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Subject: Teaching Toolbox: Perspectives of Students in STEM

Perspectives of Students in STEM

by Zelda K. Shifflett, with perspectives from Raymond Martin, Charles Beattie, and anonymous STEM students

As an undergraduate teaching assistant (TA) in Biology, I've had the opportunity to experience the classroom from multiple perspectives. All of the students I've worked with are incoming students who are new to JMU, either as first-years or transfers. I've watched them throughout the year, as they've developed skills and become more comfortable at JMU. I've also myself experienced the transition from community college to JMU (during the pandemic, which added layers of challenge), and I'm grateful to all of the faculty who have provided ongoing support.

My hope is that this Toolbox can offer some ideas for faculty, in STEM and beyond, for ways to shape an environment that feels [welcoming](#) for learning and learners, especially transfers and other students with [diverse backgrounds](#) and pathways to college. By understanding the perspectives of students, faculty can [create relationships in the classroom](#) to foster communication and [build trust](#). Faculty and students can work together to create mutually beneficial learning environments.

To work toward these goals, here are some quotations gained from interviews with students from multiple STEM programs at JMU:

What were some of the ways faculty helped you make the transition to JMU?

- For my major, the transfer section of the BIO 203: Viral Discovery course was very helpful. My first two years of community college were during COVID so my only labs before I transferred had been online. The class taught me lab skills and made me feel capable as a biology student at a four-year institution. Other professors also came to classes to speak with us about their research, which helped with finding the confidence to talk with faculty to get involved in undergraduate research or other opportunities. (Zelda Shifflett, Biology)
- Some professors were willing to meet after class and advise me on courses and research. (Anonymous, Engineering)

What are some of the challenges of being a student in STEM/transfer student?

- Transitioning as a STEM transfer student posed significant hurdles, particularly in readjusting to the academic rigors after a prolonged hiatus. Having been away from college for nearly three years, diving back into a demanding schedule filled with science courses proved immensely challenging and unfamiliar. Rebuilding my study routines from scratch and striving to catch up with my peers initially shook my confidence as I embarked on the semester. (Raymond Martin, Biology)
- Mainly the homework load for me. Also, not fully understanding what is asked of us in lab reports. (Anonymous, Engineering)
- One of the challenges of being a transfer student is graduating on time. My major has many required courses to fit into a two-year time period, so I had multiple semesters where I was taking up to 18 credits of physics, chemistry, math, and upper-level biology courses at the same time. On top of this, I was starting from scratch with my GPA, so I didn't have the same grade cushioning my peers had. (Zelda Shifflett, Biology)
- Gaining the confidence to go to office hours and ask questions when surrounded by people you believe are smarter than you. (Charles Beattie, Physics)

What are some of the things you've learned as a TA at JMU?

- Some things I learned as a TA were making sure those I'm there to help know that I'm not out of reach and that what they may be struggling with in class, I also did. It's a balancing act: for some students, being too open or friendly too fast is off-putting and makes them nervous, and with other students being too calm and only speaking to them when correcting something or answering a question is just as off-putting. Recognizing the difference in these cases makes it easier for those students to feel comfortable enough to admit that there's something they don't understand, or that they need help. Having TAs that students are comfortable around can also act as a step towards students being less hesitant to reach out to professors. A TA endorsing going to a professor can be less intimidating, especially with first-year or transfer students who are still adjusting and may not yet have a strong supportive network. (Anonymous, Biology)
- As a tutor and TA, I've learned how important the "why" or "how" of content is. (Anonymous, Engineering)

What are you doing now? How did you get connected to that opportunity?

- I'm working with the theater department to find ways engineering can improve their processes. My engineering professor had the opportunity on the back burner for a while. (Anonymous, Engineering)
- Possibly doing physics research in the summer due to an email sent looking for research helpers. I would love more opportunities to be introduced to research, whether it be in the classroom or through planned events. (Charles Beattie, Physics)

As all of these perspectives demonstrate, faculty can play a major role in supporting students in [the transition to college](#). Very practical things, like taking extra time to speak with students, after class or [during office hours](#), can really make a difference. Discussing research, internship, or learning opportunities with students and making sure students are aware of them is also beneficial. For example, the Biology department offers [regular seminars](#) where students can learn more about a topic and connect with experts in the field.

Another important theme that came out of my conversations is the value of [empathy](#), communication, and connection. Faculty might consider applying this Toolbox by asking some of these questions of your own students to spark important conversations and to [strengthen bonds](#) within your classrooms. These might be conversations worth having with your students on the first day and also throughout the semester, for example, by [getting their feedback](#) and doing [check-ins](#) regularly. While hopefully this Toolbox yielded some useful insights, you can learn even more by asking your students for their perspectives, including specific things they would find helpful. All students are unique, but all benefit from caring faculty who actively work to understand their perspectives.

About the authors: Zelda K. Shifflett is a senior Biology major. Raymond Martin is a senior Biology major. Charles Beattie is a sophomore Physics major. With other contributions from anonymous STEM students.