PLTL AT UW-MADISON
WES-CS
(Wisconsin Emerging Scholars – CS)

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Basic Organization

• Students enroll in “normal” CS1 (lectures and hands-on labs) + WES-CS section, 2 hours per week

• WES-CS = small groups, co-operative problem solving, undergrad Peer Leaders

• Special follow-up data structures course in the spring
Basic Organization

• CS1 is 300+ students; WES-CS about 45

• 4 or 5 Peer Leaders (groups of 5 – 9); one or two groups each

• Authorization required (but we don’t say no to anyone)

• 1 extra credit for WES-CS
Recruiting

• Identify strong incoming freshmen (GPA, SAT/ACT math scores)

• Invite mostly women (+ men from small, rural high schools): e-mail + Summer Orientation

• Also invite women/minorities enrolled in CS1

• Personal contact during summer orientation is very important!
A Typical WES-CS Session

• Play Games:
  – Guess partner’s secret word using String methods (substring, charAt, etc)

• Simulate Code:
  – Act out operations on a Car class

• Solve Logic Puzzles:
  – Sudoku, chess mysteries…

• Write Code
Other Activities

• Exam review sessions

• Dinners with guest speakers and “field trips” to local companies

  Goal: let students know a CS job doesn’t mean “sitting alone in front of a computer all day”
Fall 2004 Results 😊

- 43 students, 46.5% women
- 54.2% of women would not have enrolled without recruiting
- Drop rates:
  
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Fall 2004 Results 😊

• Students very positive about WES-CS:

I have [several] lectures that same day, and I originally thought, “Oh my God, by the time this comes around I'm going to be like, get me out of here.” But it's actually really enjoyable. It has to be the fastest two hours of my day.

We really help each other out. Some people are better at certain things than others, so when someone has a question someone will step up and explain it. When that person who was originally explaining might have a question on something, another person can explain it to them, so it's really well-rounded in that aspect.
Fall 2004 Results 😞

• Interest in CS declined in all students

• Only 5 of 19 women went on to take next CS class: 26%

• Reasons:
  – Just didn’t enjoy it
  – Don’t want a job sitting alone in front of a computer all day
Changes

• New instructor

• Hands-on labs

• Outside speakers and field trips
  – wide range of interesting jobs
  – not just programming
  – plenty of human interaction
Fall 2005 Results

• 44 students, 29.5% women

• Students very positive about WES-CS

• Drop rates:

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• 5 (of 13) women went on to take next CS course: 38%
Fall 2006 Results

• 63 students, 23.8% women

• Drop rates:

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• 3 (of 12) women went on to take next CS course: 25%
Results Summary

😊 Higher percentage of women, minorities than CS1; some only because of recruiting

😊 Higher grades

😊 Lower drop rates

😊 Lots of enthusiasm!

😊 Good for Peer Leaders

😢 Percent women less than target (30% not 50%)

😢 Not many women continue in CS (26, 38, 25%)

😢 Hard to get female Peer Leaders
Conclusions so Far

• Active recruiting works to attract students with no previous interest in CS

• Peer-led team learning works to help students succeed in and enjoy CS1

• However, a good CS1 experience may not be enough to keep students in CS