ASHLEY M. THARP

 \times Teaching Statement \times

I have taught a wide range of courses during my graduate career at NC State. I have been recitation leader and instructor of record for the second course in the university's calculus sequence for Engineering and Science students, as well as lecture assistant for a one-semester overview of calculus for non-STEM majors. I was instructor of record for a senior level abstract algebra course geared towards Mathematics Education majors and served as the Graduate Support Resource TA, assisting a two-semester sequence of classes for first year graduate students which I helped develop. I am currently participating in the Graduate School's selective Preparing the Professoriate program; in Spring 2023, I will be instructor of record for Foundations of Advanced Mathematics. Below, I describe some of the strategies I use to support my students' success in my courses by creating space for all students to self-identify as mathematicians and to make connections.

One of my main goals as an educator is for every student to have experiences in which they self-identify as a mathematician. Before they can have this experience, each student must feel they belong in our classroom. In service of this, I learn all of my students' names by six weeks into the semester. Especially in a hundred-person calculus class, this has been no mean feat, but the impact has made it worthwhile. Though I wish it weren't necessary, I am grateful to have had several students approach me when personal issues interfered with their ability to complete classwork, allowing us to discuss their path forward and what support they needed from me within the class. Knowing students' names and encouraging low-stakes failures as an important part of the learning process, including using daily in-class assignments as formative assessments in my calculus classes, enabled me to have success in all of my classes with "cold-calling" students. Because students knew they were valued in our classroom, they were willing to participate fully; as a result, they not only learned more material, but also felt more successful in the process. One calculus student wrote in their course evaluation, "Thanks so much for making me like math — it's something I never thought I would be able to love!" and shared that they were considering switching their major from Public Health to Applied Math. My students also remember feeling known and successful in our class: I have been a reference for half a dozen students (many of them women) for opportunities including REUs, fellowships, internships, and first jobs after graduation.

All students stand to benefit from understanding the connections between the input of their actions in a class and the output of their test grades. I prompt students in every class to consider this relationship using post-test check-ins. Students consider whether they have done some "obvious" practices beneficial to learning (like going to office hours) and share anything extra they've done. In another section, students use a strategy called Keep-Stop-Start, which I first encountered outside of math. They identify a few specific, measurable, and actionable things they want to *keep*, *stop*, and *start* doing to be successful in our class moving forward. Students who have math anxiety benefit greatly from this exercise: one such student, in an overview of calculus for non-STEM majors, wanted to stop second-guessing their work and start practicing more. Finally, students give me feedback on how we spend class time and have an opening to make requests from me. Though this feedback has never constituted a mandate for drastic change, it has made courses feel co-created, increasing participation through the semester.

I recently learned about the initiative Transparency in Learning and Teaching (TILT) in Higher Education: in short, educators can positively impact a variety of student outcomes by increasing transparency around assignments. As instructor of record for a five-week summer session of integral calculus, I sought to make the connection between homework and tests more apparent. From each lengthy, auto-graded standard homework assignment, I chose a few questions to grade quantitatively. Students submitted their written work for those problems and received prompt, specific feedback from me. This supplemental homework served three purposes for students: it gave them an idea of what questions I considered both reasonable and important, conveyed my expectations of work on those types of problems *before* our test, and outlined both what they had done well and how to improve. Most students appreciated the amended homework system, and I was pleased with the overall performance of the class, especially given the challenging pace of the summer session.

My efforts have been recognized beyond class evaluations. In my second year, I was chosen to teach Introduction to Modern Algebra, a senior level course on abstract algebra for Mathematics Education majors. To introduce group theory, I created an inquiry-based activity in which students constructed the dihedral group using manipulatives. I received an Excellence in Classroom Teaching award from the Graduate Student Association in 2020; this selective award goes to fewer than twenty graduate students across all departments each year. I was also chosen by the departmental Diversity, Equity, and Inclusion (DEI) committee as the first Graduate Support Resource Teaching Assistant (GSRTA). In my first semester in the role, I collaborated with the Director of Graduate Programs for Mathematics and Applied Mathematics and the faculty instructor of a one-semester course for early graduate Teaching Assistants in the math department, expanding it to become the First Year Graduate Seminar. The seminar, a two-semester sequence designed to holistically support all incoming graduate students in the department, includes practical training for student-facing Teaching Assistants, presentations on departmental standards for graduate students, discussions on applying intra- and interpersonal skills to life as a graduate student, and presentations by campus experts on DEI topics and student mental health.

I remain committed to learning and doing better as an educator, and I'm grateful to have learned a great deal with and from my colleagues. I expect to complete the 100-hour Teaching and Communication Certificate through the Graduate School's Office of Professional Development this fall. Creating more accessible class materials and TILTed assignments and seeing the approaches of peers in other disciplines has been inspiring, and I am better prepared to support students in crisis after participating in a workshop on suicide prevention. As GSRTA, I observed over forty recitations led by first year graduate Teaching Assistants. In them, I witnessed common teaching missteps as well as accessible strategies to create a more engaging class. My peers gave masterful demonstrations of what culturally inclusive pedagogy looks like in a college calculus class, excellent pacing, and new ways of soliciting and asking questions. I look forward to emulating those practices and exploring many others in my future classes.