Transitioning to Academia

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Abstract

After 23 years working as an engineer in a private consultant firm, a municipality, and a state department of transportation, I had the opportunity to teach at my alma mater. I took the opportunity and because of the immediate need to fill the position, I left my employer and began teaching duties in a short two week time frame. I was assigned two full time courses and additionally took on duties assisting with two other courses. I soon devised organizational techniques to develop lectures that incorporated both textbook information and additional material. I also recognized that anecdotes from my work experiences helped explain many concepts. Using my contacts in industry, I was able to obtain supplemental materials to distribute in class and have speakers that could address specific areas of interest. I also became involved in some student activities so that I could get to know individual students better. To help develop my teaching skills, I took several on-campus seminars that introduced me to campus protocols and teaching techniques. As an outsider, I had to learn the computer systems used for communication throughout the university and the variety of offices that service the professional campus community. As an educator, I found that I needed to present the basic and most current information to students such that they could understand the state of practice. The academic requirements formed through the Industrial Advisory Committee and the ABET accreditation process introduced a different perspective to me that demonstrate the progressive development of modern educational standards.

Introduction

There is an old saying, "those that can do and those that can't teach." This saying reflects the beliefs of many practicing engineers who feel that students are not taught practical information. Practicing engineers recognize that students learn the important theories of engineering in academic settings, but students need to be "trained" to the work environment before they can be valuable in the workplace. "Academics just can't apply theory to real life situations."

I had always admired my engineering instructors and professors during my undergraduate and graduate years in college. I continued contact with many of my former professors through continued professional and alumni relationships since graduating in 1981 with a BS degree in Civil Engineering. During my professional practice, I encountered several new graduate engineers entering the workplace and took special effort to help them get acclimated into their new work environments. I was able to mentor several of these new engineers and could see how quickly they adapted to new technology. As a supervisor to some new engineers, I allowed them to implement changes to improve processes in an often unyielding work environment entrenched

in standard protocols. One of my favorite engineering professors had admonished my graduating class of 1981 that within the first 5 years of graduating, 50% of everything that we had learned would be obsolete. He was right.

After having taught a few night courses outside my work environment, I recognized that the expression, "those who can't teach," was very much in error. Teaching courses demonstrated to me how difficult presenting new material to students actually can be. I found that I had to not only review concepts that I had learned years before, but I also had to learn new areas that were beyond my standard span of working knowledge. It was one of the most challenging assignments that I had ever undertaken, but was also one of the most rewarding.

In June 2003, I was offered the opportunity to make a career change from being a practicing Civil Engineer with the Maine Department of Transportation to becoming an adjunct professor at the University of Maine. The opportunity came quickly in order to replace a professor for the fall 2003 semester. The position was offered for a temporary position and required that I take a leave of absence for the fall 2003 semester from my position with the MDOT.

The MDOT granted me a full leave of absence in mid July 2003 for the period of August 9, 2003 to January 5, 2004. I hurriedly completed my current MDOT assignments and reported to the University of Maine on Monday, August 9, 2003.

Course development

The fall 2003 semester began on August 30, 2003 at the University of Maine. I was assigned the responsibility to teach two full lecture courses and three computer labs. I was also assigned to assist with a weekly course called Introduction to Construction Management.

Textbooks had already been chosen and I read through each book. I took notes in an outline form for each text as I read. I used these outlines for developing course notes and lectures for ensuing coursework. I had no notes to work from and found that I needed to develop information fairly quickly. Because of the closeness to the fall semester, I was not able to order supplemental materials suggested in some of the textbooks. I did, however, order the supplements that gave answers to textbook questions. I was required to develop course syllabi and quickly learned to use open ended language to allow adaptability in the event of not meeting planned topic areas. From review of the textbooks, I found that they did not meet my "existing knowledge" base about the particular subjects. I brainstormed some topic areas and realized that I had professional acquaintances that could fill in gaps for classroom presentations.

I prepared for two full lecture courses. The first was a course in project management taught to the senior class of the Civil Engineering Department. Unfortunately, the textbook was a small handbook of lists. There were no real expectations given to me and I created a course based on my dealings with project managers in both private and public sector arenas. I divided the course into three parts. The first part covered overall management concepts such as organizational structure, chain of command, project teams, and personality profiles. I included interactive exercises such as team building using a spaghetti and marshmallow tower building exercise that I found in a standard book on icebreakers. I brought in the Chief Engineer of the MDOT to

discuss engineering ethics with the class. The second part covered basics on scheduling and cost estimating. I emphasized that as project managers, engineers need to have a sense of schedule and cost. Brief class exercises demonstrated how to use standard cost guides such as RS Means and to develop small schedules using PERT diagrams. The third part consisted of developing proposals that would be used in the spring senior capstone project.

The second course that I developed was in construction project scheduling taught to the senior class of the Construction Management Technology Department. The chosen textbook emphasized computer applications and I decided to spend more time developing concepts. I gave an overview on construction project management and then developed scheduling concepts through building activity lists and precedence relationships. I brought in some standard information from management courses that I had had in coursework that I did for my MBA and MPA degrees.

The three computer labs supplemented lecture courses. I needed to learn the programs Primavera P3, Expedition, and Docubuilder. Two labs supplemented the construction scheduling class and I was able to integrate lecture topics to the lab. I created a project for the end of the semester and began the lab course showing Primavera P3. I soon found that Primavera P3 was too complicated to show undergraduates during one short semester. I concentrated on the basic features and lead classroom exercises each week for the first 5 weeks. The students were then on their own to complete the assigned project within the remaining semester. The project consisted of scheduling a building construction project that had been introduced to the class in earlier coursework within the Construction Management program. The third lab course supplemented a previous semester's writing intensive course in construction documentation. A set of project documents had been scanned, but no information as to how these documents would be used was given to me. I took random plan sheets and wove a story around these individual sheets such that students needed to respond to letters and memos that resolved my inquiries. I usually came up with the exercises used for this lab on a weekly basis as was needed. Students were allowed to work as teams and I corrected each exercise for content and grammar.

Classroom evaluations

Since I had no notes left behind to work with, I needed to utilize the textbook supplemental answer materials. However, I soon found out that the answers in the teaching supplements were not always correct and I had to "back paddle" on a few assignments. I developed my own tests and found that short answer questions were preferred by many rather than true/false and multiple choices. I gave partial credits and found that I needed to look at items objectively to maintain consistency across student tests. I assigned a scheduling project in the construction scheduling class and proposals in the project management class. To grade these project oriented courses, I devised rubrics to meet the major criteria that I had hoped to have students produce. I assigned numeric grades to the criteria based on my perceptions of what had been turned in to me and gave written comments on my evaluations. My goal was to return such items by the end of the semester or by the beginning of the spring semester.

Classroom behavior

From my professional background and my experience as an undergraduate, I found that by wearing a sport shirt and tie I have a "different" level of classroom respect than if I wore casual clothing. My students were not disrespectful toward me. In discussing concepts within the context of the respective courses, I relayed personal experiences that I had had as an engineer in similar situations. I had worked as a project engineer and project manager in the private and public sector. In the project management class, I discussed the problems that I encountered while dealing with people. I emphasized that the best engineering isn't always received well with the public and often has to be compromised to satisfy constituencies. In the scheduling class, I relayed how material delays often break a well defined schedule. Labor problems also can introduce interesting delays to project schedules and I have several stories about such issues. I found that by relating these stories, students could better understand concepts that are placed in the textbooks. I also found that by having an "open door" policy with students, I had a better interaction with them in the classroom. I had established office hours, but I allowed students to come to discuss items of interest at anytime that they found me in my office or on campus.

Student interaction

I am involved in several outside community service boards and public committees. I found a service project with a social agency for which I am the building chair. The student chapter of the American Society of Civil Engineers took on the service project to build ramps for the facility. I obtained the funding for the project and participated with the group over a course of 5 Saturdays to build the ramps. I physically worked beside the students and took direction as a worker. I found that the students better related to my interaction with them. I now make it a point to participate in student activities within my department, as much as is practical, outside the classroom.

Academic protocols

As in all new work environments, I found that the University has many protocols to follow. The main method of communication is through the electronic First Class email system. I had used an email system at the MDOT, but I had not had a system with so many sub categories such as conferences where I could immediately contact my respective students. Like all large organizations, there are a series of forms to complete for University activity and I needed to wade through these items. The first semester was truly a learning experience for me as I got exposed to the University system. My peers within the School of Engineering Technology have multi-disciplined backgrounds. I have informal contact with each of them, but am independent on my teaching content. I found these colleagues to be supportive of any of my efforts.

Permanent appointment

Late in November 2003, the CMT program conducted a search for a replacement faculty member. I interviewed for the position, but because of a hiring freeze, the position could not be filled. Because of my MDOT leave of absence, I needed to return to the MDOT on January 5, 2004. I obtained an extended leave of absence and returned to the University for the spring 2004

semester. Using some of the strategies that I developed for the fall 2003 semester, I prepared for spring 2004 during the Christmas break. I taught courses in construction estimating, construction methods, and the senior capstone project for Construction Management Technology. In February 2004, I accepted a permanent appointment in the CMT program and terminated with the MDOT.

Conclusion

The transition to academia from a professional working environment is a challenging opportunity. As a working engineering professional, one is used to a set of consistent projects working with an established group of colleagues. Most engineers work within a specialty area and develop standards of practice that become fairly routine procedures. A professor works within a changing set of concepts and courses to present new ideas to students in a short 15 week period. Changing sets of students from course to course and semester to semester do not allow professors time to gain a long term working relationship with these students. Professors need to recognize the personality traits of the students fairly quickly and make quick evaluations of their work on a routine basis. In the professional work environment, one gets to know colleagues in over a period of years and make more thorough evaluations of subordinates on an annual basis.

Working professionals who transfer into academia should supplement course materials with information learned during one's professional career. These supplements enhance the education of the students through the experience of the new professor. As in the professional working environment, the transitioned professor should treat students with respect. Students need guidance from those who can offer advice, encourage development, and nurture the student's intellectual curiosity. How can a transitioned professor develop these skills? These skills are part of one's professional pursuit. A professional needs to keep himself current and work effectively within his environment. If he can transfer this intellectual development to the student, a professor can teach valuable lessons.

A transitioned professor needs to remain organized and engaged with students. The ability to make quick judgments helps the professor establish priorities to maintain an evolving schedule. As in the professional work environment, the transitioned professor will be most effective through the best choice of priorities.

Both academia and the working environment have a set of established protocols. One needs to understand these protocols to become acclimated to either environment. I offer a new saying to the engineering community, "those that can do and those that invest in the future teach."

Biography

Mr. Philip Dunn, Jr. PE is an Assistant Professor of Construction Management Technology in the School of Engineering Technology at the University of Maine at Orono. He is in his second year of teaching after a 19 year career at the Maine Department of Transportation and 3 years with a private consultant and municipality. He holds BS and ME degrees in Civil Engineering from the University of Maine, a MBA from Husson College, and a MPA

from the University of Maine. He currently teaches courses in Construction Methods, Cost Estimation, Construction Scheduling, and Project Management.