



Reaching Their Potential Through Undergraduate Research

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Undergrad Research at NC State

- Mid 1960's - early 1990's
 - Maximum of one or two honors students per year doing independent study/research (mostly independent study)
- 1990's - present
 - Ten to twelve students per year doing independent study/research (mostly research)
 - Significant participation in REU's

What Changed?



Attitudes!

- Then:
 - Faculty thought undergrads couldn't do research
 - Students thought undergrads couldn't do research and opted for independent study if they did anything
- Now:
 - Faculty see students who are able to do good projects & say "I can mentor kids like this".
 - Students see other students who are able to do good projects & say "I can do this too!"



Requirements

- 1960's - early 1990's
 - Honors program students encouraged to do independent study/research
- 1990's - present
 - Honors program students required to do independent study/research
 - Non-Honors students encouraged to do independent study/research
 - Students encouraged to do REU's



Need: Projects that Work for Your Student

One size does not fit all. A project should match the student's

- Interests
- Background
- Ability
- Time constraints

And even then we need to be flexible.



There's more than one way

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- Projects can be supervised in
 - Computer Science
 - Physics
 - Operations Research
 - Economics, etc
- Student is doing a project in 1st major (not math)
 - We ask them to bring in a significant math component and present results to faculty and students



Matching Students with Projects and Faculty

- Web page
 - Lists faculty willing to mentor
 - Projects they're willing to supervise
 - Pre-requisites needed for project
- List of faculty who have mentored
- Student proposed project
 - Suggest possible mentors
 - Email possible mentors



Encourage Your Students

- “These faculty are willing to work with you!”
 - Web page
 - Math newsletter
 - Student research presentations
- “You can do it too!”
 - Advisors encourage research
 - Student research presentations
 - Student papers



Presentations and Reports

- Oral presentation to math faculty and students
 - Required
 - 15-20 minutes
 - Guidelines provided
- Other presentations recommended
 - NC State Undergrad Research Symposium
 - Regional and national meetings
- Written report
 - Required
 - Guidelines provided

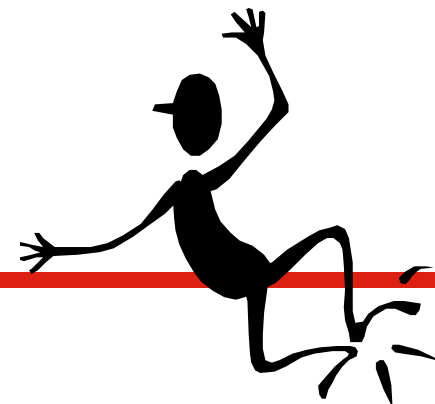


What Else?

- Stronger students are encouraged to do:
 - Tougher projects
 - More than one project
 - REU's
- Students doing the 5 year BS/MS program can roll over their undergrad project and wind up with a very strong master's project



The Payoff



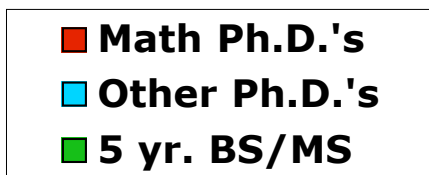
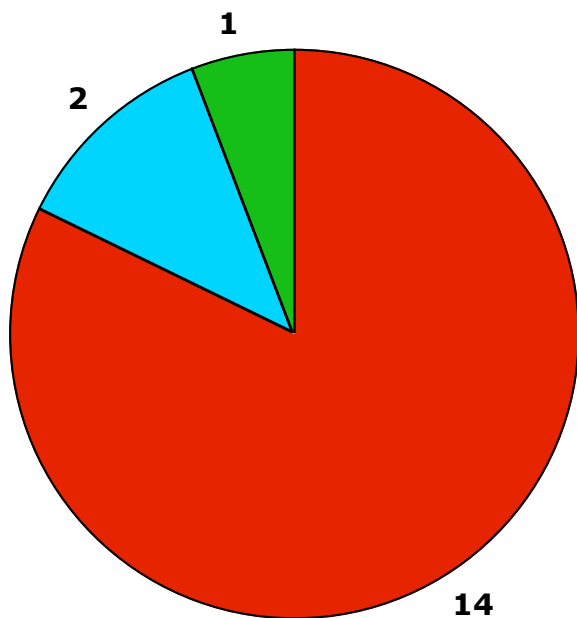
Good research makes a big difference:

- Students are more likely to go to grad school
- They go to better grad schools
- They're more likely to get national fellowships and scholarships

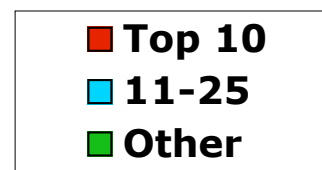
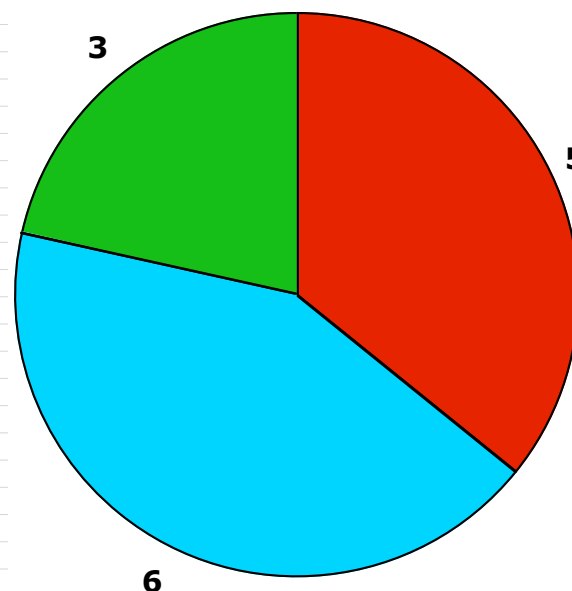


Math REU's + In-house Research

Math REU's



Math Ph.D.'s





Math Grad Schools

- 1980's

Berkeley

Indiana

Rutgers

VPI

- 1990's - present

Princeton

Berkeley

Stanford

NYU

UCLA

Wisconsin

Cornell

Maryland

Rutgers

Urbana-Champaign

Penn

UT Austin

Northwestern

Ohio State

Duke

Penn State

UNC

NC State



And there's more!

- 3 DoD Fellowships
- 2 Gates Fellowships
- 1 Fulbright
- 1 Ford Fellowship
- 5 Goldwater Scholarships



What Can You Do?

- Be a research mentor
- Facilitate research
 - Publicize successes
 - Get faculty involved
 - Get students involved
 - Keep records



Bottom Line

Everybody benefits

- Students
- Faculty
- Department
- Institution
- Profession