Education Research

Ed Research and Teaching communities are disjoint

- Teachers traveling to conferences
  - Time & resources are scarce
  - Researchers and teachers travel to different conferences
- Learning progression on CS
  - Not known
  - No agreement
- Universities value research, and not teaching

Ed Research and Teaching communities are disjoint

- Recommendations
  - CS departments should proactively partner with Ed departments
- Benefits
  - Strong curricula
  - Improved retention
- Challenges in CS departments
  - High dropout rate in CS 0 and CS 1 courses

High school vs. college

- CS teaching in high schools very different
  - Non interactive lengthy lecturing does not work in high schools
  - CS 1 in high school has to appeal to broader student demographic / not just future CS majors
  - Computing more important than programming
- Collection of pre-test / post-test student knowledge in CS classes could help improve teaching

- Asking students to collect questions as they read / work on homework
  - Helps ensuring that questions are addressed in following lecture
- Teaching methods specific to or tuned for CS should be the focus of CS education research
- Reasons students drop college intro CS
  - Surprised by content
  - Not interested

- High school challenges
  - No dropping of CS course
  - Competition with other electives / AP courses
  - CS courses considered impossibly demanding (“4 hours of homework”)
  - Teachers need to be good story tellers
  - Teachers should focus on big picture as opposed to focusing on details
  - Pre-req to APCS is not rated (doesn’t count much towards GPA)

- Ed research challenges specific to CS
  - Debugging
- What are misconceptions regarding CS
  - Common mistakes
  - Myths
- Platform independence
  - SW, HW

- Teaching CS w/o programming
  - No programming language details
  - AP CS Principles course seems too dependent on programming (from presentations)
  - How do we teach the other 6 principles
  - Is programming equivalent to rigor?
- Teaching CS w/o computer
  - Doesn't work: Students lose interest

- Data leads to knowledge
  - Difficult to process data w/o actual computers