

conversations with their advisor, professors, or peers. Our department has also started formally advertising available projects in a “research lightning talk” event. This has been especially important for ensuring equitable access to research, as not all students are aware of what undergraduate research is, or how to pursue those opportunities.

In closing, undergraduate research offers a path to not only balance, but to enhance, the teaching and research roles of faculty members working at primarily undergraduate institutions. The more the interconnectedness between these two pillars of academic work can be realized, the more difficult it becomes to see where teaching begins and research ends. Our research can inform our teaching, our teaching can recruit students to our research, and those research students can bring new ideas to our research program and help maintain our research momentum. For me, this is probably one of the most compelling reasons to work at a research-supportive primarily undergraduate institution!

References

- [BGH15] J. C. Beier, J. L. Gevertz, and K. E. Howard, *Building context with tumor growth modeling projects in differential equations*, PRIMUS 25 (2015), no. 4, 297–325, available at <https://doi.org/10.1080/10511970.2014.975881>.
- [TCNJ] Teacher-scholar, definition of <https://policies.tcnj.edu/wp-content/uploads/sites/247/2018/02/Teacher-Scholar-definition-of-1.pdf>. Accessed: 2022-10-21.



Jana Gevertz

Credits

Author photo is courtesy of Matt Furman.

Bridging the Gap by Building Lasting Mentoring Relationships

Allison L. Lewis

In the summer of 2011, I was freshly graduated from my small, undergraduate liberal arts college. As one of just a few departing math majors who had enjoyed easy access to all of the offerings of the department and never questioned my belonging in the major, I was excited and confident about moving on to the next stage of my education. That feeling wouldn't last long. As I transitioned to my graduate program that summer, I very quickly felt lost and out of my depth. Within a few months, I found myself looking for an escape route.

We talk a lot about the importance of strong mentoring while our students are in college. And yet, we don't always think about how to continue these relationships once our students leave us. As we know, students attend PUIs for the intimate setting that they can provide. They get to know their classmates and professors on a personal level, get involved in research projects, and enjoy the benefits of a one-on-one advising relationship, all long before their counterparts at larger universities. This can give students at PUIs a sense of empowerment and confidence that can help to boost them into a career or along the road to graduate school. However, the ensuing transition to a large research university or the workforce can then be extremely jarring; these students are often accustomed to being recognized by their peers and instructors, engaging with professors frequently for advice, and having their belonging validated regularly. When they start out in this new and overwhelming environment, they feel unsettled and start to question their worth. (I speak from experience.)

To help students weather this transition, the importance of mentoring that stretches beyond their time on campus cannot be overstated. Students at PUIs can benefit greatly from building a solid support network while they are still in college: something that they can bring forward into the next stage of their careers and lean on when the road gets rough. This can be from a formal mentoring structure in which they choose to participate (one example of which I will discuss below), but can also be a more informal continuation of relationships that were initiated during their time in college. In the latter case, it is often up to us as instructors to recognize that our previous students may

Allison L. Lewis is an assistant professor of mathematics at Lafayette College in Easton, PA. Her email address is lewisa11@lafayette.edu.

DOI: <https://dx.doi.org/10.1090/noti2667>

need a boost but don't have the confidence to ask for it; we should take the initiative in reaching out.

The onus of mentorship does not have to lie solely on professors, however; other resources can be utilized for the benefit of all parties. For example, colleague Joy Zhou and I recently began a mentoring program for female and non-binary mathematics majors in our department that draws upon the expertise of our alumni base. Students are grouped into peer clusters with whom they meet monthly, in order to establish a group on campus from which they can draw support on a daily basis. Additionally, each student receives an alum mentor with whom they connect several times each year. Since they rotate mentors each year, each student participant graduates with several alum connections that they can call upon for advice and encouragement later in their journey. These mentor-mentee relationships have been invaluable to all groups: several students have received job offers as an outgrowth of discussions with their mentors, alum mentors often express appreciation for the opportunity to get involved with their old department, and all of our program participants get to explore numerous career paths about which we, as professors, are often unable to advise them. In particular, such a mentoring program built with a focus on supporting underrepresented groups in STEM fields can help to address the leaky pipeline, by providing students with frequent validation and giving them a group of peers and role models with whom they self-identify [L1]. Because members of minority groups may be somewhat shielded from the worst effects of bias during their time at PUIs, it can be particularly important for them to have an existing support structure in place when they inevitably encounter these prejudices later in their careers.

For all the benefits that a formal mentoring structure provides, however, informal check-ins can have just as large of an impact and often require a much smaller time commitment. The relationship need not have been a close one during the student's time at the college in order to make a difference. Pacheco-Tallaj has written in this very publication about the disproportionate impact that small gestures—even one-time conversations—can make from the perspective of undergraduate students [L2]. Simply sending a quick email to a former student can make them feel seen and reopen the lines of communication, in the event that they are struggling but hesitant to reach out on their own. Many times, during my own graduate school years, a short check-in email from a previous REU advisor reinforced that I did belong, and reminded me of a time in my undergraduate years when I was passionate and enthused about mathematics...

...Which brings me back to 2011. Here I was, in the first year of my graduate program, and already looking for an escape route. While emailing back and forth with a student who was still at my former college, I casually mentioned that I was considering quitting. I certainly didn't expect

anything to come of that remark. But I was wrong. This student immediately sent out an SOS to the math department. She handmade a beautiful card and marched it around to all of my former professors, who covered it in encouraging notes, anecdotes, and reminders of those moments during my undergrad journey when I had experienced breakthroughs and successes as a result of hard work. The card arrived in my mailbox a week later, and it made all the difference. Having this reminder of where I came from and how many people were in my cheering section gave me the motivation to keep pushing forward. I made it through those difficult first few years, found myself a new group of supportive peers and a thesis advisor, and finished my PhD in 2016. I'm now working in my dream job as a professor at another PUI.

I still have that card. It serves as a reminder of the kind of professor I want to be.

References

- [L1] T. C. Dennehy and N. Dasgupta, *Female peer mentors early in college increase women's positive academic experiences and retention in engineering*, Proc. Natl. Acad. Sci. USA **114** (2017), no. 23, 5964–5969, DOI 10.1073/pnas.1613117114.
- [L2] N. M. Pacheco-Tallaj, *Casual Mentorship and the Strength of Weak Ties*, Notices Amer. Math. Soc., <https://dx.doi.org/10.1090/noti2143>.



Allison L. Lewis

Credits

Author photo is courtesy of Allison L. Lewis.

Maintaining a Research Career at a PUI

Jennifer Paulhus

My tenure track job search over a decade ago can best be described as “scattershot.” As a postdoc during the height of the financial crisis, I applied to just about any job I was

Jennifer Paulhus is an associate professor in the Department of Mathematics and Statistics at Grinnell College. Her email address is paulhus@math.grinnell.edu.

DOI: <https://dx.doi.org/10.1090/noti2671>