Developing Rubrics

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Office of Institutional Research, Planning, and Assessment
Northern Virginia Community College
Assessment at NOVA

- Gather Evidence
- Methods of Assessment
- Curriculum Mapping
- Identify Student Learning Outcomes
- Use Results
Steps to Assess Student Learning Outcomes

1. Identify student learning outcomes for your program
2. Determine practices used to achieve outcomes through curriculum mapping
3. Determine methods of assessment
4. Gather evidence
5. “Close the loop”
   - Review and interpret results
   - Recommend actions
   - Make changes
   - Measure effectiveness of changes
Student learning outcomes for today’s workshop

After attending today’s workshop, you will be able to:

1. Describe what a rubric is.
2. Discuss various types of rubrics.
3. Identify components of and steps to developing a rubric.
4. Construct a rubric.
What is a rubric?

• What exactly is a rubric?
  • A standardized scoring guide

• Identifies important criteria and levels of success for each criterion

• Describes qualitative as well as quantitative differences

• Generally used to assess assignments, projects, portfolios, term papers, internships, essay tests, performances, etc. – “performance” assessment

From Pickering, “Creating Rubrics & Prompts”
What is a rubric?

• A table that identifies and describes various levels of student performance for each of a set of criteria.

• A method of rating student work in a more objective manner.

• A kind of scorecard that breaks down a written or demonstrated assignment into manageable, observable pieces.

• A way to consistently assess student work to determine whether a program is meeting its goals.

http://www.web.virginia.edu/iaas/assessment
What is a rubric?

• A scheme for evaluating student work along certain dimensions
  • Specific skills or aspects of a learning outcome
  • Concrete descriptors of levels performance

• Good for measuring higher-order skills or outcomes not easily measured by multiple-choice tests (e.g., oral communication, integration)

From Kasimatis, “Scoring Rubrics”
What is a rubric?

• It is a way of organizing criteria to systematically determine if the outcome is met based on data.

• Used when a judgment of quality is required

• It is a pre-defined scheme for the evaluation process, the subjectivity involved in evaluating an essay becomes more objective.

From Zelna, Rubrics 101: A Tool to Assess Learning
Advantages of Scoring Rubrics

• Good for measuring higher-order skills or evaluating complex tasks.

• Summaries of results can reveal patterns of student strengths and areas of concern.

• Can be unobtrusive to students.

• Can generate great discussions of student learning among faculty, especially regarding expectations.

• Grading is more objective, unbiased, and consistent.
Rubrics can be used to assess:

- Essays/Papers
- Projects
- Labwork
- Presentations
- Exam questions
- Capstone projects
- Exhibits
- Performances
- Portfolios of student work
- Artwork
- Internships
Types of Scoring Instruments

- **Checklists**: list of grading criteria that are completed/present

- **Rating Scales**: includes a continuum for scoring

- **Holistic Rubrics**: has overall description of the entire product/performance rather than the components

- **Analytic Rubrics**: levels of performance are described for each criterion
Types of Scoring Instruments

Scoring Instruments for Performance Assessments

Checklists

Rating Scales

Rubrics

Analytic Rubrics

Holistic Rubrics

Checklists

Checklists are an appropriate choice for evaluation when the information that is sought is limited to the determination of whether specific criteria have been met.

See handout #1 – checklist for writing SLOs

From Moskal, 2000
Checklists

Checklists are an appropriate choice for evaluation when the information that is sought is limited to the determination of whether specific criteria have been met.

Scoring Rubrics

Scoring rubrics are based on descriptive scales and support the evaluation of the extent to which criteria has been met.

From Moskal, 2000
Holistic Rubrics

• When there is an overlap between the criteria set for the evaluation of the different factors, a holistic scoring rubric may be preferable to an analytic scoring rubric. In a holistic scoring rubric, the criteria is considered in combination on a single descriptive scale (Brookhart, 1999).

• Holistic rubrics require the teacher to score the overall process or product as a whole, without judging the component parts separately (Nitko, 2001).
Holistic Rubrics

• Holistic rubrics are customarily utilized when errors in some part of the process can be tolerated provided the overall quality is high (Chase, 1999).

• The focus of a score reported using a holistic rubric is on the overall quality, proficiency, or understanding of the specific content and skills (Mertler, 2001).

See handout #2 – Holistic Rubric
Analytic Rubrics

• Analytic rubrics result initially in several scores, followed by a summed total score - their use represents assessment on a multidimensional level (Mertler, 2001).

• Scores for separate, individual parts of the product or performance.
Analytic Rubrics

• In order to give feedback to students regarding how to improve their performance, rubrics provide descriptions at each level regarding what is expected.

• Each score category should be defined using descriptions of the work rather than judgments about the work (Brookhart, 1999).

  • Judgment: "Student's calculations are good."

  • Description of work: "Student's mathematical calculations contain no errors."

See handout #3 – Analytic Rubric
Steps in Developing Rubrics
Steps in Developing a Rubric

1. Decide if one is measuring the presence of criteria or the quality of criteria.
   - Presence = Checklist
   - Quality = Rubric
Steps in Developing a Rubric

2. Determine what the evaluation criteria should be.

- Break SLO into manageable parts.
- Identify observable attributes of the SLO.
- Decide on the criteria that are essential to demonstrating achievement of the SLO.
- Criteria will often number between 3-8.
Break SLO into Manageable Parts

Some examples:
Leadership: communication, decision making, motivation, etc.

Sportsmanship: cooperate with officials, remain calm when interacting with opposite team, no foul language, etc.

Active Listening Skills: Sits leaning slightly forward, makes eye contact, nods, asks open ended questions, etc.

Problem Solving Skills: Identifies the problem, identifies the available options, able to recognize the consequences for each option, etc.

From Zelna, Rubrics 101: A Tool to Assess Learning
Steps in Developing a Rubric

3. Determine what the performance levels should be and how many.

- Consider the anchors first - best and worst.
- Then determine how many different levels in between so that each level is still distinct from the next.
- Number of levels usually between 3-5.
- Use both qualitative terms (see next slide) and quantitative (point value) for performance levels.

See handout #4 – Labels for Performance Levels
Steps in Developing a Rubric

4. Provide descriptions for each level.

• For holistic rubrics, write thorough narrative descriptions incorporating each criteria into the description.

• For analytic rubrics, write description of performance levels for each individual criteria.

• Be consistent with terminology and the means by which the criteria are evaluated.

• Use non-judgmental terminology.
Consistency Across Performance Levels

• **Consistency of the Attributes in Performance Criteria Descriptors:** “Although the descriptor for each scale point is different from the ones before and after, the changes concern the variance of quality for the (fixed) criteria, not language that explicitly or implicitly introduces new criteria or shifts the importance of the various criteria.” (Wiggins, 1998)

• The performance levels provide a continuum of quality as relates to specific components of the criteria.
Example of **Inconsistent** Performance Criteria and Correction for Science Journal

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Novice (1)</th>
<th>Apprentice (2)</th>
<th>Master (3)</th>
<th>Expert (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem Criterion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Journal</td>
<td>Writing is messy and entries contain spelling errors. Pages are out of order or missing.</td>
<td>Entries are incomplete. There may be some spelling or grammar errors.</td>
<td>Entries contain most of the required elements and are clearly written.</td>
<td>Entries are creatively written. Procedures and results are clearly explained. Journal is well organized presented in a duotang.</td>
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</table>
## Example of Inconsistent Performance Criteria and Correction for Science Journal

<table>
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<tr>
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<tbody>
<tr>
<td><strong>Breadth:</strong> The required elements are present for each journal entries (e.g. Lab Summary, Materials, Procedure, Results, Conclusion).</td>
<td>Few of the required elements are present in each journal entry.</td>
<td>Some of the required elements are present in each journal entry.</td>
<td>Most of the required elements are present in each journal entry.</td>
<td>All the required elements are present in each journal entry.</td>
</tr>
<tr>
<td><strong>Clarity:</strong> The entries are clearly written (e.g. style, grammar enhance understanding).</td>
<td>Journal entries are slightly clear.</td>
<td>Journal entries are moderately clear.</td>
<td>Journal entries are mainly clear.</td>
<td>Journal entries are extremely clear.</td>
</tr>
<tr>
<td><strong>Organization:</strong> The journal is organized (e.g. visible titles, ordered pages, etc.)</td>
<td>The journal is slightly organized.</td>
<td>The journal is moderately organized.</td>
<td>The journal is mainly organized.</td>
<td>The journal is extremely organized.</td>
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### Example of Inconsistent Performance Criteria for Assessing Silent Reading Skills

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Emerging 1</th>
<th>Developing 2</th>
<th>Achieving 3</th>
<th>Extending 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silent Reading</td>
<td>Off task and disruptive during sustained silent reading period.</td>
<td>Has difficulty choosing books for sustained silent reading.</td>
<td>Reads independently during sustained silent reading.</td>
<td>Chooses books with enthusiasm and reads independently during sustained silent reading.</td>
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**Problem Criterion**
Example of **Inconsistent** Performance Criteria for Assessing Silent Reading Skills

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**Problem Criterion**

Task-oriented – disruptiveness – ease of choosing books – independent reading – enthusiasm for choosing books
Suggested Correction for **Consistent** Performance Criteria:
1. If reading ability is the target, rethink the criterion to ensure that the attribute is meaningful.
2. If learning behaviors are being measured, and autonomy and attention are the desired attributes, reword the descriptors as shown below.

<table>
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</thead>
<tbody>
<tr>
<td>Autonomy and Attention: <em>Student reads independently and stays on task during a silent reading period.</em></td>
<td>Student <strong>seldom</strong> reads independently and stays on task for <strong>little</strong> of the time during a period of silent reading.</td>
<td>Student <strong>sometimes</strong> reads independently and stays on task <strong>some</strong> of the time during a period of silent reading.</td>
<td>Student <strong>usually</strong> reads independently and stays on task <strong>most</strong> of the time during a silent reading period.</td>
<td>Student <strong>always</strong> reads independently and stays on task <strong>all</strong> of the time during a silent reading period.</td>
</tr>
</tbody>
</table>
Guiding Questions for the Rubric Construction Process

1. Are all the performance criteria explicitly stated?
   Are the performance criteria present in the rubric those intended? Is there anything that is implicitly expected in the students’ products or performances that is not stated in the rubric?

2. Are the attributes consistently addressed from one level to the next on the progression scale?
   Is the rubric addressing the same attributes for each student’s product or performance across the levels? Does the value of the attribute vary in each level descriptor, while the attribute itself remains consistent across the scale levels?

Activity

Developing a rubric step-by-step.
Activity - Step 1 for All Rubrics

1. Decide if one is measuring the presence of criteria or the quality of criteria.

To evaluate: chocolate chip cookies
= Quality of criteria
## Activity – Step 2 for an Analytic Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of chocolate chips</td>
<td></td>
</tr>
<tr>
<td>Texture</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
</tr>
<tr>
<td>Taste</td>
<td></td>
</tr>
<tr>
<td>Richness (flavor)</td>
<td></td>
</tr>
</tbody>
</table>
## Activity – Step 3 for an Analytic Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Poor 1</th>
<th>Needs Improvement 2</th>
<th>Good 3</th>
<th>Delicious 4</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of chocolate chips</td>
<td></td>
<td></td>
<td></td>
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<tbody>
<tr>
<td>Number of chocolate chips</td>
<td>Too few or too many chips</td>
<td></td>
<td></td>
<td></td>
<td>Chocolate chip in every bite</td>
</tr>
<tr>
<td>Texture</td>
<td>Texture resembles a dog biscuit</td>
<td></td>
<td></td>
<td></td>
<td>Chewy</td>
</tr>
<tr>
<td>Color</td>
<td>Burned</td>
<td></td>
<td></td>
<td></td>
<td>Golden brown</td>
</tr>
<tr>
<td>Taste</td>
<td>Store-bought flavor, preservative aftertaste – stale, hard, chalky</td>
<td></td>
<td></td>
<td></td>
<td>Home-baked taste</td>
</tr>
<tr>
<td>Richness (flavor)</td>
<td>Nonfat contents</td>
<td></td>
<td></td>
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<td>Number of chocolate chips</td>
<td>Too few or too many chips</td>
<td>Chocolate in 50% of bites</td>
<td>Chips in about 75% of bites</td>
<td>Chocolate chip in every bite</td>
<td></td>
</tr>
<tr>
<td>Texture</td>
<td>Texture resembles a dog biscuit</td>
<td>Texture either crispy/crunchy or 50% uncooked</td>
<td>Chewy in middle, crisp on edges</td>
<td>Chewy</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Burned</td>
<td>Either dark brown from overcooking or light from undercooking</td>
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# Analytic Rubric – Check for Consistency

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</table>
Activity – Step 2 for a Holistic Rubric

Criteria

Number of chocolate chips
Texture
Color
Taste
Richness (flavor)
# Activity – Step 3 for a Holistic Rubric

<table>
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<tr>
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</tr>
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<table>
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<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poor</strong></td>
<td>Too few or too many chocolate chips; Texture resembles a dog biscuit</td>
</tr>
<tr>
<td></td>
<td>Burned; Store-bought flavor with a preservative aftertaste – stale, hard,</td>
</tr>
<tr>
<td></td>
<td>chalky; Non-fat contents</td>
</tr>
<tr>
<td><strong>Needs Improvement</strong></td>
<td></td>
</tr>
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</tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td><strong>Delicious</strong></td>
<td>Chocolate chip in every bite; Chewy; Golden brown; Home-baked taste; Rich,</td>
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Improve Validity of Rubric

• Validity refers to the degree to which the evidence supports that these interpretations are correct and that the manner in which the interpretations are used is appropriate (American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 1999).

• Ensure that the rubric is producing evidence for intended SLOs.

• Write appropriate prompts/directions for the assignment.

• Number each criteria and then write the number of the criteria by the part of the prompt for which that criteria is used.
  • One can see if any criteria does not address the prompt, or if part of the prompt does not have an explicit criteria.
## Improve Validity of Rubric

<table>
<thead>
<tr>
<th>Content</th>
<th>Construct</th>
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<tbody>
<tr>
<td>1. Do the evaluation criteria address any extraneous content?</td>
<td>1. Are all of the important facets of the intended construct evaluated through the scoring criteria?</td>
</tr>
<tr>
<td>2. Do the evaluation criteria of the scoring rubric address all aspects of the intended content?</td>
<td>2. Is any of the evaluation criteria irrelevant to the construct of interest?</td>
</tr>
<tr>
<td>3. Is there any content addressed in the task that should be evaluated through the rubric, but is not?</td>
<td></td>
</tr>
</tbody>
</table>
Improve Reliability of Rubric

1. Evaluators should meet together for a training session.
2. One or more examples of student work should be examined and scored.
3. Discuss the scores and make decisions about conflicts that arise.
4. More than one faculty member should score the student work.
5. If two faculty members disagree significantly (more than 1 point on a 4 point scale) a third person should score the work.
6. If frequent disagreements arise about a particular item, the item may need to be refined or removed.
7. Provide sample papers to instructors with completed rubrics.

http://www.web.virginia.edu/iaas
Testing Your Rubric

- Use a rubric to evaluate your rubric.
- Ask a colleague/peer to review the rubric and provide feedback.
- Ask a student to review the rubric and provide feedback.
- Test out on a few student samples.
- Use multiple raters to norm the rubric.
Collecting, Reviewing, Interpreting Data

- To collect data:
  - Consider pre-programming a spreadsheet so data can be entered and analyzed during the reading and participants can discuss results immediately.

- To review the data:
  - Average scores across raters (if you used two raters).
  - Aggregate those scores across students for each criterion.
  - Aggregate total score across students.
  - Review frequencies for each criterion.
  - Present data in user-friendly way and have discussion of what it means.

- To interpret data:
  - Determine how good is good enough.
    - At least 80% of the students score at least 3.
    - No more than 5% of students are at the “unsatisfactory” level and at least 80% are at the “good” level.
  - The average score for each criterion must be at least 3 (out of 4).
How to Start a Rubric

• How might you start to formulate a rubric?
  • Search literature and Internet for existing rubrics – we’ll see some of these later on.
  • Use examples of students’ work to identify defining criteria and levels of competence.
  • Work with a committee or consult with colleagues.
  • See if your professional association has either a rubric bank or performance standards/criteria.

How to Enhance a Rubric

• How do you fine tune your use of rubrics?
  • Initial practice (especially if multiple raters)
  • Establishment of inter-rater reliability
  • Detection of scoring errors and biases
  • Development of exemplars and anchors
  • Assignment of weights for criteria

From Pickering & Yerian, 2005
## Converting to Grade for Course

Sample grades and categories

<table>
<thead>
<tr>
<th>Rubric Score</th>
<th>Grade</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>A+</td>
<td>Excellent</td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>6</td>
<td>B+</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>B</td>
<td>Good</td>
</tr>
<tr>
<td>4</td>
<td>C+</td>
<td>Fair</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>Fair</td>
</tr>
<tr>
<td>2</td>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>1</td>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>0</td>
<td>U</td>
<td>Unsatisfactory</td>
</tr>
</tbody>
</table>

From Mertler, 2001
Suggestions for Using Rubrics in Courses

1. Hand out the grading rubric with the assignment so students will know your expectations and how they'll be graded. This should help students master your learning outcomes by guiding their work in appropriate directions.

2. Use a rubric for grading student work and return the rubric with the grading on it. Faculty save time writing extensive comments; they just circle or highlight relevant segments of the rubric. Some faculty include room for additional comments on the rubric page, either within each section or at the end.

3. Develop a rubric with your students for an assignment or group project. Students can then monitor themselves and their peers using agreed-upon criteria that they helped develop. Many faculty find that students will create higher standards for themselves than faculty would impose on them.
Suggestions for Using Rubrics in Courses

4. Have students apply your rubric to some sample products before they create their own. Faculty report that students are quite accurate when doing this, and this process should help them evaluate their own products as they are being developed. The ability to evaluate, edit, and improve draft documents is an important skill.

5. Have students exchange paper drafts and give peer feedback using the rubric, then give students a few days before the final drafts are turned in to you. You might also require that they turn in the draft and scored rubric with their final paper.

6. Have students self-assess their products using the grading rubric and hand in the self-assessment with the product; then faculty and students can compare self- and faculty-generated evaluations.
Student learning outcomes for today’s workshop

After attending today’s workshop, you will be able to:

1. Describe what a rubric is.
2. Discuss various types of rubrics.
3. Identify components of and steps to developing a rubric.
4. Construct a rubric.
ASSESSMENT LOOP RESOURCES

- Identify Student Learning Outcomes
- Use Results
- Gather Evidence
- Methods of Assessment
- Curriculum Mapping

Assessment Cycle of Continuous Improvement
The loop represents the continuous nature of assessing student learning outcomes. Assessment is comprised of several steps. Click on any step to access information and resources on that topic.

LEARN MORE
- Welcome
- For Students
- Program Evaluation
- Student Learning Outcomes
- Assessment Loop Resources
- Reports
- Resources & Links
- Staff
- Contact Us

Offices
- College Planning
- OIR
- OIRPA
- ATD Initiative
Future Workshops

• Classroom Assessment Techniques (CATs)
• “Closing the Loop” – Using Results to Enhance Student Learning
• WEAVEonline – online management tool
Questions?

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Developing Rubrics

Dr. Jennifer E. Roberts
Coordinator of Academic Assessment
Office of Institutional Research, Planning, and Assessment
Northern Virginia Community College
Identify Student Learning Outcomes

Use Results

Curriculum Mapping

Assessment at NOVA

Gather Evidence

Methods of Assessment