2006 CRA Academic Careers Workshop

Mentoring and Managing Students
Do's and Don'ts

Carla Ellis

Duke University

Do: Choose to be a mentor (Not just a research advisor)

- Mentoring is a special *relationship*
- Goal is to help someone else achieve greater success
- Involves professional & personal development
- Provides encouragement, advocacy, contacts, & professional opportunities
- If mentor = advisor, then also provides technical advice & research apprenticeship

Don't:
Expect advising to come naturally

- It's easy - just emulate your advisor
- Don't spend valuable cycles
  - Learning management skills
  - Understanding what mentoring entails
  - Investing any time reading about non-technical topics like mentoring
    - "Advisor, Teacher, Role Model, Friend – On being a mentor to students in S&E", National Academy Press, 1997. www.nap.edu/readingroom/mentor
    - "Research Student and Supervisor: An approach to good supervisory practice" Council of Graduate Schools. www.cgsnet.org/PublicationsPolicyRes

Do: Recruit good students

- Be selective – like everyone you want smart, creative, hard-working…
  - Are you & a particular student a good match?
    - Your expertise / their interests
    - Your skills / their needs
    - Working styles
- How to actively recruit
  - Teach entry-level graduate courses
  - Serve on the grad admissions committee
  - Encourage promising undergrads to pursue grad school
  - Network with colleagues at other schools to get their best students to apply (and reciprocate)

Don't: Create a research climate based on survival-of-the-fittest

- Emphasize competition, aggression, & ambition as keys to success
  - Collaboration, cooperation, & diversity will suffer in this environment.
- Adopt a highly critical tone to enforce high standards
  - Critical feedback is essential (but does it need to be harsh?)
  - Positive motivation, encouragement, praise, & building confidence are important
- Build a big group & use attrition to get best

Do:
Recognize individuality of students

- Each student is unique & their mentoring needs are different
  - Help them identify & build upon strengths (they may not have known they had)
  - Help them overcome obstacles (without getting discouraged)
  - Tailor mentoring to their career goals
- Understand the challenges faced by students with different backgrounds or experiences
  - Language, cultural, isolation, harassment

Don't: Be unavailable

- Keep your door closed
- Instill independence in students by not reliably making 1-on-1 time for them
- Reward productivity with attention (unproductive students don't deserve or need your time)
- Amortize advising time by holding one big group meeting

Do: Nurture the complete researcher

- Goal (& satisfaction) is to see the growth from novice to independent researcher
- Train "full-functionality" - how to
  - Identify & choose good research problems
  - Acquire skills: literature search, methodologies
  - Write papers
  - Write proposals: thesis, grant
  - Review papers & proposals
  - Give talks: elevator, conference, job
  - Network & collaborate in research community

Don't: Exclusively focus on producing papers

- Meeting the deadline takes priority over training the research apprentice
  - Can't afford to let the student try risky potential breakthroughs/dead-ends
  - Research problem is well-defined
  - Short-term focus (one paper at a time)
  - Students deployed according to already acquired skills (e.g., programming but not the technical writing)

Do: Provide resources & opportunities

- Financial
  - Stipend & tuition
  - Equipment
- Travel to conferences
  - Help find funding: grant, university, professional societies, conferences
  - Encourage active roles: posters, demos, scribes, WIPs
- Summer internships at industrial research labs

Don't: Avoid any focus on research ethics & CSE culture.

- Publishing
  - Dual submissions to maximize probability of acceptance
  - Adding minimal content to conference version for journal submission
  - Cut-and-pasting chunks of your own text
- Reviewing
  - Using confidential information from submitted work in one's own.
  - Being critical primarily to protect your turf

Do: Be an advocate

- Talk to colleagues about students
- Introduce them around at conferences
- Credit their contributions in talks & discussions
- Nominate them for awards, fellowships
- Help them find the right job
- Later: Suggest them for program committees, NSF review panels, awards, etc.

Don't: Exploit students to boost your career (pre-tenure)

- Take credit for the work of your students
  - Be first author on all papers
  - Do the presentations at conferences
- Keep students around as long as they are producing papers
  - Argue that it will make their dissertation stronger
- Offload teaching responsibilities onto TAs
  - Hold out the promise of a stronger recommendation letter.

Do:
Listen & Communicate

- Failure to communicate is a major cause of stress (& breakups) in advising relationships
  - Usually both parties are responsible
- Benefits are trust, mutual respect, empathy, understanding, and long-lasting friendships

Don't: Avoid undergraduates

- The expected return (volume of research results) probably isn't equal to the investment (in time).
  - Easier to do the work yourself
- Hard to define appropriate projects
  - Concrete demos, contributing code to system
- Distraction for my graduate students
  - How useful is the experience they get by serving as mentor?
- Providing a good experience that encourages them to go to grad school likely benefits another program
  - The overall CSE pipeline is a concern

Do: Make it fun and rewarding

- Stay positive & energized
- Enjoy your collaborations
- Keep in touch with former students – now as colleagues & friends
- Find mentors for the next stage of your own career