DEVELOPING AN EFFECTIVE RUBRICS

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Developing an Effective Rubrics

Contents

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Rubric Definition:

A rubric is a direct assessment method that can be used to assess learning from assignments such as papers, presentations, and projects. It details the specific learning that is being assessed for a given assignment or experience as well as a detailed description of what constitutes acceptable or unacceptable levels. They can provide dichotomous levels of learning or scale data based on 3 to 5 point scales and are often developed in the form of a matrix.

Different Types of Rubrics: There are four types of scoring tools or rubrics that each have advantages and disadvantages. This include checklists, rating scales, holistic rubrics, and analytic rubric.

- Checklist: is the most simplistic format. It presents a list of elements presented in student work and are to judge whether those elements are present or not. It does not assess the frequency or quality of those items.
  - Advantages: easiest to develop because it involves listing out learning expectations in one column and a checkbox in the other column
  - Disadvantages: provides dichotomous levels, either the student meets the learning or doesn't; does not provide varying levels of learning data; require considerable additional explanation through written comments to students, which can be quite time consuming
  - Use when:
    - You want to do a quick observation of student learning
  - Example of a checklist:

Check if present	Dimensions for a well-designed website
☐	The site's structure is clear and intuitive.
☐	Titles are meaningful.
☐	Each page loads quickly.
☐	Graphics and multimedia helps convey the site's pain points.
☐	The design is clean, uncluttered, and engaging.
☐	Spelling, punctuation, and grammar are correct.
☐	Contact information for the author or sponsor is provided.

- Rating Scale: has a list of traits or criteria for student work that is accompanied by a rating scale marking the frequency or quality of each trait. These are also sometimes called minimal rubrics, performance lists, expanded checklists, assessment lists, or relative rubrics. The rating scale is typically 3 to 5 point scales.
  - Advantages: fairly easy to develop once you have the scale range identified; provides varying degrees of learning data
  - Disadvantages: it lacks descriptions of what learning looks like for each level of the scale
  - Use when:
    - An individual is using the tool to measure student learning and wants to know the different levels that students are learning different concepts.
  - Example of a rating scale:

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This group member…	1 – Rarely	2 – Sometimes	3 – Often	4 -Almost Always
Did his or her fair share of work.				
Participated actively in the group's activity.				
Contributed useful ideas, suggestions, and comments.				
Listened carefully.				
Was considerate of others and appreciated their ideas.				
Asked others to clarify their ideas.				
Expressed disagreements respectfully.				

- Holistic Rubric: asks the evaluator to make a single judgment about the object or behavior being evaluated. Each possible score is accompanied by a statement that describes performance at that level. Although the description will refer to special characteristics of interest, these characteristics are not scored separately.
  - Advantages: quick scoring, provides an overview of student achievement, efficient for large group scoring
  - Disadvantages: does not provide detailed information; may be difficult for scorers to decide on one overall score
  - Use when:
    - You want a quick snapshot of achievement
    - A single dimension is adequate to define quality
  - Please see an example of a holistic rubric:

Student Essay Rubric (Holistic)	
Sophisticated	The essay is focused and clearly organized, and it shows depth of development. The language is precise and shows syntactic variety, and ideas are clearly communicated to the reader.
Acceptable	The essay is generally focused and contains some development of ideas, but the discussion may be simplistic or repetitive. The language lacks syntactic complexity and may contain occasional grammatical errors, but the reader is able to understand what is being communicated.
Developing Competence	The essay may be somewhat unfocused, underdeveloped, or rambling, but it does have some coherence. Problems with the use of language occasionally interfere with the reader's ability to understand what is being communicated.
Inadequate	The essay has at least one serious weakness. It may be unfocused, underdeveloped, or rambling. Problems with the use of language seriously interferes with the reader's ability to understand what is being communicated.

- Analytic Rubric: are used to assess multiple outcomes simultaneously or for multi-dimensional outcomes and each dimension needs to be rated separately, resulting in multiple judgments about an object or performance.   For each characteristic, a three- to five-point scoring scale is developed with explicit statements to describe performance of each level. This type of rubric is more commonly used to measure student learning.

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- o Advantages: provides more detailed feedback on student performance; scoring more consistent across student and raters
- o Disadvantages: more time consuming than using a holistic rubric
- o Use when
  - ▪ You want to see strengths and weaknesses
  - ▪ You want detailed feedback about student performance
- o Please see an example of an analytic rubric:

Design Project Rubric (Analytic)					
Topic	**1-Unacceptable**	**2-Marginal**	**3-Proficient**	**4-Exceptional**	**Score**
Design Problem and Boundaries (1)	Little or no grasp of problem. Incapable of producing a successful solution.	Some understanding of problem. Major deficiencies that will impact the quality of solution.	Overall sound understanding of the problem and constraints. Does not significantly impair solution.	Clear and complete understanding of design goal and constraints.	
Alternative Designs (2)	Only one design presented or clearly infeasible alternative given.	Serious deficiencies in exploring and identifying alternative designs.	Alternative approaches identified to some degree.	Final design achieved after review of reasonable alternatives.	
Use of Computer–Aided Tools (2)	Serious deficiencies in understanding the correct selection and/or use of tools.	Minimal application and use of appropriate tools.	Computer–aided tools used with moderate effectiveness to develop designs.	Computer–aided tools are used effectively to develop and analyze designs.	
Application of Engineering Principles (2)	No or erroneous application of engineering principles yielding unreasonable solution.	Serious deficiencies in proper selection and use of engineering principles.	Effective application of engineering principles resulting in reasonable solution.	Critical selection and application of engineering principles ensuring reasonable results.	
Final Design (3)	Not capable of achieving desired objectives. No implementation of resource conservation and recycle strategies.	Barely capable of achieving desired objectives. Minimal utilization of resource conservation and recycle potentials.	Design meets desired objectives. Moderately effective utilization of resource conservation and recycle potentials.	Design meets or exceeds desired objectives. Effective implementation of resource conservation and recycle strategies.	

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Benefits of Rubrics:
- A rubric creates a common framework and language for assessment.
- Because it is a criterion-referenced method, instead of a norm referenced it is comparing student learning to a set of criterion rather than to other students.
- Allows for qualitative descriptions of student learning and quantitative results
- Helps clearly communicate the expectations to students and others (e.g. writing center, tutors)
- Provides consistent assessment of student learning
- Gives students the opportunity to receive constructive, detailed, and timely feedback on their learning that can be applied to future assignments
    - Research has found that feedback that is timely can have a bigger impact on student learning because students can then apply that feedback to subsequent assignments and can lead to developing better self-assessment skills (Rucker & Thompson, 2003; Tara, 2003)
- Makes grading quicker and easier
    - Student often make similar mistakes on assignments, and so faculty end up providing similar individual feedback, which could be solved by using an analytical rubric; additional notes can be provided to students when the feedback is not covered in the dimension descriptions
- Can be used by students to self-assess their assignment before submitting it; they can compare their product to the dimensions and the descriptions. This allows students to participate in critical thinking.
- Helps faculty identify a student's strengths and weaknesses and see how student learning improves throughout a course if a similar rubric is used. For example, in a writing course, a rubric could measure content development and be applied to multiple papers over the semester to see improvement
- Promotes collaboration and meaningful, productive conversations between colleagues leading to consensus of shared expectations and grading practices
- Collects information that can be used to refine practice and improve student learning; looks at student learning at an aggregate level; this can be done at course-level or programmatic-level
- Can be used to effectively assess complex learning or behaviors
- Can serve as a way to translate academic terminology (e.g. critical thinking, analysis) for disadvantaged students, such as first-generation
- Well-trained reviewers apply the same criteria and standards

How to develop an analytic rubric
Analytical rubrics are composed of four basic parts. In its simplest form, the rubric includes:

1. **Identify the task or performance description**.
    - Identify and develop the task or performance that the rubric will be used to assess student learning;
    - This task or performance could include a presentation, paper, reflection/journal, poster, or subjective exam
    - By adding this to the rubric, we can go back and remember what the rubric was used to assess

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2. **Reflect on the task/performance**
   - Stevens and Levi (2013) developed a set of eight questions that should be addressed before developing the rubric
     - What was the purpose of developing the assignment?
     - Has this assignment been used before or something comparable? If so, how can it be improved?
     - How is this assignment aligned to the other course assignments? Are the other assignments built upon this one?
     - What knowledge and/or skills will students need to successfully complete the assignment?
     - What is the assignment asking the students to do?
     - What learning needs to be demonstrated by the students? What evidence do they need to provide?
     - What does an exemplar level of student performance look like for the overall assignment?
     - What does the lowest level of student achievement look like for the overall assignment?

3. **Select the scale to be used (columns)**
   - The scale helps us understand the level that a student has learned for a particular construct.
   - The following are scaled focused on three types of measurement:
     - Competency
       - Beginning (1), Developing (2), Accomplished (3), Advanced (4)
       - Unacceptable (1), Marginal (2), Proficient (3), Exemplary (4)
       - Novice (1), Intermediate, (2), Proficient (3), Distinguished (4)
       - Not yet competent (1), Partly competent (2), Competent (3), Sophisticated (4)
     - Frequency of Behavior
       - Never (1), Rarely (2), Occasionally (3), Almost Always (4)
       - Never, Once, Twice, Three times, Four times…
       - Never, 1-3 times, 4-6 times, 5-7 times
     - Extent Performed
       - Not at all (1), Slightly, (2), Moderately (3), Considerably (4), A great deal (5)
       - Not met, Partially met, Met

4. **Select the dimensions (rows)**
   - Dimensions take an assignment or performance task and specify what a student should be able to do and demonstrate
   - For example, the assignment may ask a student to demonstrate their ability to problem solve and the dimensions are the steps involved in solving a problem (define the problem; identify strategies; propose solutions; evaluate potential solutions; implement solution; evaluate outcomes)
   - Weight can be applied to certain dimensions if they are considered more important
   - Don't include any description of quality for the dimensions, as this will be provided in the descriptions (e.g. good communication, effective organization)

5. **Develop descriptions of each dimensions (cells)**.

- o Refer back to your reflection for developing the dimension descriptions
- o Describe each dimension in some detail; describe what it should look like based on each of the levels of the scale you have chosen.
- o Start with the highest score on the scale for each dimension; this is what an exemplar sample looks like
- o Then write the descriptions for the lowest score on the scale for each dimension
- o Then fill in the descriptions for each scale number in between the highest and lowest

6. **Before using the rubric, test and evaluate it**

- o Test the rubric
  - Apply the rubric to an assignment
- o Share with a colleague
  - Have a faculty colleague review the rubric
  - Ask them to provide feedback for improvement
  - Make revisions based on feedback

7. **Additional Tips when developing a rubric**

- o Why reinvent the wheel. You may find a rubric that you can use and adapt to fit your needs. One resource to explore is AAC&U's Value Rubrics. Another faculty member at your institution may also have one that you can use. Most of the time you will need to make some revisions.
- o Evaluate before using. Before using a pre-existing rubric, you will want to evaluate it. Ask yourself some questions: a) Is it designed to measure the learning outcomes? b) Is the rubric useful, feasible, manageable, and practical?
- o For beginners. Developing your first few rubrics may be time consuming, but as with anything, the more you practice, the easier it becomes. It has been found that the use of rubrics cuts down on the time for grading and results in more timely and meaningful feedback for students. Furthermore, rubrics can improve classroom preparation and instruction.
- o Involve students in the development of course rubrics. This can help them better understand assignment expectations, assist the instructor in identifying misunderstandings, and show students that they are involved in the learning process; the following models can be employed to involve students (Stevens & Levi, 2013; Anderson, 1998)
  - Feedback Model: The instructor presents the class with the completed rubric, solicits feedback (this can be done by breaking students into smaller groups), and makes changes based on student input
  - Pass-the-Hat Model: The instructor works with students to create part of their own rubric during class time. The students list out potential expectations for the assignment; this can be done by passing out 3-5 slips of paper and asking students to define what would be required to achieve an A on the assignment (1 idea per slip of paper). The instructor then converts these into dimension descriptions for the highest achievement level. Try to include student language as much as possible as it shows that their input was utilized. The instructor will add in any constructs that the students didn't include. Best for small to medium sized courses with less than 30 students.

- Post-it Model: This model takes the Pass-the-Hat model a step further and includes the students in identifying the dimensions and uses post-its rather than slips of loose paper. The instructor serves as the moderator as students work to group ideas together. A volunteer reads out those that are grouped together and they work to develop a dimension (less than 3 words) and the volunteer documents this on a large post-it. This is better for smaller, upper-division or graduate courses. This can sometimes take 2 to 3 class periods, but is worth the time because it can help instructors identify misconceptions.
- The 4x4 Model: The instructor is limited to designing the assignment, explaining to students the overall purpose of the assignment, and facilitating the development of the rubric. The instructor begins the facilitation by reading the assignment description from the syllabus and then divide students into small groups. In these groups, students draw upon their own experiences and develop 4 dimensions. One spokesperson shares the dimensions that his or her group identified and the instructor helps the class group any together and then asks the entire class to vote on the top four (try to reach 2/3 of class in agreement). The students return to their groups and write descriptions for each of the dimensions on a scale of 1 to 4. Again, the volunteers shares the descriptions with the whole course and then the instructor holds a vote. Lastly, the groups go back to identify descriptions for each of the scale numbers. This is appropriate for any size or level of course, but should be limited to a class between 8 and 100 students, but should be reserved to substantial assignments such as a research paper or term projects.

How to Use the Rubric

- Review the rubric with the students so they have a good understanding of the expectations for the assignment; do this before they start working on the assignment
- Try to grade an assignment using the identified rubric in a timely manner and return the completed rubric to students by the next 1 -2 class periods. This allows them time to apply the feedback to their next assignments that focus on the same learning expectations.
- Review the aggregate results with your students to address the areas that class are collectively struggling with and conduct a learning exercise focused on these areas. This can help reach students that are too timid or insecure who are less likely to seek out help during office hours.
- Use the rubric as a way to evaluate student's existing knowledge; discuss the different dimensions with students and clarify any confusing language

Relationship between learning outcomes and a rubric:
Learning outcomes describe what students will do to demonstrate their learning, including:

- Giving a presentation
- Role play a…
- Work in a team to…
- Write a reflection that…

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Rubric describes:

- The expected properties of that demonstration (dimensions)
- The possible levels of achievement/performance (scale/descriptions)

Example of learning outcome and rubric alignment

- Learning Outcome: Reflecting teamwork instruction in the leadership workshop, students will employ their teamwork skills in the execution of their final group project.
- Scoring rubric: Teamwork rubric defines four criteria and related standards for effective teamwork that will be examined through the interactions needed to complete the final group project focused on:
  - Contributing to team
  - Facilitating the contributions of others
  - Fostering constructive team climate
  - Responding to conflict

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