Teaching Philosophy of Charles D. Ghilani

Learning styles are as varied as teaching styles. No single individual learns in the same manner as another and no instructor can perform at their peak with a teaching style foreign to them. I also believe that everyone wants to excel to the best of their abilities, and will if they are provided the opportunity and resources. In education this means providing students with enough avenues of learning so that one will match their needs. While my courses lend themselves to a lecture-style teaching, I recognize that this style may not reach all of my students at the same level. Thus I often have problem-solving group sessions in the lower-level courses. Additionally, I designed my courses to provide multiple avenues for learning. These include an Angel website, where I wrote on-line books when none were commercially available, practice exams, lesson notes, additional links to external sources of related information, and video lessons, which provide the course lessons in a shorter format. I also believe that true education lies in the design of the curriculum, and that it is incumbent on the faculty to make courses outside the discipline relevant in discipline-specific courses. I implemented this back in the early 90's when I designed the B.S. surveying curriculum.

When I came to Penn State 23 years ago, there was only an associate degree in surveying technology. To meet the needs of the profession and society, I designed a baccalaureate degree in surveying engineering in 1992 to meet industry's needs. In the design, I felt it was important that students have a complete education that covered more than just the technical aspects of the discipline. While the Penn State undergraduate curriculum requirements met this need to a certain extent, students often felt that courses outside the discipline were not as important to their professional careers. To counter this impression, I implemented a just-in-time plan where students take courses outside the discipline that match course content in the discipline. As an example, students are scheduled to take their statistics course at the same time they take a surveying course that deals with statistics. As another example, students take their technical writing course at the same time they take their "W" course in the discipline. Matching courses outside of the discipline with courses in the discipline allows the students to appreciate why they take these courses.

About 50% of the population and about the same percentage of my students cannot visualize a three-dimensional image by looking at a two-dimensional drawing. In a discipline where three-dimensions are the norm, this is a problem and hindrance to students. Thus I learned the virtual reference markup language (vrml) in order to create 3D animations of particularly difficult topics, which can be viewed and manipulated by students at their own convenience from the Angel website. These animations are also incorporated into my animated PowerPoint presentations lecture material and made available to instructors at other institutions.

In the initial design of the program, a research component was incorporated into the baccalaureate program. It has always been my goal to assist students in developing research skills that will support their professional lives and possible post-graduate educational experiences. In the design of the curriculum, I created a sequence of assignments, which are still implemented by our faculty today. The students begin by writing article reviews from professional and technical journals in their first semester. By their third semester, students are asked to limit their article reviews to the subject matter of a particular course. In their fourth semester, students are given a well-defined but open-ended design project. This project makes them realize that there can be several different successful designs to meet a particular goal. In their fifth semester, they research and present to their peers a selected topic. By their eighth semester, students solve engineering problems and present their designs to a class. This program design has enabled several students to develop papers that have been published in peer-reviewed professional journals. Several of our students have also won national awards. Some of our students have gone on to teach in academia while others present workshops at professional conferences and others have chosen post-graduate degrees.

Today's students are plugged into visual technology. Three years ago, I began a project to develop video lessons for my books and courses, which are also available on the Angel website. These video lessons allow the students to review a lecture or a solution to a particular problem at their convenience. Quite honestly, I was first concerned that the students would stop coming to class. However just the opposite has happened. Students generally attend the class more prepared than before. They also review the lessons where they feel deficient. In fact, in my research study two years ago, I found that the test scores of the students increased by 10%. Currently I have over 100 hours of video lessons with one course left to create. By having so many avenues to learn, students can select the path that works best for them. Since our students use precise surveying equipment on the entire 52-ac WB campus, my ability to help them in the lab is limited by time and distance. To provide students immediate assistance, I have developed several short (1 – 5 min) videos on equipment and software usage that they can access with their smart phones using a QR code I placed on the instruments.

We often forget that the students we have are just entering the adult-phase of their life and sometimes will act like adolescents. As my graduate school mentor did with me, I treat my students as part of my family. This means correcting their behavior as well as their assignments, and tests. Having taught children at the grades 5 – 12 level, I have experience in handling disciplinary problems. The reality is that my students trust me to be fair. Some instructors are afraid of getting too close to their students since they feel they may not respect them. I have never had this problem. I am respected for my knowledge and am not afraid to fail a student. I tell all my students the first day of class that they are all failing. However, to pass they simply need to obtain enough points, which they can follow in ANGEL. When a student is in trouble, I reach out to them to try offer my assistance. On Fridays, I have an open invitation to all 3rd and 4th year students to meet me for breakfast at a local restaurant. I have only two rules; we don't talk about class and they pay the tip. I often hear about their Thursday nights, upcoming weekends, and other things related to their lives. What I hear stays with me, and gives me insight into their lives.

I can summarize my teaching philosophy into a few sentences. Individuals have varied learning styles, which we as faculty must meet. Design a curriculum that is coherent both inside and outside the discipline and demonstrates the importance of non-discipline classes in the discipline. Incorporate and implement a logical plan to develop research skills in students so that they can use these skills in the future. Finally, provide students with multiple avenues of learning so that they can achieve their goals.