Advice to new research mentors and research students
from former College of Wooster independent study (IS) students*
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These quotes** were in response to the prompt: *"please provide 2-4 pieces of advice you would give someone who is new to mentoring undergraduate research projects. For example, you could mention potential pitfalls, or something you would want an undergraduate mentor to know about research from a student perspective."*

<u>Advice to mentors:</u>
Students are (obviously), so individual and their needs are individual. Their strengths and weaknesses are different, and the same approach might not always work.

While it is important to set up regular check-ins with your undergraduate student first, to let them know that you are engaged with their research, and second, to provide an opportunity to talk through issues that have come up, etc., it is vital to have a support system outside this. Having something set up like a cohort system is also important for helping the undergraduate researcher to succeed. This could be a group of undergrad students all working together in the lab or maybe a group of undergrad students from labs with overlapping research interests. As a mentor, you can't realistically oversee every step of the project, and having the cohort system built-in gives students more support.

The hardest thing for me was just not knowing what is unknown. I would have really struggled to come up with a new project and was better off coming up with a question based on your existing research. It was helpful to have time with you to just discuss your research so I had a better idea of what research exists and what the gaps are.

To me, what built really strong mentor relationships in undergrad and beyond was relating to each other and seeing bits of yourself in your mentor/mentee. A great way to help undergrads is to work for more diversity and inclusivity within one's own department.

Along the lines of "not knowing what is unknown" as an undergrad, I also assumed my professors knew everything. It was eye-opening and reassuring when you shared things you didn't know or also struggled with. Like sharing how you learned R, or your own struggles in grad school or fieldwork.

I think that data management seems like an intuitive process, but a lot of undergrads do not know how or when to manage their data logically. I think someone new to undergraduate mentoring research should spend time talking about data management and archiving and not assume the student will figure it out. This instruction is a useful asset to the students and will save them a lot of headaches later in the process.

Looking back, it was the relationship that my mentors built with me that was most impactful in my IS journey. They took the time to understand my specific interests in the project, as well as the outside interests I had that could potentially compete with IS. They did an amazing job engaging me around my interests in a way that kept me curious and passionate for over a year. The advice I would give new mentors is to get to know your mentee and to engage them around their interests within the project.

I think being able to encourage intra-lab interactions is very important. While it is good to have a solid one-on-one relationship with individual students, I think it is equally important that students have a good relationship with each other. Feeling comfortable discussing work with fellow labmates is valuable and can offer a different type of support.

For the mentor, there is a balance in how much guidance they choose to provide to the student. Providing too much guidance stifles the intellectual growth of the student, while too little guidance leaves the student lost and stressed out.

I think for new mentors, one thing to keep in mind is the balance between challenging students while also setting them up to succeed. One example of this could be in a goal-setting situation. I think something like setting ~2-4 easily achieved goals and ~1-3 moderate and/or difficult goals is a good approach, as it challenges, but hopefully doesn't overwhelm. Ideally, over time the difficulty of these goals (or the type work, etc) would increase as the student becomes more comfortable.

Deadlines are important and can also be collaborative. Together we set small deadlines (such as when I would turn in the next section draft, or when I would complete [an aspect of the research]) that were ambitious and strict, AND that took into account my work, class, and extracurricular schedule. By setting deadlines with me, my advisors forced me to take ownership for the pace of my work and also showed their respect for me.

Push students as far as they can go (and then further). At least for me, this kept up my pride and passion for my work.

It is easy to forget that as an undergraduate, research is not a student's only priority. There are classes, clubs, job apps, and other life things that take up someone's time and headspace. I know most people know this but it is nice to remind yourself when working with a student who has a tendency to take on too much.

It can be easy for students to be overwhelmed by the size of the research project. Clearly breaking down the project into smaller, more manageable pieces is important. It is also important that the student not feel rushed or overthink the timeline.

<u>Advice to other students</u>
Be prepared to change everything that you wrote in your junior IS and even as you're doing your experiment. You need to be able to be flexible and not lose sight of your project.

You may not get the topic or professor you want, but it's okay. It's not the end of the world. Just power through it the best you can.

Do not procrastinate on ANYTHING! Time is an illusion. In August, when you start classes back up, you are already behind. Try to do data analysis as soon as possible, and if you are waiting on something in the lab, start looking up sources for your literature review. You can always be working on something.

This may be very stressful for you. I strongly encourage you to find something you can incorporate into your schedule that we help with destressing yourself.

Reach out to other professors in the department (or even outside of the department) that you have a great relationship with to talk through your ideas or even collaborate with.

Completing at least small amounts of IS each day, to continually grow your project into the research paper and presentation it becomes. If each day doesn't work, think about weekly or monthly goals you'd like to accomplish

Think about using task management programs to help you along the process, and show progress that you've made.

Don't be afraid to ask for help in this lab or with the IS progress. Everyone could have something valuable to contribute or suggest for your project - a new methodology, a new data analysis program, a new article or study with valuable information.

*10 former students from the Ison lab (graduation years 2016-2020) provided this advice.
**JLI made minor edits to help keep the quotes anonymous and fix minor typos.