# Session 08: **Developing Homework** Assignments and Exams

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#### Outline

- What makes a good assignment?
  - Homework assignment
  - <sub>n</sub> Exam
  - Project
- Nifty assignments discussion
- Meta-cognitive discussion

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#### Resources

- Teaching Tips
  - Ch.7, Ch.8 (pp.87-94), Ch.9, Ch.15 (pp.192-198, p.204), p.261, p.310
- n Tools for Teaching, by Barbara Gross-Davis
  - Ch.28 (http://teaching.berkeley.edu/bgd/quizzes.html), Ch.29 (http://teaching.berkeley.edu/bgd/allay.html)
    - Also Ch.25, Ch.27, Ch.30-31 not online
- n Nifty Assignments (in Computer Science)
  - http://nifty.stanford.edu/
- The Bushwhacking Alternative, by Ed Sobey

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#### What Assignments?

#### Types:

- Homework assignments
- Problem solving exercises, peer reviews
- n In-class activities
- Discussion, role playing
- In-class presentations
- Exams
  - In-class or take-home
- Projects

#### Also...

- Graded or ungraded
- n Graueu or ung... n Individual or group CSE599A TA Training, Au'05, Session 08



#### What Makes a Good Homework Assignment?

- List what you believe is the single most important factor in making a good homework assignment.
- Mhat makes that factor so critically important?

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Circle the factors that at first you would not have thought of.

a) Clearly relates to the (established) learning goals for the course

- Directly relates to material discussed in class
  Is intrinsically motivating and fun to do
- Challenges students just enough (but not more and not less) Provides clear and measurable goals and expectations
- Is relatively easy and/or fun to grade and provide feedback for
- Allows quick self-assessment of progress by each student Encourages and rewards creativity
- Permits learning to occur at different levels Doesn't place undue constraints
- Has a relatively low stakes (risk level)
  Allows for outcomes other than a complete success or a complete failure
- Is worded in a way that is inclusive of and respectful toward all students
- Is proof-read and professionally prepared
  Identifies a set of milestones that serve to guide students toward the
  completion of the overall objective
- Due date/time is respective of student needs



#### Potentially Controversial Ideas for Homework Assignments

#### Circle what you believe to be correct.

- n Homework assignments benefit from having an element of competition.
  - <sub>n</sub> (A) Yes
  - " (B) No
- Homework assignments should attempt to teach "core values" (that the instructor believes in) even if those fall outside the realm of the discipline.
  - <sub>n</sub> (A) Yes

n (B) No 22 Nov 2005

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#### Potential Factors for a Good Exam

Which of the (same) factors below are not true for exams? Circle.

- Clearly relates to the (established) learning goals for the cours Directly relates to material discussed in class

- Is intrinsically motivating and fun to do Challenges students just enough (but not more and not less)
- Provides clear and measurable goals and expectations
  Is relatively easy and/or fun to grade and provide feedback for
- Allows quick self-assessment of progress by each student
- Encourages and rewards creativity
  Permits learning to occur at different levels
- Doesn't place undue constraints Has a relatively low stakes (risk level)
- Allows for outcomes other than a complete success or a complete failure Is worded in a way that is inclusive of and respectful toward all students
- Is proof-read and professionally prepared
- Identifies a set of milestones that serve to guide students toward the completion of the overall objective Due date/time is respective of student needs



#### Recipe for Making a Lousy Exam

- Test mostly memory / recall without relating facts and phenomena to broader concepts.
- Make it too easy or too hard for most students.
  - This way you won't be able to distinguish below average from average from good achievers.
  - Students won't be able to tell which group they are
- n Don't match the learning goals for the course.
- Stray far from what assignments have prepared students for (in terms of content and skills).

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#### Aspects Important for Exams but Not for Homework Assignments

- Problems must be relatively easy in order to be completed in a limited time
- Students usually take exams at the same time and in the same place
  - Biases results in favor of those who operate well at those hours / days / locations
- Students must generally work on their own and quietly (on CS exams)
  - Biases strongly in favor of introverted types
- Varying the types of questions (multiple choice, short answer, essay)
  - Allows for quicker grading and for a more objective assessment of a broader range of skills
- n Format and layout matter (as time savers)
  - on 08



# What Makes a Good Project?

List what you believe is the single most important factor, beyond those already mentioned, in making a good exam.

Note: Your answer will probably be CS-specific and may not hold for other disciplines.

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# My Take on What Makes a Good Project

- Gives students exposure to practical tools used in the discipline in a professional setting
- Allows the application / exploration of key concepts in practice
- Is well constrained so that it is clear what aspects are most important to focus on
- Is reasonably well specified at the start, but not overspecified
  - Exception: if a learning goal of the course is for students to be able to dig for the requirements, as in a software engineering or a capstone course

**Note:** Those may not hold for other disciplines.

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2



#### What Makes a Nifty Assignment?

- n All of the above plus:
  - Sparks curiosity and interest (perhaps by relating to a real-world interest) of students
  - Provides opportunities for bragging rights
  - <sub>n</sub> Is self-contained for success
  - Has been successful and can be reused across universities / dev environments

n ...

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### Examples of Nifty Assignments

- Text Processing and Generation
  - http://www.cs.washington.edu/education/courses/cse143/04sp/projects/project2/partB.htm
- Simple graphics in 142
  - http://www.cs.washington.edu/education/courses/cse142/04su/homework/proj2/proj2.htm
  - One amazing result:



Others nifty assignments you know of?

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# Examples of "Almost" Nifty Assignments

- <sub>n</sub> MP3 Crawler
  - http://www.cs.washington.edu/education/courses/cse454/01wi/project1.html
  - Except that most songs we would find are not those you'd want to listen to
    - $_{\scriptscriptstyle \rm n}$  This had nothing to do with the technical aspects of their work.
- <sub>n</sub> Penguin Data
  - http://www.cs.washington.edu/education/courses/481a/02au/Groups/GroupC/
  - $_{\rm n}$  Except that the core users didn't appear as interested and involved
- n Others you know of?

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### Meta-Lessons: Teaching Techniques We Used Today

- Tying material to prior lessons
- n In-class discussion and activities
- Using classroom technology to engage everyone
- n Shifting gears between presentation and discussion
- <sub>n</sub> Meta-cognition
  - This is what we are doing right now
- One-minute feedback

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#### One-Minute Feedback

- In one sentence, what was the most useful idea you got from today's session or readings?
- Mhat question still remain open for you? Be specific.

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