Best Practices in Grading

Drs. Lynn Pardie & Karen Moranski
Session Topics

What is Grading?
Why Grade?
Why Reliability & Validity Matter
Minimizing Errors in Assessment & Grading
Guidelines & Recommendations
Assignments & Rubrics
Grading Scales & Approaches
What is Grading?

- Rank Ordering (*ordinal measurement*)
- Applied at 2 Levels
  - **Micro performance**
    - individual assignments, tests, papers, exercises, tasks
    - example: % correct on single test
  - **Macro performance**
    - aggregated summative course level
    - example: % of total possible points in course
Benefits of Grades

- Important formative and summative feedback for learners
- Significant predictors of subsequent academic performance
- Important formative and summative feedback for faculty and others
  - teaching
  - curricular design
  - accountability
Typical Objections to Grades

- Not pure indicators of ability
- Subjective
- Assignments may not be good measures
- Grades can be misinterpreted
- Grades cause problems
Maximize the Positives & Minimize the Negatives

- Inoculate your students against unreasonable ideas about grades

- Develop valid assessments of learning and skills
  - Adequately sample knowledge and skill domains identified as learning outcomes
  - Minimize error in test and assignment construction

- Apply reliable and meaningful grading techniques to determine levels of achievement
  - Minimize the potential for rating errors and calculation errors to influence grades
  - Maximize assessment of true differences in achievement
Reliability and Validity
Measure Ability, Not Error

- Inadequate Sampling of Knowledge or Performance
- Vague Instructions
- Poorly Constructed Tests
- Plagiarism & Cheating
- Poorly Developed Evaluative Criteria
- Inconsistent Judgments
- Grading Calculation Errors
Develop a Course Plan

- Consider Bloom’s Taxonomy
- Take a developmental approach
- Identify appropriate learning outcomes
- Map content, learning objectives, process or skill development exercises
- Develop or select performance-based methods of assessing learning outcomes
  - Match foci and methods of evaluation with learning objectives
  - Weight graded components in accordance with the course map
- Select an appropriate grading approach
Develop Valid Assessments

- Be reasonable and clear about your expectations for performance
- Ensure student understanding of expectations by specifying the evaluative components in advance
- Adequately sample knowledge and skill domains represented by established learning outcomes
- Write questions and assignment instructions carefully
- Know and use guidelines for test item development
- Keep in mind ability levels and realistic testing limitations
Develop clear evaluation rubrics and grading templates in advance, and use them
Use points rather than grades
Avoid “zero” points; use failing points instead
When grading essays or papers, read through more than once, and in a different order
Take breaks
Check grade calculations
Keep paper and essay reviews “blind” if possible
Digging Deeper: The Grading Base
Grading is Easier When Assignments Are Well Constructed

- Consider the following assignment given to students in days gone by:
  “Ten page research paper on a topic of your choice, due on the last day of classes. Worth 40% of your grade in this class.”
- What’s wrong with this assignment? What’s missing?
5 Steps to a Good Assignment

As you think about creating assignments, use these five principles:

- Tie the task to specific pedagogical goals or course learning outcomes.
- Note rhetorical aspects of the task, i.e., audience, purpose, writing/speaking situation.
- Make all elements of the task clear.
- Include grading criteria on the assignment sheet.
- Break down the task into manageable steps.

Source: Adapted from http://wac.colostate.edu/intro/pop10a.cfm
How To Start A Good Assignment

- What do you want students to learn?
  - Assignments should promote student learning not just easy evaluation.

- What are your goals or learning outcomes for the course, and which outcomes do you want this assignment to address?
What Students Want to Know About Assignments

- How will this assignment help me learn the course material?
- If you, the teacher, had to do this assignment, how would you do it?
- How does this assignment relate to the kind of work specialists in this field do?
- When you evaluate my work, what are you looking for?
- How will you be helping me succeed on this assignment?

Source: Adapted from http://www.mwp.hawaii.edu/resources/wm1.htm
What is a Rubric?

“... A rubric is a scoring tool that lays out the specific expectations for an assignment. Rubrics divide an assignment into its component parts and provide a detailed description of what constitutes acceptable or unacceptable levels of performance for each of those parts.”

Rubrics can be used to assess student learning outcomes at the program or institutional level.

Rubrics provide students with timely feedback
Rubrics can save faculty time
Rubrics help students understand the expectations of an assignment
Rubrics prepare students to use detailed feedback
Why Use Rubrics? Part II

- Rubrics encourage critical thinking
- Rubrics facilitate communication between
  - faculty and students
  - students and tutors
  - students and students
- Rubrics help faculty refine teaching skills
- Rubrics level the playing field for particular populations of students
Four Parts of a Rubric

A. Task Description
B. Scale
C. Dimensions
D. Levels of Performance
A. What Are Task Descriptions?

- Task description = assignment
- Task descriptions should be placed in close proximity to the rubric so students can see how the two relate
- Examples of tasks from various disciplines
Assignment: Changing Communities in Our City

Task Description: Each student will make a 5 minute presentation on the changes in one Portland community over the past 30 years. The student may focus the presentation in any way s/he wishes, but there needs to be a thesis of some sort, not just a chronological exposition. The presentation should include appropriate photographs, maps, graphs, and other visual aids for the audience. The speaker should communicate ideas clearly and imaginatively and should be prepared to answer questions.
B. What are Scales?

- Scales = levels of achievement
  - “Way better than good enough, good enough, and not good enough. That’s enough.” (Dr. Doug Eder, retired Director of Assessment at SIU–Edwardsville)
  - Scales usually have 3–6 levels. Three levels is a good place to start.
  - Numbers are frequently an easy shorthand for letter grades.
  - Some instructors use 3– or 6–point scales to frustrate easy equations of 4 or 5–point scales with letter grades.
  - Examples of scales
<table>
<thead>
<tr>
<th>Category</th>
<th>Excellent</th>
<th>Competent</th>
<th>Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge/Understanding</td>
<td>The presentation demonstrates a dept of historical understanding by using relevant and accurate detail to support the student’s thesis. - Research is through and goes beyond what was presented in class or in the assigned texts.</td>
<td>The presentation uses knowledge which is generally accurate with only minor inaccuracies, and which is generally relevant to the student’s thesis. - Research is adequate but does not go much beyond what was presented in class or the assigned texts.</td>
<td>The presentation uses little relevant or accurate information, not even that which was presented in class or in the assigned texts. - Little or no research is apparent</td>
</tr>
<tr>
<td>Thinking/Inquiry</td>
<td>The presentation is centered around a thesis which shows a highly developed awareness of historiographic or social issues and a high level of conceptual ability.</td>
<td>The presentation shows an analytical structure and a central thesis, but the analysis is not always fully developed and/or linked to the thesis.</td>
<td>The presentation shows no analytical structure and no central thesis.</td>
</tr>
<tr>
<td>Communication</td>
<td>The presentation is imaginative and effective in conveying ideas to the audience. - The presenter responds effectively to audience reactions and questions.</td>
<td>Presentation techniques used are effective in conveying main ideas, but a bit imaginative. - Some questions from the audience remain unanswered.</td>
<td>The presentation fails to capture the interest of the audience and/or is confusing in what is to be communicated.</td>
</tr>
<tr>
<td>Use of Visual Aids</td>
<td>The presentation includes appropriate and easily understood visual aids which the presenter refers to and explains at appropriate moments in the presentation.</td>
<td>The presentation includes appropriate visual aids, but these are too few, in a format that makes them difficult to use or understand, and/or the presenter does not refer to or explain them in the presentation.</td>
<td>The presentation includes no visual aids or visual aids that are inappropriate, and/or too small or mess to be understood. - The presenter makes no mention of them in the presentation.</td>
</tr>
</tbody>
</table>
C. What are Dimensions?

- Dimensions = a breakdown of the skills/knowledge involved in the assignment
  - Dimensions lay out the various parts of a task.
  - Dimensions help students understand the elements of an assignment.
  - Dimensions help students know which factors are more important than others (weighting)
  - Examples of dimensions (see oral presentation rubric, Stevens and Levi, Fig. 1.5)
<table>
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<td>only minor inaccuracies, and which is generally relevant to the student’s</td>
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<td>30%</td>
<td>–Research is through and goes beyond what was presented in class or in the</td>
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<td>the analysis is not always fully developed and/or linked to the thesis.</td>
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<td>of conceptual ability.</td>
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D. What are Levels of Performance?

- Levels of performance = descriptions of what constitutes each level of performance
  - Descriptions can start with the highest level of performance, but if the rubric is divided into three levels, all three levels should be described.
  - Examples of levels of performance
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Rubrics can be used to measure student learning across courses or across majors.

Rubrics allow programs to meet the expectations of assessment reports and program reviews.

Rubrics at higher levels are connected to program or institutional learning outcomes (e.g. Baccalaureate Goals and Outcomes)

Rubrics at higher levels must find the common elements in assignments in different courses
Understanding Grading Scales

- **Common Grading Scales**
  - **Two-Category System**
    - Pass/Fail or Credit/No Credit
  - **Five Category System**
    - A  B  C  D  U or F
  - **13-Category System**
    - A+  A  A-  B+  B  B-  C+  C  C-  D+  D  D-  U

- If assessment base has a reliability of .95....
  - **Two-Category reliability** .63
  - **Five-Category reliability** .85
  - **13-Category reliability** .93

Basic Grading Approaches

- **Absolute**
  - NOT percent of total

- **Relative**
  - grading on the curve
  - eyeballing the gap
  - T score/percentage combo
Absolute Grading System

- Based on mastery approach to teaching
- Requires care in designing performance objectives
- Requires care in designing learning tasks
- Outcomes assessed with criterion-referenced tests

A  Outstanding
   Mastery of all major & minor objectives (95 to 100% correct)

B  Very Good
   Mastery of all major & most minor objectives (85 to 94% correct)

C  Satisfactory
   Mastery of almost all major objectives but only a few minor ones (75 to 84% correct)

D  Very Weak
   Mastery of only a few major & minor objectives; probably needs remedial work (65 to 74% correct)

U  Unsatisfactory
   Insufficient mastery (<65% correct)
NOT the same as Percent of Total Method

Total Possible Points for Course: 480

<table>
<thead>
<tr>
<th>Obtained Total Scores</th>
<th>%</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>439</td>
<td>91</td>
<td>?</td>
</tr>
<tr>
<td>431</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>378</td>
<td>79</td>
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</tr>
<tr>
<td>363</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>339</td>
<td>71</td>
<td></td>
</tr>
</tbody>
</table>
Relative Grading System

- Norm-referenced
- Ranks learners on achievement
- Sometimes involves use of normal curve
- Connection between percentage points and grade categories can be variable
Histogram: Score Distribution

Number of Students

Assignment Points

<table>
<thead>
<tr>
<th>58.5 - 63.5</th>
<th>63.5 - 68.5</th>
<th>68.5 - 73.5</th>
<th>73.5 - 78.5</th>
<th>78.5 - 83.5</th>
<th>83.5 - 88.5</th>
<th>88.5 - 93.5</th>
<th>93.5 - 98.5</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fixes the % of grades in advance
  - Uses standard deviation units
  - Grade Distribution 7-24-38-24-7

Only justifiable with large number of unselected (beginning-level) students

Alternative system = set %s

Maximizes grading errors at between-category cut points
Normal curve

Number of Students

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>7%</td>
</tr>
<tr>
<td>D</td>
<td>24%</td>
</tr>
<tr>
<td>C</td>
<td>38%</td>
</tr>
<tr>
<td>B</td>
<td>24%</td>
</tr>
<tr>
<td>A</td>
<td>7%</td>
</tr>
</tbody>
</table>
Adaptations of Relative System

- eyeball the gap
- combined T score/percentage versions
<table>
<thead>
<tr>
<th>Obtained Total Scores</th>
<th>Gaps</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>439</td>
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<td></td>
</tr>
<tr>
<td>431</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>378</td>
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<td></td>
</tr>
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<td></td>
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<tr>
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</table>

Eyeball the Gap Method

Total Possible Points for Course: 480
Recommendations for Weighting Assessment Components

- Take a developmental approach; place greater weight on later summative work when earlier work is foundational or developmental.

- Ceteris paribus, place greater weight on objective assessments.

- Determine appropriate weights for coursework & adjust for actual variability.
## Weighting: A Cautionary Tale

(Desired Weights 33.3% 33.3% 33.3%)

<table>
<thead>
<tr>
<th>Student</th>
<th>Test1</th>
<th>Test2</th>
<th>Test3</th>
<th>Total</th>
<th>GRD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeke</td>
<td>53</td>
<td>65</td>
<td>18</td>
<td>136</td>
<td>?</td>
</tr>
<tr>
<td>Velma</td>
<td>50</td>
<td>59</td>
<td>42</td>
<td>151</td>
<td>?</td>
</tr>
<tr>
<td>Walt</td>
<td>47</td>
<td>71</td>
<td>30</td>
<td>148</td>
<td>?</td>
</tr>
<tr>
<td>Means</td>
<td>50</td>
<td>65</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Std Dev** 2.5 5 10 14.3% 28.6% 57.1%
<table>
<thead>
<tr>
<th>Student</th>
<th>Test1</th>
<th>Test2</th>
<th>Test3</th>
<th>Total Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>212</td>
<td>130</td>
<td>18</td>
<td>360</td>
</tr>
<tr>
<td>B</td>
<td>200</td>
<td>118</td>
<td>42</td>
<td>360</td>
</tr>
<tr>
<td>C</td>
<td>188</td>
<td>142</td>
<td>30</td>
<td>360</td>
</tr>
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<td>Means</td>
<td>200</td>
<td>130</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Std Dev</td>
<td>9.8</td>
<td>9.8</td>
<td>9.8</td>
<td></td>
</tr>
</tbody>
</table>
Formula for T score conversions

\[
\left[ \frac{\text{Raw score} - \text{Mean}}{\text{Standard Deviation}} \right] \times 10 + 50
\]
## T Score Conversions

<table>
<thead>
<tr>
<th>Student</th>
<th>Test1</th>
<th>Test2</th>
<th>Test3</th>
<th>Total Pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>62</td>
<td>50</td>
<td>38</td>
<td>150</td>
</tr>
<tr>
<td>B</td>
<td>50</td>
<td>38</td>
<td>62</td>
<td>150</td>
</tr>
<tr>
<td>C</td>
<td>38</td>
<td>62</td>
<td>50</td>
<td>150</td>
</tr>
</tbody>
</table>

Means       50  
Std Dev     10
Summary Example

If Your Desired Weights are
- Test 1 (20%)
- Test 2 (20%)
- Homework (10%)
- Final Project (20%)
- Final Cumulative Exam (30%)

Then Take the Following Steps
- Convert raw scores to T scores
- Multiply components by 2, 2, 1, 2, 3, respectively
- Sum
- Apply Grades (Eyeball the Gap or Use Percentages, etc.)
Adjusting the Grading Scale

- Evaluate distribution for test difficulty & performance gaps
- Carefully adjust top of distribution as needed
- Always re-check calculations & consider complaints
Lynn’s Grading for the example

- **Course Grading Scale**
  - The highest total sum obtained will be considered in setting the upper limit of the final distribution, and the following percentages will be used to assign final grades:

- **Abby** 439 97% A
- **Bart** 363 73% C
- **Carol** 378 79% C+
- **Dave** 431 94% A
- **Ed** 339 67% D
Resources--Books

List of sample rubrics from Winona State: [http://www.winona.edu/air/rubrics.htm](http://www.winona.edu/air/rubrics.htm)

List of general education rubrics from UNC–G: [http://assessment.uncg.edu/GEDassess.htm](http://assessment.uncg.edu/GEDassess.htm)

College of Wooster – Rubrics from the Writing Center: [http://www.wooster.edu/writing_center/facrubrics.html](http://www.wooster.edu/writing_center/facrubrics.html)

Empire State College, State University of New York – A collection of rubrics for the arts, humanities, natural science, social science and American history: [http://www.esc.edu/ESConline/Across_ESC/InstResearch.nsf/allbysubject/Rubrics+Developed+at+Empire+State+College+and+other+SUNY+institutions?openDocument](http://www.esc.edu/ESConline/Across_ESC/InstResearch.nsf/allbysubject/Rubrics+Developed+at+Empire+State+College+and+other+SUNY+institutions?openDocument)


The California State University – A collection of rubrics from multiple institutions [http://www.calstate.edu/itl/sloa/links/rubrics.shtml](http://www.calstate.edu/itl/sloa/links/rubrics.shtml)

Winona State University – A collection of rubrics from multiple institutions [http://www.winona.edu/AIR/rubrics.htm](http://www.winona.edu/AIR/rubrics.htm)

Clemson University – A collection of rubrics for general education: [http://www.clemson.edu/ugs/ge/Rubrics.html](http://www.clemson.edu/ugs/ge/Rubrics.html)


(Note that Mr. Winters uses a T score system with a mean of 70, but the calculation principles are essentially the same as those we discussed for a T score system with a mean of 50.)