Integrating Undergraduates into Real Research

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NSF REU Program

Research Experiences for Undergraduates
  • supplements to existing awards
  • REU sites

We’ve done both, with (generally) good success

But it took us a while to figure them out
Mechanics: REU Supplements

Small add-ons to existing NSF awards

- one or two students
- three page proposal
- no overhead
- we budget $7,000 for a 10-week summer
  - $5,000 stipend
  - $1,500 housing allowance
  - $500 travel

You should do these for all of your awards
Mechanics: REU Site

Three years, 10 students per year
  • can build in salary support
  • same student costs as supplement (for us)
  • full 15-page proposal
  • competitive
  • can be renewed
  • additional programmatic elements

This is a lot more work, on all axes
Mechanics

We have a site, but we include all summer students in the activities

• 15 this summer

A site pays for your time to develop the additional programmatic elements
The REU program is not about research. It’s about a research experience

- the experience is the goal
- accomplishing something is secondary
- this can be frustrating to faculty

Show undergraduates what it’s like to be a graduate student.
Structure

Students pre-assigned to existing projects
  • with a defined grad student mentor
  • often paired with a peer

Grad students meet daily and provide support

Faculty meets once or twice a week
  • plus regular group meetings
Structure

Weekly talks
- technical and career

Periodic social events
- organized at start of REU
- ad-hoc by end

Plus, all the usual grad student stuff
- technical meetings
Weekly Talks

• What do grad students do? How are they evaluated?
• Time management and similar skills
• GRFP writing workshop
• Grad school application workshop
• How to read a paper
• How to write a paper
Warning

Most undergrads are not that productive
  • at least at the start

They don’t know much
  • at least at the start

They often need a lot of structure
  • at least at the start

Week 10 is pretty close to “the start”
But...

This is a long game
  • at least for us

It’s as much about student development as it is about research
  • even if you don’t directly benefit by getting more publications
Project Thoughts

Incorporate them into an existing project
  • built-in support structures

Don’t put them on the critical path
  • since they might not deliver

Don’t give them pointless work
  • since they should be working on a real problem

Assign projects beforehand
  • give them time to get up to speed and hit the ground running
The Long Game

Keep in touch with the students

Some will become graduate students
  • some will become your graduate students

If they have a good time, they’ll tell their friends
  • and this will give you better graduate students
So, Did it Work?

3 students were eligible to apply to graduate school this year

All 3 students are starting in the Robotics Ph.D. program this Fall
Summary

You can successfully incorporate undergrads into real research

You need to be clear *why* they’re there

It’s sometimes a lot of input for little (or negative) output

But it’s important if you’re playing a long game
Thanks

REU Site: Robots for the Real World
(CNS 1359480)
Shameless Self-Promotion

http://robotics.oregonstate.edu
Questions?

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