

Teaching Statement

Teaching has become a natural part of my life. I have spent the last ten years in the front of classrooms or among friends and family, sharing my knowledge and my enjoyment of mathematics, interacting with students from a variety of backgrounds, and learning to improve my skills as an instructor of mathematics. In this statement, I will expound on my experiences that have shaped my instruction and my philosophy of teaching. I will also discuss some of my methods in the classroom. I will elaborate on my participation as a seminar associate in three mathematics summer research programs for undergraduates. Finally, I will discuss one of my main duties as a professor of mathematics: recruiting students to pursue an undergraduate or graduate career in mathematics.

My CV outlines all the teaching experience I have had: from a fledgling Graduate Student Instructor at the University of California at Berkeley to an adjunct instructor at Radford University to my current position as an assistant professor in mathematics at Sam Houston State University (SHSU). At every level, there was as much to learn as there was to teach, and I have taken all my lessons very seriously. Above all, I have learned that students, like everyone else, need someone to believe in them and their abilities to succeed. I find much of my opportunity to do that in the classroom.

I begin every semester with a little handout that asks for the student's name, major, standing and to fill in the rest of the statement, "You may not be able to tell this by looking at me, but..." It is a very quick way to break down some initial barriers, and I often find it extremely entertaining to read and to get to know my students this way. I also spend a few minutes letting them know a little something about me. Many are curious when they see me. "Her last name is Garcia, yet she does not appear typically Hispanic." They are surprised to hear that I was born and raised in Guam and are all ears as I discuss my journey to becoming the first Chamorro woman to receive her Ph.D. in mathematics.

I encourage my students to seek me out in office hours, by reminding them of the scheduled times at the end of each class. Many of them have difficulty arriving at the scheduled time, but I often let them know of my frequent availability and invite them to stop by anyway. They take up my invitation. Their visits give me the chance to discuss whatever is challenging them mathematically and also to give them a little pep talk, if needed. For those students who have even the slightest inclination toward mathematics, it becomes my first opportunity to discuss with them the benefits of either majoring or double majoring or minoring in mathematics.

From the very beginning, I map out my courses entirely: dates of exams and quizzes, sections in the text that will be covered, the order in which the sections will be covered and homework deadlines. During the semester, I might need to make minor adjustments to the dates. However, having most of this information beforehand helps the students to know what to expect and a bit of routine eases some anxiety. In classes like "College Mathematics," topics are left to the discretion of the instructor. I make sure to select topics that a student anxious about mathematics would find either really interesting or "useful in real life." I choose topics like logic, consumer mathematics, graph theory, group theory, number theory and set theory. I also enjoy the challenge

of incorporating technology in classes like calculus, differential equations and linear algebra. I have developed various Mathematica notebooks for these classes that would guide a student through interesting problems related to topics discussed in class.

I make it a point to arrive early to class. It gives me time to chat with students about topics beyond the coursework. I often discuss briefly some math news of the day, an upcoming conference, a previous conference, or even my own research. This usually sparks an interest in one or more students who tend to visit and talk about these topics further after class or during office hours. In all my courses, I frequently offer extra credit questions which are taken from the GRE subject exam in mathematics or the quantitative or analytical sections of the General GRE. By the end of the semester, the students will have completed most of the related questions from a specific GRE and it is at this time that I announce my source. Their reaction lifts my spirits. They had no idea they had it in them. They feel empowered by the fact that they now have what it takes to get through related material on an exam for graduates. This alone may be responsible for changing a few non-majors to majors or minors!

While in the classroom, I need constant interaction with my students. It is important to me that we have clear communication of ideas and that my students understand the gist of my lecture. At times, with all this interaction, it is a perpetual balancing act to maintain control of the class. This is where my uncanny ability of remembering names comes in handy. In a class of seventy-five students, I can address any flare-ups by name by the end of the first week of classes. Early on, the students learn they should remain respectful in my classes.

I supplement my lectures with oodles of examples. I also reserve time to discuss homework problems and solutions. Oftentimes I ask students to present their work on the board with an explanation. Some of them are naturals! Some... not so much, but in those cases, I continue to interact with them, or at the very least encourage those seated to interact with them. At times, I provide worksheets for the students and I guide them to work in groups or pairs. It is always a thrill to hear mathematical debates by the students. I walk around and listen in, and when asked, I make a comment or two to help them over the humps. But for the most part, the students work through these problems on their own. We then wrap things up with a summary of ideas.

I taught at various levels, from a summer program involving eighth graders to undergraduate mathematics courses, from directing undergraduate research to teaching graduate classes and directing two master's theses. In each one of those experiences, there was always a student or more who stood out as someone who enjoyed the topics of the class or did extremely well in their exams. I encouraged many of these students to consider very seriously choosing mathematics as a college major or to those who are in higher level mathematics to consider attending a summer program in mathematics. After my first year at SHSU, I worked to get three of our undergraduate students into summer mathematics programs for the first time in our department's history.

I participated in summer research programs both as a student (one summer) and as a teaching assistant (three summers). I saw firsthand the career-bending effects these programs have on student participants and I am also living testimony to those effects. I directed nine undergraduate students in three separate research projects (one each summer) in computational commutative algebra. I also helped design the "crash course in computational commutative algebra" and I

aided in developing and facilitating the computer lab component. This was all part of the Summer Institute in Mathematics for Undergraduates (SIMU), which just last year received a citation by the AMS as “a mathematics program that makes a difference.”

However, since the end of 2002, there has not been a summer program to fill the huge void that was created by the sudden halt of SIMU. It would be my privilege to resurrect a similar program, this time reaching out to all classes of underrepresented students from across the country, including the Territory of Guam and the Commonwealth of Puerto Rico. I have completed most of the developmental stages of a program I call the Pacific Undergraduate Research Experience in Mathematics (PURE Math).

Currently, I am writing proposals to the National Science Foundation’s Research Experience for Undergraduates (NSF-REU), the NSF Tribal Colleges and Universities Program (NSF-TCUP) and the National Security Agency (NSA) to fund PURE Math. I have confirmation from the Mathematics Department at the University of Hawaii at Hilo (UHH) that there is serious interest in hosting PURE Math on their campus. I am collaborating with Raina Ivanova in the Mathematics Department at UHH. Herbert Medina, co-director and co-founder of SIMU, has agreed to act as senior advisor for this program. Thus far, seven researchers in mathematics and statistics have confirmed their interest in participating as future seminar directors. The successful grants will support *a summer mathematics program in Hawaii* – I cannot imagine a better program.

Excellence in teaching requires a thorough knowledge of the subject and the wisdom to strike the right balance of patience and prodding. It requires care for the art of teaching, a respect for the work of teaching and a hope for the effects of teaching. My classroom is my canvas, my office and my dream for the future. We have the power to make a difference in the lives of our students and we must exercise this power to produce scientists and professionals of the highest caliber: those with the analytical prowess of a mathematician. In the end, when the tables have turned, our futures are derived from the choices we make in our classrooms today. And I’m happy to report that I can live with mine.