Suggestions for Effective Testing and Grading

(Notes based on workshop given by Dr. Elena Berman, Univ of Arizona)

1. State your grading policy in writing at the beginning of the semester and don't change it without thoroughly explaining the rationale for the changes.

2. Write grading criteria such that others would reach the same judgment.

3, Get student feedback about your grading system.

4. Make sure you are evaluating what you want students to learn. (There is considerable research showing that students learn what they are tested on.)

5. Base course grades on as large a number of elements as possible to maximize fairness and accuracy

6. Grades should reflect the goals of the course

7. The current trend is toward "mastery- or criterion-based" grading (Absolute Grading)

8. Design an assessment system that accommodates <u>both</u> Learning Oriented (LO) and Grading Oriented (GO) Behaviors:

LOGO: Learning • Oriented • Grade • Oriented

Take the "LOGO SURVEY"(see next page) -- to compare your <u>*attitudes*</u> toward grading with your <u>*grading behaviors*</u>

SOURCE: Making Sense of College Grades by Ohmer Milton, Howeard Pollo & James Eison: Jossey-Bass Inc Pub. (March 1986)

Two Approaches to Grading

Normative Grading: Students are graded relative to other students.

Advantages:

1. Rewards students whose academic performance is outstanding compared to their peers.

2. Is familiar to faculty and meaningful within a given group.

Disadvantages

1. Standards fluctuate depending on who is in the class: an excellent class will have differnt standards than an incompetent class.

2. Even in an outstanding group, some must get low grades; conversely, in an incompetent group, some will get high grades.

3. Grades are difficult to interpret without information on the overall group.

4. System tends to discourage cooperation among students

Absolute (Criterion-based) Grading: Students are graded relative to a standard. All students can earn As by meeting predefined criteria.

Advantages

1. Course goals and standards must be clearly defined and communicated.

2, The focus is on mastery of material, not competition for a grade.

3. Final grades reflect achievement of course goals.

4. Students do not jeopardize their own grade when they help their classmates.

Disadvantages

1. Instructor must decide in advance on what constitute reasonable requirements (may be difficult for new instructors or new courses).

2. It may be difficult to set up course standards for each grade increment.

Table A1

LOGO: F

Part 1

DIRECTIONS: Below is a series of statements concerning faculty reactions to students, teaching, and classroom policies. Please read each statement carefully, and indicate how strongly you agree or disagree with each item using the following scale:

(1) strongly disagree (3) neither disagree nor agree (4) agree
(2) disagree (5) agree strongly

____1. Without regularly scheduled exams most students would not learn the material I present.
____2. I think students should be encouraged to collaborate rather than compete.
____3. I think college grades are good predictors of success in later life.
____4. Students' concern about grades often interferes with learning in my classroom.
____5. I think it useful to use grades as incentives to increase student performance.
____6. I wish my colleagues across the campus were tougher graders.
____7. I don't mind if students enroll in my classes under the "pass/fail" or "audit" options.
____8. I think my colleagues across campus place too much emphasis on using grades to motivate students.
____9. I worry about colleagues who are giving an ever increasing number of A's and B's.
____10. I would prefer teaching a course in which no grades were given than a typical graded course.

Part 2

DIRECTIONS: Please read each of the following statements carefully. Indicate how frequently your behavior coincides with the action described using the following rating scale.

(1) never (3) sometimes (4) often
(2) seldom (5) always

____11. I set grading standards that are designed primarily to challenge the brightest students in my classes.
____12. I emphasize in my conversations with students the importance of studying to obtain "good grades."
____13. I allow students the opportunity to choose among alternative assignments as a way to enhance motivation.
____14. I encourage students to raise questions in class that are topic-related but which also go beyond the scope of the tests which I prepare.
____15. I am willing to make exceptions to stated grading criteria when unusual circumstances arise.
____16. I design course assignments that encourage students to read outside of my discipline.
____17. I orient my teaching style (e.g., content, pace, difficulty level) to satisfy the needs of upper level students (and hope that the others can keep up).
____18. I encourage students to focus primarily on their studies and to limit their participation in extracurricular activities which might jeopardize their GPA.
____19. I tell students that competition for grades prepares them for the competitive nature of adult life.
____20. I reward student improvement and growth by weighing the students' progress in my grading system.

Table A2
Scoring Directions for Logo: F

Recopy your answers from the LOGO: Form F survey to the appropriate spaces below. Your learning orientation score is the sum of the five items which measure learning-oriented attitudes plus the sum of the five items which measure learning-oriented behaviors. Similarly, your grade orientation score is the sum of the five items which measure grade-oriented attitudes plus the sum of the five items which measure grade-oriented behaviors.

Learning-Oriented Attitudes

Item 2 _____
Item 4 _____
Item 7 _____
Item 8 _____
Item 10 _____

LOA Total _____

Grade-Oriented Attitudes

Item 1 _____
Item 3 _____
Item 5 _____
Item 6 _____
Item 9 _____

GOA Total _____

Learning-Oriented Behaviors

Item 13 _____
Item 14 _____
Item 15 _____
Item 16 _____
Item 20 _____

LOB Total _____

Grade-Oriented Behaviors

Item 11 _____
Item 12 _____
Item 17 _____
Item 18 _____
Item 19 _____

GOB Total _____

LO TOTAL (LOA PLUS LOB) = _____

GO TOTAL (GOA PLUS GOB) = _____

From a presentation by Dr. Elena Berman, University of Arizona

Better Testing = More Learning

Elena Berman, Ph.D.
Assessment and Faculty Development Specialist
Assessment and Enrollment Research
626-4214 ◆ eberman@u.arizona.edu

Evaluating Student Learning

- value of evaluation
- relating evaluation to desired outcomes
- ensuring validity and reliability
- maximizing student success

Value of Testing

"Minute for minute, testing is the best of all teaching techniques."

LB Mirrielees, quoted in *The Measurement of Classroom Learning*

Why is testing so valuable?

decades of research show that students learn what they are tested on!

Teach to the Tests!

- *If it's YOUR testing plan, and it's a good testing plan,*
- *then teaching to it is appropriate and students will appreciate your doing so*

Key Questions for Effective Evaluation of Learning

- What do you want students to know/think/be able to do?
- How will you know if they know/think/can do it?

Desired Learning Outcomes

- cognitive
- attitudinal
- skill

Some Commonly Used Measures

- pre/post tests
- projects, papers
- standardized tests (national, local)
- oral exams, interviews
- questionnaires, surveys
- performance measures
- portfolios

Key concepts of evaluation

- *Validity*:
  you're measuring what you intend to measure
- *Reliability*:
  the measures work consistently across circumstances

Ensuring Validity and Reliability

- Be sure you're testing for what you want students to know/do
- Base your course grade on multiple elements
- Use a variety of assessment measures
- Measure each major course objective using more than one method
- Provide explicit, objective criteria for grading
- Analyze test results

Sample Table of Specifications for a course

Desired Outcome	Evaluation Instrument				
	Exam 1	*Exam 2*	*Final*	*HW*	*Project*
knowledge of concept A	✓		✓	✓	
given X, will be able to to do Y		✓	✓	✓	
understand rel. bet. X and Y				✓	✓
familiar with relevant literature				✓	✓
etc.					

Sample Table of Specifications for an exam

Desired Outcome	Test Questions
knowledge of concept A	1-5, 21-25
knowledge of concept B	6-15, Essay 1
given X, will be able to to do Y	Essays 2,4
understand rel. bet. X and Y	Essay 3
familiar with relevant literature	16-20

Analyze Test Results

"Objective" Tests

- > 70% correct: too easy
- < 30% correct: too hard
- common errors
- faulty items
- overall test reliability

Essay Tests

- check performance on specific criteria

Helping Students Succeed

- State your grading policy in the syllabus
- Prepare students for tests/assignments
- Give the first test early in the semester
- Debrief tests/assignments with the class
- Solicit feedback about your grading system

Strategies for Enhancing the Effect of Testing on Learning*

- test material soon after it is introduced
- give frequent tests
- increase interval between tests
- make some tests cumulative
- provide immediate feedback

*F.N. Dempster

Some notes from Elena's presentation:

- Validity + Reliability + Reality = "authentic testing"
- Be sure you are testing learning, not just short-term memory
- Test shouldn't be a surprise; students should be prepared for tests, have had practice with the types of questions, etc.

Advantages of MC Tests

- can cover a lot, yet be completed in a short time
- can test complex knowledge
- easy and reliable grading (machine-scorable)
- provide clues about student misconceptions
- can be banked for re-use; mixed and matched to produce equivalent versions
- difficulty level can easily be controlled

Disadvantages of MC Tests

- cannot test ability to organize and express ideas
- hard to give credit for partially correct answers
- subject to "clueing"
- hard to develop good items
- high probability of poorly written/poorly read items

Advantages of Extended Writing Tests and Assignments

- excellent for testing complex knowledge
- can test ability to organize and express ideas
- relatively easy to write good questions
- give scope for student individuality and creativity

Disadvantages of Extended Writing Tests and Assignments

- time-consuming to grade
- hard to grade consistently (reliably)
- hard to cover a range of material in a limited time
- penalize students with poor writing skills
- penalize non-native speakers

Advantages of Online Tests and Assignments

Disdvantages of Online Tests and Assignments

Using Pretests

Pretesting is a useful strategy for beginning a class, especially when classes contain students with mixed abilities coming from a diversity of backgrounds. Pretesting is a way of sampling where the students are relative to the content you're going to teach. It is ungraded and may take many forms, including map-making, providing samples of poetic forms, speaking in public, and responding to a case study, as well as conventional multiple choice or free response formats.

If you present pretesting as an information-gathering, or needs assessment, activity, that will not affect their grades in any way, most students will engage willingly. This is especially likely if you share with them some of the many benefits of pretesting.

Benefits of pretesting

- provides a preview of course coverage for students
- can act as an "advance organizer," which may improve student learning
- allows for early adjustment based on student interests and prior knowledge
- allows for early identification of student strengths and weaknesses
- improves ability to measure what has actually been learned in a course
- provides a way to get students started as active thinkers during classtime
- offers a potentially powerful tool for introducing students to working in small groups
- provides the instructor a good overview of class composition
- provides data that may be used in tracking student success and other research
- designing a comprehensive pretest helps an instructor review his or her vision for the course (which may or may not be the vision of the students)

Present the pretest as an information-gathering tool and use it to initiate a tradition of active thinking during classtime. Have students first take the pretest individually. Then ask them to compare answers in small groups and compile a group response. (Collect the individual responses for use in identifying advanced or deficient students.) If you plan to have students work together in groups during the semester, this is a powerful way to introduce them to the practice in a non-threatening context where the superiority of the group product will be clearly demonstrated.

Designing a good pretest requires you to have a conceptual overview of the course. This means bringing to consciousness the prerequisites and instructional goals, which makes fine-tuning easier in response to realities of student background and interests as well as exigencies of curriculum committees and departments.

Pretest data can be used in researching relations between preparedness and achievement. Data can also be used to design remedial modules, support arguments for curriculum change, and document changes in student ability that are a clear result of conscious teaching choices (prima facie evidence of teaching excellence).

What do pretests cover:

A comprehensive pretest seeks information about all three of the following areas:

1) knowledge of the course content

A pretest usually samples the important concepts of the entire course in such a way that the responses can be compared to responses to assignments or course exams. This gives the students a

*Written by Elena Berman, Ph.D., Assessment and Enrollment Research, eberman@u.arizona.edu.

preview of what they will be expected to learn, while giving you information about how much students already know. If most students are familiar with certain domains of the course content, you can address that content at a higher level. You can also use analogies from areas of greater common knowledge to explain new material. Some research suggests that previewing course content in this fashion actually increases learning by acting as an "advance organizer" for students.

It's a good strategy to collect and retain the pretests and use some of the same questions during the semester and on the final. It's often morale-building for students to see clearly that despite continuing confusion, they actually have learned quite a lot.

As students work the pretest, you can diffuse anxiety by reminding them that if they could answer all the questions, there'd be no point in taking the course.

2) attitudes about the course content, the course in general, and student goals

Questions about student attitudes, beliefs, and preconceptions provide invaluable information about areas of high/low curiosity, prejudice, prior (mis)information, etc. that you can draw on to tailor lectures and trigger discussions. An overall course strategy may need shifting if students turn out to have little interest in the course content as you've conceived it, whether the shift is to be a change of focus or a head-on confrontation with student lack of interest.

Information about student goals and interests may suggest improvements in course or assignment design. For example, a class in which student interests cover a wide spectrum may call for an assignment strategy that maximizes options, while a narrower range of interests may suggest group assignments that probe more deeply into a single subject.

3) knowledge of prerequisite material

In addition to covering the course content and student attitudes, it is important to ensure that students are able to do the work required for the course. If students lack prerequisite skills or knowledge, the sooner they find out about it, the better their chances for constructive action (whether that means dropping the course or doing remedial work). If a significant percentage lack prerequisite skills, instructors should consider changing the course to incorporate areas of deficiency.

Inform students unable to meet prerequisites that being successful in the course will be an extra challenge for them. If possible, direct them toward resources for remedying deficiencies. You will be doing both yourself and your students a favor if a deadline date is set when students are again tested and required to demonstrate basic proficiency with prerequisite knowledge.

Studies have shown that students able to solve problems or state generalizations in one realm are often baffled when asked to perform the same tasks in different contexts. That is, even if students can define common statistical terms or physical laws in general terms, they may not recognize them in contexts proper to your course. Therefore, pretesting for background knowledge should involve questions using the terminology and content of the course being taught. If you find out that knowledge transfer is a problem, you could provide a review of how terms, concepts, formulae, etc. will be used in the class.

For more information

Angelo, T.A. and K.P. Cross, Classroom Assessment Strategies, San Francisco: Jossey-Bass Publishers, Second Edition 1993. A compendium of useful ideas for getting feedback from students.

Glenda Wilkes, Thinking About College Teaching, Volume 2, Nos. 5&6, available from the University Teaching Center, 621-7788. One page papers on related topics.

*Written by Elena Berman, Ph.D., Assessment and Enrollment Research, eberman@u.arizona.edu.

Grading Written Assignments

Source: Political Science/JSIS/LSJ Writing Center Tools for TAs and Instructors
http://depts.washington.edu/pswrite/grading.html

The stack of papers on your desk seems bottomless, and mid-way through the paper you are reading, you cannot remember what the student is arguing. Now you have to go back and re-read the paper. On top of this, you are not even sure what constitutes a good and bad paper anymore.

We have all been overwhelmed by the grading process. Though many of the tips below may appear to be time-consuming, they can in fact lead to a reduction in grading time and more importantly, a more productive, fruitful use of that time.

Invest Your Time Earlier in the Process

- Clearly explain the criteria you will use when evaluating student papers. Writing out your criteria insures consistency and provides a useful point of discussion in student conferences.
- If possible, provide a *model* to students, by photocopying an A paper from a previous assignment, for example. Explain why the paper is successful.
- *Discuss the assignment*: go over it sentence by sentence; clarify important terms; reword; illustrate with examples or ask students to do this.
- *Include informal writing* about the assignment before the final paper is due (see "In-class Writing Activities" for suggestions).
- *Conference with students*: If time, see each student individually to help them develop and revise their paper. Make your key contribution here; put a grade and only minimal comments on the final paper.
- *Use peer review* (see "Using Peer Review")

Working Through the Pile

- *Review criteria before grading* : Know exactly what you expect of an A paper, and how you will differentiate among A, B, C, D, and F papers (see below for suggestions).
- *Locate range finders*: Set aside one or two representative As, Bs, Cs, Ds which can act as touchstones if you lose focus.
- *Read through the writing once without commenting*: Respond-as-you-go is a tough habit to break, but it can interrupt the flow of your reading, creating frustration and comprehension problems.
- *Separate problem papers*: Agonizing over problem papers may disrupt your reading; set them aside and go back to them.
- *Take breaks* : Don't read an entire batch of papers in one sitting.

Holistic Grading
Holistic grading involves looking at the paper as an entire document instead of distinguishing content from form. It might help to write out a description of what constitutes an A, B, and C paper. The following paragraphs are illustrative:

- **A.** This paper is insightful. It addresses the assignment in a way that indicates your comprehension of and control over the assignment itself as well as an understanding of the underlying issues. The message is communicated clearly, concisely, and directly. There is a confidence in this writing.
- **B.** The paper meets, and at times, exceeds the basic requirements of the assignment. The paper indicates that you are beginning, at times, to think through and deal with major ideas in the assignment. The message is communicated with generally effective clarity, directness, and conciseness.

- **C.** While the paper offers little insight into the greater issues of the assignment, it meets the basic requirements. The message, for the most part, is reasonably clear, concise, and direct, although there are some problems with your writing.

Grading With Checklists
Evaluation sheets or checklists permit:

- Students to edit their papers using the checklist guidelines
- Teachers to grade efficiently and consistently

However, some graders find segmenting the paper into specific items counter to their holistic understanding of writing. Others dislike using points that may add up to more or less than the grade the paper seems to merit.

Sample Checklist

Content
The paper...
- ☑ Addresses the topic or question
- ☑ Accurately presents assigned authors' viewpoints
- ☑ Provides sufficient textual evidence to support the argument

Structure
The introduction...
- ☑ Is present in the paper
- ☑ Includes a clearly stated thesis
- ☑ Indicates how the paper is organized

The body...
- ☑ Contains a complete discussion and support

Each paragraph...
- ☑ Includes a topic sentence
- ☑ Develops one main idea
- ☑ Has a transition sentence linking it to the next paragraph

The conclusion...
- ☑ Recaps the thesis statement and the essay's main points
- ☑ Presents a closing statement of the writer's position

Organization and Development
The entire composition
- ☑ Is logically organized
- ☑ Has a solid argument with supporting evidence

Main points
- ☑ Are relevant to the thesis statement
- ☑ Are discussed without too much repetition

Style
- ☑ Is concise and precise
- ☑ Is free of misspellings
- ☑ Is free of grammatical mistakes
- ☑ Lacks incomplete sentences
- ☑ Uses correct punctuation
- ☑ Includes subject/verb agreement
- ☑ Uses pronouns correctly
- ☑ Is free of jargon and cliches
- ☑ Cites references correctly

Sample Writing Assignment and Grading Rubric

The writing assignment below was used in a junior-level course on teaching and learning. Higher order thinking skills are needed to decide which materials to include given the specified purpose and audience. Note that the grading rubric, next page, lists appropriateness to audience second to content in specifying adequacy standards.

REPORT AND PRESENTATION ON NON-TRADITIONAL STUDENT GROUPS

The demographics of the university student population have changed dramatically over the past thirty years. Nationally, the traditional white, straight-out-of-high-school, middle-to-upper-middle-class, full-time student now accounts for less than 20% of the university student population nationwide. Adaptation to this changed student body has generally been ad hoc and outside the traditional academic structure.

As a class, we will undertake a major survey of diversity issues in higher education, with the goal of developing a presentation for faculty and other campus groups.

After a discussion in class, each student will choose a non-traditional student group and explore the questions below:

1. In what time periods, and in what numbers, has the group you're studying entered the university? Provide a brief history relating to the university and the group you're studying.
2. What problems or issues has your group encountered in gaining access or being successful?
3. What programs have been successful in alleviating these problems?
4. What issues or problems arise related to classroom instruction methods or faculty behavior in the classroom?
5. What changes in classroom behavior could faculty make that would improve learning for the group you're studying?

Criteria for evaluation of papers on non-traditional student populations

Goal: an informative, readable summary of information about a non-traditional student population, aimed at UofA faculty

	Excellent	Satisfactory	Needs improvement
Content	•answers all questions fully or explains why a complete answer can't be given. •provides sources for all claims. •provides multiple examples of successful approaches that can be applied in the classroom.	•provides reasonably complete responses to all questions, sources for most claims, and two or three examples of successful approaches that can be applied in the classroom.	•questions are incompletely addressed; no sources provided for claims.
Appropriateness to audience	•information and examples are related to everyday experiences of faculty. •writing is concise; summary statements introduce sections. •awareness of audiences is demonstrated by highlighting of especially important information. •tone is positive; assumes good will and interest on the part of readers.	•information is appropriate to audience and reasonably accessible.	•paper is not organized for easy access to information. •paper has faculty-bashing tone.
Expression and format	•paper has effective sentence and paragraph structure. •paper looks attractive and approachable; format and headings direct readers to information.	•most sentences are concise and show good word choice and arrangement. •most paragraphs are well-organized and appropriately restricted. •format provides reasonable access to information.	•paper is excessively wordy with many poorly structured sentences and poorly organized paragraphs. •paper looks sloppy or crowded, uninviting to potential readers.
Mechanics	•no more than three spelling, punctuation, or grammatical errors. (This includes typos, so be sure to spell-check and then to edit.)	•no more than six spelling, punctuation, or grammar errors.	•more than six mechanical errors.

Example of a "Holistic Grading" Chart (used in Hirschboeck's NATS 101 Class):

	Excellent	**Satisfactory**	**Needs improvement**
Worksheet *(10 pts possible)*	9-10 pts worksheet adequately filled in & used in the report	6-8 pts worksheet partially filled in & used in the report	0-5 pts worksheet absent (0 pts) or only minimally filled in
Content *(25 pts possible)*	*22-25 pts based on how well the report:* Addresses I through IV above completely, clearly, thoroughly, accurately, & articulately. Demonstrates a high level of independent critical thinking about the assignment beyond the classroom; effectively ties together the observations, hypotheses, class discussion, and conclusions into a well-constructed synthesis of the entire activity.	*11-21 pts based on how well the report:* Addresses I through IV above completely, clearly, thoroughly, and accurately Demonstrates some independent thinking and synthesis; does not just "parrot" phrases from the in-class discussion, but shows evidence of thinking and making connections beyond the classroom about the material in the assignment.	*1-10 pts based on how well the report:* Addresses I through IV, but not completely, clearly, thoroughly or accurately on every point. Demonstrates some follow-up thinking about the assignment but mostly repeats what was said in the class discussion and doesn't go beyond this by thinking on one's own.
Expression and format *(5 pts possible)*	*4-5 pts based on whether:* **Headings (noted above) start each section** Paper has effective sentence and paragraph structure. Content is well-organized and argument flows well from the organization and format of essay. Writing is concise; effective introduction and conclusion to the essay is provided.	*2-3.5 pts based on whether:* **Headings (noted above) start each section** Most sentences are concise and show good word choice and arrangement. Paragraphs are well-organized. Content is sufficiently organized and argument is easily understandable from the organization and format of essay. Adequate introduction and conclusion is provided.	*0-1.5 pts based on whether:* **Headings (noted above) are not used** Paper is excessively wordy with many poorly structured sentences and poorly organized paragraphs. Content is poorly organized and argument doesn't hold together in the essay's format and organization Introduction and conclusion are absent or ineffective.
Mechanics *(5 pts possible)*	*4-5 pts based on:* No major spelling, punctuation, or grammatical errors. (This includes typos, so be sure to spell-check and then to edit.)	*2 - 3.5 pts based on:* A few spelling, punctuation, or grammar errors, but none that detract from the essay's effectiveness & meaning.	*0 - 1.5 pts based on:* Many spelling, punctuation or grammar errors that detract significantly from the essay's effectiveness & meaning.
Referencing *(2 pts possible)*	*2 pts based on:* Sources used are referenced properly (see I-2 referencing guidelines)	*1-1.5 pt based on:* Sources used are referenced, but not in proper format *or* some items inadequately referenced	*0 -.5 pts based on:* Sources used are not referenced or are poorly referenced

Holistic Grading Criteria for Problem Sets and Journals

This scoring system is a focused holistic scoring or level system (Charles, 1985). The method focuses on the total solution, and evaluates the performance of well-defined criteria. Criteria are established for scoring points from 0 to 4. When scoring a paper, check first to see whether it meets any of the criteria for 4 points, or a level 4. If not, then check criteria for 3 points, 2 points, etc.

4 points or Level 4- Excellent

These papers have ANY of the following characteristics:

- The student fully understood all of the information in the problem and showed all work to find the solution.
- The student selected and appropriate solution strategy or strategies and showed all work.
    - The student may have made an error in carrying out the solution strategy, HOWEVER, these errors do not reflect misunderstanding of either the problem or a lack of knowledge of how to implement the strategy, but rather they might only include a copying error or a computational error.
- The student implemented different solution strategies to solve the problem in more than one way, integrating topics and applying knowledge.

3 points or Level 3- Good

These papers have ANY of the following characteristics:

- The student implemented a solution strategy that could have led to the correct solution, but the student misunderstood part of the problem or ignored a condition of the problem.
- Appropriate solution strategies were properly applied, but
  (a) the student incorrectly answered the problem for no apparent reason,
  (b) the correct numerical part of the answer was given and the answer was not labeled correctly,
  (c) no answer is given.
- The correct answer is given, and there is some evidence that appropriate solution strategies were selected. However, the implementation of the strategies is not clear.

2 points or Level 2- Poor

These papers have ANY of the following characteristics:

- The student used an inappropriate strategy to get an answer.
- An appropriate strategy was used, but
  (a) it was not carried out far enough to help the student find the solution (e.g. the first two entries in an organized list), or
  (b) it was implemented incorrectly and led to no answer or an incorrect answer.
- The paper successfully reached a subgoal.
- The paper has the correct answer, but (a) the solution attempt is not systematic, or
  (b) no work is shown.

1 point or Level 1- Unacceptable

These papers have ANY of the following characteristics:

- There is a start to finding the solution (beyond copying the problem) that reflects some understanding of the problem, but inappropriate method was used.
- Inappropriate strategy started, but is not carried out. It appears the student tried one approach that did not work and “gave up”.
- The student tried to reach a subgoal but never did.
- The paper has a correct answer, with no work shown.

O points or Level 0- Not scoreable

These papers have ANY of the following characteristics:

- The paper is blank.
- The data in the problem is simply recopied, but nothing is done with the data, or something is done with the data, but there appears to be no understanding of the problem.
- The paper has an incorrect answer with no work shown.

Evaluate your grading strategy

In *Tips for Improving Testing and Grading* (p. 129), John Ory and Katherine Ryan suggest eliciting direct student feedback about your grading with questions like these:

1. The grading procedures for the course were

   Very fair 1 2 3 4 5 ***Very unfair***

2. Did you clearly understand the grading system from the beginning of the semester?

   Very clearly 1 2 3 4 5 ***Not very well***

3. Was the grading standard too high or too low?

   Too high 1 2 3 4 5 ***Too low***

4. How would you characterize the grading system?

   Very objective 1 2 3 4 5 ***Very subjective***

5. The amount of feedback I received during the course was

   Quite adequate 1 2 3 4 5 ***Not enough***

6. Were requests for regrading or review handled fairly?

   Yes, almost always 1 2 3 4 5 ***No, hardly ever***

7. My work was evaluated in a meaningful and conscientious way.

   Strongly agree 1 2 3 4 5 ***Strongly disagree***

A Short Bibliography on Grading

Anderson, R.S. and B. W. Speck, eds. ***Changing the Way We Grade Student Performance: Classroom Assessment and the New Learning Paradigm.*** New Directions for Teaching and Learning No. 74, Summer 1998, San Francisco: Jossey-Bass.

Brookhart, Susan M. ***The Art and Science of Classroom Assessment: The Missing Part of Pedagogy***. ASHE-ERIC Higher Education Report (Vol. 27, No. 1. Wahington, DC: The George Washington University Graduate School of Education and Human Development, 1999.

Ebel, R.L. ***Essentials of Educational Measurement.*** Engelwood Cliffs, NJ: Prentice-Hall, 1991.

Eison, J.A., Milton, O., and Pollio, H.R. ***Making Sense of College Grades.*** San Francisco, CA: Jossey-Bass, 1986.

Jacobs, L.C. and C. I. Chase. ***Developing and Using Tests Effectively: A Guide for Faculty.*** San Francisco, CA: Jossey-Bass, 1992.

Janzow F. and J. Eison, "Grades: Their Influence on Students and Faculty." From M.D.Svinick, ed. ***The Changing face of College Teaching***, New Directions for Teaching and Learning No. 40, Summer 1990, San Francisco: Jossey-Bass.

Ory, John and Katherine Ryan.***Tips for Improving Testing and Grading,*** Sage Publications, 1993.

Pollio, H.R. and W. L. Humphreys, "Grading Students." From R.E. Young and K. Eble, eds., ***Assessing Students' Learning***, New Directions for Teaching and Learning No. 34, Summer 1988, San Francisco: Jossey-Bass.

Tobias, S. and J. Raphael. **The Hidden Curriculum: Faculty-Made Tests in Science**, Parts 1 (Lower-Division courses) and 2 (Upper-Division Courses). New York: Plenum Press, 1997.

Walvoord, B.E. and V. J. Anderson. ***Effective Grading***, San Francisco, CA: Jossey-Bass, 1998.

Wergin, J. F. "Basic Issues and Principles in Classroom Assessment." From R.E. Young and K. Eble, eds., ***Assessing Students' Learning***, New Directions for Teaching and Learning No. 34, Summer 1988, San Francisco: Jossey-Bass.