

TEACHING WITH WRITING

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WRITING = PROBLEM SOLVING?

One way or another, we pose questions for our students. And while we're certainly interested in the answers students give, we're at least equally interested in the ways of thinking that produce those answers. Because one way or another, we're not just teaching facts and information, we're teaching students how to use and combine and analyze and weigh those facts. We're teaching philosophy majors how to think like philosophers, mechanical engineers how to think like engineers, physics majors how to think like physicists.

In his Math 392 Problem Solving course, Mike Shaughnessy assigns a problem-solving journal as his way to make sure students become intellectually self-conscious problem solvers. And one central feature of the journal are what Shaughnessy calls "the write ups" of homework problems.

Write ups are divided into three parts:

- 1) Before (Understanding the problem)
 - did you have troubles understanding the problem?
 - what were the keys to understanding it?
 - is the problem well posed or are there several possible interpretations?
- 2) During (Explaining & carrying out your plan)
 - what were the strategies you used?
 - did you change your plan of attack and try again?
 - what is your solution for the problem?
- 3) After (Looking back)
 - is your answer reasonable?
 - is this problem similar to others you have done?
 - can you pose a new problem that extends or changes this one?

The write ups are evaluated on five point scale: (See WRITE UPS, p. 2)

10 MINUTE QUICK QUIZZES

How can you keep a large class involved and interested? How can you possibly use writing without burdening yourself with endless grading? One answer may be quick quizzes.

Chris Anderson (English) describes quick quizzes as 10 minutes of "directed freewriting." Anderson gives 8 quizzes over the course of a term--essentially one quiz a week. The first one is practice: he scores it but doesn't count the score. He doesn't announce them in advance and they cannot be made up. "A quick quiz is much like any other quiz. It has the same value of testing students on the reading and making them do it, but students freewrite their responses and so can brainstorm more, be more open and exploratory at the same time. Students can even exchange and comment on each other's responses in ways that conventional quizzes don't quite allow."

The quizzes also allow Anderson to focus class discussion by getting students intellectually involved in the quiz questions he poses.

Anderson still uses midterms and the final to help him arrive at student grades, but he notes that the questions on the midterms and final are often variations on quiz questions. Thus the quick quizzes also have the advantage of giving students the chance to practice writing about these questions in advance.

Quick quizzes are scored on 3 point scale, and Anderson says he can work through 70 quizzes in about 45 minutes. Here's how he awards points:

1 point if there's something written down.

2 points if it's clear that the student has done the reading.

(See QUIZZES, p. 2)

WRITE UPS (Continued from p. 1)

- 1) Problem started but not properly understood; little progress made towards a well-formulated plan.
- 2) Problem understood, a plan of attack initiated, but little evident progress toward a solution.
- 3) A well formulated plan led to significant progress, however the solution process was incomplete or incorrect.
- 4) A well formulated plan led to a solution that was not quite complete, had minor errors, or was inadequately written-up.
- 5) Your plan was good, your solution process complete and correct, and your write up clear and complete.

Do these write ups make a difference? They seem to. Here's one student's testimonial: "I learned more from this math class than any other I've taken. My proof? I could tell anyone, right off the top of my head, about any one of the problems we did this term, remember exactly how to do it (and how not to do it), and explain it to them without having to look at my notes. Why? Because I had to write about each one of them in glorious detail... I understand the math better in terms of approach, strategies, and reasons for the solutions, and yet more importantly, I can communicate the language of math better."

QUIZZES (Continued from p. 1)

3 points if the student says something interesting, alive, insightful, personal, above average.

Anderson concludes, "of course, what you discover is that the freewriting is not that different from what students would turn in on a paper, maybe even better (except for the handwriting and spelling). And I have the general sense now of having lowered the risk and gotten students saying and thinking things they wouldn't have otherwise."

REGISTRATION CONTINUES FOR SPRING SEMINAR

To accommodate larger numbers, the spring term WIC seminar will be offered two separate times: Wednesday afternoons from 3-5 and Thursday afternoons from 2:30-4:30. Some openings remain for both days. Interested faculty should ask to be nominated by their department chair; nominations should be sent to the WIC office, Waldo 125.

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