

Teaching competency can be viewed as the ability to accomplish the following six key factors:

- 1. Articulate appropriate course goals and objectives.**
- 2. Organize and design courses with these goals and objectives in mind.**
- 3. Present material effectively and communicate with students in a variety of settings, including large classes and small groups.**
- 4. Provide feedback to students to give them clear messages about their performance in ways that will help them improve before the semester is over.**
- 5. Employ varied teaching methods that appeal to the various learning styles of students.**
- 6. Incorporate into your teaching the latest scholarship in your field or discipline.**

Over the last 17 years, I have had the pleasure of teaching at Saint Anselm College, the University of New Hampshire at Manchester, and the University of New Hampshire in Durham in a variety of departments and with a range of courses. My current and most recent teaching assignments focus on Introduction to Database Technology (IT775), Data Architecture (DATA900), and Data Architecture (DATA821-Online), all at the University of New Hampshire. An inspection of materials from these classes demonstrates my teaching competency.

As described in my statement of teaching philosophy, I view learning as occurring through the engagement of the learner in the process of learning. In my technical field, students are less likely to read a text-based document and reach a higher-order of learning through that solitary exercise. Rather, students use the reading of a textbook or introductory document as a starting point, along with pre-knowledge (material that students already know) that each student brings into the classroom, as a starting point to engage in the learning process. In viewing the IT775 syllabus, in-class conversations and activities are used to reinforce the text-based material and homework assignments seek to reinforce the topics.

One key aspect of my teaching is not to be the smartest person in the room, but rather assist the students in becoming the experts themselves through self-learning and continual personal development. The field of Computer Science is constantly changing, and finding valid materials that will help students to continually learn is key to remaining current and competitive. I explicitly encourage students, as noted in the syllabus in IT775, to bring forward in class any topic that might be in the current media that has a relationship to our database technology topics. I recall one of the many SQL injection data breaches that are reported on in the media as one of our in-class discussion topics, where we not only discussed what happened and why, but how to prevent the breach from occurring, including code examples to write that could test installed databases. Since most of my exams are open-book, open-note exams, as noted in the syllabus, I remind the students of the key principles of good studying itself, and often refer to the literature on teaching and learning to show that my interleaving teaching and assessment process is based on the studies on learning that show improved learning by following these methods. Over the years, as I attend more workshops on teaching, I have incorporated into my courses, though not stated explicitly in the syllabus, the utilization of a few Classroom Assessment Techniques (see Angelo & Cross, 1993) that I have seen effectively used in a course format similar to IT775. Learning Goals Assessment, Muddiest Point, Course Speed Feedback, and Minute Papers have all been used in IT775 in the last five year.

I have expressed to students on the first day of class that my approach is to not attempt to force 80% of the learning of the course into the last 20% of the class time. Rather, I structure the course to be modular such that there are three major modules that have several sub-modules, making interleaving and small topics of learning more focused to understand for the students in the course.

In my exam structure, I tend to prefer three exams in a 15-week, semester-long course. The first exam is generally focused on many of the basic terms and concepts, aligning to the first two levels of Bloom's Taxonomy – Knowledge and Comprehension. In IT775, the questions would be focused on the definition of terms and pointing out items on a chart. The second exam tends to draw on the concepts of the first exam and asks the student to apply and analyze the material that has been studied – Bloom's Taxonomy Levels of Application and Analysis. IT775 questions ask the student to convert Entity-Relationship (E-R) Models into Relational Models, or build a database schema from an E-R Model, or use an existing schema and apply the process of Normalization to the database schema to make the database more efficient. The third exam will typically pose a real-life scenario to the student, and the student needs to draw upon all aspects of the database technology discipline to propose a possible solution that would satisfy the user requirements. The Bloom's Taxonomy Levels of Synthesis and Evaluation are applied in this final exam, leading the student to realize that the student has mastered the concepts and progressed through the levels of learning over the period of the course. My students have commented informally that the gradual challenge of the exam process assists them in reaching a proficiency level that abides after the course is over, when they are in hiring interviews for jobs and when they are solving problems in their professional career.

As is inevitable in the practice of teaching, I have learned many lessons across my classroom experiences, some harder than others. As I understand material concepts better by teaching them over and over again, I have been able to be my own adviser in recommending changes to the course delivery to increase student learning. The course design, including topics to cover and their order, the textbook to augment the course, and the assignments to complete for homework, have all undergone extensive overhaul. The first course delivery is very different from the last course delivery. I always ask the students in each course to provide feedback on the course design and content on the course evaluation document. In the center of the course, I will ask the students to provide anonymous feedback on the remaining topics in the course, asking if the remaining topics are all adequate or if something should drop to be replaced with something else. By asking halfway through the course, I can make those corrections and assist the students in controlling their learning, while helping them to realize that they have gained a significant level of expertise in the subject matter at the halfway point in the course as the topics make sense to them and they can begin to Synthesize and Evaluate as Bloom would expect.

In IT775, my intention is to vary the teaching methods to match the varied learning styles of the class. When the course topic is focused on requirements engineering to design schemas, the reading and class lecture are about the mechanisms and processes to follow to carry out that function. The subsequent class activity is similar to Prediction Guide (LAT #11) (Barkley & Howell Major 2016) where the class breaks into small teams and each team is given an envelope that has, taped to the outside, a scenario that requires the team to design a schema based on the requirements presented in the scenario. Each envelope has a different scenario. The team places their solution to the scenario in the envelope without looking at the other solutions already in the envelope, and the envelopes rotate around the room until every team has seen every envelope, with each team finally receiving back their original starting envelope. Each team removes the solutions placed in the envelope and reviews the solutions presented, either selecting the best solution (which may not be their own) or rejecting all of the solutions and drafting a new solution. Then, each team presents the scenario they had and their selected solution and a discussion ensues. Finally, the homework assignment asks each student to do the same task, but on a new scenario and without the assistance of others. By using different teaching methods, I am able to see when and by what means each student learns the concepts and be in a better place to assist in their learning.