Teaching Statement
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My teaching has been informed by both theoretical and practical experience. Theoretical experience includes a course titled *Teaching Science and Engineering* in the Delta program at the University of Wisconsin–Madison, which develops the teaching skills of future professors. The Delta course emphasized teaching in practice – that is, learning to teach by teaching. I acquired such skills as active learning techniques and backward lesson design as well as knowledge of multiple intelligences and theories of student assessment. These skills were put into practice as a teaching assistant for a senior undergraduate / first-year graduate course in electric power systems. Drawing on these experiences, my teaching philosophy is best summarized by three main objectives: (1) impart a sound foundation of basic knowledge for all students using an active lecture style, (2) provide broad context in order to make connections among course materials, and (3) encourage student engagement through authentic and meaningful teaching.

Foundation of Basic Knowledge

In order to climb the ladder of Bloom's learning objectives taxonomy, students must obtain a solid foundation of course knowledge. As I experienced during my teaching assistantship, imparting basic knowledge is especially challenging for a diverse class with significant disparities in knowledge between experienced students and those seeing the material for the first time. This is particularly evident among non-traditional learners who lack the requisite background knowledge. In order to create a foundation of basic knowledge for all students, I drew on experience from the Delta course to develop an active lecture style in order to teach to multiple levels of student knowledge and to anticipate the needs of non-traditional learners. With this style, my lectures encouraged student engagement and understanding using brief exercises and assessments. For instance, after introducing a concept, I often provided a short related problem that students solved in a "think-pair-share" exercise. This gave the opportunity for all students to assess their mastery of the material and allowed me to clarify any misunderstandings. After improvement through trial and error during the semester, this style was well-received among students and helped bridge the knowledge disparity among the class.

Broad Context

Concurrent to imparting a solid foundation of basic knowledge, providing a broad context for course material allows students to construct an understanding of how knowledge fits together both within and among disciplines. Putting knowledge in context is important to prevent students from simply memorizing material to pass the course assessments. By providing a contextual framework for course material, students are able to build on their knowledge. To accomplish this, I start each class with an overview describing the purpose of the material and frequently identify connections to previous knowledge. Providing context is also accomplished by drawing on outside experts, such as guest lecturers from industry and government, who can motivate students with discussion of how their knowledge aligns with practical goals. I also provide

context through resources for deeper and broader student learning, including other courses, relevant seminars, and information about related student groups and extracurricular activities.

Authenticity in Teaching

With a contextually grounded foundation of basic knowledge, I use authentic teaching and assessment to motivate students to achieve a deep understanding of course material. Authentic teaching engages students with practical and meaningful learning opportunities. As one mechanism for authentic teaching, projects requiring creativity generate student interest and cement existing knowledge. For instance, I saw much stronger student engagement in a realistic transmission expansion design project than the routine solution of circuit equations.

My interdisciplinary experiences enable authenticity in teaching. A technical background alone is not sufficient for tomorrow's engineers to meet many societal challenges; authentic interdisciplinary instruction is necessary to prepare students for workplaces that need increasingly diverse skills. For instance, sustainably meeting the world's energy challenges requires the interaction of engineers, environmental scientists, and policy analysts. The Master's of Public Affairs and the Energy Analysis and Policy Certificate programs have afforded me a strong background for teaching to these interdisciplinary challenges.

Integrating teaching and research is another important way for ensuring authenticity and student engagement. For example, one of my most gratifying teaching experiences occurred when a student spontaneously asked an open question in my research field. After a brief summary on the limitations of the current literature and a description of how I was approaching the problem, the student's engagement with the course material greatly expanded as evidenced by a follow-up discussion on research opportunities in power systems. Excitement about research is contagious.

Conclusion

My theoretical background and practical experiences have cultivated the objectives of imparting a sound foundation of basic knowledge to all students, providing context for course material, and emphasizing authentic teaching. While my experience affords a strong base, I look forward to further developing my teaching skills. Accordingly, I plan to guest lecture in power systems courses during my postdoctoral fellowship at the University of Michigan. As an aspiring professor, I intend to teach courses in electric power engineering, applied optimization, and circuits and systems. I am also interested in courses with large interdisciplinary components. For instance, one proposal for interdisciplinary education is a project-based class that investigates the power system expansion process. Several professors from a variety of disciplines would teach students how their area of expertise informs the investigation. Forming teams from a variety of disciplines, students would take the viewpoint of a stakeholder in a hypothetical future scenario (for example, meeting regional electricity needs in 2025) in order to create and defend a proposal at a mock public utility commission hearing at the end of the semester. Such a project would teach students the multifaceted interactions inherent to electric power supply.