

TEACHING PHILOSOPHY

My primary goal as an educator is to facilitate students' academic and personal growth. To do so, it is important that students encounter new experiences, be exposed to new ideas and perspectives, and learn how to constructively challenge their preconceptions. The following principles guide the decisions I make as a reflective practitioner.

Set and Support High Expectations Fundamentally, I believe that individuals are both intrinsically and extrinsically motivated to meet expectations. I embrace a growth mindset and maintain high expectations for my students with the belief that they can all succeed. Consequently, it is my responsibility to provide appropriate support for students to meet these expectations, which I provide through a variety of methods. These methods include an open door office hour policy and an instructional flexibility capable of responding to midsemester feedback from students. I am working on ways to refine my course and classroom using universal design principles in ways that promote learning. These include increasing transparency in my courses, as well as more effectively assisting struggling students. Ultimately, I want students to be comfortable struggling to master new concepts and to develop the confidence to ask questions and seek answers on their own.

Actively Engage A student-centered classroom provides me with ample opportunities to actively engage with students via dynamic interactions and active learning techniques. I also strive to engage with students outside of the classroom and foster a sense of belonging. For example, I incorporate students in my research and outreach efforts, attend their extracurricular events, invite students to meet for lunch, and organize my schedule and office to better facilitate interactions with students. Within the realm of professional relationships, I try to break down the invisible faculty-student barriers implicit in authority structures by sharing some details about my personal life and incorporating them into classroom materials. I embrace bringing my self to the classroom through engaging with students regarding the 'About You' survey they are invited to complete, show up early to class for casual conversations with students, admit when I have to think hard about questions, and offer stories of personal struggle. Ultimately, I strive for a mindset where students are the focus and mathematics is the context for their learning opportunities.

Broaden Perspectives Fostering a mathematical experience that will broaden perspectives is invaluable to the student experience. My hope is that every student who desires a place in the mathematical community can envision one regardless of their background or perceived merit. By discovering mathematics, students learn to process new information and to acknowledge when something does not make complete sense. A mathematics classroom can facilitate growth in persistence, one's level of comfort admitting partial understanding, and the realization of intrinsic expectations for academic performance. Having witnessed remarkable achievement both in unexpected places and from unexpected individuals, I strive to support the needs of diverse student populations, use inclusive pedagogies to build a community in which everyone has a welcome place, and leverage equitable assessment practices that reflect demonstrated understanding of course content.

Continue Personal Development As I bear responsibility in the development of my students, I must also strive to continually better myself both professionally and personally. Whether it is a question posed from a student in class or a relevant result from another discipline, it is important that I embrace being a life-long learner. This involves being transparent in what I do not yet know and following up after finding an answer. In an effort to learn from those more experienced than myself, I have participated in a variety of professional experiences, including MAA's Project NExT and a CURM workshop on mentoring undergraduate research. I have also participated in campus and departmental activities, including co-organizing the Professional Idea Exchange faculty conversation group as a postdoc at Davidson College, co-organizing a regional mathematics competition at Northern Kentucky University, and attending a variety of workshops, the most recent of which focused on inclusivity.

STUDENT RESEARCH

As a field of study, graph theory is especially attractive for student research. Students are able to quickly access key ideas and begin thinking about problems in this area, but require a much deeper understanding in order to make significant advances. For the undergraduate research projects that I have advised, I found that embracing the principles described in my teaching philosophy is both easier on an individual scale and more fulfilling in certain ways. My guidance on these projects manifested in setting short-term goals to establish noticeable progress and build student confidence while maintaining flexible long-term goals capable of adapting to student interests and abilities.

STUDENT ADVISING AND MENTORSHIP

Although not having formally been assigned students to advise or mentor, students have often turned to me for advice and guidance. I have guided a number of students through their graduate school and/or job search process, and been recognized multiple times by graduating seniors as a faculty member who had a positive impact on their personal and/or academic development.

COMMUNITY ENRICHMENT

In a 2015 opinion piece in the Boston Globe, Tara Holm recounts the all too familiar responses when people learn we're a mathematician: an undue assumption of our "brilliance" or a quip about their "inability to balance a checkbook." As one of the less than 1% of over 25 year olds with a Ph.D. in mathematics¹, I feel a responsibility to provide self-proclaimed 'not math persons' a positive experience with mathematics. For my part, I try to humanize the image of a mathematician by openly interacting with K-16 students, colleagues on campus, neighbors in my community, and strangers that I meet. I have participated in professional development experiences for communicating with a general audience, including a STEM Ambassadors Program facilitated by the University of Utah and a Communicating Curiosity partnership between NKU and the Cincinnati Museum Center.

Further information about my teaching and outreach experiences is available online at
<http://sappho.nku.edu/~brandta2>

¹US Census Bureau, <https://www.census.gov/data/tables/2016/demo/education-attainment/cps-detailed-tables.html>