Computer Science: Learning Goals

Beth Simon
Donald Acton, Patrice Belleville, Paul Carter, Kurt Eiselt, Mike Feeley, Ed Knorr, David Lowe, George Tsiknis, Kim Voll, Steve Wolfman

Jared Taylor, Life Sciences
Learning Goals: A Tale of Two Efforts

• Course and Topic Level Goals
  • All 5 1st and 2nd year core courses
  • Process, Results, Reflection

• Study of Learning Goals in the Classroom
  • Case Study in a non-majors course
  • What value do students see?
  • How does it change the course?
Goals

• Describe, in detail,
  • What students can do
  • When
  • How assessed

• Look for (eventually)
  • Duplication
  • Missed dependencies
  • More consistency across sections/instances
Process

• Topic Goals
  • By the end of the course students can…
  • First Cut: Exam analysis
  • Lecture materials
    • ID topic areas
    • Make sentences that complete
    • By the end of the course students can…

• Course Level Goals
  • Discussion
  • Grid-based placement of Topics under Course
  • Fix, re-do update
What did we get out of this?

- Exam design is MUCH easier
- There are important learning goals we are not assessing
  - Some course goals are not supported by topic goals
- Supported a coherent “story” for a class
  - And identified beyond anecdote where there are issues
- Enables iterative refining of course materials
- Incredibly valuable to discuss, debate
Tale 2:
Study of Learning Goals in the Classroom

- CPSC 101: Connecting with Computer Science
  - Non majors, varied purposes
- Instructors previously interested in developing LGs
  - Help make clear what we really want students to know
    - Not just programming 😊
Learning Goals Creation Process

• Discussion directed by topic areas (lectures)
• Instructor in Spring 07 made LG as developed and re-developed lectures.
  • Re-worked them in Fall 07 and…
How LGs were used (effectively)

• Featured LGs prominently at the beginning of each class.
• Started the term with a LG of learning how to use LGs to know what to learn in the class.
• Made (and kept) an explicit promise that all exam questions would be based on LGs
Impact on Students

- Interviews
  - 11 students just after first midterm

- Surveys:
  - Please complete the following sentence five times:
  - For me, in the class, the use of learning goals was __________________________
What do students say?

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Focus

• Focus
• On track
• Summarize
• Outline
• Expectations
• Organize
• Guide
What do instructors say?

• We have a contract with students
  • We and they are clear on their responsibilities
    • Separates key material from interesting discussion
    • Keeps any one topic from accidentally dominating course

• Exams are very simple to write
  • You’ve already done the work
  • Though it does take time and refinement to write good, examinable topic goals

• Makes it much easier for frequently revised courses

Look for a full report by end of summer 2008.
Questions/Comments
Helping Students Know and Practice What They Need To Know

- Collaborative Web Site supporting creation and review of multiple choice questions
- Students create questions, distracters, and explanations of correct answers
- Other students can “practice” questions and comment on results
- Students reflect, develop meta-cognitive skills, explain

Interested for 2008-2009? Email: esimon@cs.ubc.ca
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