

Teaching Statement

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"What is mathematics?" is a question I always begin my undergraduate first-day class with. While some students may hold positive perceptions of mathematics, biases, negative images, and misconceptions remain common among undergraduates. These misconceptions include beliefs such as "Mathematics is a hard, challenging, and boring subject", "It is solely about finding and using formulas", "It's just a required course for my program", or "It's only about solving problems."

My teaching philosophy is rooted in raising awareness about the importance of mathematics, highlighting the valuable skills acquired through its study, and dispelling stereotypes and misconceptions. My approach centers on inspiring and motivating students to engage in activities such as estimation, verification, interpretation, articulation of results, and the ability to connect with others' ideas. These principles form the foundation of my teaching career. Moreover, sharing my passion for the subject and witnessing the transformation of students' answers to the question "What is mathematics?" into more positive perspectives has shaped me into the educator I am today.

I view teaching as a comprehensive process that extends well beyond the confines of the classroom. It encompasses a spectrum of elements, including preparation, practical experience, motivation, and a guiding educational philosophy. These factors collectively shape a student's perspective on the subject matter, both within and outside the classroom. In my perspective, teaching represents a crucial phase in the journey of learning and character development, one that should be adapted to align with the current advantages and requirements of the contemporary world.

TEACHING MATHEMATICS IN THE CLASSROOM

I firmly believe that every student's success in mathematics is rooted in their opportunities, experiences, and dedicated effort rather than innate intelligence. My mission is to provide unwavering support to all students, ensuring they can reach their full potential. To achieve this, I provide comprehensive lectures, reading materials, and assessments designed to facilitate student success. My goal extends beyond course achievements; I aim for students to acquire a deep and practical understanding of mathematics tailored to their unique interests.

Recognizing the challenges of mathematics, I openly share my own academic journey and struggles as a student, fostering an environment where mistakes are valued as part of the learning process. I carefully curate problem sets that encourage students to thoroughly analyze and evaluate the theorems and concepts discussed in our lectures while ensuring accessibility for everyone in the class. Drawing on my years of experience in academia, I've gathered common student errors and engage in constructive discussions to identify their root causes, addressing gaps in their prior education through targeted readings, problems, and additional learning resources.

I emphasize that while not all students may directly apply advanced mathematical concepts in their future careers, mathematics equips them with critical thinking, logical reasoning, and effective idea

organization skills that have practical applications in various aspects of life. In the classroom, I enthusiastically share my passion for mathematics, illustrating its wide-ranging implications and real-world relevance, fostering an environment where learning becomes an exciting journey of exploration and discovery.

TEACHING MATHEMATICS OUTSIDE THE CLASSROOM

Teaching mathematics outside the classroom is a significant aspect of my educational philosophy. I believe that the quality of assignments, well-crafted questions, and detailed solution sets, coupled with constructive feedback, holds more value than a mere grading scheme. This approach not only helps students solve problems but also deepens their understanding of mathematical concepts.

Accessibility to students is a cornerstone of my teaching approach. I use technology to record lectures, share comprehensive notes, and stream classes, ensuring that learning is accessible to all. I'm dedicated to providing ample office hours, establishing open communication channels for students to voice concerns, request extensions, or seek extra help. Furthermore, I make sure to acquaint students with additional resources offered by the institution to enhance their mathematical skills.

Beyond regular class hours, I facilitate supplementary programs, such as review sessions and collaborative problem-solving activities. These initiatives not only bolster mathematical proficiency but also foster a sense of community among students, promoting shared learning. Collaboration with colleagues, teaching assistants, and other departments is integral to addressing student struggles effectively. This collaborative effort underscores the message that students are not alone in their challenges and that seeking help is a commendable step toward success. In essence, teaching mathematics beyond the classroom enriches the educational experience, nurtures student growth, and cultivates a supportive learning environment.

TECHNOLOGY IN MATHEMATICS: BENEFITS AND CHALLENGES

I find that the incorporation of technology into mathematics education brings both notable advantages and potential challenges. It's imperative to emphasize students that current digital and modern tools should serve as a means to enhance mathematical understanding rather than becoming the sole focus for finding an answer to a problem.

I've observed the benefits of computational software like Mathematica in my teaching. It allows students to compare their own solutions with computational outcomes, apply mathematical theory to practical, real-world scenarios, and gain a deeper appreciation for how mathematics underpins our world. Similarly, I've utilized software like Webwork for online assessments, which provides a valuable platform for students to practice and improve their problem-solving skills while receiving constructive feedback.

Nevertheless, there's a temptation among students to rely on external resources, such as solution sets, online forums, or paid websites offering ready-made answers, as shortcuts to achieving better grades, rather than engaging in genuine learning. Furthermore, the rise of AI-powered software for solving mathematical problems has its merits in generating articulate responses, but it often lacks the critical and analytical skills required to consistently provide accurate solutions. I provide examples in-class of incorrect AI-generated solutions to mathematical problems to illustrate this. Thus, as an educator, I emphasize nurturing students' problem-solving abilities and encouraging them to leverage technology as a tool for deeper understanding, rather than a mere shortcut to academic success.