

Grading; engagement; assessment

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Grading is the elephant (Walvoord)

- It “infuses everything that happens in the classroom”
- Futile to downplay students’ concern about grades
- “Instead of ignoring the elephant, we want to use its power for student learning”
- Grading includes all discussion of grades
- *Roles*: evaluation, communication, motivation, organization, reflection

Grading to assess and to teach

- Evaluation of student work “can be a rich and fruitful component for assessment of student learning” (Walvoord, Johnson, p. 4)
- “Try to ensure that any assignments, tests, and exams that you give and grade will facilitate the acquisition of the knowledge, skills, and attitudes that you most want students to learn and retain” (p. 9)

What do I value?

For students to

- Learn concepts
- Apply concepts
- Acquire skills
- Think critically
- Work in teams
- Present results

What did my syllabus say I valued?

“Grading	
“Attendance	5 %
“Midterm exam	15
“Project	20
“Assignments	15
“Quizzes	20
“Final exam	25 ”

A framework for grading

- *Learning objectives* guide all activities, including grading
- *Most of a student’s grade* is based on her/his measured learning of the objectives
- Students have *multiple chances* to show achievement of an objective

Assessment and grading

- To measure:
 - Individual achievement of learning objectives
 - Contribution to the learning of the class
- Breakdown: 60/40
- Assumptions: Learning is shared and measurable

A pie chart divided into two segments: a larger light blue segment labeled 'Your learning' representing 60%, and a smaller yellow segment labeled 'Your contribution' representing 40%.

David Keil Grading to support student engagement 1/14 7

Assessment of learning objectives

Assumptions:

- Application of concepts is measurable via core and other topic objectives
- Facts about concepts matter
- We learn by summarizing and reflecting

A pie chart with four segments: a large orange segment labeled 'Core topic objectives', a smaller green segment labeled 'Summarize', a smaller pink segment labeled 'Factual knowledge', and a smaller blue segment labeled 'Non-core objectives'.

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Assessment of contribution and participation

We assume that learning happens by:

- Inquiring and sharing inquiry
- Being present
- Solving problems together
- Activity throughout the semester

A pie chart divided into five segments: a red segment labeled 'Project', a blue segment labeled 'Exercises', a green segment labeled 'Leading discussion or presenting results', a purple segment labeled 'Attendance', and a cyan segment labeled 'Group activity'.

David Keil Grading to support student engagement 1/14 9

Natural critical learning environments (K. Bain)

- Natural: Where possible we want to address problems in the real world
- Critical: We challenge the materials we study and we challenge each other
- Learning: Students have chances to fail, then succeed, before being evaluated
- Environment: Learning is supported by structure and by work with other learners

David Keil Grading; engagement; assessment 5/15 10

The growth mindset

- Carol Dweck reports that:
 - People can learn new skills when they believe that their effort matters
 - Learning takes effort
 - Intelligence grows with effort
- Alternative mindset: *fixed*
- The fixed mindset says that *innate talent*, not effort, is decisive and is unchanging

David Keil Grading; engagement; assessment 5/15 11

The objective is the unit of assessment

- The quiz is just a piece of paper
- Each objective is assessed by a set of questions that might appear on quizzes
- On make-up quizzes, the student just answer questions for objectives not yet achieved
- I ask students to leave questions blank if they don't know the answer
- I apply an honest (tougher) standard

David Keil Grading; engagement; assessment 5/15 12

A generic rubric

- 6 Solution of rare quality that surpasses requirements.
- 5 Solves problem thoroughly and accurately; shows mastery of objective.
- 4 Mostly successful solution with good application of concepts. Strong claim of success with objective.
- 3 A fair-quality solution with omissions or errors. Generally successful application of concepts.
- 2 A solution that shows some grasp of relevant concepts, meeting minimum standards for the objective.
- 1 Unsuccessful answer that shows some understanding of problem or relevant concepts.
- 0 No answer or irrelevant answer

Some recent pre-quiz results

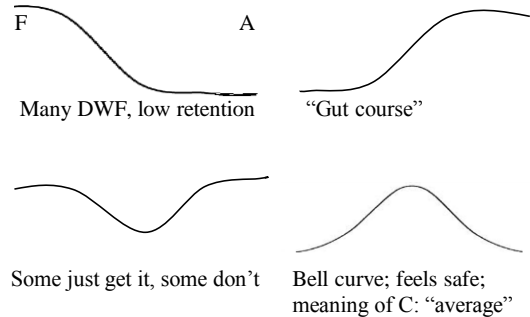
- Students in a class had multiple chances to show achievement of 7 objectives of a *previous* course
- “Success”: achievement of 4 or more objectives
- *Results:*

	%
– Success on first try	10
– Success on 2-4 tries	57
– Nonsuccess after 1 try, then gave up	19
– Nonsuccess after 2 tries, then gave up	14
– Nonsuccess after 3+ tries	0

Conclusions

- Very few (10%) were ready to succeed on a *review* quiz on the first try
- A majority (57%) succeeded with persistence (growth-mindset behavior)
- One-third gave up after 1-2 tries (fixed-mindset behavior)
- Anyone who tried 3 or more times succeeded with a majority of objectives
- Growth mindset contributes to success

Grading curves



Does the bell curve measure learning?

- Does a bell curve encourage collaboration, or disengagement?
- Do we hope that students will be motivated to learn by the prospect of a ‘C’ for average work?
- Do some students begin to enter a fixed ‘C’-oriented mindset?
- Do they calculate the minimum effort to obtain a ‘C’?
- Do we unconsciously grade on the curve?

Two approaches to grading

- *Criterion referenced:*
 - Measures competence of learner at tasks
 - *Example:* medical school exams
- *Norm referenced:*
 - Measures student’s position in some ranking in group
 - *Examples:* GRE, SAT

What is learned in our classes?

- By top students?
 - average students?
 - all students who pass a course?
- Does our grading tell us what has been learned?
- What learning from a prereq course do students take to the next course?

Do we want to know what our students are learning?

- Do our grades tell us what students are learning?
- Does *average* student work meet the standard of *competence*?
- Do *we* or *central-tendency statistics* set the standards for what is learned?

Certification vs. ranking

- *Argument:*
 - The old model of norm-based (Bell curve) grading has taken us *downward*
 - Achievement of learning objectives may be measured *and encouraged* by assessment methods, including multiple tries
 - Rubrics support objective evaluation
 - Competence or criterion based evaluation enables us to raise standards

Questions:

1. What is the *goal* of your teaching?
2. How does your *grading process* serve that goal?
3. What's a *fair grade*?

Some answers

1. My goal is for students to achieve my learning objectives
2. My grading focuses the classroom on my objectives and tells me how well we're reaching them
3. A fair grade is a criterion-based measure of *competence* and *contribution*

References

- Ken Bain. *What the Best College Teachers Do*. Harvard University Press, 2004.
- Center for Faculty Excellence, University of North Carolina at Chapel Hill. *Grading systems*. August, 2012.
- Carol Dweck. *Mindset: The New Psychology of Success*. Ballantine, 2006.
- Barbara E. Walvoord and Virginia Johnson Anderson. *Effective Grading*, 2nd ed. Wiley, 2010