

Personal Statement

I have always considered teaching the noblest of all professions. It is crucial not only to our students, but also to our society and to the human race, for what we teach today's students will determine our future. My interest in teaching stemmed from my admiration and respect for my teachers. After all, the most admired and respected historical figure in China, Confucius, was revered as the teacher of all teachers. My continued learning experience in life always urges me to share what I know with my students, and I have been teaching since I earned my Ph.D. degree in 1988.

Teaching has not always been easy for me. It was with great comprehension at the beginning of my career that I recognized that since each student approached learning differently, teaching was not just simply lecturing students on what was in the textbook. Therefore, I have continued to strive to be an effective teacher using innovative approaches both in pedagogy and contents. Over the years, I adopted a student-centered learning/teaching strategy with three major emphases. The first is working with students individually based on their backgrounds and talents. The second is using an inquiry-based learning process. The third is using an interdisciplinary approach in teaching and research.

The salient feature of Confucius' teaching was reflected in his philosophy, "Teaching according to the student's ability". It is very true that each student has individual characteristics and different capabilities. It is the responsibility of the teacher to recognize the student's ability and to help the student reach his/her highest potential. I have been working with students on a one-on-one basis throughout my career according to students' needs, talents and abilities.

I involve undergraduate students in my research based on their schedules and aptitudes. To some students, I simply outline the objectives and give the students the freedom to work in the lab. Several students have been able to design their projects and carry out their experiments independently with the outcomes of refereed publications as undergraduate students. For some other students, I work with them every step of the way so that they can master the basic laboratory skills. Furthermore, a mathematical oriented student who enjoys abstract thinking can usually choose a project with an emphasis on computation and simulation, while a student who is skillful with instrumentation can pursue an experimental project. The collaboration between these students benefits their learning in all aspects. During the past 10 years, 45 students have worked in my laboratory on such individual research projects.

I also serve as a mentor and advisor for students in independent studies, internships, and summer projects. The topics of Independent Studies ranged from *Biomedical Ethics on Animal Use in Research*, *Patient Privacy*, to *MR Imaging*. In Student Internships, I coordinated and advised students in projects such as *Magnetic Nanoparticle in Drug Delivery*, *Automation in Drug Delivery and Health Care*, and *DNA and Genomics*. In this capacity, I have worked one-on-one with 13 undergraduate students at the University of Central Oklahoma (UCO) and 12 high school students.

The advancement of science and technology has completely broken down the boundaries of traditional science fields. To ensure our students' competitiveness in today's global economy, I have for many years pursued interdisciplinary teaching and research. Specifically, I have developed, among many others, the medical physics classes and laboratories at UCO. In 2000, I took the leadership role in establishing the Biomedical Engineering (BME) undergraduate degree program, the first and only such a program in the State of Oklahoma. I designed the curriculum, degree requirements, and developed and taught new BME courses. The BME program integrated biological and

physical sciences, mathematics, and engineering. Our BME program grew rapidly and today it enrolls more than 70 students.

I have been conducting research on cancer treatment using a novel laser immunotherapy, a program involving many different fields, such as laser physics, engineering designs, biology, and chemistry. I work with students in my lab on different components of the research, such as design of laser delivery system, temperature determination, drug administration, immunological assays, and animal treatment and observations. Again, I assign projects based on the ability of individual student. The combination of the new BME program and my research provided students with opportunities to gain interdisciplinary knowledge and skills both in the classroom and in the research laboratory.

Experiential learning is the most effective teaching method. Confucius once said, “I hear and I forget. I see and I remember. I do and I understand.” In my teaching, I emphasize on inquiry-based learning. In almost every class, I design and assign projects to students requiring experiments and/or simulations to obtain results and knowledge either independently or with teamwork. For example, I worked with students to measure the muscle force of the arm and back using lever systems. Involving undergraduate students at all levels in my research is also an integral part of my teaching.

I believe the hands-on experience gives my students the competitive edge in their professional career and graduate education. More than half of my 160 publications were co-authored by students and 37 by undergraduate students. More than 40 students have presented their research projects in regional, national, and international conferences. Many have obtained Ph.D. degrees and others are pursuing Ph.D. and M.D. degrees. Still others have become major players in biomedical industries and in hospitals.

In my teaching, I emphasize two important aspects. One is the learning process, not only the knowledge itself. I convey to students that college is the place where they learn how to think and how to develop their methods to approach real-life problems. I teach them the only constant in the real world is the “Constant Change”. I often challenge them with open-ended questions so that they will see what the real world looks like. For example, I introduce the students to the status of cancer and development of treatment methods so that they can think how they can tackle similar problems. The second aspect is service learning. I constantly try to infuse the notion that the purpose of learning is to serve the people and to contribute to the society, not merely to enrich oneself. I brought my cancer patient treatment experience to my classroom and my research laboratory to demonstrate the points of serving people. I challenge them to save or change at least one person’s life in their career. My dream is to have my students come to me one day and tell me they did just that.

Looking back, my 20-year teaching experience has been filled with struggle, success, failure, challenge and excitement. I have been recognized for my teaching with awards such as UCO Vanderford Faculty Award in Support of Undergraduate Research, Creative and Scholarly Activities, the DaVinci Fellow Award for Creativity among Oklahoma’s Higher Education Faculty, and the National Tandy Technology Prize for Science, Mathematics and Computer Science Teaching. However, the highest award to me is to see my students growing intellectually and personally to become productive citizens and contributors to the society.