CRA Academic Careers Workshop: 2001

Mentoring and Managing Students

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Outline

- Mentoring in general
- Mentoring Graduate students, focus on Ph.D. students
  - Research
  - Personal Development
  - Environment
  - Culture
- Mentoring M.S. Students
- Mentoring Undergraduate Students
- Faculty need mentors!

How do we learn to Mentor?

- **Success as a faculty member in academic institution**
  - **Research**
    - **How to find and solve important research problems**
    - **Publishing**
    - **Mentoring and advising students**
  - **Teaching**
  - **Service**
- **We "parent" like our parents did – no training**
  - **We "advise" like our advisers did – no training!!**

Mentoring?

- Mentoring has become a "buzz" word in higher education – raises a number of questions:

- What is it?

- Who should be mentored?

- What is the difference between mentoring and advising?

- How should one mentor?

What is a mentoring?

Mentoring is establishing a very special relationship
- **involves professional development (ultimate goal to help someone achieve success) but also personal development**
- **develops and lasts over an extended period of time, with varying intensity and purposes**
- **provides information, help, advice,and contacts**
- **provides encouragement and advocacy**

In general, effective mentoring relationship is characterized by mutual respect, trust, understanding and empathy.

Lots of studies about importance of mentoring

- Researchers have identified mentoring as the most crucial need for success and advancement at all levels in career development and fields

- Mentoring is a career long activity and involves both mentoring and being mentored.

- Comes in different forms:
  - ad hoc
  - systematic and part of a program or procedure

What is an ideal mentor?

- No such thing as a profile of an ideal mentor or mentee

- Success depends on both
    - **drive and ability of mentee**
    - **willingness, availability and knowledge of mentor**

- **One mentor does not fit all:**
    - **People may seek, develop, and maintain several mentoring relationships over time – or at the same time.**

Mentoring Graduate Students

- **Rewarding**
    - **Start – expert researcher/novice**
    - **When graduate – both experts**
        - **Also colleagues and friends - lifelong**
        - **Mentoring becomes mutual**
- **Impact – very important**
    - **Difference between student being successful and not being successful**
    - **Mentor**
        - **provides opportunities student did not know about or think about**
        - **recognizes and nurtures abilities student did not know had**

Responsibilities of Mentor – Graduate Students

- Research

- Personal Development

- Environment

- CSE Culture

Is research adviser a mentor?

- Research adviser – helps
  - Define a research problem
  - develop a research project leading to Ph.D.
  - Ensure student has skills needed
- Difference
  - Mentoring involves personal development as well as professional development
  - Faculty adviser may or may not be a mentor – depends on the relationship – ideal YES!
  - Mentor may not be a research adviser – maybe not in same field – maybe more than one mentor
- Role model is not necessarily a mentor but may be.

Assume that mentor = adviser

Responsibilities of Mentoring: Research

Apprenticeship for research
- How to find research problems
  - Give them a research problem
  - Guide them in find their own
  - Let them find their own
- How to get proper background: literature, skills

- Writing papers
  - Technical writing – multiple passes of editing
  - Organizing papers

- Writing proposals

- Giving talks
  - Elevator talks
  - Conference talks

Responsibilities: Financial support

- Stipend & Tuition
  - Support student from your research grant
  - Help to find fellowships and other sources (e.g., TAs)
- Help travel support to conferences
  - Grant
  - Department
  - Professional Societies: SIGPLAN, SIGSOFT, etc.
  - Conferences
- Internships
  - Summer internships at companies – IBM, HP, Intel. etc.

Responsibilities: **Personal Development**

- Set high standards and challenges for the students
- Guide, direct, encourage and foster independence
- Help build confidence – Encourage students
  - **success is great catalyst for encouraging student continue and reach their potential**
- Help with network
  - **Conferences, workshops, email**
- **Help with finding right job for student after graduation -**
  - **job interviews**
  - **job talk, etc.**

Promote and act as advocate for your students

- Talk to colleagues about students

- Credit them in talks and conversations

- Nominate them for awards, prizes, fellowships

- After graduation, suggest them for program committees, conference committees, NSF panels, etc.

Responsibilities: **Environment**

Single student – project
- – Community
- – Working group

Team of students working an same general project
- · Clearly identifiable research projects
- · Clearly identifiable contributions

Establish right atmosphere
- – Inclusive – especially if have underrepresented groups
- – Cooperation vs. competitive
- – Treat students equally (as much as possible)

Responsibility: CSE Culture and Ethics

- · Educate students about the acceptable practices and ethics in CSE

    - – Publishing
        - · Conferences versus journals
        - · Dual submissions
            - – Conference & conference (workshop)
            - – Conference & journal
        - · Resubmitting essentially the same paper
        - · Conference papers resubmitted to journals

    - – Reviewing
        - · Constructive criticism
        - · Confidentiality

Establish own culture and policies

- **Maintain data and accurately reporting of experimental data**
- **Deciding on authorship**
  - **Order of authorship**
- **Who gives talks?**
- **Ownership of research ideas & software**
  - **After graduation**
- **Employing students**
  - **Within university**
  - **Outside endeavors**

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Ethical Concerns

- **Close and long term relationship**
- **Clear power differential**
  - **possible to exploit graduate students**
    - **Exploited sexually**
    - **Emotionally – faculty disclose inappropriate info**
    - **Academically faculty make take credit for students work**
    - **Demand work many long hours for good recommendations or pay**
    - **Keep students around longer than necessary because of their paper production.**

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Guiding principle: Be flexible

- **Different students will require different amounts of and kinds of attention, advice, information and encouragement**
- **These will change along the way**
- **Some students feel comfortable approach mentors; other will be shy, intimidated or reluctant**
- **There will be different styles of work habits – may not match yours!**
  - **Spurts, steady**
  - **Wait until last moment, get things done early**

Each student is different - mentoring is different

Diversity of students

- Under representation (women and minorities): may need more encouragement, help with feeling excluded and different
- Different cultural issues
  - **International, background**
  - **Communication and learning styles**
- **Disability issues**
  - **Physical, mental, emotional or learning- help with them getting assistance if needed**
- **Personal issues**
  - **Families, health, children, spouses/partners**
  - **Personal problems**

Finding Good Students

Be active: encourage good and interested students to work with you on research topic of mutual interest
- **Independent study**
- **Working group**

- **Identify students with potential and encourage them to pursue higher degree**
  - **M.S. degree and then Ph.D. degree**
- **Bright students – may need to encourage them**
  - **Especially true for women and minorities**

Less talented students – creativity, background, etc
- **Take more time**
- **Careful when still untenured**
- **Still enjoyable!**

Mentoring: Master's students

- **Master's students:**
  - **More organization in research**
  - **Clear idea of what you want students to accomplish**
  - **Have in mind a paper – and design project for the paper.**

  - **Have the student write a mini proposal, including steps and experimental design – 2-4 pages.**

  - **If good, encourage to go on – however, different skills needed**

Mentoring: Undergraduates

Major and career choices: what courses to take, importance of internships, advice on career opportunities

Encouragement – major, graduate school

Research – help get undergrads involved in research
>   Well planned project – can be completed in certain period of time
>   Research that is poorly conceptualized might be worse for undergrad than no research experience

>   How differs from grad students
>   Not typically long term – not as much time
>   Expectations should be realistic

Barriers to creating and maintaining a mentor-rich environment

- Faculty member doesn't have enough time to devote to mentoring
  - **Being too busy is not acceptable**
- Faculty member and student are in competition with each others
- Faculty member and student lack personal experience with people of different backgrounds
- Trust is not there
- Communication problems - poor listening skills
- Unrealistic expectations – both from faculty member and student

Best Practices

- Establish "protected" time to meet with students and keep it
  - **Could be brief – just checking in**
  - **Some will may require more time than others**
- Set realistic deadlines
- Be prompt in providing feedback
- Learn to work with the mentee – nurture self-sufficiency
- Be approachable and available
- Be constructive – critical feedback is essential for improvement but do it kindly and temper criticism with praise
- Find your own mentors

Should you say YES?

- **Consider the needs of a prospective student**
  - **Area of expertise**
  - **Personality – do you like the person?**

- **Do you feel the student has what it takes to do a quality Ph.D. dissertation**

- **Do you have the time, energy, grant funds to support a student through the doctoral program**
  - **How many students do you have?**
  - **What other commitments do you have?**

Mentoring faculty

- **Assistant Professor**
  - tenure
  - building a research career
  - finding funding
  - begin networking
  - time management and family issues
- **Associate Professor**
  - network
  - international reputation
  - involved professional activities (e.g.,program/conference chairs, journal editors)
- **Professor**
  - leadership positions
  - honors
  - networking
  - politics

Finding/evaluating an faculty mentor

- **Is the person's work current and relevant? Is it funded? Does the faculty member publish in respectable places?**

- **How many students does he/she supervise?**

- **How long does it take students to finish?**

- **What is the placement of the adviser's students in the past?**

- **How responsive is adviser?**
  - **How long to return written materials?**
  - **How accessible**

Finding/evaluating an adviser (cont)

- How much freedom does the student have?
  - Learn to do research – find problems
  - Not just be handed a project from research grant

- Does the adviser publish with students? What is the order of names?

- Who presents the papers that are co-authored?

- Does the person take students conferences and help with networking?

- Are the person's work habits compatible with own?

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Why should you want to be a good mentor?

- One of the most rewarding and satisfying professional and personal activities
  - Having a student succeed and eventually become a friend and colleague is great joy

- Best mentors are most likely to be able to recruit and keep students of high caliber who can help produce better research, papers, and grant proposals

- Provides stimulation through exposure to new ideas and different approaches

- Recognition for finding talent and having influence

- Develop professional network – in making contacts for students, strengthen own contacts

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Resources

- "Adviser, Teacher, Role Model, Friend - On being a mentor to students in S & E", NAS, NAE, IOM, National Academy Press, 1997
  - http://www.nap.edu/readingroom/mentor

- CRA-W Career Mentoring Workshops Booklet
  - Getting tenure, Building research career, Finding funding, Time management
  - http://www.cra.org/craw

  - Research Student and Supervisor: An Approach to Good Supervisory Practice
    - Council of Graduate Schools, Washington, D.C.
  - http://www.cgsnet.org/PublicationsPolicyRes

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