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Teaching Philosophy Statement

As an instructor of mathematics, I aim to help make my students become independent thinkers. This is the core of my teaching philosophy. I feel responsible to further develop my students' mathematical reasoning abilities. My goal is to present mathematical concepts and allow them the opportunity to use their deduction abilities to comprehend these concepts, thus enhancing their ability to problem solve and reason independently.

"Really good at getting **concept** *across."* - Student evaluation from Integral Calculus for the Social and Life Sciences

Students best learn mathematics through practice and discussion. In my classes, students interact with new concepts immediately, which is vital for them to internalize the material. To that end, when presenting a new concept I immediately pose questions to my students. I allow them time in class to contemplate these questions, and in some cases discuss their ideas with their classmates. This strategy allows my students to develop a deeper understanding of the material. The immediate interaction also allows them to realize new questions they may have and exposes any initial misunderstandings of the concepts. Because my students attempt problems during class, I am available to help them immediately. This boosts their confidence and puts them in a position to be successful while working independently.

"Always willing to answer questions and is good at involving the class." - Student evaluation from differential equations

An important aspect of teaching mathematics is the ability to adapt. As an instructor, I have taught classes and led discussion sections varying in size from 6 to 80 students. The topics have ranged from Elementary Algebra to Vector Calculus. Each class required a different style of teaching but one that still focuses on engaging the students with the material. In my smaller courses, I break up the lecture by having students do group work and student presentations to gain further understanding of the material. As an example I would cite the lesson where I introduced the notion of the derivative in my Differential Calculus course consisting of 26 students. For this lesson I assigned a group work activity where the students developed intuition for derivatives before being introduced to the formal definition. I put the students in groups and walked around the class helping them through the worksheet. The last question on the worksheet was to give a definition of the derivative of a function at a point. I then had each group present their definition and we developed the formal definition as a class. This process ensures that my students have a better intuition and understanding of derivatives than if I simply presented the concept to them in a lecture. Moreover, it allows them the opportunity to practice communicating mathematics both written and orally.

"Excellent delivery method and techniques." - Student evaluation from Differential Calculus

While group work and student presentations are excellent in smaller classes, these strategies are more difficult to employ in larger classes. In larger classes, I have engaged students with electronic polling using iClickers and think-pair-share activites. One example where this was particularly successful was in my Differential Equations course of 80 students when we learned the integrating factor method. I had the students pair up with a neighbor, then posed a series of iClicker questions for them to discuss that helped them "discover" the integrating factor method. This strategy helps students understand why this method works as opposed to just memorizing a formula. This strategy also allowed me to walk around the class and interact with the students during lecture, something that is

not usually possible in a large class. The iClickers also have the potential to be effective in a smaller class as well because providing the students with questions throughout the lecture keeps students engaged with the material. Whatever the class size or course, my students are always contemplating questions and problems that use their mathematical reasoning to discover new solutions and gain a deeper understanding of the material.

"Has helpful worksheets as practice" - Student evaluation from Differential Equations

Another aspect of adaptability is the ability to incorporate new technologies. In all of my courses I have a website where I post lecture notes, links to outside resources, study aides, and any worksheets I have assigned. The availability of these resources puts my students more at ease and makes them feel more engaged with both the instructor and the material. I also have experience utilizing such tools as online homework forums, online quizzes, online homework assignments, and using wikis to have students submit written solutions for feedback. Receiving feedback for written solutions is especially useful for students as it is important in developing their ability to write mathematics effectively.

" She knows how to teach in a manner that allows to comprehend the material." - Student evaluation from Integral Calculus for the Social and Life Sciences

The techniques I employ in my classes foster my ideal of creating independent thinkers. The questions I pose help students to discover the deeper meaning of the concepts as opposed to being solely dictated the information. With all of my classroom techniques and materials I strive to emphasize concepts rather than computation. Posing these types of questions forces the students to think through the ideas so that they are not learning to simply solve certain types of problems using algorithms, but rather learning that to perform math is to apply their knowledge of concepts to solve any given problem. This contributes to my goal as an instructor to help my students become independent thinkers with strong mathematical reasoning abilities. These skills will help them to succeed in school, but will also carry over into daily life.