Fall 2008 Teaching Conference
for International GSIs

Faculty Keynote:
Twenty Top Time-Tested
TA Teaching Tips

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UC Berkeley
Lecturer SOE
Dan Garcia

GSI TEACHING & RESOURCE CENTER

Use this tremendous resource early and often. Great teachers within!

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Background

- I was just like you, once!
  - Fall 1992, I was a first-time EECS GSI @ Cal
  - I was bitten by the bug

- I joined Cal faculty in 2000
  - I received “lecturer tenure”, or “security of employment” in 2006.

- These tips drawn from those my TAs deemed most important
Before the Semester

- Share mutual expectations
- Know the material
- “How Children Fail”
During the Semester (1/4)

- Preparation, preparation, preparation
- Handouts, handouts, handouts
- Know your audience

- Piaget’s adaptation
  - Assimilation
  - Accommodation
During the Semester (2/4)

- Bloom: Tutoring + Mastery
- Get regular feedback
- Give regular feedback

The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring

Benjamin S. Bloom
University of Chicago and Northwestern University

Two University of Chicago doctoral students in education, Annessa (1982, 1989) and Burke (1986), completed dissertations in which they compared student learning under the following three conditions of instruction:

1. Classroom. Students learn the subject matter in a class with about 20 students per teacher. The instruction is the same as in the conventional classroom (with the same teacher). Formative tests (the same tests used with the conventional group) are given for feedback followed by corrective procedures, and parallel formative tests to determine the extent to which the students have mastered the subject matter.

2. Mastery Learning. Students learn the subject matter in a class with about 10 students per teacher. The instruction is the same as in the conventional classroom (with the same teacher). Formative tests (the same tests used with the conventional group) are given for feedback followed by corrective procedures, and parallel formative tests to determine the extent to which the students have mastered the subject matter.

3. Tutoring. Students learn the subject matter with a tutor for each student (or two or three students simultaneously). This tutoring instruction is followed periodically by corrective procedures, and parallel formative tests in the mastery learning class. It should be pointed out that the need for corrective work under tutoring is very small.

The students were randomly assigned the three learning conditions, and their initial aptitude tests scores, previous achievement in the subject, and initial attitudes and interests in the subject were similar. The amount of time for instruction was the same in all three groups except for the corrective work in the mastery learning and tutoring groups. Burke (1986) and Annessa (1982, 1989) replicated the study with four different samples of students at grades four, five, and sixth and with different subject matters, Probability and Cartography. In each sub-study, the instructional treatment was limited to 11 periods of instruction over a 3-week block of time.

Most striking were the differences in final achievement measures under the three conditions. Using the standard deviation (SD) of the control condition, it was typically found that the average student under tutoring was about two standard deviations above the average of the control class (the average tutored student was about 96% of the students in the control class). The average student under mastery learning was about one standard deviation above the average of the control class (the average mastery learning student was above 85% of the students in the control class).

The variation of the students’ achievement also changed under these learning conditions such that about 95% of the tutored students and 10% of the mastery learning students attained the level of summative achievement reached by only the highest 20% of the students under conventional instructional conditions. (See Figure 1.)

There were corresponding changes in students’ time on task in the classroom (62% under conventional instruction, 75% under Mastery Learning, and 90% under tutoring) and students’ attitudes and interests (high positive under conventional instruction and most positive under tutoring). There were great reductions in the relations between prior measures (aptitude or achievement) and the summative achievement measures. Typically, the aptitude-achievement correlations dropped from ~.69 under conventional to ~.25 under mastery learning and ~.25 under tutoring. It is recognized that the correlations for the mastery learning and tutoring groups were as low because of the restricted range of scores under these learning conditions. However, the most striking of the findings is that under the best learning conditions we can devise (tutoring), the average student in 2 sigma above the average control student taught under conventional group methods of instruction.

The tutoring process demonstrates that most of the students do have the potential to reach this high level of learning. Before an important task of research and instruction is to seek ways of accomplishing this under more practical and realistic conditions than the one-to-one tutoring, which is too costly for most societies to bear on a large scale. This is the “2 sigma” problem. Can researchers and teachers devise teaching/learning conditions that will enable the majority of students under group instruction to...
During the Semester (3/4)

- Recycle great ideas
- People learn differently
- Let students drive
- Find your voice
During the Semester (4/4)

- Make it fun
- Don’t just lecture
- Nurture “Learning Community”
- Nothing beats enthusiasm
After the Semester

- Consider teaching career!
- Love your job
- Mantra: “Lifelong Learning”
“And in Conclusion…”

- It’s a privilege to have the honor of teaching
- Will you be the one to carry the torch of inspiring teaching to your students?