Thoughts on Teaching and Learning
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Perfection is not attainable. But if we chase perfection, we can catch excellence.

−Vince Lombardi

My teaching/learning strategy is to empower my students to catch excellence. I try to build success into all of the courses I teach but I am adamant that my students succeed under their own power.

First, I try to remove obstacles that impede learning.

- I give explicit written instructions for all assignments and tests.
- I make standard textbook and lecture material as accessible as possible so students can focus their effort into digging up material for term papers and research projects that are beyond the scope of the text.
- I provide ample opportunities for practice in the form of homework and old tests. Learning quantitative and mathematical subjects is like learning to play an instrument or learn to play a sport: students must learn by doing – practice is essential. Mathematics is something you do, not something you read about.

My classroom should be an example of good management. I practice what I teach and I apply continuous improvement techniques that include student input.

Second, I try to eliminate attitudes that erode students’ ability and will to do their best.

- I do not curve grades because it demotivates weaker students and it promotes competition rather than cooperation. If a student believes enough other students are better and that they will get the quota of A grades, then he or she is not motivated to do his or her best.
- I check my students work carefully, and often ask them to redo assignments that are not correct. I do not rewrite papers or redo projects for students but make concrete suggestions for improvement and often require them to go the writing lab for additional help. Many students never go the extra mile of figuring out how to do things right unless they have been forced to redo. They do not believe that they can execute a perfect paper or project until I refuse to accept less than their best and make them redo until everything is correct.
- My classroom is a level playing field. I try to treat all students in the same way, regardless of whether they are easy to work with or difficult to work with. I realize that students have different needs that must be met, and I try to meet them without showing favoritism. I try to avoid the “halo effect”, that is, giving students who have been successful in the past the benefit of the doubt. When I grade papers, I often grade the same question or problem on all test papers before going to the next in order to maintain consistency. As much as possible, I avoid knowing the identity of the student whose paper I am grading to prevent favoritism.
Third, I equip my students with the tools to learn and to succeed.

- I try to teach students to think and solve problems. Mathematics is the study of patterns, not numbers and quantitative techniques, as is widely believed. Numbers and quantitative techniques are used to describe patterns. I focus on trying to get my students to see the patterns, whether they are patterns of variation in a statistics class or algorithms that can be programmed into a computer or concepts behind proofs in a calculus or linear algebra class. When a student is able to see patterns, he or she is able to generalize patterns to solve larger classes of problems. Because I believe that seeing the pattern and knowing the technique is more important than being numerically accurate (computers can do that), I do not take off points for isolated arithmetic errors on tests. I do not want students to become so bogged down in the details that they do not see the patterns.

- I select projects (computer projects and otherwise) in such a way that they are not only relevant to the real world but so that my students will be equipped with the skills and software that will make them rising stars in their careers.

Finally, I set high standards and externally benchmark student success in student paper competitions and other academic competitions.

- Students generally live up (or down) to the teacher’s expectations. For a student to achieve his or her full potential, a I must set the level of expectation as high as reasonably possible and convince the student he or she can succeed.

- External benchmarking competitions change my role from that of a judge to that of a coach. I tell my students on the first day of classes that at least one of them will win money and they have not been disappointed. My students have won the local level of the APICS Donald W. Fogarty International Student Paper Competition every year since 1994 except the year that I was on sabbatical and did not teach. In regional competition they placed 2nd in 1994, swept 1st, 2nd, and 3rd places in 1999, placed 1st and 3rd in 2000, and placed 1st in 2001. The student who placed 1st in the regional in 1999 went on to win the international, society level competition. My students have also either won or been the runner-up in the Ferlini Competition (University of Indianapolis in-house writing across the disciplines contest) every year since 1995 except the year that I was on sabbatical. One of my students won the 6th Annual Data Analysis Contest sponsored by Tennessee Tech in 2001.

When my students take over the world (and they will) we can expect drastic improvements in quality in all products and services. Deming’s 14 points will be scrupulously adhered to in the business world. With all the emphasis that I put on writing, we will be able to read and understand software documentation. In particular, I am looking forward to being able to buy products that require assembly that have all their parts and that have instructions that I can read and follow.