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Cumulative Educational Reflection

My perspective on the educational experience at Iowa State University will be somewhat different from the majority of students on campus. I am a non-traditional transfer student with a long career history and a good bit of world travel and exposure to other cultures. I am already a lifelong learner with a relatively unbroken string of college classes spanning…let's just say many years. I have already done many of things that my engineering education prepares me to do. However I have learned lots of new skills and definitely had some character-building experiences.

Since many of my classes had been taken years earlier the first challenge I faced was the discontinuity of my education. I spent a lot of time getting up to speed on my algebra and trig skills before I started classes and decided to retake all of my calculus classes since I knew that strong math skills would be a major key to success in an engineering curriculum. This reasoning proved true. This was probably one of the biggest challenges I faced as a returning student. Besides all the effort I put in to preparing before classes started I would say I probably spent twice as much time in my math studies as other students trying to get up to speed. I identified a critical path in my education and persevered until I achieved the level of proficiency I felt I needed. I also got to serve as a student ambassador for three semesters. I served on a panel to answer questions for students who were transferring and/or non-traditional. I also put together a talk and slideshow for a couple of orientation classes to highlight all the technology and resources available to engineering students.

I have a long list of classes that I can classify as painful yet enjoyable. Physics II would be one of these. One thing that can make a huge difference in the effectiveness of a learning experience is the timing between the lecture material and the lab content. In this class it was perfect. I was able to explore the material in the labs with a full understanding of the concepts involved. I learned to carefully perform the experiments and take as much data as I could for later analysis. The importance of knowing the difference between error, accuracy, precision, and uncertainty was repeatedly driven home and enforced in the grading of the labs. This class taught me the discipline and attention to detail necessary to properly conduct an experiment and analyze the results.

I must say that not all of my team experiences have been positive. Picking a good team can be the difference between an underpaid babysitting job and a valuable experience highlighting the power of a

good team. One of my more positive experiences was with a Software Engineer in a class on Digital Logic. The instructor in this class was relentless and set unusually high standards for everything we did. At first I felt overwhelmed but as I was able to complete things I thought I would not be able to do I gained confidence. Our team project was to use the DE2 FPGA board to decode a signal sent over the air from the atomic clock in Ft. Collins, Colorado and display the time information on a seven segment display. I did not know how to do it or if it could be done but I had the confidence to try. I learned I could depend on my teammate for any work he was assigned and he would deliver it on time. We capitalized on each other's strengths to maximize the value of our time spent on the project. When a team works well it is a very profound and powerful experience. This team experience taught me not to be afraid to forge ahead into the unknown, that initially picking a good team is critical to the team's success (actually a bad team experience in another class did a better job of teaching this!), and that a team that works well together can accomplish great things.

I have had many more such character and skill building experiences at Iowa State. However one such under-rated experience is Gen Ed and the ethics and diversity training provided in the x94 series of classes for engineers. I wish every student had the opportunity to go overseas and experience other cultures and get to know the people. The media tends to paint a divisive picture in its reporting that dehumanizes those in other countries. It has gotten so bad that even friends like Canada and the European nations are vilified and berated. Cultural differences aside, these people are no different than your own mother, brother, or sister. As engineers the technology that we help build and evolve will have an impact on our society for better or worse. We are not forced to act in an ethical manner. But we have been taught the difference between right and wrong and we will have to live with the decisions we make and their consequences.

A student who does not make a commitment to lifelong learning, especially one in a technical field, will not go very far at all. An engineer should get over the fear of the unknown. All projects start at this point. It is your job to make the unknown known. The best engineers work longer and harder than their peers. Learn to delegate and more importantly pick the right people for delegation. There will be many shades of gray when it comes to ethics in your career. But there are lines that no one should cross. No one respects or trusts an ethically weak engineer. Use your college education as an opportunity to develop your skills and avail yourself of the practically limitless resources and technology that are provided. These tools will be much rarer and more expensive when you leave. The last piece of advice I would give is that if you are to work hard you must learn to play hard. Make what little free time you have as rewarding as possible.