

# Creating and Using Rubrics to Support Student Learning

Sue Brookhart  
 NESA Winter Training Institute  
 January 26-27, 2018

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## Overview

Institute Session	Topic	Level
I – 9:00-10:30 Friday	Introduction, Goal Setting	1, 2, 4
II – 10:45-12:15 Friday	Selecting or Creating Rubrics	3
III – 1:15-2:45 Friday	Implementing Rubrics	3, 4, 5
IV – 3:00-4:00 Friday (4:00-4:30 reflection)	Validity and Reliability	4, 5
V – 9:00-10:30 Saturday	Using Rubrics with Students	3, 4, 5
VI – 11:00-12:30 Saturday	Rubrics for 21 <sup>st</sup> Century Skills	4, 5
VII – 1:30-3:00 Saturday	Extending Implementation	4, 5

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## Why are you here? SETTING PURPOSE AND GOALS

- Individually, answer the question, "Why am I here?" What do you intend to learn and take away from this Institute (about rubrics, of course)? Be as specific as you can.
- With your table, share these goals. What do you all have in common? How are you different?
- Make a non-redundant list of the learning goals represented at your table. Post them on chart paper (one chart per table).




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5 Selecting or Creating Rubrics

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5 **Formative Assessment**

Formative assessment is an **active and intentional learning process** that partners the **teacher and the students to continuously and systematically gather evidence of learning** with the express goal of improving student achievement.

*Moss & Brookhart, 2009, p. 6*

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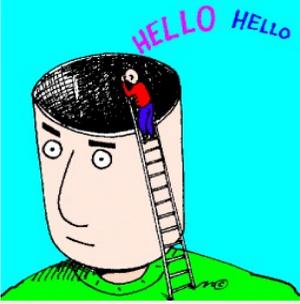
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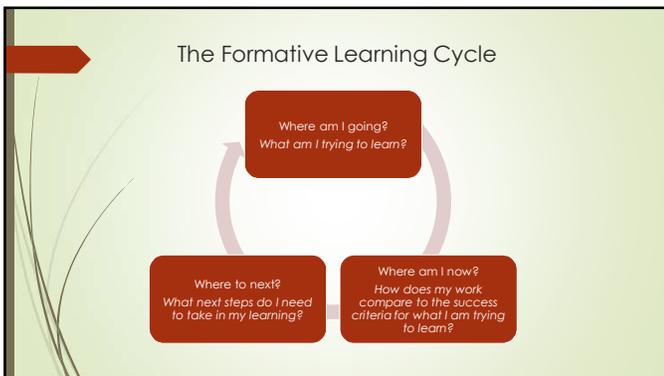
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Teachers who are	Expert in Formative Assessment	Not expert in Formative Assessment
<ul style="list-style-type: none"> <li>Collect evidence of student thinking (quality of thinking)</li> <li>Interpret student responses in terms of what students were thinking</li> <li>Consider what feedback or immediate next step in instruction will address the specific needs</li> </ul>	<ul style="list-style-type: none"> <li>Collect evidence of student performance (quantity of thinking)</li> <li>Evaluate the correctness of responses</li> <li>Re-teach topics based on percent correct</li> </ul>	<small>(Minstrell, Anderson, &amp; Li (2009); Hattie (2009); Hattie &amp; Timperley (2007); Krug, Rub-Primo, &amp; Sands (2014))</small>

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10 **Developing Rubrics to Support Student Learning**




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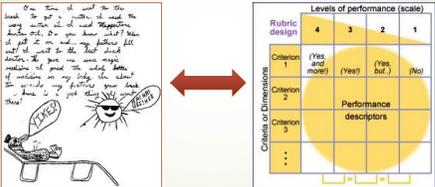
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11 **Both the student's performance and how you observe or score it defines what kind of evidence you get.**



		Levels of performance (scale)			
Rubric design		4	3	2	1
Criteria or Dimensions	Criterion 1 (Yes and more)				
	Criterion 2 (Yes)				
	Criterion 3 (Yes/No)				
	...				
Performance descriptors					

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12 **Some people call any scoring scheme a "rubric."**

- Checklists
- Rating scales
- Point schemes
- True rubrics




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**Math problem solving**

I described what the problem was asking.  
 EXCELLENT GOOD FAIR POOR

I wrote an equation, or used a diagram or model, to solve the problem.  
 EXCELLENT GOOD FAIR POOR

I calculated the correct answer.  
 EXCELLENT GOOD FAIR POOR

I labeled my answer.  
 EXCELLENT GOOD FAIR POOR

My sentence has  
 \_\_\_ a capital letter.  
 \_\_\_ a period.  
 \_\_\_ a complete thought.

Did I reason from examples to arrive at a clear, accurate description of physical and chemical changes?  
 2 = Completely and clearly – response gives clear evidence of reasoning from the examples  
 1 = Partially – response is accurate, but reasoning from examples isn't clear or is only partial  
 0 = No – response does not demonstrate reasonable conclusions from the examples

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**True rubrics have 2 elements**

- A coherent set of criteria
- Descriptions of levels of performance quality

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To check that they were meeting their teacher's expectations, students used this adapted rubric while completing problem-solving tasks.

Your score	Math Problem Solving Rubric		
	SHOWING MATH KNOWLEDGE (Can you do the problem correctly?)	USING PROBLEM-SOLVING STRATEGIES (How do you solve the problem?)	WRITING AN EXPLANATION (Can you explain your work?)
5	<ul style="list-style-type: none"> <li>I figure out the correct answer.</li> <li>I solve the problem with no mistakes.</li> </ul>	<ul style="list-style-type: none"> <li>I use all the important information from the problem.</li> <li>I show all the steps I used to solve the problem.</li> <li>I make a drawing to show how I solved the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I write what I did and why I did it.</li> <li>I explain each step of my work.</li> <li>I use math words and strategy names.</li> <li>I write the answer in a complete sentence at the end of my explanation.</li> </ul>
4	<ul style="list-style-type: none"> <li>I figure out the correct answer.</li> <li>I solve the problem, but I make a few small mistakes.</li> </ul>	<ul style="list-style-type: none"> <li>I use most of the important information from the problem.</li> <li>I show most of the steps I used to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I write what I did and a little about why I did it.</li> <li>I explain most of my work.</li> </ul>
3	<ul style="list-style-type: none"> <li>I figure out part of the answer.</li> <li>I try to solve the problem, but I make some big mistakes.</li> </ul>	<ul style="list-style-type: none"> <li>I use some of the important information from the problem.</li> <li>I show some of the steps I used to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I write a little about what I did or why I did it, but not both.</li> <li>I explain some of my work.</li> </ul>
2	<ul style="list-style-type: none"> <li>I try to solve the problem, but I don't understand it.</li> </ul>	<ul style="list-style-type: none"> <li>I use very little important information from the problem.</li> <li>I show almost none of the steps I used to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I write something that doesn't make sense.</li> <li>I write an unclear answer.</li> </ul>
1	<ul style="list-style-type: none"> <li>I don't try to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I show no steps that I used to solve the problem.</li> </ul>	<ul style="list-style-type: none"> <li>I don't write anything to explain how I solved the problem.</li> </ul>

Parker & Breyfogle, 2011

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### Math Problem Solving

I can do the problem correctly and get the correct answer.

I can figure out a strategy to use to solve the problem.

I can explain my work – tell what I did and why I did it.

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### Effective Rubrics

- The rubric itself must be well designed.
- The rubric should be used for *learning* as well as *grading*.




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Name: Student 1 Date: 3/25/09

### Oral Reading Rubric

	Outstanding	Satisfactory	Needs Improvement
<b>Expression</b>	Very expressive throughout the entire selection	Expression throughout most of the selection	Very little to no expression when reading
<b>Phrasing</b>	Meaningful phrasing throughout the selection	Some phrasing; pays attention to punctuation	Mostly a word-by-word reader
<b>Pace (Speed)</b>	Reads at a steady, smooth pace	Pace is slightly fast or slow	Pauses frequently to sound out individual words
<b>Clarity</b>	Loud, clear voice that is easily understood throughout the entire selection	Most words in the selection are clear and can be understood	Reads with a low tone or mumbled voice that is hard to understand
<b>Accuracy</b>	Missed 0-2 words	Missed 3-6 words	Missed 7 or more words

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### Criteria

- Should be about the learning to be demonstrated, not about the requirements for the assignment
- Matched to the learning goal or achievement standard you want to measure and report on

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### Effective Criteria

- Appropriate
- Definable
- Observable
- Distinct from one another
- Complete [for your purposes]
- Able to be described along a continuum of quality

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### Effective Performance Descriptions

- Descriptive
- Clear
- Cover the whole range of performance
- Distinguish among levels
- Center the target performance (mastery, passing) at appropriate levels
- Feature parallel descriptions from level to level

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**22** **Example #1**  
 Poor example [one criterion from science oral report]

	4	3	2	1
<b>Props and Visuals</b>	Props and/or visuals (pictures, diagrams, maps) were used throughout the presentation.	A few props and/or visuals were used.	One prop or visual was used.	No props and/or visuals were used.

Good example

	4	3	2	1
<b>Props and Visuals</b>	Props and/or visuals (pictures, diagrams, maps) give listeners an exceptionally clear understanding of the concepts.	Props and/or visuals mostly illustrate the concepts for listeners.	Some props and/or visuals illustrate the concepts and some do not.	Props and/or visuals were irrelevant to the concepts, inaccurate, and/or confusing.

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**23** **Example #2**  
 Poor example [one criterion from science lab report rubric]

	4	3	2	1
<b>Introduction</b>	1. Includes question to be answered. 2. States hypothesis based on research and/or reasoning 3. Title is relevant 4. Hypothesis (prediction) is testable	One of the "excellent" conditions is not met.	Two of the "excellent" conditions are not met.	Three of the "excellent" conditions are not met.

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**24** **Example #2**  
 Good example

	4	3	2	1
<b>Introduction—Stating Research Questions and Hypotheses</b>	States a hypothesis that is based on research and/or sound reasoning and is testable. Report title reflects question or hypothesis.	States a hypothesis that is based on research and/or sound reasoning and is testable. Report title may not reflect the question or hypothesis.	States a hypothesis, although basis for the hypothesis is not clear or hypothesis is not testable. Report title may not reflect the question or hypothesis.	Does not state a hypothesis. Introduction may be a general statement of the topic or the assignment or may be missing or unclear.

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**Example #3**  
Poor example

	4	3	2	1
<b>Grammar &amp; Usage</b>	No errors in grammar, punctuation, spelling or capitalization.	1-3 errors in grammar, punctuation, spelling or capitalization.	4-5 errors in grammar, punctuation, spelling or capitalization.	6 or more errors in grammar, punctuation, spelling or capitalization.

Good example

	4	3	2	1
<b>Grammar &amp; Usage</b>	Grammar, punctuation, spelling and capitalization are correct or nearly so, and minor errors do not detract from reading the story.	Grammar, punctuation, spelling and capitalization are mostly correct. Readers can still figure out what is meant in the story.	Many errors in grammar, punctuation, spelling and capitalization detract from the story.	Numerous errors in grammar, punctuation, spelling and capitalization severely detract from the story.

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	6 Points	4 Points	2 Points	0 Points
<b>Title of poster</b>		Title is evident on poster, correctly spelled and capitalized	Title is on poster, but with errors or it is hard to read	No title or heading
<b>Order of life cycle stages</b>		All the stages of the life cycle are in the correct order. Stages are correctly labeled.	One or more stages of the life cycle are in the wrong order.	Not included
<b>Illustrations of life cycle stages</b>	Illustrations of each stage are evident.	One or two illustrations of the life cycle stages are missing.	More than 2 illustrations of the life cycle stages are missing.	Not included
<b>Description of life cycle stages</b>	Stages are described with at least 2 details.	Stages are described with one detail. One or more stage is missing.	Stages are incomplete missing. Stages have one or zero supporting details.	Not included
<b>Overall appearance of poster</b>		Poster is very neat and organized. Title and all sentences have correct spelling, capitalization, and punctuation.	Poster is somewhat neat and organized. Some correct spelling, punctuation, and capitalization. Poster shows signs of little effort.	Poster is messy, many errors, not colored, or unfinished. Poster shows no signs of effort.

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	Advanced	Proficient	Nearing Proficient	Novice
<b>Order of life cycle stages</b>		All the stages of the life cycle are in the correct order and correctly labeled.	One or more stages of the life cycle are in the wrong order.	No order is specified, or order is incorrect.
<b>Illustrations of life cycle stages</b>	Each stage has an illustration that gives an especially clear or detailed view about what happens to the animal then.	Each stage has an illustration that helps show what happens to the animal then.	Some stage illustrations do not show what happens to the animal then.	Illustrations do not help show what happens to the animal during its life cycle.
<b>Description of life cycle stages</b>	Stages are described accurately. Descriptions are especially complete and detailed.	Stages are described accurately.	Stages are described with some inaccurate or incomplete information.	No stages are described, or stages are described inaccurately.

Revised version, Life Cycle Project rubric,  
Used with a checklist for assignment requirements

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## Checklist for assignment requirements

- Not used for grading – used formatively
- By students (self and/or peers)

### My Poster Checklist

- \_\_\_ My poster has a title.
- \_\_\_ My poster is neat.
- \_\_\_ My poster is well organized.
- \_\_\_ My poster has correct spelling.
- \_\_\_ My poster has correct capitalization.
- \_\_\_ My poster has correct punctuation.

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## What happens when bad criteria are used?

Category	Excellent 3 points	Good 2 points	Fair 1 point	Poor 0 points
<b>Required content:</b> Title, Page Number, Site of biome, Abiotic, and partial weather.	All three required content is found on the project.	One, 2 of the required content is found on the project.	Only 1 of the required content is found on the project.	All required content is missing on the project.
<b>World map of where biomes is located</b>	Excellent map. Shows details of where biomes is located. Easy to read and understood.	Good map. Shows most of the details of where the biomes is located but it is hard to read and understand.	Map is okay. In missing some of the details about the biomes location. It is small and hard to read.	Map is small, hard to read and not accurate about the location of the biomes.
<b>Write about biomes (Place name the writing is complete and in one paragraph)</b>	Report contains at least 3 detailed facts about the biomes.	Report contains 2 detailed facts about the biomes.	Report contains 1 detailed fact about the biomes.	Report is missing detailed facts about the biomes.
<b>Climate / weather conditions (Describe paragraph)</b>	Report accurately describes climate / weather condition including temperature and precipitation.	Report describes climate / weather but could be more descriptive.	Report mentions a vague description of the biome's climate / weather condition.	Report does not mention anything about climate / weather conditions.
<b>Picture of animals</b>	Report contains at least 3 pictures of different animals found in the biome.	Report contains 2 pictures of different animals found in the biome.	Report contains 1 picture of different animals found in the biome.	Report contains no pictures of animals found in the biome.
<b>Picture of plants</b>	Report contains at least 3 pictures of different plants found in the biome.	Report contains 2 pictures of different plants found in the biome.	Report contains 1 picture of different plants found in the biome.	Report contains no pictures of plants found in the biome.
<b>Grammar</b>	No misspellings or grammatical errors.	1 or 2 misspellings and/or grammatical errors.	3 or 4 misspellings and/or grammatical errors.	More than 4 errors in spelling or grammar.
<b>Appearance &amp; Organization</b>	The project has successfully attractive formatting and well-organized information.	The project has attractive formatting and well-organized information.	The project has well-organized information.	The project's formatting and organization of materials are confusing to the reader.
<b>Proficiency of Presentation</b>	Presentation is organized and the interest level of the audience is maintained.	Thoughts articulated clearly, though does not engage audience.	Thoughts don't flow, not clear does not engage audience.	Message, audience has difficulty hearing, confusing.

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## Student A – 7<sup>th</sup> grade inclusion



**Temperate Forest**

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The temperate forest is located in the Northern Hemisphere, the area between the equator and the Tropic of Cancer. The temperate forest is found in the Northern Hemisphere, the area between the equator and the Tropic of Cancer. The temperate forest is found in the Northern Hemisphere, the area between the equator and the Tropic of Cancer.

The temperate forest is located in the Northern Hemisphere, the area between the equator and the Tropic of Cancer. The temperate forest is found in the Northern Hemisphere, the area between the equator and the Tropic of Cancer. The temperate forest is found in the Northern Hemisphere, the area between the equator and the Tropic of Cancer.



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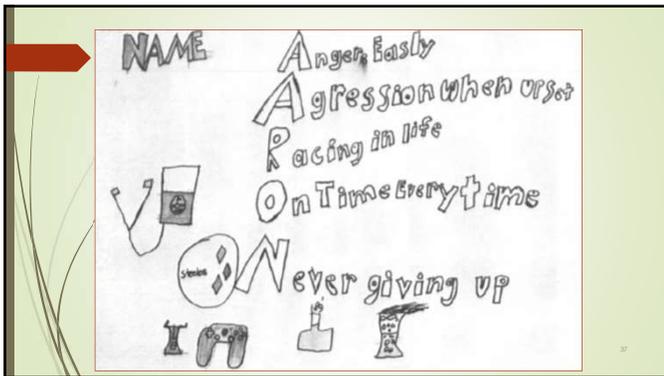
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CATEGORY	4	3	2	1	0
<b>Title</b> You gave me the type of poem but not a title.	Title can be read from it & user and describes content well.	Title can be read from it & user and describes content well.	Title can be read from it & user and describes the content well.	The title is too small and/or does not describe the content of the poster well.	No title is on the poster.
<b>Grammar</b> Spelling Ability Aggression	There are no grammatical mistakes on the poster.	There is 1 grammatical mistake on the poster.	There are 2 grammatical mistakes on the poster.	There are 3-6 grammatical mistakes on the poster.	There are more than 6 grammatical mistakes on the poster.
<b>Mechanics</b> Only capitalise first letter of each line.	Capitalisation and punctuation are correct throughout the poster.	There is 1 error in capitalisation or punctuation.	There are 2 errors in capitalisation or punctuation.	There are 3-6 errors in capitalisation or punctuation.	There are more than 6 errors in capitalisation or punctuation.
<b>Graphics - Originality</b> well done Variety	Several of the graphics used on the poster reflect originality of student creativity in their creation and/or display.	One or two of the graphics used on the poster reflect student creativity in their creation and/or display.	The graphics are made by the student but are based on the designs or ideas of others.	The graphics are cut-outs from another source.	No graphics made by the student are included.
<b>Graphics - Relevance</b> Appropriate	All graphics are related to the topic and make it easier to understand.	All but one of the graphics are related to the topic and most make it easier to understand.	Most of the graphics relate to the topic.	Only a few graphics relate to the topic.	Graphics do not relate to the topic.
<b>Required Elements</b> Missing title	The poster includes all required elements as well as additional information.	All required elements are included on the poster.	All but 1 of the required elements are included on the poster.	Several required elements were missing.	Most of the required elements are missing.
<b>Content - Accuracy</b> Good name poem!	Poem correctly fits the theme scheme and/or formula of the type of poem identified.	Poem mostly fits the theme scheme and/or formula of the type of poem identified.	Poem fits about 50% of the theme scheme and/or formula of the type of poem identified.	Poem fits less than 50% of the theme scheme and/or formula of the type of poem identified.	Poem is an entirely different type of poem than is identified.

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**Critique these Volcano Project Rubrics**

CATEGORY	5	4	3	2	1	0
<b>Student Info Included</b> (Name, Date, Period)	All items included		One item missing		Two items missing	No info provided
<b>General Info Included</b>	All 8 items included	One item missing or inaccurate	Two items missing or inaccurate	Three items missing or inaccurate	More than 3 items missing or inaccurate	No info provided
<b>Eruption Information</b>	All 6 items included	All 4 items are included and accurate	Half the information is included and accurate	One 2 items included and accurate	Minimal or no information included or accurate	No info provided
<b>Volcano Diagram</b>	Clear, accurate diagram, with all 5 parts shown.	Diagram is included; 11-14 parts clear and accurately shown.	Diagram is included; 6-10 parts clear and accurately shown.	Diagram is included; 5-5 labeled parts.	Diagram has less than 5 parts labeled.	No info provided
<b>Overall Presentation</b>	Clear, neat, organized, layout well planned.	Layout is planned and organized, Writing is not neat	Info could be better organized, Writing is sloppy	Not organized, Not all info fits properly, Some attempt to make it work, Writing and lines are hastily done.	Very disorganized and poorly prepared, Lines not straight, Spacing is sloppy, Writing is hastily done, May have been done in haste.	No suggestions followed for organization and neatness.
<b>Use of Creativity</b>	Various materials are used to effect, Attention to detail obvious, Good use of color.	Some use of materials, attention to detail, and/or use of color.	Moderate use of varied materials, attention to detail, and/or color.	Minimal use of either varied materials, attention to detail, or color.	No use of either varied materials, attention to detail, or color.	No creativity

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## Volcano Project Rubrics

- Only half of the score is about understanding volcanoes
- All of the points that are about volcanoes have to do with counting facts (requiring copying, not even recall)!

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CATEGORY	5	4	3	2	1	0
Student Info Included (Name, Date, Section)	All items included		One item missing		Two items missing	No info provided
General Info Included	All 8 items included	One item missing or inaccurate	Two items missing or inaccurate	Three items missing or inaccurate	More than 3 items missing or inaccurate	No info provided
Explanation Information	All 6 items included	At least 4 items are included and accurate	Half the information is included or accurate	One 2 items included and accurate	Minimal or no information included or accurate	No info provided
Volcano Diagram	Clear, accurate diagram; with all 15 parts shown	Diagram is included; 11-14 parts clear and accurately shown	Diagram is included; 6-10 parts clear and accurately shown	Diagram is included; 3-5 labeled parts	Diagram has less than 3 parts labeled	No info provided
Overall Presentation	Clear, neat, organized. Layout well planned.	Layout is planned and organized. Writing is not neat	Info could be better organized. Writing is sloppy	Not organized. Not all info fits properly. Some attempt to make it work. Writing and lines are hastily done.	Very disorganized and poorly prepared. Lines not straight. Spacing is sloppy. Writing is hastily done. May have been done in haste.	No suggestion followed for organization and neatness
Use of Creativity	Various materials are used for effect. Attention to detail obvious. Good use of color.	Some use of materials. Attention to detail, and/or use of color.	Moderate use of varied materials. Attention to detail, and/or color.	Minimal use of either varied materials, attention to detail, or color.	No use of either varied materials, attention to detail, or color.	No creativity

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## For Simple Tasks

3	Task is complete and correct. Response shows understanding of intended learning outcome.
2	Task is partly complete and correct. Response shows some understanding of intended learning outcome.
1	Task is not complete or correct. Response shows little/no understanding of intended learning outcome.

**NOTE: DON'T use this "rubric" as is - it's a template. It lacks CRITERIA. Replace the "boilerplate" language with criteria specific to your learning outcome of interest.**

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### Kindergarten Example Making Equal Sets

3	Elements of each set are organized in a single line. There is a one-to-one correspondence between elements of each set.
2	There is an attempt at organizing elements of each set and showing correspondence between elements of each set. These attempts are not entirely successful.
1	Elements of each set are not organized. No correspondence is shown between elements of each set.

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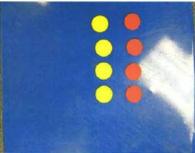
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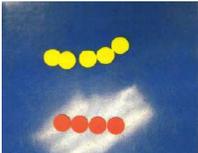
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### Kindergarten Example Making Equal Sets



**A**



**B**

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### Summary

- Task(s) or assignment must tap the student learning outcomes
  - Knowledge
  - Skills
  - Level of Thinking
- Rubrics must accurately describe student performance along a continuum of quality  
**ON THOSE SAME LEARNING OUTCOMES**




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	4	3	2	1
<b>Topic</b>	Strongly and clearly states a personal topic/opinion.	Some reference to the issue but does not state a topic/opinion.	Personal topic/opinion is hard to understand.	Personal topic/opinion is not clearly stated.
<b>Reasons and Support</b>	3 reasons stated with excellent support.	3 reasons are made but the support is weak or lacking evidence.	Only 2 points are made with weak arguments.	Arguments are weak and less than 2 points are made.
<b>Introduction</b>	Paragraph introduces the paper and has 4 sentences.	Paragraph introduces the paper but contains only 3 sentences.	Introduction paragraph is evidence but does not introduce paper. Only 1-2 sentences.	Introduction paragraph is not evident.
<b>Conclusion</b>	Paragraph concludes paper and contains 4 sentences.	Paragraph concludes the paper but contains only 3 sentences.	Concluding paragraph is evident but does not conclude paper. Only 1-2 sentences.	Concluding paragraph is not evident.
<b>Mechanics and Grammar</b>	Contains 1-2 errors in spelling, punctuation, and grammar usage.	Contains 3-5 errors in spelling, punctuation, and grammar usage.	Contains 5-7 errors in spelling, punctuation, and grammar usage.	Contains more than 7 errors in spelling, punctuation, and grammar usage.
<b>Organization</b>	Paper is organized into 3 evident paragraphs of an intro, body, and conclusion. Sentences are well written.	Paper is organized into 3 evident paragraphs of an intro, body, and conclusion. Sentences are average.	Paragraph and sentence structure is inconsistent.	There is no logical organization to the paper.




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	On Target	Not on Target
<b>Content</b>	I shared an insight or thought that was genuine, relevant, and worthwhile.	I shared a thought that was made-up, irrelevant, or trivial; OR I didn't share a thought.
<b>Reasoning</b>	I explained why I chose the thought I shared.	I didn't explain why I chose the thought I shared; OR my explanation was not sensible.

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Implementing Rubrics in Your Own Teaching

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**Implementing Rubrics in Your Own Teaching**

- EITHER think of an assignment or assessment you use, and locate a rubric on the internet that you might revise for use with this assessment.
- OR review, critique, and revise a rubric you brought with you from your school.
- Work with a partner.
- Use page 2 of the handout.



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**Validity and Reliability Concerns for Rubrics**

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**A Sad Tale**

Every Friday Story Test  
15 points –  
vocabulary  
5 points –  
comprehension  
20 points total

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### Assessment Quality

**VALIDITY**

- Soundness of the **interpretations** and **uses** of assessment results
- Does the assessment measure what it is intended to measure?
- Reliability is one aspect of validity

**RELIABILITY**

- Degree to which results are consistent across replications
  - Occasion (time)**
  - Test form**
  - Rater/grader**
- Measurement error is the degree to which results are inconsistent

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### Validity and Reliability A Simple Example



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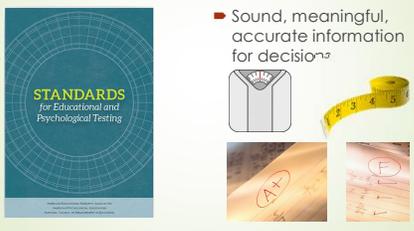
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### Why are Validity and Reliability necessary?

Sound, meaningful, accurate information for decision<sup>1-2</sup>



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**Review rubrics asking:**  
**Are the criteria appropriate?**  
**Are the weights appropriate?**  
**Remember the Volcano Rubrics!**



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**Panel Review of Performance Tasks and Rubrics**

- Panel of people different from those who wrote the performance task or rubrics
- Document their qualifications



- Go through the performance assessment task and rubrics, evaluating the match (of both content and thinking skills) to the standard. Tally. Report results.

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**Other Ways to Provide Validity Evidence**

- Panel uses a protocol, document participants and results



- Correlate scores on the assessment with other known measures of the same standard



- Compare scores on the assessment from students with and without instruction on the standard

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### The Need for Alternate Forms Over Time

- To prevent the domain from narrowing
- Different tasks, same rubrics if possible
- Tasks need to be comparable

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### Pilot (Try Out) the Task and Rubrics

- Judgment of the validity of a task and rubrics to measure achievement of an intended standard is a good foundation.
- To know how real students interpret the task and what their work looks like, you need to try out the task with at least a few students.
  - Observe their work – does it offer the evidence of achievement that you need?
  - Ask students what they were thinking
  - See if the rubrics allow scoring of everything important in the work in the way you intended

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### Reliability for Performance Assessment

- For performance assessments or essay tests scored with teacher judgment (rubrics or other multi-point scoring), document that 2 or more raters give similar scores (use percent agreement or kappa, expectancy tables)
- For comparing forms, report the consistency (correlation) of scores for a sample of students taking both forms

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### Typical Scorer Training

- Review the task and rubric.
- Review each criterion on the rubric (one at a time), and examine sample student work at each performance level. Discuss why each model paper is an example of that level.
- Practice applying the rubric to training papers that are pre-scored; calculate agreement. Aim for exact agreement of 80%, or agreement  $\pm 1$  level of 90%-100%.
- Do additional review as necessary, and additional scoring of training papers if raters did not qualify.
- Re-train periodically to minimize "rater drift."

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62

### Ensuring Scoring Consistency

- Select a few papers (questions, tasks) from different classes
- Double-score this set of papers (questions, tasks)




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### A Tale of 8<sup>th</sup> Grade ELA Portfolios




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### Expectancy Table for Two Raters Using a Four-point Rubric

Rater 1 Rater 2	1	2	3	4	Total
4	0	0	2	8	10
3	0	1	5	3	9
2	1	7	1	0	9
1	4	1	0	0	5
<b>Total</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>13</b>	<b>33</b>

Agreement =  $(4 + 7 + 5 + 8)/33 = 24/33 = 73\%$

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### Let's Try a Rater Reliability Study

- Use handout pages 4 through 7.
- INDIVIDUALLY: First, try to do the problem on page 4 yourself, using the rubric on page 5 as your success criteria.
- TOGETHER: Then, discuss the problem as a group and come to consensus on what the task and criteria intend to assess.
- INDIVIDUALLY: Score the student work samples on pages 6 and 7, using the rubric on page 5.
- TOGETHER: Make a chart describing the level of agreement at your table for each of the student work samples.




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### Using Rubrics with Students

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**Describe the most student-centered strategy(ies) you have used with rubrics so far in your work.**

- What are your current thoughts about the effectiveness of these practices?
- What issues or questions have arisen?

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### Effective Rubrics

- The rubric itself must be well designed.
- The rubric should be used for *learning* as well as *grading*.



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69

### Rubrics Help Teachers Teach

- A focus on the criteria by which learning will be assessed means a focus on
- What *students are going to learn* rather than what *you are going to teach*



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### Rubrics Help Coordinate

- Instruction and Formative Assessment
  - Show students what desired performance looks like
  - Gives students a way to know how they're doing and decide what next steps to take
- Summative (Graded) Assessment

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### Rubrics Help Students Learn

- Research in many subjects
  - English, Mathematics, Science, Social Studies
- At many grade levels
  - Primary, Secondary, College
- Brookhart & Chen, 2015



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72

### Using Rubrics for Learning

- Students must understand the rubrics
- Students use the rubrics formatively

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### How to Use Rubrics to Share Learning Targets with Students



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**Strategy 1:** Ask students to pose clarifying questions about the rubrics



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**Example – You be the student!**



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**76**

### Leaf Structures

- Obtain a piece of Iceberg lettuce (make sure it is white/light green). Place it on a slide and add a drop of water and a cover slip.
- Look under High power to find the stomata. the opening is surrounded by two curved guard cells. Take two different pictures per team and use Paintbrush to label the stomata and guard cells. Add the functions of the guard cells and stomata as well as what materials enter and leave the stomata.
- Use all team members in your work. Add your pictures to the team wiki and include a paragraph of the importance of the stomata and guard cells to the plant and the process of photosynthesis.

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**77**

### Leaf pictures Rubric

Information	Excellent (5)	Average (3)	Poor (0)
Labels	Stomata and guard cells labeled		Stomata and guard cells not labeled
Functions	Functions of the stomata and guard cells using easy to understand language that is original.	Functions of the stomata and guard cells using easy to understand language.	Functions missing or inadequate.
Importance (x2)	Importance of both structures to the functioning of the plant and photosynthesis in exceptional detail.	Importance of one structure discussed in detail or both discussed in incomplete detail.	Importance of both structures incomplete.
Images	Beautiful detail in the two different images.	Images not quality.	Poor quality images or only one image portrayed.

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**78**

### Strategy 2: Ask students to restate the rubrics in their own words

The Rubric Translator

Assignment \_\_\_\_\_

Teacher Rubric \_\_\_\_\_

The diagram shows a grid of five columns and two rows. The top row is labeled 'Assignment' and the bottom row is labeled 'Teacher Rubric'. Arrows point from the 'Assignment' row to the 'Teacher Rubric' row, indicating that the assignment is used to evaluate the rubric.

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**Example**

Importance	5	3	1
	Importance of both structures to the functioning of the plan and photosynthesis in exceptional detail.	Importance of one structure discussed in detail or both discussed in incomplete detail.	Importance of both structures incomplete

Note: "Structures" are stomata and guard cells.

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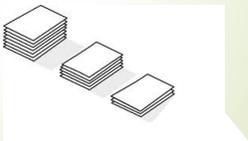
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**Strategy 3:** Have students sort examples of work into groups: High, Medium, Low, then explain their reasoning



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**Strategy 4:** Co-Create Rubrics with Students



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### Co-creating Rubrics

- Be clear about the learning target.
- Use a range of examples (handout p. 3).
- Collect descriptions of qualities of the work (one per card or paper strip).
- Remove duplicates.
- Sort the descriptions into categories; name criteria.
- Describe the categories along a continuum of quality (Or, stop with the previous step and the teacher can write the performance level descriptions).
- Apply the rubrics to the examples to see how they work; revise rubrics as needed.

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### Haiku Example

- Japanese poem form
- Seventeen syllables
  - In three lines of five, seven, and five
- Traditionally evokes images of the natural world
- We will follow the steps for co-creating criteria. We will not co-create performance level descriptions.



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### How to Use Rubrics for Student Self-Assessment and Goal-Setting



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**Strategy 5:** Have students match their own, peers', or sample work to the rubrics, and explain their reasoning



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**Strategy 6:** Have students use highlighters to match performance descriptions to elements in the work



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**Strategy 7:** Use rubrics to help students keep track of their own work on a criterion of interest

- Have students plan for, and then reflect on, their progress
- Make sure to focus on **learning**, not **scoring**

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### Example

#### WRITING A MATHEMATICS EXPLANATION

Problem Set	Level 1	Level 2	Level 3	Level 4	Level 5
Oct. 7 Problem set #1	1	1	1	1	1
Oct. 14 Problem set #2	1	1	1	1	1
Oct. 21 Problem set #3	1	1	1	1	1
Oct. 28 Problem set #4	1	1	1	1	1
Nov. 4 Problem set #5	1	1	1	1	1
Nov. 11 Problem set #6	1	1	1	1	1

- 5**
  - I wrote what I did and why I did it.
  - I explain each step of my work.
  - I use math words & strategy names.
  - I write the answer in a complete sentence at the end of my work.
- 4**
  - I write what I did and a little about why I did it.
  - I explain most of my work.
- 3**
  - I write a little about what I did or why I did it, but not both.
  - I explain some of my work.
- 2**
  - I write something that doesn't make sense.
  - I write an unclear answer.
- 1**
  - I don't write anything to explain how I solved the problem.

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### Rubrics for 21<sup>st</sup> Century Skills

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### How to Construct Rubrics for Thinking Skills

- **Name and define the quality or qualities** you want to measure.
- **Decide how the rubric will be used:** formatively or formatively and summatively.
- Decide whether you will use a **holistic or analytic rubric** (one criterion or several) to measure the quality.
- Decide **how many levels of performance** you want to define.
- Identify **indicators of each criterion that you will look for as evidence** of accomplishment on that criterion.
- **Write student-friendly performance level descriptions** for each level of performance on the criterion.
- **Focus on what is observed**—the presence of behaviors or characteristics—rather than what is not observed (describe “what they do, not what they don’t do” at each level).
- **Try out the rubric and revise** as necessary.

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### Example from the American School of Bombay: Approaches to Learning

Interpersonal and Intrapersonal Habits		Cognitive Habits	
ATL Standard 1: Managing Complexity	ATL Standard 2: Collaboration and Social Skills	ATL Standard 3: Critical Thinking	ATL Standard 4: Creativity and Innovation
Students demonstrate organization and planning, including setting appropriate goals	Students are engaged, show understanding and respect when working with groups	Students inquire, reason and evaluate information effectively	Students use a wide range of idea-creation techniques to make choices and extend thinking
Students employ self management strategies to meet goals and effectively allocate time, energy and resources	Students contribute and take ownership of their work as part of a collaborative group.	Students observe and analyze how parts of a whole interact to produce overall outcomes in complex systems	Students develop and revise ideas
Students demonstrate perseverance and resilience when working towards the achievement of their goals	At a team level, students resolve conflict and effectively create and commit to shared group goals.	Students think about problems from multiple perspectives and understand they can be solved using different strategies	Students produce evocative and unique results demonstrating originality and inventiveness
	Students utilize each other's strengths and try new approaches and ideas.	Students analyze their own and others' thought processes; thinking about how one thinks and how one learns	

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### Example from Catholic High School, Singapore: Thinking Skills

Thinking Skills	Meaning
Critical Thinking	1) Seeking truth and understanding <ul style="list-style-type: none"> <li>Involves weighing the evidence, considering its validity</li> <li>Looking for links between bits of evidence to build up a theory and then testing the theory.</li> </ul>
	2) Strategic <ul style="list-style-type: none"> <li>Adopting a step-by-step approach</li> <li>Anticipating problems &amp; being careful in thinking.</li> </ul>
Creative Thinking	3) Intellectually Skeptical <ul style="list-style-type: none"> <li>Not taking issues at face value</li> <li>Probe further, look for proof and evidence.</li> </ul>
	4) Open minded <ul style="list-style-type: none"> <li>Being flexible.</li> <li>Willing to try out new ideas to generate alternative explanations &amp; looking beyond the given and expected.</li> </ul>
Reflective Thinking	5) Curious <ul style="list-style-type: none"> <li>Propels exploration and finding the interesting in the ordinary (process of discovery).</li> </ul>
	6) Metacognition <ul style="list-style-type: none"> <li>Monitoring one's own understanding and learning in order to take necessary actions to meet learning goals</li> </ul>
Conceptual Thinking	7) Seeing Patterns & Connections <ul style="list-style-type: none"> <li>Making meaning of abstract ideas/facts and finding connection or patterns between those ideas/facts that may or may not be directly related or easily identified.</li> </ul>

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### Create a Rubric Using a Resource

- With a partner or very small group, decide on a thinking skill for which you would like to create a rubric in your discipline.
- Use the resource "Annotated Examples of Rubrics for Thinking Skills" to help you.
- Follow the steps for rubric construction on the first page of the resource.
- Record your draft in a form you can share.




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	On Target	Not on Target
<b>Content</b>	I shared an insight or thought that was genuine, relevant, and worthwhile.	I shared a thought that was made-up, irrelevant, or trivial; OR I didn't share a thought.
<b>Reasoning</b>	I explained why I chose the thought I shared.	I didn't explain why I chose the thought I shared; OR my explanation was not sensible.

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Extending Implementation

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- What do you need to do next?
- Continue work on academic rubrics
  - Continue work on rubrics for thinking skills
  - Plan for implementing and extending the use of rubrics with colleagues from your school
  - Getting your questions answered (check in with your goals from Friday morning)
  - Write questions and find answers in the book
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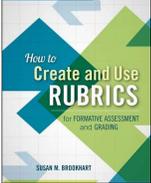
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