

EFFECTIVE TEACHING AND CLASS MANAGEMENT

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Introductions

Sue Fitzgerald

- PhD University of Missouri-Kansas City 1996 (Computer Science and Telecommunications)
- Industry experience, other faculty appointments
- Metropolitan State University, MN 1996-present
 - Faculty; Department Chair; Director, Center for Faculty Development; Interim Dean, College of Sciences
- Research in computer science education

Dianne O'Leary

- PhD Stanford 1976 (Computer Science)
- University of Michigan 1975-78
- University of Maryland 1978-2014
- Distinguished University Professor Emerita
- Research in scientific computing, text and image processing



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About this session

- **Organization:**
 - Interactive
 - Topics chosen by you
- **Effective teaching:**
 - Now: We choose topics of interest
 - Break into small groups for discussion
 - Each group reports back
- **Class management:**
 - We choose topics of interest
 - Break into small groups for discussion
 - Each group reports back
- **Wrap up:**
 - Q & A



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Effective Teaching: Possible Issues for Discussion

- Matching teaching style to class size and material
- How to establish trust and encourage participation
- Teaching students with special needs
- **Directing research experiences for undergraduates**
- **Mentoring graduate students**
- Effective use of technology in the classroom
- Using Think-Pair-Share and other peer learning techniques
- Flipping the classroom
- Using case studies
- Preparing interesting lectures
- What to do about low teaching evaluations
- Teaching online
- Dealing with large classes
- **Preparing for class vs research**
- **Active learning to raise evals**



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Class Management: Possible Issues for Discussion

- What to put on the syllabus
- Managing teaching assistants
- **Designing assignments**
- Grading assignments and programs
- **Managing trouble**: What to do when you don't know the answer or when one student dominates class time, or when a student is disruptive or ...
- **Team project management**
- Grading
 - **Dealing with complaints**
- How to grade collaborative work
- How to encourage attendance
- How to encourage collaboration outside classroom
- Dealing with complaints about instructor
- About team members
- **How to deal with solutions being available online**
- Understanding and responding to student needs



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Summary of Discussion

- Directing REUs:
 - Weave instruction with research rather than pushing research to later.
 - Pair the undergrad with a grad student.
 - Don't do it if you can't be enthusiastic.
- Teaching a class with students with a variety of backgrounds:
 - Give a non-credit pre-assessment quiz on day 1 to inform you and them of their preparation.
 - Reveal next topic in advance (perhaps making slides available) so that they have a chance to prepare.
- Active learning:
 - Case study instruction is quite effective but requires extra work.
 - If you can't *find* good case studies, you could eventually make your own collection into a book.



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Summary of Discussion

- Dealing with aggressive students:
 - Require students to raise hand and be called on before speaking.
 - Speak with authority and confidence.
 - Put a requirement for civility in syllabus (See Sue’s syllabus).
 - Be open to suggestions.
 - Note that you appreciate the input but you are the decision maker.
 - “In fairness to other students, I can’t give you more points than I gave them.”
 - Ask student to produce a source if challenging a fact.
- Encouraging attendance:
 - Pop quizzes, dropping the lowest grade.
- Testing policies: Consider a no-makeup policy.
- Being available to students:
 - Explore tools such as Piazza and Slack so that answers of general interest are available to all students.



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Summary of Discussion

- Grading
 - Having rubrics promotes fairness and prevents conflicts.
 - Announce the point distribution in advance.
 - Save a record of mistakes and point values in case of dispute.
 - Automated tools can speed the process. Examples:
 - Gradescope, which can sort papers to cluster similar answers.
 - Marmoset, which can help with running programs on test sets.
- Dealing with solution material available on-line:
 - Clear plagiarism policy, requiring students to name sources.
 - Policy against using an entire program.
 - Frequent reminders of the policies.
 - Personalize assignments: e.g., design your own object.
 - Written reflection on assignment.
 - Test question that is only easy to answer for those who understand the solution in depth.



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Summary of Discussion

- Syllabus
 - The contract between you and your students.
 - Protects you from unreasonable requests.
 - Protects students by letting them know expectations and dates.

Example civility clause:

<http://faculty.metrostate.edu/FITZGESU/FitzgeraldICS240Syllabus.pdf>

Example of detailed schedule information:

<https://www.cs.umd.edu/users/oleary/c662/info.pdf> plus

<https://www.cs.umd.edu/users/oleary/c662/sched.html>



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Some Resources on Teaching Computer Science

<https://www.cs.umd.edu/users/oleary/teachcs.html>

Questions?



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