answer is correct | The answer is correct with proper justification. |

| *Category* | **Not Enough Evidence** | **Beginning** | **Developing** | **Proficient** | **Advanced** | **Mastery** |
|---|---|---|---|---|---|---|
| *Strategic Approach* | | | | Has a structured approach *so that it is easy to follow your thought processes.* | | |
| *Physics Concepts* | Could not identify physics elements in the problem. | Identify physics elements in the problem. | Can identify relevant concepts | Can apply correct physics concepts | Can apply physics concepts correctly | |
| *Mathematical Concepts* | Cannot identify any mathematical equations or concepts. | Identify any mathematical equations or concepts. | Uses relevant mathematical equations in the problem. | Can identify the correct equation | Correctly identified and used the correct equation | |
| *Answer* | No answer was given. | | Answer attempted | An answer is given | The answer is correct | The answer is correct with proper justification. |

# Example: Critiquing a Problem solving Rubric

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Mastery |
|---|---|---|---|---|---|
| No attempt was made to solve the problem. | I identify physics information in the problem and/or any mathematical equations or concepts. | I identify a relevant information and a relevant mathematical equation. | I identify the correct equation.<br><br>I use a structured approach so that it is easy to follow my thought processes.<br><br>An answer to the question is given. | I apply problem solving process completely and correctly.<br><br>The answer is correct and has the correct units.<br><br>I use my calculator correctly. | I apply multiple physics concepts correctly or complete a multi-step problem.<br><br>The answer includes proper justification in words. |

# My Problem solving Learning Progression

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| 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 answer the question asked. | 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. |

# But… how do I use this for grading?

1. Determine pacing–identify target levels for each unit.
2. Differentiate as needed.
3. Use a grade translation.
4. Use a pattern of performance.

# Determine pacing and target levels

- Identify reasonable end goal for the year.
- Identify probable starting point.
- Plan how to move students from entry level to goal in 10 months.
- Communicate target for each assignment. Mask the higher levels until ready to use.

# Planning for Progress

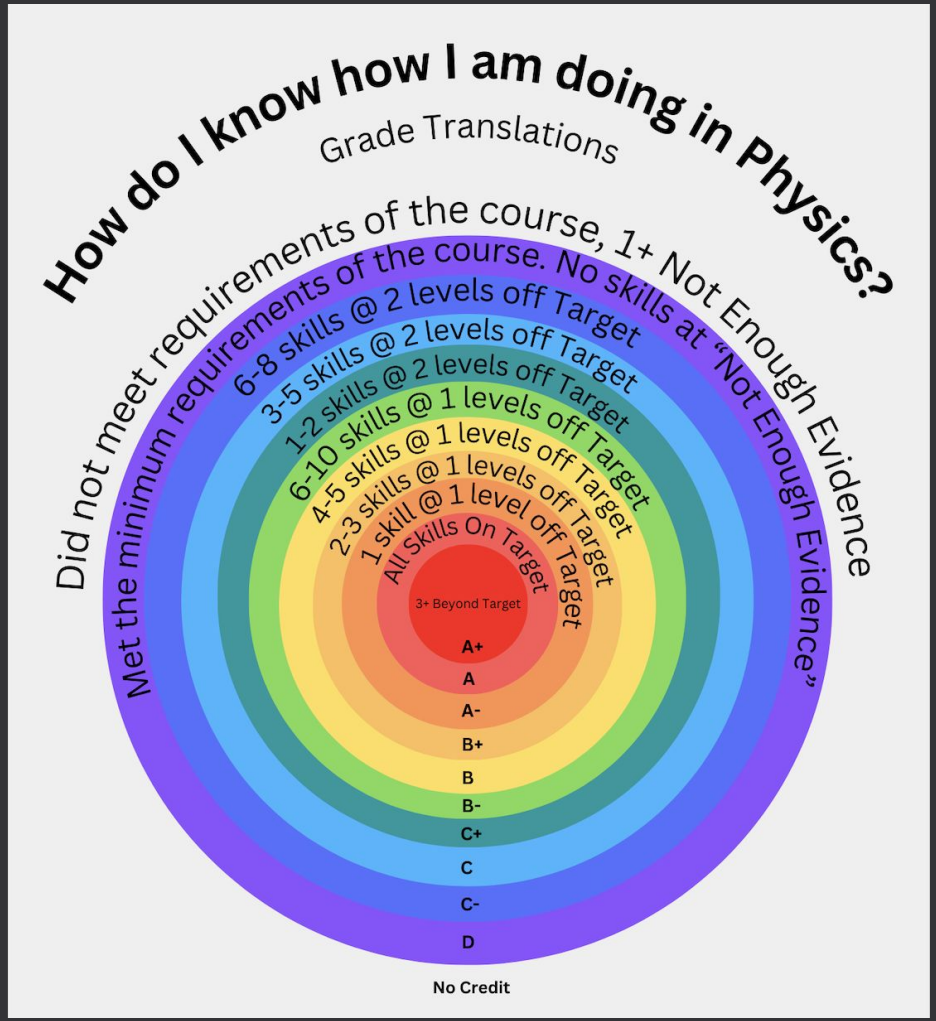
| Standard | Target Levels for Unit 1 | Target Levels for Unit 2 | Target Levels for Unit 3 | Target Levels for Unit 4 | Target Levels for Unit 5 | Target Levels for Unit 6 | Target Levels for Unit 7 |
|---|---|---|---|---|---|---|---|
| Experimental Design | Beginning | | | | | | |
| Data Analysis | Beginning | | | | | | |
| Arguing a Scientific Claim | Developing | | | | | | |
| Using Feedback | Beginning | | | | | | |
| Creating a Scientific Explanation | Developing | | | | | | |
| Problem Solving | Developing | | | | | | |
| Graphical Interpretation | Beginning | | | | | | |
| Graph Creation | Beginning | | | | | | |
| Engaging with Content | Beginning | | | | | | |
| Engineering Design Cycle | Beginning | | | | | | |

# Differentiation

| Pacing of Target Levels for Analyzing Data (LP2) (2023-2024) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Course | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5 | Unit 6 | Unit 7 |
| Conceptual Physics | Beginning | | | | | | |
| Physics | Beginning | | | | | | |
| Honors Physics | Beginning | | | | | | |
| AP Physics 1 | Developing | | | | | | |

# Our Grade Translation

| Grade | Requirements |
|---|---|
| A+ | Beyond the targeted level of development in 3 or more skills. All other skills on target |
| A | On target for all skills. |
| A- | 1 level off target for no more than 1 skill. All other skills on target |
| B+ | 1 level off target for no more than 3 skills. All other skills on target |
| B | 1 level off target for no more that 5 skills. All other skills on target |
| B- | > 5 skills 1 level off target |
| C+ | 2 levels off target for no more that 2 skills |
| C | 2 levels off target for no more than 5 skills |
| C- | 2 levels off target for no more than 8 skills |
| D | Met the minimum requirements of the course. No skills at "Not Enough Evidence" |
| No Credit | Did not meet the minimum requirements of the course |



# Using a Pattern of Performance

| | ***Creating Explanations*** | ***Solving Problems*** | ***Interpreting Graphs*** | ***Creating Graphs*** | ***Data Analysis*** | ***Engineering Design*** |
|---|---|---|---|---|---|---|
| **Unit 1** | Beginning | Beginning | Developing | Beginning | Beginning | Beginning |
| **Unit 2** | Developing | Proficient | Developing | Developing | Developing | Beginning |
| **Unit 3** | Proficient | Developing | Proficient | Proficient | Developing | Developing |
| **Unit 4** | Proficient | Developing | Proficient | Proficient | Developing | Developing |
| **Sem. 1 POP** | | | | | | |
| ***Sem. 1 Targets*** | *Proficient* | *Proficient* | *Proficient* | *Proficient* | *Proficient* | *Proficient* |

# Rubrics can be powerful tools to shape learning

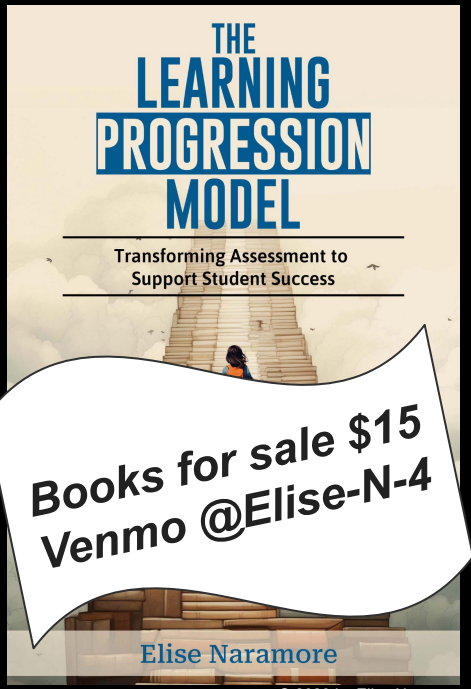
The true test is when you use it to score student work.

- What feedback are you providing?
- What information are you receiving from the students?

Keep revising as needed.

# Want to learn more?

Visit reimaginedschools.com for informative blogs, downloadable artifacts, and more!

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fostering growth, creativity and individuality

# Extra Materials

# ADD Low Floor/High Ceiling

Define the minimum effort required to demonstrate engagement.

Provide challenge to those who are ready.

| | 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. |

# Add Low Floor/High Ceiling

| | Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|---|
| ***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. | |

# Add Low Floor/High Ceiling

| | Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|---|
| ***Solving Problems*** | I did not attempt to solve the problem described. | | 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. | |

# Add Low Floor/High Ceiling

| | 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. | |

# Add Low Floor/High Ceiling

| | 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. |

# OMIT REDUNDANT CRITERIA: A FINAL PROJECT IN 9TH GRADE BIOLOGY

Focus on introducing new or modified expectations at each achievement level. This will ensure that each level builds upon the previous one.

| | 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 Understand -ing | 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

| | Not Enough Evidence | Emerging | Relevant | Explicit | Extending | Expert |
|---|---|---|---|---|---|---|
| Reflection of Understand-ing | 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

| | Not Enough Evidence | Emerging | Relevant | Explicit | Extending | Expert |
|---|---|---|---|---|---|---|
| Reflection of Understanding | I did not submit a project about a characteris-tic of life. | I submit a project about a charact-eristic 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.<br><br>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.

# Reusablity: 9th grade biology "The Cell project" (one part)

| Category | Excellent (3) | Satisfactory (2) | Needs Work (1) |
|---|---|---|---|
| Cell Parts<br>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.

# Avoiding a Laundry List

## The Engineering design cycle

| | 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 meets the basic criteria. | I produce a product that seems to meet all criteria.<br><br>I document the construction of my prototype.<br><br>I outline the experimental design to communicate what data I collected, how I collected it, and how it was analyzed/used.<br><br>I produce at least 3 iterations, documenting with photos and/or video.<br><br>I include evidence in the form of qualitative or quantitative observations.<br><br>Progress is updated and shared periodically. | I produce a product that overtly meets all criteria.<br><br>I clearly document the development of my ideas, communicating the problem, needs, constraints, and any research/background information. I document the brainstorming process in detail.<br><br>Experimental design is correct and fully fleshed out.<br><br>Evidence for each prototype includes data organized in table(s) and, when appropriate, data analysis. Data collection is correctly done.<br><br>Reasoning is presented in which physics is applied to explain performance (good and poor).<br><br>Progress is updated and shared after setup and then at least once during each prototype. | I can produce a product that effectively solves the problem.<br><br>I fully document the methodical and iterative steps of the engineering design cycle.<br><br>The experimental design that you selected enables you to collect meaningful, correct data. The analysis of the data is correct and useful.<br><br>I communicate how I made decisions using physics analysis, rather than tinkering. This may be qualitative and/or quantitative.<br><br>I choose and present a final prototype design based on my testing results.<br><br>My log/journal communicates what was done, any problems and achievements, current thinking, and next steps. | I can produce a creative and effective product that meets all criteria.<br><br>When appropriate, the efficient use of resources is a driving factor in the design process.<br><br>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. |

# Instead... put details in assignment and lessons

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| I do not present any relevant product and/or evidence of using the EDP. | I build the base model.<br><br>I use some steps of the engineering design process (EDP).<br><br>There is evidence of the product. | I produce a product that addresses the assigned task.<br><br>I present evidence the steps from the EDP were used to evolve my product.<br><br>I present evidence of the product. | I produce a product that meets all listed criteria.<br><br>I document the evolution of my product so that my use of the Engineering Design Process is easy to follow.<br><br>I worked through the EDP multiple times. | My final product is the best possible model based on the collected data.<br><br>I provide convincing evidence to link the collected data to the final design.<br><br>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.<br><br>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. |

# Designing an Experiment

| Not Enough Evidence | Beginning | Developing | Proficient | Advanced | Expert |
|---|---|---|---|---|---|
| I did not include the task, data, and/or procedure. | I state the task.<br><br>I collect and present data.<br><br>I describe the procedure followed. | I use the tools and equipment effectively to collect data related to the stated task and organize it into a table.<br><br>I communicate the methods and materials used during the investigation. | I restate the task as a question that is directly related to the assigned task.<br>I use the available measurement tools correctly.<br>The data collected is complete and can be used to answer the question.<br><br>The data table is well-organized.<br><br>The methods and materials are descriptive enough for someone else to replicate the data collection during the experiment.<br><br>I use a method to reduce experimental uncertainty, which is obvious in my data table. | I ask testable questions that are directly related to the assigned task.<br><br>I can plan and implement precise and effective data collection strategies.<br><br>The data table is well-constructed, including columns for analysis relevant to the lab.<br><br>I communicate clearly, succinctly, and with sufficient detail, including labeled pictures.<br><br>I explicitly describe a valid and effective method to reduce experimental uncertainty. | I ask an independently generated question.<br><br>I independently develop an investigation that can produce data to answer that question.<br><br>I independently carry out that investigation, collecting relevant data. |