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Teaching outside my comfort zone

“Be brave enough to live creatively. The creative is the place where no one else has ever been. You have to leave the city of your comfort and go into the wilderness of your intuition. What you'll discover will be wonderful. What you'll discover will be yourself.”

Alan Alda (1936 -)

Introduction

Teaching is both an art and a science. Creativity applied in the classroom setting is often restricted by content and disciplinary boundaries. These boundaries often lead to arbitrary limitations in teaching mode and manner. For example, in mathematics classes, teaching technique is often limited to lecture due to the sheer amount of material that must be covered in a course. However by teaching outside my discipline, outside my comfort zone, I have been able to discover untapped areas of my teaching abilities and have been greatly enriched by the process. The enrichment came not only from teaching, but also from discussing with colleagues and learning from the students.

As a teacher of mathematics, most of my experience involves valid proofs, correct calculations, solid concepts, and proper definitions. My typical class consists of lecturing on the material under discussion, asking and taking questions, and working through examples with the students. However, in the past year, I have taught three classes that allowed me to step outside my box. These classes, consisting of a First Year Seminar class about music, the Introductory Research Seminar for math majors, and the Sophomore Laut Honors Seminar on food, all pushed me in new directions. Never before had I led discussions, assigned papers, or held a debate.

First Year Seminar

My First Year Seminar was entitled “Music From Many Perspectives: From Math to Rap and a Little History.” While teaching FYS comes with many difficulties, the previous format of allowing the professor to choose the topic through which to teach study skills permitted me to try many new things. The first day of class I allowed the students to vote on which topics the course should cover. This is rarely possible in math classes, since most math courses build on one another, and to leave out a topic can destine the student to difficulty in the future. Other class sessions included a discussion on banned music and a debate on downloading music. Both approaches to the classroom were completely new to me. While the discussion was blander than I expected, the debate had students participating with strongly held views on both sides of the piracy issue. Also, a student volunteered to talk about the history of rap, which brought an interest of many of the students to a classroom setting. Of course, not all attempts were successes. The session on protest songs seemed to interest the students, but the attempt to get them to sing was an abject failure.

Assigning reading and writing to the students was also new to me. While I typically assign reading for my math classes, the reading of technical material is a slow and difficult process due to the density of content, so being able to assign longer readings, especially ones that the students could comprehend on their own, was novel.

Introductory Research Seminar

Introductory Research Seminar is the name of the math department's junior seminar. It was recently instituted to prepare the majors for their senior theses. My goal was to get them to read, write, and speak about mathematics. It was an unusual math class for me, since it had no set syllabus. In fact, there was no real guide of how it was to be taught; all I really had was my goal for the students. This was the first math class in which I never lectured.

Since one goal was to get them comfortable speaking in front of a group, every class period included short presentations by each student. As the class was a two-credit class that met once a week, this was feasible. The students soon became proficient at presenting in front of each other and me. However, they remained uneasy about the public presentation, which was part of their final project. In fact, at one point they asked who would attend their final presentation. I responded that their friends, fellow math majors, and their professors would attend. Horrified, one student said, “But I can't present if there is a professor in the room, I'll get too nervous.” I then pointed out there had been a professor in the room all semester and after class made arrangements for the rest of the department to come one at a time to presentations in class to get the students used to the idea. The presentations were the largest success of the semester; they were attended by the department, other math majors, and some of the basketball team, who came to hear a fellow basketball player speak on some statistics related to basketball.

Getting the students to read math critically and independently did not go quite as well. Despite being exhorted frequently to read the textbooks in other math classes,

many students have never read a math book in depth; most just read the examples. Knowing this, the first readings for the course came from *The Heart of Mathematics* by Ed Berger and Michael Starbird. The book is written for a general audience and so was well below the mathematical level of the students. I picked an easier book to start with both to build their confidence about reading independently of a classroom lecture and in the hopes that they would read critically. While the students understood and enjoyed the reading, they did not relate the reading to anything they had learned before. The mathematical level of the readings increased throughout the semester and the students became able to understand most of what was read, but they did not manage to bring the rest of their mathematical experience to bear upon the reading. How to teach this skill is still something I am working on.

Writing math papers was another challenge for the students, although one they quickly realized was less difficult than they feared. There were only a couple of new factors added in a math paper that weren't present in their normal paper experience. The first and most important was the ability to include equations in the text. Teaching them the math typesetting language LaTeX, which they learned more quickly than I expected, handily solved this. The second adjustment was that math papers have some stylistic differences, the most notable being that the papers are written in the first-person plural. The "we" used in the paper is assumed to be the author and reader together. While results in the actual writing were mixed and convincing them of the need to proofread was difficult, none of the students were frightened of writing their senior thesis anymore.

Honors Seminar

The Sophomore Laut Honors Seminar was my responsibility this year, and it was called "Food: Consuming and Being Consumed." Teaching a Laut course is completely different from other courses in general, not just mathematics courses. A coordinator's job is to design, organize, and make the class a coherent whole. For most classes the coordinator finds an expert to come in and teach and direct activities for the class. This in mathematics circles would fall in the category of being the "guide on the side" rather than the "sage on the stage," although these terms are more often used to contrast discovery learning with lecture.

Assigning papers was no longer a new experience for me. However, coming up with topics for their capstone experience was novel and fascinating. Picking topics broad enough to be flexible, but narrow enough that they led the student to new knowledge, was difficult. However, with the advice of John Cox and Pamela Kinlaw, I put together a successful docket. Since students were allowed to suggest their own topics for approval, the options expanded even more. I have enjoyed a student-produced cooking show that made a three-course meal of ramen noodles, read about several students who learned to make special dishes from their ethnic backgrounds, and attended a Victorian-style tea party in which we learned about the language of fans.

The classes themselves have been quite a learning experience for me as well.

From figuring out how to use the Ignatius Hall's kitchen for cooking with all the students, to watching the students give a presentation on the food quality in the Benedum room, I have learned lots about how the students work together. Having other faculty in my classroom has provided me a glimpse into others' teaching styles. Watching an expert lead a discussion, engage the students in a lecture, or lead the students in improvisational performance has allowed me to pick up many tricks of the trade. Also, it has not been fascinating to watch how the students respond to different teaching styles, which emphasizes to me again that not all students enjoy the same things nor have the same learning style.

Conclusion

I have always thought of myself as a liberal arts person. Being an undergraduate at Oberlin College, where I took unrequired electives outside of my major and taught storytelling for the experimental college program there, expanded my boundaries. Studying abroad in Hungary broadened my horizons as well, although mostly outside my course work. In graduate school I managed, due to a loose summer course policy, to take courses outside of the sciences. Diversity in what I wanted to learn has always come naturally. Diversity in how and what I teach has been limited by my discipline and circumstances; however, these three courses have helped me start to stretch beyond these limitations. It has been satisfying to become a liberal arts teacher as well as a liberal arts learner.