

Using Undergraduates Effectively to Further One's Research and Dealing with Faculty Burn Out

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Our discussion group centered on two main themes: first, how to use undergraduates effectively to further one's research program, and second, how to deal with faculty "burn out." In each case we tried to address these issues in the contexts of a traditional summer REU and an ongoing research program using students from one's home institution.

With regard to the first issue, some points raised were

- Properly utilized, undergraduates can really further a faculty member's research program, which is especially helpful at smaller schools with heavier teaching loads. The involvement of undergraduates "kills two birds with one stone," by simultaneously educating students while furthering faculty research.
- It can be helpful to start students off by having them work specific examples, especially via computer experiments.
- Perhaps we should make more use of the group research model from the sciences, in which students commit to joining a research group for a period of time (a year, maybe longer). Such students can make more substantial contributions to the program, and then act as mentors to newer students.
- Students themselves are often capable of posing good research questions that can assist a faculty research program.

On the second issue, that of "burn out," most discussion focused on problem generation. Some points raised were

- Problem generation:
 - The new column in FOCUS, in which research problems suitable for undergraduates will be published, could be a source, but may have some difficulties of its own. Specifically, what's to prevent 10 students from attacking, solving, and trying to publish the same result? It was suggested that perhaps some kind of "wiki" approach, in which various research groups update a central site to keep other researchers posted could be helpful. There was no clear consensus on whether undergraduates should care about being "scooped."

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- It can be helpful for a faculty member to attend a professional conference which is not in his/her area, and look for research questions which are more easily accessible to a “beginner” in the area. Sometimes one can ask good questions that even the experts had not considered.
- Students from one year can (and should) pose questions for future research, which can form the basis for the work of students in a following year.
- In general it is very difficult for students to pick their own original research problems, but one can try to find problems which have many facets or variations and let students choose which variation to work on.
- Other issues raised were
 - Cycling faculty through an REU program can help reduced burnout and give those involved a break.
 - The NSF doesn’t really provide enough funds for REU faculty. The amount of work involved isn’t commensurate with the salary one can ask for (within the current budgetary guidelines). This contributes to a sense of burnout, and prevents the program from involving too many mentors.