TEACHING STATEMENT

CORNELIA YUEN

My classroom is an active, vibrant place. Students learn by trying, by doing, by asking, and also by teaching one another. They learn by constructing solutions on their own, and even listening to each others' presentations. Of course they also hear the occasional lecture. I encourage them to ask all kinds of questions, because even the most seemingly superficial questions can lead to deep ideas. Their active participation helps me understand them and pace the course correctly. Their learning moves from specific example to general theory, so that like mathematicians, their intuitions are formed by complex real examples.

We also discuss practical topics in other disciplines, like physics, economics, biology, or the social sciences. Many calculus students, who may be neither math majors nor particularly motivated to learn mathematics, are particularly engaged and educated by this eclectic, active environment.

Like most teachers, I am ambivalent about using calculators in the classroom. They enable visualizations and calculations – particularly of the tangent line to a function and the definite integral – which are otherwise impossible in the classroom. But they also enable unhealthy dependence and an erosion of basic number sense. In multivariable calculus, Maple demonstrations improve students' visualization skills enormously; consequently these skills endure even without Maple. On the other hand, too much trust in the system can lead students astray when faced with the wrong pretty picture.

A good Calculus course must lead students toward proficiency in mathematical language and abstract quantitative reasoning. The dreaded story problem shows how challenging it is to speak mathematics fluently. The need to translate quantitative information from English to math symbols and back again is felt not only in math courses, but in all scientific courses.

In my teaching I work hard to call attention to these skills of translation and interpretation. I carefully and slowly model for my students the process of reading a story problem, interpreting the question, and developing a plan of solution. Using these skills, my students typically better understand the language of mathematics and outshine their peers on uniform exams.

I find that with this deliberate training, their mathematical communication skills improve dramatically over a one semester course. I enjoy seeing their self confidence improve as they develop their mathematics skills. It makes me smile to hear students shout with great joy at the end of the semester "I can do math!" I most admire those students who may have been weak at the beginning of the semester, but who kept trying and gradually master the material. I take pride in the fact that several past students have asked me for letters of recommendation for math teaching programs.

I believe in cultivating a meaningful student-teacher relationship. I support students' learning with patience, generous office hours, careful listening, and thoughtful encouragement. Simple praise like a "Good job!" or a smiley face on homework and quizzes can go a long way. When appropriate, I advise my students about course selection, study skills, reading their textbooks, and handling their future math classes. At a large university, this personal attention is very meaningful for students, and often they continue seeking help in my office hours after our course together has ended.