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Using assessment-based methods for grading and for engaging students

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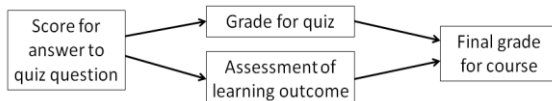
1. Introduction

- Shall we consider grading on *learning outcomes* and other objectives?
- ... as opposed to grading on methods of evaluation (quizzes, assignments)?
- *Wanted*: students' clarity about methods of evaluation used for grading
- *Prospect*: student engagement may increase if grade-related interest is focused on course content rather than method of evaluation

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2. A system of grading

- A grading system for computer-science courses that is 30-40% based on attainment of desired learning outcomes has shown advantages for grading and for student learning.



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Details of system

- Course has a few to a few dozen stated desired learning outcomes and other objectives
- Questions on problem-solving quizzes are tagged for objectives
- Questions are graded on a scale of 0 to 1.0 corresponding to a percentage scale
- Scores for these quiz questions are referenced to determine scores on objectives
- Maximum performance on an objective is tracked, using second-chance quizzes

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Uses of data

- Average for a given objective over all students yields assessment information on how well the students attained the objective
- Average for a given student over all objectives yields data on how well the student attained all objectives
- Averages may be weighted for objectives that are of varying importance.
- Students may track scores for quizzes and for learning objectives posted online

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Course-wide objectives

- Solve a problem as part of a team
- Present a short talk in the classroom
- Write a short documented research paper
- Participate in the classroom process

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3. Preliminary results

- System helps convey course objectives to my students in a meaningful way
- Students pay attention to grading and care about fairness
- Grading on objectives helps students pay attention to objectives
- Student engagement in course work can be encouraged

Student survey results

- Two thirds of students rated the grading system positively
- Almost all appreciated the listing of objectives in the syllabus
- More students reacted negatively than positively to the idea of grading a course entirely on objectives

4. Grading only on objectives?

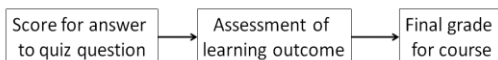
- A grading system based entirely on measured attainment of objectives may be worthwhile
- Our grading systems reflect what we value and what we want to encourage; then shall we be explicit about these?
- It is fair to call participation and keeping pace objective, especially since they support collaborative learning

A new grading framework

Grading component	%	Instruments
Application of knowledge		Problem quizzes
core objectives	25	
other objectives	25	
Knowledge of facts	15	Multi-choice quizzes
Independent inquiry	10	Research paper
Presenting results		
in person	10	Rubric
Participation	15	Participation record

Revised naming and data flow

- We may choose to bypass the “Quizzes” component of a semester grade and replace it with a large score for measured learning outcomes
- We replace the name of the measuring instrument with the name of the value measured



5. Reflections and conclusion

- We need to *invite* our students to engage actively with what we are presenting
- There is reason to hope that by focusing grade-related interest in the direction of course content, student engagement in course work can be encouraged

What is a teacher?

- *Customer*: “Bring me good work and I’ll compensate you with good grades”
- or
- *Provider of learning support services*: “You have a choice to engage with this course or not. Here is what it has to offer you if you choose to join our effort.”

Deep learning

- Formative assessment may facilitate learning with understanding
- Deep learning requires voluntary engagement of students
- Students may understand our grading schemes as more authentic if they directly reflect the learning outcomes and other concerns that matter to us

Grades in student eyes

- A means of social control and selection?
- or
- A way to obtain self-insight and desired guidance and validation from an expert?
 - If students perceive extrinsic motivation (grading) as manipulation of them, then the effect of grades on learning is negative (Bain, 2004)

Goals

- *Priorities of evaluation and assessment*: educational, or for measurement? (Broadfoot, Black, 2004)
- We can reframe grades as part of a process that aims at contributing to
 - formative assessment
 - student engagement
 - deep learning

References

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