Teaching Portfolio

I believe science and mathematics can create opportunities for students to become who they want to be, and this is why I am an educator. My purpose is not simply to provide a survey of information on a given topic over the course of a semester; this is much more efficiently accomplished by Google and reference books. Instead, my purpose is to provide students with an understanding of the power of the knowledge they are learning, and an understanding of how this knowledge is valuable to them and the world. Doing this requires much more than information. It requires first and foremost a relationship.

Over the duration of a course, I hope to create an environment in my classroom that encourages students to use their creative abilities to generate questions and answers about the field of study. Yes, this is an idealistic vision of how a classroom operates, but it is also how great science is developed: by creative thinkers using their understanding of the world and a bit of inspiration to find answers to questions they asked. When leading a classroom, talking about what I know is useful only in providing context, boundaries, and connections. Relating the truths of the world to the experiences of the students is the primary goal.

My first priority as an educator is to understand why students are in the classroom. Information can then be readily related to these motivations. If learners have a personal motivation for understanding a particular subject matter, they will not only retain the information presented in the classroom, but also learn how to continue their education for years to come. Further, by curiously asking students "Why are you here?" at the first meeting, I hope to create a culture where students ask many questions of themselves, of the knowledge they already possess, and of whatever life presents them in the future.

Obviously, the interest of students does not always lie within the focus of a course description. For this reason, the teaching objectives for all my courses are to leave my students with two main products: strong fundamentals and transferrable skills. For example, a fraction of students in Introduction to Coastal Engineering, a class for non-engineers which I teach at the University of Florida, will go on to work in science and engineering, and thus structuring lectures and assignments around solving fluid mechanics and wave equations would leave the majority of students with nothing but a course requirement fulfilled at the end of the semester and a bad impression of science.

To remedy this, I focus homework assignments around the use of Excel to solve mathematical problems. These skills are valuable to students regardless of the field they enter. I know lawyers, artists, and academics who, after using Excel, wished they had learned spreadsheet skills years ago. Of course, the point of the course is not to learn Excel, but by juxtaposing the learning of marine science (which is very interesting) with the learning of a spreadsheet tool (which can be very boring and needs context), students gain skills to achieve their career goals in a memorable fashion.

As a pedagogical example, my lesson about velocities under waves begins with me asking students to imagine themselves at the beach. While standing in water about 4 feet deep, they imagine 1 foot waves coming towards them. I ask them, when the wave crest is at your neck, which way is the

water moving? (Answer: onshore.) When the wave trough is at your waist, which way is the water moving? (Answer: offshore, like an undertow.) We then discuss how the water is moving in between these extremes, and see that water waves make elliptical velocities underneath them. This serves as a springboard for discussing wave breaking, Stokes drift, and a host of other topics. But it begins with students using their own experiences and imaginations, because this is the most powerful tool they have. The lesson concludes with the equations of water motion under waves, and for homework they are asked to plot these vertical profiles in Excel. The broad solution lies in their experiences, but they use a computational tool to convey their answers in precise terms. This parallels how many great scientists have made their discoveries.

This approach of beginning lessons with experiences may seem radical, but it is at both the cutting edge and core traditions of education. The Modeling Method of teaching, extensively studied and funded by the National Science Foundation, has been repeatedly recognized as an excellent way to teach fundamental science. It begins all lessons with an experience, with students observing something happening in front of them, rather than starting with slides or mathematical formulae. From this experience, students ask themselves questions about their observations. And while many experienced educators rightly question the value of new theories of teaching, this style of learning was documented hundreds of years ago, by Ignatius of Loyola, in his efforts to improve Catholic education. All Ignatian learning exercises begin with an experience, and require the skills of observation. These principles have been applied in science and mathematics education to great success and are a hallmark of Ignatian pedagogy. Because of these coinciding principles, and my own classroom success, I am convinced that initiating lessons with the experiences of students yields the best educational results.

The most rewarding result of my teaching experience is hearing about my former students' continued interest in the marine sciences. Two students completed summer internships in marine science after taking my class, one authored a paper in a student newspaper on noise pollution in the ocean, and one is pursuing an undergraduate research position in the coastal engineering program for the 2013-2014 year. Supporting students through their lives as they build upon the lessons learned in my classroom is an essential and invigorating aspect of the teaching profession, and will fuel my teaching spirit in the years ahead.

Course Evaluations, Fall 2012

Below are course evaluations from my Fall 2012 course, Introduction to Coastal and Oceanographic Engineering. Due to privacy laws, these are by default only made available to me as the instructor, but a verified version from the University of Florida College of Engineering can be provided upon request. This page shows results from questions scaled 1-5. Free responses can be provided upon request.

Term: 2012 Fall
College: Engineering
Department(s): Civil & Coastal Engineering
Course(s): OCE3016
Section(s): 3558
Instructor: Lapetina,Andrew J (8849-4265)
Response Rate: 66.67% (6 out of 9)

	Question	Percentages (1)	(2)	(3)	(4)	(5)	Omitted	Mean	StdDev	Median	Course Mean	Dept Mean	College Mean
1	Description of course objectives and assignments	0.00%	0.00%	16.67%	66.67%	16.67%	0.00%	4.00	0.63	4.00	4.00	4.08	4.18
2	Communication of ideas and information	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	4.50	0.55	4.50	4.50	3.96	4.06
3	Expression of expectations for performance in this class	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	4.50	0.55	4.50	4.50	4.08	4.15
4	Availability to assist students in or out of class	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.11	4.19
5	Respect and concern for students	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.30	4.32
6	Stimulation of interest in course	0.00%	0.00%	0.00%	16.67%	83.33%	0.00%	4.83	0.41	5.00	4.83	4.05	4.11
7	Facilitation of learning	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.02	4.07
8	Enthusiasm for the subject	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.32	4.38
9	Encouragement of independent, creative, and critical thinking	0.00%	0.00%	0.00%	33.33%	66.67%	0.00%	4.67	0.52	5.00	4.67	4.17	4.22
	Averages for questions 1-9							4.72	0.30	4.78	4.72	4.12	4.19
10	Overall rating of the instructor	0.00%	0.00%	0.00%	16.67%	83.33%	0.00%	4.83	0.41	5.00	4.83	4.13	4.19
11	Amount learned	0.00%	0.00%	16.67%	50.00%	33.33%	0.00%	4.17	0.75	4.00	4.17	3.98	4.02
12	Amount of effort required	0.00%	16.67%	66.67%	16.67%	0.00%	0.00%	3.00	0.63	3.00	3.00	3.86	3.94
13	Difficulty of the subject matter	0.00%	16.67%	33.33%	50.00%	0.00%	0.00%	3.33	0.82	3.50	3.33	3.70	3.83
14	The educational value (relevance) of this course	0.00%	0.00%	16.67%	50.00%	33.33%	0.00%	4.17	0.75	4.00	4.17	4.22	4.22
15	Expected grade	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	4.17	0.41	4.00	4.17	4.24	4.15
	Averages for questions 11-15							3.77	0.67	3.70	3.77	4.00	4.03

Course Evaluations, Fall 2013

Below are course evaluations from my Fall 2012 course, Introduction to Coastal and Oceanographic Engineering. Due to privacy laws, these are by default only made available to me as the instructor, but a verified version from the University of Florida College of Engineering can be provided upon request. This page shows results from questions scaled 1-5. Free responses can be provided upon request.

Term: 2013 Fall
College: Engineering
Department(s): Civil & Coastal Engineering
Course(s): OCE3016
Section(s): 3558
Instructor: Lapetina,Andrew J (8849-4265)
Response Rate: 71.43% (responded: 5, enrolled:7)

	Question	Percentages (1)	(2)	(3)	(4)	(5)	Omitted	Mean	StdDev	Median	Course Mean	Dept Mean	College Mean
1	Description of course objectives and assignments	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	4.40	0.55	4.00	4.40	4.33	4.24
2	Communication of ideas and information	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	4.60	0.55	5.00	4.60	4.18	4.05
3	Expression of expectations for performance in this class	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	4.40	0.55	4.00	4.40	4.32	4.17
4	Availability to assist students in or out of class	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.33	4.19
5	Respect and concern for students	0.00%	0.00%	0.00%	20.00%	80.00%	0.00%	4.80	0.45	5.00	4.80	4.53	4.32
6	Stimulation of interest in course	0.00%	0.00%	0.00%	20.00%	80.00%	0.00%	4.80	0.45	5.00	4.80	4.30	4.08
7	Facilitation of learning	0.00%	0.00%	0.00%	20.00%	80.00%	0.00%	4.80	0.45	5.00	4.80	4.22	4.03
8	Enthusiasm for the subject	0.00%	0.00%	0.00%	20.00%	80.00%	0.00%	4.80	0.45	5.00	4.80	4.54	4.38
9	Encouragement of independent, creative, and critical thinking	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	5.00	0.00	5.00	5.00	4.33	4.18
	Averages for questions 1-9							4.73	0.38	4.78	4.73	4.34	4.18
10	Overall rating of the instructor	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	4.60	0.55	5.00	4.60	4.32	4.17
11	Amount learned	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	4.60	0.55	5.00	4.60	4.22	4.03
12	Amount of effort required	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	4.20	0.45	4.00	4.20	4.05	3.92
13	Difficulty of the subject matter	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	4.20	0.45	4.00	4.20	3.86	3.79
14	The educational value (relevance) of this course	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%	4.60	0.55	5.00	4.60	4.37	4.24
15	Expected grade	0.00%	0.00%	40.00%	20.00%	40.00%	0.00%	4.00	1.00	4.00	4.00	4.32	4.22
	Averages for questions 11-15							4.32	0.60	4.40	4.32	4.16	4.04