

Rubrics

Making the Subjective More Objective

Marie A. Abate, BS, PharmD.
Professor of Clinical Pharmacy
Director of Programmatic Assessment
School of Pharmacy
West Virginia University, Morgantown WV

Objectives

As a result of attending this seminar you should be able to:

- Describe the types and key components of a rubric
- Discuss the potential advantages with the use of rubrics as learning and assessment tools
- Describe the steps involved in developing and modifying a rubric
- Begin to construct a rubric to meet an identified student learning/assessment need

What is a Rubric?

- A set of printed rules or instructions
- Tool/Scoring guide that clearly specifies criteria and what constitutes various levels of performance for those criteria
- Checklist? - used to simply determine if specified criteria have been met

Checklist Example

Criteria	Completed	
	Yes	No
Purpose	✓	
Experimental Design	✓	
Statistical Methods		✓

Rubric Example

Criteria	Level of Performance			
	Excellent(3)	Good (2)	Fair (1)	Poor (0)
Purpose	Research question well-defined & consistent with literature	Research question defined but does not fully address need from lit	Research question unclear or only superficially relates to need	Research question missing or unrelated to need based upon literature

Why Use a Rubric?

- Helps students learn*
 - Illustrates specific criteria for judging work - share in advance
 - Differentiates excellent vs. poor work, provides benchmarks, develops self-assessment skills - students could evaluate own work
 - Students can help set criteria and describe performance levels – builds consensus

Why Use a Rubric?

- Helps students learn*
 - Opens dialogue between students & teacher, and students & peers
 - Allows different instructors to provide feedback using same instrument, at same or at different times

Why Use a Rubric?

- Helps faculty learn:
 - Facilitates discussions about curriculum & assessment
 - Promotes collaboration about common criteria that could evaluate students across courses or disciplines
 - Must clearly delineate criteria for performance, more objectively define “excellence”

Why Use a Rubric?

You (alone or with other colleagues) need to assess a student's or resident's:

- Seminar presentation
- Formal evaluation of a patient's condition and therapy
- Ability to develop a comprehensive patient management plan
- Ability to perform a procedure that involves several steps

Why Use a Rubric?

- Assists faculty in making judgments about student performance, especially more complex types*:
 - Serves as explicit guide for faculty in determining a grade
 - Assists multiple evaluators in grading by focusing on specific, well-defined criteria
 - Greater accuracy and consistency in assessments

Why Use a Rubric?

- Assessment - authentic student assessments (course, program), incorporate criteria that would be used in real-life situations;* results improve learning*
- Provides specific feedback regarding how performance can be improved*
- *Initial time investment* balanced by time saved later plus improved judgments

Types of Rubrics

Holistic, analytic

Holistic: scores the student's work as a whole, without judging the individual criteria separately

Analytic: scores the individual criteria separately, then combines scores to obtain an overall total

Types of Rubrics

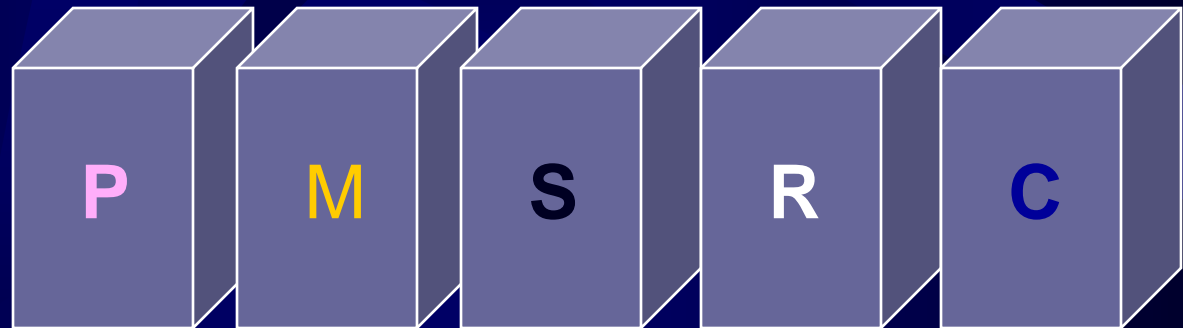
Holistic, analytic

Holistic:

One
score

Purpose, Methods, Stats,
Results, Conclusion

Analytic:



Each criterion/dimension scored separately

Types of Rubrics

When to use a holistic vs. analytic rubric?

Holistic: when deficiencies in some aspects are tolerated as long as overall quality is high; evaluating work (e.g., portfolio) in which score reflects overall quality or proficiency; *only limited feedback provided to students*

Types of Rubrics

Holistic rubric example:

- 4 = Complete understanding; all requirements [specified here] of performance achieved
- 3 = Fairly thorough understanding; most requirements of performance achieved
- 2 = Partial understanding; several requirements of performance not achieved
- 1 = Little understanding; most requirements of performance not achieved
- 0 = No understanding; performance not at all achieved

Types of Rubrics

When to use a holistic vs. analytic rubric?

Analytic: when it is important to evaluate specific student strengths and

weaknesses in overall performance;

*** provides significant feedback to*

students for each of the individual

scoring criteria - formative feedback

– construction & use more time-consuming

	3=Excellent	2=Good	1=Fair	0=Poor
Clarity	Well organized; clearly articulated; no extraneous information	Minor flaws; most info clearly stated; some extra info	Difficult to follow in many places; lacks logical flow; much of info not pertinent	No structure; rambles to extent that it is not understood; info irrelevant
Accuracy	Consistent with current literature; strengths & weaknesses addressed	A few inconsistencies; some str/weak missing	≥ One major inconsistency; many strengths/weaknesses missing	Not consistent with lit; no str/weak addressed

Types of Rubrics

General vs. Task-Specific

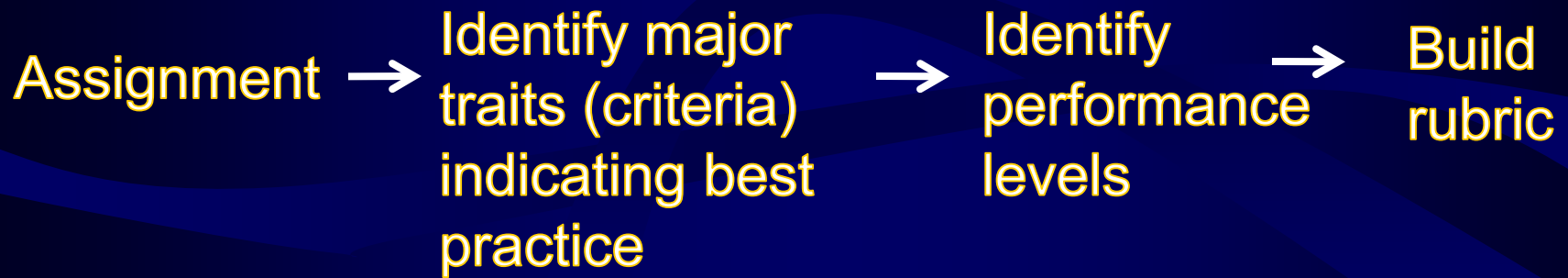
General: Evaluates broad category of performance, e.g., verbal communication (could be used to score different types of presentations)

Task-Specific: Contains specific criteria related to unique features or attributes of performance

(Can contain components of each)

Primary Trait Analysis

Method for identifying key traits in an assignment; used with scoring rubrics to develop the explicit criteria for assessing an assignment



	Exceeds (3)	Meets (2)	Doesn't Meet (1)
Trait 1			
Trait 2			
Trait 3			

Primary Trait Analysis

Density Determination - Chemistry

Trait (Criteria)	Criteria (Performance Levels)	Score
Drawing a graph	Graph has a title, labels on the axes, appropriate scale, best fit line, and the correct variables on the axes.	3
	One of the above characteristics is missing.	2
	More than one of the characteristics is missing.	1
Determining the equation of line	Has selected 2 points on the best fit line and correctly calculated the value of the slope, including units. Has extrapolated the line to determine the value of the y intercept when $x = 0$.	3
	Has correctly determined either the slope or the intercept, but not both.	2
	Has incorrectly calculated both.	1

Key Components of Rubrics

- 1) Performance criteria or categories - should comprise ALL essential elements necessary for high quality student work or performance; include types of knowledge, skills, behaviors that are being looked for; form rows in rubric
 - Organize or group related items

Example of Performance Criteria

Performance: Prepare an in-depth written analysis of a patient's therapy

Criteria: Determination of Patient Problem(s)

- **Problem list**
- **Extent of disease state control**

Analysis of Drug Therapy

- **Doses, route of administration, duration**
- **Drug interactions, adverse effects**
- **Recommendations**

Written Report

- **Clarity, Completeness, Style, etc.**

Key Components of Rubrics

- 2) Levels of performance mastery - clear descriptions of key evidence for, or characteristics of, each individual level; form columns in rubric; identified by column labels (e.g., **excellent, good, fair, unacceptable**; exemplary, proficient, acceptable, unacceptable; **expert, competent, beginner, novice, etc**)

	3-Excellent	2=Good	1=Fair	0=Poor
Problem List	Correctly identified all main/acute problems, other diseases/ conditions being treated, and all other diseases/ conditions or patient concerns that might require intervention	Correctly identified all main/ acute problems; missed only one or two of other diseases, conditions, or other patient concerns	Incorrectly identified a main or acute problem or did not recognize several other diseases, conditions, or other patient concerns	Unable to identify the main or acute problems or did not recognize any other diseases, conditions or other patient concerns

Key Components of Rubrics

3) Scoring procedure - determine how final score will be obtained:

- Sum of each item for a total score -- how is this total score judged - converted to letter grade? must achieve at least a certain score to “pass?” for total, certain items?
- Weighted rubric - certain criteria are deemed more important to learn and assigned greater weight → emphasis

Steps in Constructing Rubric

- 1) Identify outcome, competency
- 2) Identify all the important criteria (knowledge, skills, attitudes) for performance to be of high quality → if student can score high on all criteria but not perform well, you have wrong/missing criteria
- 3) *Talk to colleagues, review actual student examples to identify characteristics of “excellence”

Steps in Constructing Rubric

- 4) Determine how many levels to include in columns -- How?
 - Start with highest level of performance, describe (clear, specific) characteristics that make it such
 - Pay close attention to “acceptable” level of performance, describe characteristics that make it such
 - Work on descriptions of performance for intermediate and lower levels

Steps in Constructing Rubric

- 4) Determine how many levels to include in columns -- How?
 - Clear separations in levels; consider fewer levels with clear distinctions instead of more levels with unclear or fine distinctions
 - Begin with three levels (e.g., exemplary, acceptable, unacceptable)
 - try it; expand if needed to make greater distinctions

Steps in Constructing Rubric

5) Write clear description of performance at each level

- Avoid undefined terms or terms that express value (e.g., “trivial,” “considerable thought,” “good”) in descriptions
- Descriptions should make sense; reflect actual value of activity; “real world like”
- Be consistent in attributes across levels, e.g., if including grammar, writing style and spelling in one level, include them in others

Steps in Constructing Rubric

Example of attribute inconsistency:

	3-Excellent	2=Good	1=Fair	0=Poor
Written report	Procedures and results clearly explained. Well-organized & presented	Most of required elements present. Clearly written	Partly incomplete. Some spelling or grammatical errors	Messy, with spelling errors. Not organized, not complete

For key points - make individual criteria, or include in each level

Steps in Constructing Rubric

- 6) Define scoring procedure and assignment of grades
 - Identify any criteria that should receive more emphasis and weighting
 - Determine how any weighting will be done
 - e.g., multiply scores by weighting factor, use different scale for some groupings of criteria, etc.
 - Determine how to assign final grade or pass/fail based on score

Scientific Lab Report Rubric (EXAMPLE)

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Abstract & Title	Either the Abstract or title are missing	Title does not identify the work. Abstract only a listing of facts	Title identifies the project. Abstract does not include all sections of the report	Title Clearly identifies the main Question solved. Abstract includes all sections of the paper and is a coherent whole that can be understood on its own.	
Introduction	Does not include background or previous work does not identify the purpose the project or the question(s) being addressed	Gives vary little background or information. May include the Question(s) but does not identify their purpose for addressing them	Gives a decant listing of the facts and previous work but does not tie them together and show how they lead to the purpose of the present work and the questions being addressed. It does have the question(s) being addressed and some purpose for doing them.	Presents the background information and previous work in a concise well resend manner that directly leads into the question(s) being addressed and the purpose of the research.	

Steps in Constructing Rubric

- 7) Test rubric to identify what works well; make changes as needed
 - Easy to distinguish among levels?
 - Too many or too few levels?
 - Descriptions appropriate and clear?
 - Are high scores being achieved for not really excellent or good work? (or reverse)
 - Scoring/weighting seem appropriate?

Electronic Writing Portfolio Assessment Rubric – Eastern Illinois University

Superior	Superior	Satisfactory	Needs Improvement	Unsatisfactory
Content	<ul style="list-style-type: none"> - Fully responds to all criteria of the assignment - Clearly identifies and fully develops all ideas/themes - Provides logical, valid and specific details and support - Effectively uses all relevant information, including outside sources - Draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Sufficiently responds to most criteria of the assignment - Identifies and develops main ideas/themes, but some may lack clarity or depth - Generally provides logical and valid details and support - Effectively uses most relevant information, including outside sources - For the most part, draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Does not respond or incompletely responds to some criteria of the assignment - Does not identify or develop some main ideas/themes - Provides support but may not be logical or valid; some details may be missing - Frequently omits relevant information; outside sources may be inappropriate or missing - Draws mostly unclear or inappropriate conclusions 	<ul style="list-style-type: none"> - Does not respond to most criteria of the assignment - Does not identify or develop most ideas/themes - Provides few details and little support or support that is illogical or invalid - Omits relevant information; outside sources inappropriate or missing - Draws unclear/inappropriate conclusions or omits conclusions entirely

Suppose student/resident does everything in Superior category except they missed an important reference and their conclusions were unclear

Electronic Writing Portfolio Assessment Rubric – Eastern Illinois University

Superior	Superior	Satisfactory	Needs Improvement	Unsatisfactory
Content	<ul style="list-style-type: none"> - Fully responds to all criteria of the assignment - Clearly identifies and fully develops all ideas/themes - Provides logical, valid and specific details and support - Effectively uses all relevant information, including outside sources - Draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Sufficiently responds to most criteria of the assignment - Identifies and develops main ideas/themes, but some may lack clarity or depth - Generally provides logical and valid details and support - Effectively uses most relevant information, including outside sources - For the most part, draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Does not respond or incompletely responds to some criteria of the assignment - Does not identify or develop some main ideas/themes - Provides support but may not be logical or valid; some details may be missing - Frequently omits relevant information; outside sources may be inappropriate or missing - Draws mostly unclear or inappropriate conclusions 	<ul style="list-style-type: none"> - Does not respond to most criteria of the assignment - Does not identify or develop most ideas/themes - Provides few details and little support or support that is illogical or invalid - Omits relevant information; outside sources inappropriate or missing - Draws unclear/inappropriate conclusions or omits conclusions entirely

Option: Identify what was done well in each category; assign partial points (if applicable)

Electronic Writing Portfolio Assessment Rubric – Eastern Illinois University

Superior	Superior	Satisfactory	Needs Improvement	Unsatisfactory
Content	<ul style="list-style-type: none"> - Fully responds to all criteria of the assignment - Clearly identifies and fully develops all ideas/themes - Provides logical, valid and specific details and support 	<ul style="list-style-type: none"> - Sufficiently responds to most criteria of the assignment - Identifies and develops main ideas/themes, but some may lack clarity or depth - Generally provides logical and valid details and support 	<ul style="list-style-type: none"> - Does not respond or incompletely responds to some criteria of the assignment - Does not identify or develop some main ideas/themes - Provides support but may not be logical or valid; some details may be missing 	<ul style="list-style-type: none"> - Does not respond to most criteria of the assignment - Does not identify or develop most ideas/themes - Provides few details and little support or support that is illogical or invalid
Conclusions based on evidence	<ul style="list-style-type: none"> - Effectively uses all relevant information, including outside sources - Draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Effectively uses most relevant information, including outside sources - For the most part, draws clear and appropriate conclusions 	<ul style="list-style-type: none"> - Frequently omits relevant information; outside sources may be inappropriate or missing - Draws mostly unclear or inappropriate conclusions 	<ul style="list-style-type: none"> - Omits relevant information; outside sources inappropriate or missing - Draws unclear/ inappropriate conclusions or omits conclusions entirely

Option: If “conclusions” are a very important grading criterion, add subheadings under “Content” – also scored

Final Points

- Well-developed rubrics *reduce* subjectivity
- Consider *process*-related criteria needed to successfully complete task, e.g., critical evaluation of literature, ability to work in team
- How many criteria (rows) to include?
 - ✓ No correct answer
 - ✓ Recommendations from 3 - 8; perhaps more for students in early stages, less for advanced

Final Points

- Language used most challenging task
- Assure *validity* in criteria and levels (*content, construct* - is trait/concept theoretically being measured [e.g., reasoning, problem-solving] *actually* measured, *criterion* - can score predict later performance in practice?) – aim for *qualitative* differences in characterizing levels
- Assure *reliability* (interrater, intrarater) - use clear descriptions, training

Final Points

Qualitative wording

Criterion: Presentation skills

Handling of questions

“Excellent” - Responses to questions exhibit clear knowledge of topic and underlying concepts; questions thoroughly answered; exhibits poise, enthusiasm

“Good” - Question responses demonstrate unclear or incomplete knowledge for minor aspects of topic or underlying concepts; enthusiastic but some discomfort exhibited

Final Points

- Require a number of uses before “final” form

"Practice is the best of all instructors."

Publilius Syrus (Latin, 1st century BC)

"People who write about spring training not being necessary have never tried to throw a baseball."

Sandy Koufax (Major league baseball pitcher)

Final Points

- Review criteria with students; provide examples that illustrate excellent performance
- Use to track performance over time; if levels of performance clearly differentiate novice vs. expert performance, same rubric can be used

Additional Resources

- Internet - Rubric information & templates available; many K-12, several have design flaws (e.g., inconsistent/ inappropriate performance criteria descriptions) - may provide ideas
- *Practical Assessment, Research & Evaluation* (peer-reviewed electronic journal) - PAREonline.net
- IUPUI (Indiana Univ/Purdue Univ Indianapolis) Rubrics in Assessment - <http://sites.google.com/site/iupuinca2012/Home>
- VALUE (Valid Assessment of Learning in Undergraduate Education) rubrics – focus on broad skills (critical thinking, problem solving, etc), from: <http://www.aacu.org/value/rubrics/index.cfm>

Additional Resources

- Books:
 - Stevens DD, Levi AJ. Introduction to rubrics. Virginia: Stylus Publishing, LLC; 2005
 - Arter J, McTighe J. Scoring rubrics in the classroom. California: Corwin Press, Inc., 2001
 - AACU (Association of American Colleges & Universities) Assessing Outcomes and Improving Achievement: Tips and Tools for Using Rubrics (VALUE rubrics), from: <http://www.aacu.org/>
- ERIC (Educational Resources Information Center - US Dept of Education)

“Every end is a new beginning”