Examples of Graduate Student Teaching Philosophy Statements

Compiled by:

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Recently a fellow graduate student challenged me on the issue of whether I teach or simply lecture. The point being made was that, with a class of over 100 students, it is not possible for me to teach effectively. I found myself in a position of having to justify what I do in my classes and why: what is the difference between teaching and lecturing?

I have come to this challenging field of teaching after a variety of life experiences. Many of these have provided invaluable learning opportunities that I have been able to draw on. For 17 years, I was involved with a mountain Search and Rescue team. As a Search Manager, I was responsible for the overall co-ordination and organization of the search task. Amongst the valuable skills developed was thinking on my feet, valuing advanced preparation and dealing with individuals under less than ideal situations. Though far removed from an emergency situation, the classroom calls upon these skills. Organization and preparation are reflected in the presentation of material and the competency with which this is done. Such nuances are not lost on students as their term-end evaluation comments indicate (Appendix 2). Often students are under a great deal of stress and they are not always equipped to deal with the curves life throws at them. As a teacher, it behooves me to treat all students regardless of the circumstances and situation with respect and sensitivity. My ability to organize and control a classroom was acknowledged and appreciated by my students (Appendix 2).

When dealing with students of any age, it is important for their learning process to apply the proffered knowledge to something in their own world. When discussing the development of complex societies, I introduce the concept of identifying the reign of cultural leaders and varied societies through architectural styles. We are fortunate at the University of Saskatchewan to be an old campus with successive building campaigns. I call the students' attention to the varied building styles that, if they checked, correspond with specific university presidential administrations. Thereby providing them with an on site, applied example of the specific concept. This use of contemporary examples is gratifying for me as well in being able to formulate examples that a younger generation can grasp easily (Appendix 3).

By virtue of the discipline of Archaeology, I have a wonderful opportunity to explain many concepts that are either "common knowledge" to all or those which are accepted knowledge amongst the discipline but not the public. An example of the former is the reality that many of us have our wisdom teeth (3rd molar) removed or are born lacking wisdom teeth. Much to the students' amazement this is an example of macro-evolution at work. As our species moved towards an increased
level of agriculturalism our diet shifted accordingly. This shift continues today as we eat an increasing level of refined foods. As a direct result, we no longer need the chewing abilities provided by this set of 3rd molars and our jaw is becoming progressively smaller to accommodate fewer teeth. In the second case, it may be obvious to Archaeologists but not to the public how we detect the trait of bipedalism in our early ancestors, the Australopithecines. Very simply, we do it through the structure of the femur and pelvis and the location of the foramen magnum. Easy when you know what to look for.

One of the most difficult things I had to learn as a new instructor was how much information is enough and when is it too much. I quickly came to realize that it is physically impossible to include a whole textbook into a one- or even two-semester class. My job as a teacher is to expose the tip of the concept and stimulate the students to want to look further. No matter what their educational goals or reasons for being in my class it is important to encourage students to think critically and explore the options.

Several years ago I was a student pilot. I still remember the first take-off and landing, fortunately under the hand of my flight instructor. The memory of the terror is still vivid in my mind, never believing that I would ever get a plane into the air let alone land it in one piece. I don't believe that I am an individual to whom all skills come easily whether flying or kayaking. Yet learning such skills has taught me far more than meets the eye. Flying and other pursuits epitomize so much of what I try to bring to the classroom and my difficulty in learning such skills enhances my teaching. I have learned to break down any task or new skill into manageable learning components. In essence, to draw back from the bigger picture and focus on one step at a time, one skill building onto another and into the final landing. Not only have I learned several outdoor skills, I have taught them. Regardless of what I am teaching I always try to recall being in the position of the student. Doing this allows me to empathize with and to honestly encourage perseverance and persistence from my students. Each term I learn. Some of this from formal textbooks and workshops, and a great deal from my students themselves and this, I believe, is as it should be.

Economics
Michael Malcolm
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http://www.ssc.wisc.edu/~mmalcolm/teaching/teaching_phil.pdf

My varied forays into teaching have, to date, met with relative success. At the same time, I have both grown and learned a lot by being open-minded and hope to continue honing my teaching skills as my career progresses. I have been a TA for eight semesters at the University of Wisconsin-Madison, for both graduate courses and undergraduate courses at various levels. Based on student and faculty evaluation, I won the department’s highest teaching citation for six of the seven already-completed semesters, with the highest student evaluations among
all the department’s TAs for two semesters. I won two department scholarships recognizing outstanding teaching and was nominated for two additional university-wide teaching awards. I have been appointed to teach a graduate course in public program evaluation as a lecturer at the University of Wisconsin’s LaFollette School of Public Affairs. In addition, I have served as lecturer at a University of Wisconsin branch campus and at Madison’s local community college.

My primary motivating criterion in teaching is to maximize student engagement in the material. I have succeeded in a number of ways. First, and perhaps most importantly, student engagement in the material is directly correlated to my own engagement in the material as an instructor. Instruction is far more effective if students detect that I have a genuine interest in the material at hand and view my instruction as a joint process with all of us simultaneously engaged in the material, not a unidirectional process. As such, I always structure courses to maximize student interaction. From simulating a prisoner’s dilemma or oligopoly problem to setting aside time for students to work in small groups and interacting personally with each group, students are much more likely to stay attuned if they feel personally engaged in the material. A classroom full of bored students is the best way to minimize learning.

In general, I emphasize to students that economics is a skills-based discipline and not a content-based discipline; that is, the focus of the course is not to memorize a large body of material that could be easily referenced in a book but to learn to think in an economic way and to apply economic reasoning to a wide variety of problems. In doing so, one of my main goals is for students to continue to develop their critical reasoning capacities. In my view, problem-solving and constant practice with the material are critical, and I view regular problem sets as essential to students’ understanding the material. As I emphasize, my problem sets (and exams) are not designed for students to simply repeat material that was covered in class, but to apply the skills to new problems. My hope is to design problems that demonstrate the wide applicability of economic reasoning to their lives. I sometimes choose nonstandard topics to maximize this goal; my classes in microeconomics spend an unusual amount of time, relative to a typical course, on game theory, for example.

Another explicit goal of mine is to minimize students’ math-anxiety. For better or for worse, quantitative methods are a part of economics. I have found that, nearly universally, the math itself is never the barrier – if students understand the fundamental economic concepts behind calculations and graphs, the numbers and diagrams take care of themselves. When lecturing and working with students individually, I always emphasize that rote calculations are never the answer and not the goal of the course – What exactly does this number mean? What is this graph telling us? Why would it matter to an economist? These are the critical questions, and I fear that students sometimes lose sight of the forest if I neglect to continually emphasize that the course is not about memorizing how to perform calculations, but about how economics can inform our understanding of the world.
Graphical and mathematical techniques are just tools that make our ideas more explicit. Economics is a rich science, and economic ideas apply to a multitude of applications; my goal is to show students how economic techniques can inform analysis of a whole host of problems.

I view regular feedback and evaluation as critical, and tend towards short assignments given quite frequently instead of longer assignments given sporadically. In grading, my goal is to maximize my ability to accurately evaluate students. As such, my goal in structuring exams is to have a continuum of question difficulty – from some straightforward ones that any student should be able to answer to one or two questions that challenge even the best students. I typically maintain an “open-door” office policy, and students in the past have commented that they appreciate my accessibility.

Of course, I can’t take any credit for success in teaching without acknowledging that I’ve borrowed successful techniques from a bevy of outstanding professors and teachers at various levels with whom I’ve been fortunate to work. Continually learning and being open-minded to new techniques, even when I was convinced I had something mastered, has surely improved my teaching substantially.

Feel free to examine the materials I have attached with this statement and posted on my website regarding my teaching experiences: summary evaluations, sample student comments and teaching materials: [http://www.ssc.wisc.edu/~mmalcolm](http://www.ssc.wisc.edu/~mmalcolm)

**Political Science**
Sarah Allen Gershon  

I credit a great deal of my academic success to the encouragement and support of excellent faculty. Consequently, I believe that a large part of my job as a teacher and mentor is to bring out the very best in my students, challenging them to exceed their own expectations in the classroom. I have taught three different courses as a graduate student: Introduction to American Government and Politics, Empirical Political Inquiry (an upper level research methods course), and Political Statistics. In teaching these courses, I have found when students are pushed to think more critically and creatively in their course work and class discussion they often rise to the occasion. To challenge and encourage my students to excel, I rely on a number of different strategies in the classroom.

I design my lectures with the intention of pushing my students to not only learn the basic material presented in the class and readings, but also to connect the concepts we discuss to a broader understanding of politics and the world. I also work diligently to keep students interested and enthusiastic about the topics. This is particularly important in required courses because students often expect them to be routine,
dry or even boring (e.g. research methods). For example, when teaching research methods, I require my students to create an original study design of any politically relevant topic that interests them. They develop the project continuously throughout the semester, improving their design as we learn about the different methods used to study political phenomena. This project allows students to relate basic concepts discussed in class to a subject they are truly interested in and helps students to think critically about how the methods we use influence our knowledge of politics and the world. Several of my students commented positively on this paper project, with one saying, “The paper helps you apply what you’ve learned.”

Another strategy I use to help students relate class material to current political events is discussions and debates of current events. For example, while discussing the role of the media in politics in my Introduction to American Government and Politics course, the class read several news articles about the presidential candidates’ increased use of the internet as a campaigning medium. The class then spent a significant amount of time debating the value of this new campaigning strategy and of web-based candidate appeals to younger voters. Several students commented positively on this strategy in my evaluations. For example, one student in this course said, “The outside articles were helpful to apply the course material to the real world.”

I also believe that the use of appropriate technology can greatly enhance instruction, both in and outside of class. In each of my classes, I have relied on an online class forum to answer student questions and post announcements, assignments, extra readings and study guides. I also plan on utilizing online discussion boards in future courses. In the classroom, I frequently utilize multiple technologies (e.g. power point, internet sites, overheads, video) to deliver my course material. I also have taught an upper division political statistics course entirely online. Teaching statistics (or any course) online creates unique challenges, however, when structured appropriately, internet courses can be very successful. I believe more structure is required in online courses than in the classroom. A well organized course will ensure that the students understand and can complete the requirements, and that they are keeping up with the lectures and readings online.

Finally, I believe that it is very important to approach teaching with enthusiasm and develop a good rapport with students. Instructors cannot expect students to be interested in course material if we do not convey our own enthusiasm. Developing a positive rapport with ones’ students is also critical. When students feel the instructor is approachable and has their best interests at heart, they will more frequently ask questions in class, and will seek out assistance if they are struggling. One strategy I have used in the past to develop a positive relationship with my students was to require each student to meet with me for five minutes during my office hours at the beginning of the semester so I could approve their
choice of topics for their semester long paper projects. This strategy allows me to meet each student personally, start them off on the right path with their projects and make students more comfortable approaching me. Many of my students have commented on this aspect of my teaching style. A student in my research methods class wrote in my course evaluation, “She’s friendly, relates well to students, is always reliable and truly wants to see her students do their best.”

My experiences as an instructor have been some of the most rewarding and challenging aspects of graduate school. I have always enjoyed working with students, as a teaching assistant, leader of breakout sessions and instructor of my own courses. I look forward to developing my teaching skills in the future. I would welcome the opportunity to teach courses in media and politics, campaigns and elections, public opinion, gender politics, Latino politics, introductory American government courses, research methods, and statistics.

Political Science

Daniela Stockmann
http://sitemaker.umich.edu/daniestockmann/files/teachingphilosophy_may06.pdf

Learning is a journey. Specifically, learning in the classroom can be compared to going on a guided tour with a group. The guide picks up the members of the group where they are and takes them to a new place. Some tours are more demanding than others. In order to overcome obstacles along the way travelers need to stay focused and motivated. For a satisfying experience travelers will also have to actively engage with the new environment and avoid to just passively move along. If the tour was a success it has a lasting impact on the travelers: They may develop new skills, knowledge, and a lasting interest in the place they visited.

In the following I use the analogy of the guided tour to illustrate my view of a teacher’s responsibilities as a guide to facilitate effective learning in the classroom, and how I strive to meet them.

Picking students up where they are. Students have diverse backgrounds. As a teacher it is important to understand how much a student knows about the subject in the beginning of class. When teaching Chinese politics, in particular, I often get a mix of students who either know little about the country or who know a lot about China already - because they are of Chinese heritage or have traveled or lived in China. In addition, students vary with respect to their previous knowledge and background in political science. The challenge for the teacher in such an environment is to start out at a level that does not require much previous knowledge while at the same time not alienating the ones who already know a lot. I try to accomplish this by getting to know the students’ diverse backgrounds in the very beginning of class and asking the more knowledgeable students to provide an “expert” opinion when appropriate. In order to avoid
favoritism it is key to not always pick the same students but to acknowledge a broad range of students’ expertise.

Setting goals and explaining the route. Students appreciate if the instructor sets clear goals for the class and explains those to them. As a teacher I have three main goals for my student. First, I assist my students in developing critical thinking skills and to make them realize that being able to reproduce the material is not all that education is about. To me education in political science seeks to provide students with the tools to more easily comprehend existing discussions and to initiate independent thinking that goes beyond simple knowledge of the nature of those debates. I therefore give students many opportunities to better understand and challenge each others’ ideas as well as the arguments made in the readings or by the instructor. In order to provide students with the opportunity to make up their minds about issues discussed in class beforehand, I send out discussion questions via e-mail in advance. I always emphasize that the quality of an answer does not depend on the student’s opinion, but on how well the answer is argued. My grading of students’ class participation and writing reflects this standard.

Second, I aim to assist students in developing analytical skills. In class, we take apart arguments into their individual components – definitions of main concepts, claim, and evidence – and we discuss different ways of how to disprove arguments. I introduce students to the ideas of dependent and independent variables, and apply these concepts to our weekly discussion of the readings. Furthermore, I hold short in-class writing assignments in order to practice analyzing questions. I collect the writing assignments, give individualized feedback by e-mail, and discuss the advantages and disadvantages of differently structured answers with the students during next week’s class. The writing assignments also help me to better assess where students’ difficulties lie with the class material. A side-effect of these regularly held and graded exercises is that students make sure to cover the reading material before attending the section. This increases the standard of the discussion. In the past, students’ analysis of questions asked in class, papers, and exams much improved throughout the course.

My third main goal is to help students to identify and improve problems associated with writing. In the three classes for which I served as Graduate Student Instructor I guided students throughout the writing process of a long research paper on a topic of their own choice. In all classes students had difficulties to express their ideas on paper in a manner that allowed the reader to follow the argument. My comments on students’ writing are therefore directed at helping students to transfer their ideas into writing. Studies have shown that students are more willing to accept the teacher’s feedback if the comments are phrased in a respectful way and give constructive suggestions for improvement. When I comment on drafts and provide feedback on a one-to-one basis, I take students’ work as seriously as my peers’.

Getting students engaged. Just like members of a guided tour students do not
always take classes because they are interested in the subject of the course. They might enroll because they need to fulfill a requirement or because their friends are taking the class. But learning requires students to be motivated and active. In order to create a setting in which students feel comfortable to voice their opinions I explain ground rules for class discussion in the beginning of class and remind them when necessary. In addition, I try to spark their interest in the course material. In my experience the best way to do so is to share my own excitement about the subject with them. Previous comments I received on teaching evaluations, in e-mails, and during office hours show that many students kept an interest in China even after the course had ended.

Guidance. As teachers we provide support to our students that goes beyond the class material. In the past I have advised students on their career goals. I helped them to weigh the advantages and disadvantages of different choices, gave feedback on personal statements, and wrote numerous letters of recommendation. As a mentor I try to follow in the footsteps of my own professors - to support students in finding their goals in life and the best ways to pursue them.

The analogy of the guided tour illustrates my view of a teacher’s responsibilities as a guide to facilitate effective learning in the classroom, and how I strive to meet them. My personal view is shaped by the experience of being a student in educational systems of four countries – Germany, the United States, the United Kingdom, and China – as well as teaching experience in the United States and China. I have no doubt that I can adjust my teaching style to the specific situation of students at University.

**Psychology**

Michelle Verges  
University of Georgia  

“*It is our attitude at the beginning of a difficult undertaking which more than anything else will determine its successful outcome.*”
-- William James

William James eloquently states how I partake in the scholarship of teaching. For me, teaching is an ongoing, interactive process between the students and the instructor. I make every effort to create a dynamic environment that goes beyond the traditional lecture format. Moreover, I set high expectations for my students to master the course material.

To accomplish these goals, I use a variety of strategies to motivate students' interest. For example, on the first day of class, students write their names on
colorful, large-sized flashcards to create name cards that are placed on top of their desks. This simple technique allows me to address each student by name immediately, thus removing any sort of anonymity present at the start of the semester. I also use content-related strategies to promote critical thinking. For instance, as opposed to me reiterating the main points from a previous lecture, I often times will employ the Think-Pair-Share strategy. That is, I first ask a question or introduce an issue. Students spend two minutes thinking of their response and writing it down in their notes. Then I ask students to pair up with a neighbor (or sometimes even have them talk to someone across the room, which requires movement!) to share their responses with each other. This technique allows students to construct their own knowledge and listen to alternative perspectives from their peers. Most important, strategies such as the name-card method and Think-Pair-Share technique promote active learning and participation in the classroom.

Returning to William James’ quote, I also believe that my attitude in teaching influences my students’ attitudes. I enjoy teaching courses generally considered as dull because I am in the position to cultivate students’ appreciation for the study of psychology. Teaching research methods is a good example of a “boring” class; however, many students comment about my positive attitude in my teaching evaluations. A student in my research design class, for example wrote, “she was very enthusiastic about the material she was teaching us and did everything she could to help us understand it. She was also extremely willing to give up her time to help me, as I’m sure she was for all the other students. Great class!”

In sum, it is my practice to employ several active-learning strategies and present a positive attitude in my teaching efforts because often times our attitudes actually DO determine a successful outcome.

For a more extensive review of my teaching endeavors, please view my online teaching portfolio at http://www.arches.uga.edu/~mverges. In addition, please refer to my vita for information about courses taught.

I am prepared to teach the following courses in your department:
• Cognitive Psychology
• Social Cognition
• Research Methods • Introduction to Psychology
• Knowledge Representation
• Statistics
Biological Sciences

Veterinary Medicine
Vicki Adams
University of Saskatchewan
http://www.usask.ca/gmcte/drupal/?q=node/243

My initial approach to teaching was guided by Dr. Carl Ribble and Dr. John Campbell who were, and continue to be, role models as teachers and research supervisors. Much of my approach to teaching has developed as a result of what I learned from observing them teach in both formal classroom and informal settings. During my M.Sc. program Carl Ribble inspired me by example. He is always very professional and respectful of both colleagues and students. Since 1999, when I started teaching with John Campbell, I have observed how well he relates to the students; he has given me confidence in my ability to do the same.

Over the past five years I have refined my teaching methods to take advantage of what I have learned about teaching. When I started lecturing and giving seminars, I mainly used overheads. Now I give most of my presentations using a computer and data projector. Using Microsoft Powerpoint to create slidehows has allowed me to update my presentations each time I give them so the material stays current. It also allows me to use the internet and show students good sites to go to for information (such as the Canadian Food Inspection Agency, Health Canada, and the CDC). Appendix A has a sample of one of my Powerpoint slidehows (Tab 5).

One of my strengths as a teacher is the enthusiasm I show for the subject I am teaching. Being well prepared for class and knowledgeable about my chosen subject have helped me to be self-assured when teaching. Since I am not a faculty member in WCVM, I have not had any formal student evaluations of my teaching. I have solicited informal feedback from students in several courses that I have taught (see Tab 5 for Appendix A: Herd Medicine and Tab 8 for Appendix D: First Job Module). Students consistently comment on how enthusiastic and knowledgeable I am in their evaluations. I have also solicited comments from colleagues (see Tab 7 for Appendix C: Regulatory Aspects of Rabies and Tab 8 for Appendix D: First Job Module).

Another strength is the practical experience that I bring to class. Using examples from my clinical experiences makes the concepts that I teach more readily understandable and relevant to the veterinary students. This helps to satisfy my goal of being realistic and practical when I teach. Some of the veterinary students consider epidemiology a boring subject, especially when they come into a class thinking that epidemiology is only about statistics. I like the challenge of getting them to see how useful epidemiological tools can be for them in clinical practice. What pleases me about my discipline is the everyday usefulness of epidemiologic principles and how they apply to real world situations. I enjoy being able to
motivate students by using lots of examples in lectures. Drawing on my experiences, and the experiences that others have shared with me, allows me to tell illustrative stories to help explain the concepts that I teach. For example, I tell the students about some of my research results from my study of antibiotic compliance in dog owners: using pill counts and client questionnaires gives crude medication compliance rates that are very good (> 90%) but electronic monitoring reveals that many owners have much poorer compliance (often ~ 50%) when I look at the optimum intervals for dose timing. By sharing the results of my research and talking about how practitioners could use this information to help their clients improve the pattern of daily dosing, I can generate enthusiasm in the students.

Nursing

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http://www.usask.ca/gmcte/drupal/?q=node/235

As a registered nurse, I am deeply committed to the nursing profession and I chose nursing due, in part, to a life-changing event. When I was six years old, I became critically ill with polio - a life threatening viral illness. Although the nurses who cared for me remain nameless, the memories of their attentive and vigilant care remain vivid. The premise that I literally owe my life to nursing, as represented by the care given to me by the unknown nurses, kindles my loyalty to the profession today. Nurses promote health and healing, as well as give end-of-life care. For me, the nursing care I received was life giving and this experience contributed significantly to my becoming a registered nurse.

My affiliation with professional nursing associations has guided me in my career, namely the Saskatchewan Registered Nurses Association and the Canadian Nurses Association. An integral part of a registered nurse’s role is engaging individuals, families, and communities in learning, with the ultimate goal of providing competent and safe nursing care. It is the teaching aspect of nursing practice that I particularly enjoy, and I have fulfilled this role as (a) a bedside nurse supporting life adjustments; (b) a clinic nurse engaged in health promotion and disease prevention; (c) a childbirth education instructor; and (d) a health nurse in secured custody for young offenders, teaching lifestyle courses related to alcohol, drugs, and human sexuality.

I began learning my current approach to teaching vicariously as a Post-RN undergraduate in Professor Linda Ferguson's class: The Nurse as a Health Educator. Linda Ferguson nurtured and supported my decision to pursue a Master's program in nursing education. She was, and continues to be, a role model, a mentor, and a research supervisor. She fosters a learning climate with fairness and respect. Simply put, Professor Ferguson "walks the talk," and she has inspired me to pursue teaching in an academic setting. I further cultivated my
teaching skills, by participating in both leadership and teaching courses. These certificate courses have added to my skill and confidence, involving nursing students in active learning, using both large and small discussion groups. In teacher/student interactions, I enjoy the challenge of promoting students' critical thinking by building respectful learning environments, and by asking probing questions rather than readily giving answers. In short, I love teaching.

Cultural Diversity
I value cultural diversity, which enriches the "intellectual health" of the classroom, the university, and the nursing profession. A highlight in my graduate program has been tutoring international Asian nursing students over a period of 18 months. I tried to be sensitive to their needs, and to be available for both academic and non-academic consultation. Through socializing, we came to know one another better, and, although the students have moved on from the university setting, I am still in communication with them. The key lessons I have learned from working with the Asian students are: (a) they are not a homogeneous group and they take pride in their individuality; (b) communication takes time and patience; (c) one should not assume anything; and, (d) respectful teacher/student interactions promote learning. Therefore, I see my role with our culturally diverse student population as both teacher and learner. To teach is to facilitate students' learning, to value the learners' experience and knowledge, and to help students achieve their learning goals they have set for themselves. In addition, I believe it is the teacher's role to promote a "culturally safe" learning environment, characterized by advocacy, respect, and recognition of students' rights. I have adopted this view, based on the New Zealand Nursing Council's model of Cultural Safety. When students feel safe, they are less inhibited about raising questions and comments, and are more open to thinking critically. As well, it is the teacher's role to be mindful about seeking clarification for mutual understanding. In these ways, the teacher also becomes a learner. I have found affirmation for my teaching style in the feedback from my clinical teaching preceptor Karen Scott Barss. In Appendix 5-B, on the back of her poem Teapot, Karen writes about our collegial teaching role.

Graduate Work
My thesis work focuses on the nursing education of international Asian nursing students for whom English is a second language. The purpose of this qualitative study is to describe the experiences of five international Asian nurses at the University of Saskatchewan, and to examine what practices were helpful and/or a hindrance to their learning. The results from this study may contribute to better understanding of nursing education for international Asian nursing students, and point to changes that we could make to enrich their learning experiences.

Computer Skills
In my quest for computer literacy, I discovered that I have an aptitude for using computer applications. This discovery began in the early 1990s, when I participated in computing workshops offered to students at the University of
Ottawa. My computer literacy has grown to include skills in desktop publishing, having served as a newsletter editor for the Bridge City NeedleArts Guild. Producing the guild's quarterly newsletter for five years has given me skills that will be useful in preparing visual learning materials and handouts. Currently I am using both Corel WordPerfect and Microsoft Word, and I enjoy troubleshooting by sharing my computer skills with students and fellow co-workers. I will use technology to facilitate my availability and interactions with students; for example, using E-mail will enable timely feedback for questions and assignments. Eventually, to promote student interaction and learning from peers, I will create and maintain a class listserv. The development of online course materials complements classroom teaching; therefore, I will endeavour to advance my technological skills in pursuit of teaching excellence. Appendix 5 -C is an example of a presentation package I developed using Microsoft PowerPoint, including a small handout I designed using Corel WordPerfect.

Future Goals
Nursing has opened many doors for me in all four domains: practice, administration, research, and education. As I begin a career in nursing scholarship, I acknowledge that I have much to learn about teaching. Wherever this path leads me, my goal is to write and teach well. Furthermore, I underscore my desire to work with culturally diverse nursing students, not so much as a "knower," but a "guide at the side."

Plant and Crop Sciences

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http://www.personal.psu.edu/users/i/e/ieh102/Philosophy.pdf

Teaching is a great privilege and adventure, a profession that strives to create a desirable environment of learning in which students are encouraged to explore and investigate the material at hand. As a graduate student in the Department of Crop and Soil Sciences, I have had the pleasure of being a teaching assistant for a TURF 435, a turfgrass nutrition/soil fertility course. This course examines soil chemical properties as turfgrass growth parameters and addresses ameliorative measures in concept and operation. The experiences I had while I was a student which include a college teaching course, and now the experiences I have as a teacher has led me to believe that teaching should be about inspiring students to challenge, explore, and investigate the different concepts and ideas that are being transformed. To teach is to help students in their never-ending journey for knowledge. Teaching gives the students tools that they can carry with them on this quest.
One of the most important attributes to my philosophy of teaching lies in the capabilities of the instructor. The teacher should be well versed on the subject matter that is being taught. By having the adequate education and experience the teacher will be better able to explain the subject matter. The teacher not only should be an expert in the topic but should also convey a sense of excitement about it as well. Yet, to teach does not necessarily mean that the instructor has all of the answers, however these answers and some potential questions can evolve through the exchange of interactions between the teacher and the student. This excitement will create a better learning environment for the students who will be more apt to fully understand the importance of the topic for more than just a potential test question. Through preparation on the part of the instructor, the class time should be well organized to make efficient use of the allotted teaching period. Detailed lesson plans before each class session help in this organization. It is crucial that the teacher be not only knowledgeable and excited about the topic but should be someone that is approachable by students. I am a firm believer in the teacher being fair and sensitive to all of the students. Students may have a variety of other things going on in their lives such as jobs, family obligations, other course commitments etc. that are being juggled and the teacher should be flexible in negotiating academic responsibilities. Finally and very importantly a teacher must act with integrity and in a professional manner at all times.

It is important to me that students become engaged in the learning process. To obtain a deep understanding of the subject matter the students should work, practice and discuss the material themselves. The course requirements are to be challenging so that the student can walk away from the class having a full understanding of the subject matter and how it may apply to real life situations once college has ended. Teaching in addition to course design should foster intrinsic motivation by focusing less on exams being the major motivation and instead motivating students by emphasizing interests and the relevance of the teaching. Having a learning-centered approach places greater stress on the student’s knowledge as well as stresses opportunities to broaden the students experience base. This approach to teaching makes greater use of the students’ own experiences rather than focusing on the teachers’ experiences.

During the class period the lectures should focus on transforming the subject matter and engaging students. Asking the class questions allow for more student involvement. Questions should be encouraged, and calling on a student to talk of their own experience allows for student interaction in addition to having the students in the class get to know one another. Demonstrations are also a good way to explain the material to the students and have them see first hand what they otherwise would be viewing on a powerpoint presentation. Activities which entail solving a problem dealing with course material is a great way to encourage student involvement as well as problem-based learning. In terms of testing the students’ knowledge in the course, a good tool is an essay exam that applies the learned material. Term projects promote the full understanding and application of the course material in addition to building skills in finding outside resources.
Having students complete their own web page or portfolio is another useful tool for assessment that encourages students to apply what they learn in class rather than memorize it for a quiz or exam.

The purpose of teaching is to help students in their ongoing journey of learning. Everyone has the ability to learn, but it is the teaching that leads learning. By teaching the subject well, instructors are transforming the subject matter into an inquiry that is both exciting and relevant to the students in front of them. The journey of teaching is analogous to the journey of learning: it is a continuous, challenging, and exciting process that never fails to be rewarding.

**Environmental Science**

Holly Gabries  
University of North Carolina at Wilmington  
[http://www.uncw.edu/mms/cms.awards.htm](http://www.uncw.edu/mms/cms.awards.htm)

I enjoy environmental science because generally there is no one right or wrong answer to any problem. I enjoy watching how the students interact with each other to discuss some of the most prominent environmental issues of our time. Many times students get stuck in multiple large, lecture-dominated courses which have become all too common in undergraduate academia. This seminar course, however, allows the students to break out of their shell and gain real world skills which will stick with them throughout their careers. I pride myself on being a part of that experience and hope that the students take as much out of the course as I do.

**Biology**

Barbara Jacobson  
University of North Carolina at Wilmington  
[http://www.uncw.edu/mms/cms.awards.htm](http://www.uncw.edu/mms/cms.awards.htm)

As a teacher, I am continually learning new ways to teach my students about biology. I love sharing with my students my love of biology and I try to impress upon them why we study the natural world and what information it provides us with as a result. I feel it is important to be honest and approachable as an instructor. I encourage students to ask questions and if I don’t know the answer to a question, we find it together and we both learn something in the process. Instructing non-majors presented a different mode of teaching and as a result, I molded my lessons to what they would identify with and what information they should retain (for more than just a week). I enjoy interacting with students from every discipline, and relating what they learn to their future, in both their career and life. As long as they understand the lessons and get the point of the lab, I have done what I set out to accomplish.
My approach to teaching science is to coach the students in teaching themselves through active learning (performing tasks and analyzing results), using demonstration and lecture only when necessary. Apart from being effective, this approach teaches students that science is a cycle of planning, trying, analyzing and then planning again, rather than a matter of absorbing endless facts and concepts. Even in a lecture-based class, examples can be presented as intriguing detective stories, with the instructor not revealing the outcome until they have asked the students to speculate on what was found. It is especially important to constantly remind students of how little is known, and how much more there is to discover about the natural world. Traditional lecture courses have the insidious and deadly effect of convincing the student that everything worth knowing has already been discovered. Stressing the unexplored generates excitement and raises the hope in the student that they themselves can make new discoveries, and that they do not have to wait until they are a professor to do so.

Another crucial task of science education is to teach students the difference between facts, opinions, and theories. Confusion about these distinctions are a large part of the understanding gap between the public and the science community. How a teacher approaches this depends on the stage of learning in the students. For example, students in the early stages of learning who see the world as right and wrong, are confused and annoyed by being presented with conflicting but potentially valid theories. Unless they are explicitly taught the distinction between fact and theory, they will jump to the conclusion, shared by many people in the public sector, that scientists never actually figure anything out, and that experiments simply generate conflicting evidence.

When I teach, I provide my students with feedback on how they are doing, and on how they can improve, throughout the course, so that the final grade is not a surprise. I also actively solicit feedback from them on how I am doing, so that I can correct shortcomings and oversights as early as possible. Unless it is an advanced course, I also try to spend at least some time teaching them how to be a better student in general. Amazingly, the study skills that are crucial to success in the academic environment are seldom taught. Most students figure out how to study by trial and error, but even those who are gifted with good concentration and memory can learn to more efficient and effective in their studies. When I taught the lab section for an Intro Botany course to a class of non-science majors, I included a brief "study tip" at the beginning of each lab -- how to take notes, how to read to remember, how to review material, including one of my favorite learning techniques: take a chunk of reading or lab work and turn it into a potential exam question.
Apart from the few who become scientists, most people only encounter real-life science in the classroom. That experience will color their impression of science from then on. The facts may fade, but if you teach them how scientific knowledge is created, how hypotheses are tested, and the difference between suggestive and definitive results, they can rely on that understanding for the rest of their lives.
Physical Sciences

Geology
John Dawson
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GENERAL PHILOSOPHY
While at Colby College, I developed a strong love for small classes and the close interaction between students and faculty. For me, it was that close interaction that drove me to continue my education. As a graduate student, I have seen the disadvantages placed on students at large research universities such as the University of Iowa and the University of Massachusetts where students are subjected to large classes and are seldom offered the opportunity to work closely with a faculty member on a independent project. It is very important for students to have independent projects. My defining moment as a scientist dates back to my senior honors project at Colby. Through these independent projects students blossom into earth scientists. It is the ability to work on every aspect of a project from start to finish that every scientist needs to learn about. It is the scientific process that you cannot teach in a lecture. I feel as though I grew so much as a person and researcher during my last year at Colby. I now want to be there to witness countless undergraduates go through that process themselves.

My general teaching philosophy has two central facets: approachability and effort. Teachers must harvest an atmosphere in which students feel comfortable in learning, and many times this cannot happen when a teacher lacks patience and is unresponsive to the needs of individual students. Many times we forget that students learn in different manners (visual, audio haptic [i.e., those that learn best by doing]) and at different paces. I’ve developed the view that a multifaceted teaching approach (see below) is the best way to handle the different needs of the students. In addition, a good teacher needs to be entertaining and funny to further foster a good learning environment. My jokes might not be very funny, but they always pull the students attention back to the lecture and makes them more at ease to ask any questions (even the occasional odd one).

Good teaching requires a lot of time and effort, so every lecture or laboratory needs to be well prepared. I’ve seen many instructors that put minimal effort into their teaching. Somehow they believe that they are only there to dictate geology facts to the student and it is the students responsibility to learn them. My courses are always underdevelopment, since there are always lectures or labs that could be improved. As such, I believe that a teacher needs to keep up with the latest developments in geology. If I ever come to the point in my teaching career that I can no longer improve or add something new to my course (i.e., the course is perfect), then I will know it is time to retire and prepare for the big vacation in the sky. Overall, it takes blood, sweat, and tears to develop a good geology course. If you are not willing to do this, then you are unlikely to develop into good teacher.
As a teacher, I can only be as good as that which I strive for. In this regard, I constantly work on the mechanical aspects of teaching. In order to accomplish this, I first keep notes about how the lecture or laboratory went. Did the students have difficulty with a particular question or concept? I also solicit student criticisms of my teaching. Their opinions are always important to me, so I take their class evaluations seriously. Overall, I constantly try to improve my teaching, since there is always room for improvement.

TEACHING APPROACH
Today is an exciting time to teach geology. Traditionally, geology education has centered itself on specimen based and field oriented approaches. However, with increasing technological advances and information gathering (in the form of databases), we must start developing our students quantitative and computer skills in order to make them more competitive in the job market and more valuable to society. Our students will be left behind if we don’t prepare them for the upcoming age of geoinformatics. Obviously, we cannot ignore the field-based roots of geology, but students that can perform well in the field as well as the laboratory will be the epitome of the future geologist.

I’m very quantitative in my approach to geologic and biologic problems and feel strongly that geology students should develop excellent statistical and computer skills. As such, I try to incorporate my quantitative perspective as well as the traditional specimen and field based perspectives into my courses. One of the most important aspects of teaching is that many of my students will not become paleontologists like myself. With that in mind, I have developed the philosophy that students should learn skills and ideas that they can apply to other disciplines. In order to develop critical thinking skills, I constantly expose students to figures or diagrams from major scientific publications in the lecture or laboratory. Critical thinking skills will remain with the student even though they might have forgotten the geologic time scale or the definition of synapomorphy. Moreover, it is important for non-science majors to develop critical thinking skills as well as science majors, since it helps them make decisions in this age of information and technology.

In any geology course that I teach, I try to utilize a multifaceted approach. Students need to spend time looking at fossils and rocks in the laboratory as well as in the field, but they also need to have laboratories that require them to do more than that. Geology is a holistic science that also requires students to know something about biology, chemistry, physics, and mathematics. I expose them to the techniques and principles of modern geology. In lecture, I try to introduce the students to some concepts by presenting examples first and allow them to work out the relationships before I start giving them the definitions and facts. In my lab courses, I make students collect their own data and use simple statistics or mathematical models to analyze their data. I make them work on realistic problems with the hope that they get a sense of the complexity of the scientific
process. Overall, I use different teaching methods so that students with different learning styles find it easier to learn in my courses.

**Geology**  
William P. Clement  
[http://cgiss.boisestate.edu/~billc/teaching.html](http://cgiss.boisestate.edu/~billc/teaching.html)

I view education as providing the foundation for future decisions by people who enter a variety of careers, not solely the geosciences. My teaching goals use active learning methods to excite students to pursue knowledge and understanding and to enable them to incorporate a variety of ideas into a coherent ideology. My challenge is to stimulate students through clear explanations of complex topics and to emphasize the importance and application of the geosciences. I feel strongly that critical thinking and the ability to communicate are essential skills for all. The significance of a particular subject or exercise should be presented so that students see the link between classroom learning and real-world applications. An important aspect of education is expressing the limitations and underlying assumptions of each subject. I communicate the necessity of drawing from a wide range of fields to make basic decisions. My goal as an educator is to stimulate a desire for life-long learning from the basis of a liberal arts education.

My introduction to the demands of an educator was as a junior and senior high school math teacher. After only three years at the private school, I was honored that the students voted to dedicate the yearbook to me. As a graduate student at Stanford University, I was a teaching assistant and I was named a Stanford Centennial Teaching Assistant, awarded for outstanding teaching. At Boise State University, I have taught an introductory level geophysics course for non-science majors and graduate level courses in tomography and inverse theory and the student evaluations of my teaching have been positive. As an example of my teaching philosophy, I emphasize written communication in addition to geophysical principles. A major focus of the introductory, non-science major course was an 800 word term paper. The students submitted three drafts during the semester so I could work with them on content and writing style before giving them a final grade.

Attracting and retaining students to geology and the environmental sciences is an important role of a professor and is critical to the well-being of the department. One way to attract new students is to design topical courses for non-majors and make the material and presentation engaging, challenging, and relevant to their lives. Retaining students demands making the required material understandable and interesting, and showing how this material contributes to their knowledge of the science as a whole. I feel that my friendly, approachable manner and concern for students will help me increase the success of our department.
As a student, I have observed that the best teachers were those who cared the most about teaching. This passion is one of the single most important components of effective teaching as it leads to thorough preparation, continuous evolution of teaching skills, and the pleasure of watching students learn. The amount of time that a teacher puts into preparation directly translates to how the students learn. However, a teacher must be able to recognize how students learn best at the group and individual level, and let their lesson plans metamorphose as they interact with their students. The ultimate goal for the teacher is to communicate new information to students, not just memorizing facts, but also to learn how to think. This process can be made more efficient when both the teacher and the students enjoy what they are covering. Combined, these aspects allow a teacher to determine how a certain group of students will learn best. In my teaching experience, efficient learning by students consists of the combination of formal lecture periods, and smaller discussion sections.

During lecture periods, students are exposed to a stream of organized information that will teach them the basic blocks of the subject. The impact on the student is enhanced when the lecture is given as a narrative; where the information is clear and organized but presented in a softer story-like manner rather than dry lecturing. This also allows the lecturer not just to present coherent information, but also to keep a captive audience. In physical sciences, and in particular within earth sciences, teachers often ask students to take a leap of faith when learning new material. Concepts that are the fundamental building blocks of subject and sometimes abstract, are often taught in reduced form in order to quickly lead the students to see the big picture, particularly at the introductory level. For example, when teaching an introductory course in earth sciences, the lecturer must explain how atoms are the building blocks of molecules, which link to form minerals, and these minerals combine to form rocks. The audience is not necessarily familiar with the fundamental chemistry in order to understand the subject at every facet, however the goal for the teacher is get the student to understand the larger driving forces behind how and where these rocks and minerals form, and not advanced chemistry. The students are asked to take a leap of faith; they have to trust the lecturer enough to accept these possibly unfamiliar ideas in order to move on to see the larger framework. Trust in the teacher is also derived from the passion to teach. When students see that their teacher has a passion for teaching and for the subject, they have an easier time accepting that the difficult material because they trust the teacher. For a teacher to say “this is complex, but we will return to it after trying to see the bigger picture”, requires trust by the students so that they don’t just doze off. Teachers who lack the passion to teach run the risk of losing this trust in students, who might easily just tune out the subject, rather than try to understand a perplexing concept. The lecturer is responsible for reviewing this more difficult material in a discussion section where the subject can be treated
with greater detail, allowing the students more time to integrate all parts of a subject to see the big picture.

In discussion sections, students working in smaller groups explore subjects at a deeper level than presented during lectures. In this open atmosphere, the discussion can progress on tangents instead as a linear narrative, allowing students to work on a specific subtopic before moving on to the next concept of the general subject. The teacher acts as to facilitate the discussion using a Socratic type method to guide the conversation. While students are not always happy to ask a question, and get a one in response, this method is ultimately very fulfilling for them. In my experience, if students are simply given an answer, they are not forced to go through any thought processes to figure out the problem. However, when asking them questions in response to theirs, they can be lead along a line of thought where they work through the answer themselves, with some assistance in trajectory. Students feel satisfaction for working through the problem, and for effectively teaching themselves the answer. By not spoon-feeding them responses, they develop the tools to work through a general problem, and not simply how to memorize answers. They now learn how to adapt to different systems, where the synthesis tools are the same. At introductory levels, discussion sections are often stagnant because of student’s timidity toward giving responses. In order to stimulate conversations, the discussion leader has to rely on icebreaker skills to motivate students to talk. The simple act of learning a student’s name and a piece of information about them shows the students that the teacher has a vested interest in their class, and is genuinely interested in helping their students. Calling a student by name makes for a more intimate relationship between teacher and student, and again allows the students to put trust in the discussion leader. The teacher is then free to ask questions in order to lead a discussion, without getting blank stares in return. In more advanced classes, a discussion leader might simply be able to pose a few questions, and only intermittently add insight to facilitate discussion. This can be one of the more pleasurable teaching experiences, as the teacher can now watch as the students learn and teach with each other based on the knowledge set that they have been given by the teacher.

Some of my favorite teaching experiences have been when I have been able to integrate both lecturing and discussion components into a single setting. This can frequently occur in the form of review sessions. I have been a teaching assistant for the course “Earth Materials” (a core sophomore level class in the department of Geological and Environmental Sciences) several times. For the final exam, I have developed two review sessions in order to help the students assess the large amount covered in this course. For each session, I have developed a question and answer packet that the students work through during the session. My goal for them is to help them organize the information they have been taught, and to make sure they understand the material at a detail level, but also to understand how each part fits into the whole and to see the big picture. During the review sessions, I have the students work together to answer the questions. When new
questions arise, I instruct them to ask each other so that everyone is part of the learning process. When they reach a question they can’t answer, it is now my task to do some lecturing, and help them sift through the material. I can review tricky material, or present a clearer picture than what was presented during the initial lecture. It is also in this forum that students can clearly see how I have a passion to teach. When helping students through a tricky problem, I enjoy watching the light flash in their eyes when they work a problem through to completion. My enthusiasm to teach translates to their enthusiasm to learn. This enthusiasm coupled with proper instruction allows the students not only to meet their educational goals, but also enjoy their time during the process.

Astronomy
Chris Burns
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During my career as an undergraduate student, graduate student and teaching assistant, I have, bit by bit, developed my own teaching philosophy. As a student, I have had many teachers over the years and I have built a picture of what makes an effective, as well as ineffective, teacher. As a teaching assistant, I have had the opportunity to experiment with different teaching techniques and have come to some conclusions as to what works, and what does not, in given situations.

First, what makes an effective teacher? There are four things I consider to be paramount for a lecturer: enthusiasm, a broad knowledge base, ability in engaging the classroom and effectiveness in conveying information. Let us begin with enthusiasm. A teacher is an ambassador for the discipline they are teaching. If one is not enthusiastic in teaching the material, one should not expect the audience to be enthusiastic about learning it. The students should be made to understand why the material is important and therefore why it should be learned. In astronomy, the material usually has very little direct impact on the lives of people and therefore it is crucial to impart an enthusiasm for the knowledge for its own sake. When I teach astronomy to students or the general public, I always try to impart my fascination with the universe.

No two people learn the same way. Hence it is important to be able to impart knowledge from several different ”angles.” This requires a broad knowledge base of the material. The most effective teachers I have had have built their lecture notes from several different sources, imparting several different authors' visions of the material. Difficult concepts require explanations from different points of view. The use of analogies or examples is an excellent way to describe the physical universe in terms of more everyday situations, but there are often more than one and some students may identify with one more than another.

The view that a lecture should be a passive process has fallen from favour. Research, and common sense, dictate that students learn more effectively if they take an active role in their learning. This, however, requires that the lecturer
develop an environment in the classroom where students feel at ease asking questions and offering answers to posed questions. Indeed, a student should feel comfortable in making an hypothesis and understand that getting the wrong answer is part of the scientific method. Also, I feel it is very important for students to be critical of the material instead of just accepting it at face value, especially in more advanced courses. This requires an environment where the students feel they can object if something does not make sense to them instead of assuming it is because they do not understand. In my entire student life, I have had only one such course and it was by far my favourite. Developing such an environment requires a great deal of patience on the part of the teacher. He or she must be attentive and engaging and must be willing to abandon, at least for a time, the planned lecture material if and when the opportunity for good discussion arises.

Lastly, and perhaps most importantly, an effective teacher must communicate effectively. While vocal skills play an important part in this, there are other aspects to being a good communicator. First, there is the need for structure in both the individual lectures and the course in general. The students should have a clear idea of where things are going and how the topics are related to each other. The course outline should clearly define the learning goals and what will be expected of the students. Second, good feedback is essential to allow the students to assess their strengths and weaknesses in the course. This does not only mean writing good comments on graded material, but also designing assignments and tests that are appropriate to the course goals. Further, I believe that the final exam (or equivalent assessment) should weigh significantly more than term work, especially if a student has shown a marked improvement.

This is my current teaching philosophy. I have no doubt that this philosophy will be refined in the future as I continue to try new things and receive feedback from my students. Perhaps one final thing to add is that a good teacher should be constantly re-assessing his or her teaching philosophy. A good lecture is a learning experience for the teacher as well as the students.

Computer Science
Stephen E. Levy
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As a member of the research staff at the IBM T.J. Watson Research Center in NY I had the benefit of being a student, a researcher, and a teacher for over 20 years. My experience has shown that the three roles are inseparable; each role a stepping stone that permits growth in each area of endeavor.

I have been a life-long student, because research does not take place in a vacuum. It is built on the work of others, whose work I must understand and then
expand upon. As a researcher, I have invented new modes of computer and human interaction, involving handwriting and speech. I have explored new ways to use the technology of the World Wide Web. A good patent teaches one skilled in the art how to recreate and/or use your invention. In the process of examining a patent the examiner must be turned into a student of your technology. The examiner must ensure the patent can be used as a teaching tool for one skilled in the art to use the invention (i.e. patent = syllabus for your technology). Appendix A has a listing of my issued patents.

Finally, being a student or a researcher has little purpose if we do not teach what we have learned or discovered. I have patented my work, produced software products for market, but the achievement I have taken most satisfaction in is teaching. This teaching has rarely occurred in a classroom setting but has involved teaching in the forms of mentoring new researchers, educating my colleagues on new technologies, and formal presentations to customers on applications of technology developed in research. Appendix B lists my most recent presentations.

I believe that as I move to a formal teaching environment I will take the lessons my roles above have taught me to heart:

1. Being exposed to a topic by a teacher with enthusiasm (passion), led to discover the concept, but then encouraged to look further on his or her own is essential to the student. This encourages the student to build a conceptual model of the topic that will be a basis for further discovery.
2. Being a good student is essential to good research. We are constantly learning from the work of others.
3. Disseminating what we have learned through teaching is essential.

Patents and papers are limited in their reach. Teaching permits us to contribute to the process that leads to discovery.

My mentor, Dr. Stephen J. Boies, guided me to understand that every person learns at his/her own pace, and specifically by doing. We first met when I was demonstrating a Message Manager system to him. I went through all the capabilities, pushing buttons, and talking non-stop for 10 minutes. I was very pleased in how well and how smoothly I had presented the system. He then told me that he had learned very little, other than to observe my knowledge and understanding of the system. He wanted to develop his own understanding. We then went through the system again, this time with him pushing all the buttons. This lesson stays with me to this day. As a teacher we need to be enthusiastic, but need to listen to the needs of our students, and let them discover the knowledge for themselves.

My hope is to bring my experience to life in the classroom. Through the research and development projects I have participated in, I want to: be able to ground
theory in practical applications; to demonstrate that paper and book knowledge have direct applications to both business and research; to expose students to the future of Human Computer Interaction, and to make them into accomplished students, researchers, and teachers.

**Computer Science**  
Ann Zimmer  
University of Waterloo  

One of the most rewarding experiences for a teacher is to help a student understand a complex topic. My goal as a teacher is to incorporate skills and techniques that help students learn, therefore I motivate student learning, enhance student understanding, and encourage student interaction. When students understand the course material, not just memorize the information, this knowledge provides a better base of knowledge for future studies, especially in advanced courses covering related or the same types of information.

Students are primarily motivated to learn the basic course material as part of their degree requirements, however teachers have an opportunity to motivate a deeper understanding of the course material by presenting the information in an interesting manner that stimulates the students' curiosity. When a student’s curiosity is peaked, the student pays greater attention to the information as it is presented, considers the material from a personal perspective, and spends extra time researching and studying the finer details, which results in a better understanding of the course material.

Students who learn the underlying concepts retain their knowledge longer and are able to apply the concepts to new problems, hence teaching to improve student learning should not focus solely on getting the students to memorize the material. There are several methods that I use to motivate this more complete understanding of the key concepts: explaining how the material is important using real-world situations; exploring examples that interest students (i.e., examples from their discipline or general interest items); and identifying how underlying concepts are related to other topics to encourage critical thinking and problem solving skills.

To increase student understanding I discovered that it is important to assess the general knowledge level of the class before teaching complex topics. By identifying if the class (or some portion) is missing background information I can address this issue right away minimizing its impact, by allotting time to teach this material (in class or tutorial) or by making a reference guide available to students. Knowing the students' knowledge levels and background helps ensure the proper selection and presentation of the course material. Once the course design is
complete, making class notes available in advance, as well as preparing sample questions and examples further aids student comprehension.

Class participation benefits both the students and the teacher. Questions raised by students identify areas where further clarification of a concept is required and establishes the students’ level of understanding. Other forms of class participation also increase student learning: when students work in small groups they have the ability to teach and learn from one another, and classroom debates result in open discussions and encourage critical thinking. During each class I encourage students to ask questions and utilize interactive problem solving to promote participation.

Ultimately, it is the students’ decision whether or not they learn; however, a great teacher will motivate, encourage, and stimulate a student's interest resulting in an increased desire to learn making the process a more effective experience. By following the teaching goals outlined above, I hope to become such a teacher.

TEACHING GOALS AND STRATEGY

I have identified several different techniques that I use or plan to use in the future to increase student understanding, motivation, and participation. These three teaching goals are linked so that many techniques apply to several goals. For example, encouraging student questions both increases student understanding and increases participation. The details in Appendix A: Teaching Observations give an independent observer’s view of some successful strategies I have used while reaching these goals.

ENHANCING STUDENT UNDERSTANDING

I have found that by supplying students with well-defined and clear information I can enhance student learning. Usually when presenting a new concept I start by defining new terms and outlining their purpose or relevance; next I expand the details and elaborate with examples and diagrams; finally I reiterate the important points. An example of this approach is shown in slides 7-21 of Appendix B: Sample Lecture: slide 7 reviews the overall plan of the talk and introduces this section, slides 8-13 introduce the new terms, slides 14-20 expand the details and provide two different types of examples, and slide 21 sums up the advantages allowing me to verbally emphasize the important points from this section.

Diagrams and examples are used to re-enforce the concepts presented and aid in student comprehension. Usually classroom situations do not allow time for many examples, however tutorials, help sessions, and handouts can supplement examples given in class. I find animation (either computer generated, such as animation using Power-Point, or interactive using over-heads and blackboards) a very effective technique when presenting examples, especially when demonstrating algorithms. For example, when solving an algorithmic problem I start with the problem and then I step through the solution adding and explaining
each step. This strategy encourages students to follow each step as it is presented.

Some other useful tools for increasing student understanding I have used include: supplying lecture notes in advance (I modify animated slides in the student’s version of the lecture notes and let students fill in the missing steps during class), preparing practice exercises or questions, identifying alternate reading resources, and making use of assignments (see Appendix C: Sample Assignment) and tutorials.

PROVIDING STUDENT MOTIVATION
I have found that the most effective methods to motivate students are to be enthusiastic about the subject, show your students you care, and use examples creatively.

One of my favorite memories as a teaching assistant occurred while I was assigned to a Pure Math logic course. One of my duties was to hold weekly office hours. Starting at the beginning of the term a young woman came to me for help. She was having difficulty with the subject, but she wanted to learn the material. I gave her practice problems to work on and at our next meeting I corrected her solutions and went over any areas of confusion. She worked diligently and I was proud of how she began to grasp the concepts. By working together and showing I cared (i.e., by preparing and correcting the extra practice problems) this young woman was successful in comprehending the course material. At the beginning of the next term, she made a special effort to find me and thank me for all the help; she said it was because of my help that she passed the course.

I use several types of examples to motivate student interest: fun examples, real-world examples, and discipline-related examples. Fun examples use puzzles or common interest items, such as gaming theory, to trigger student curiosity. For example, one of my professors used a puzzle from a Harry Potter book as an assignment question, where we used a logic-based programming language to solve the puzzle. Real-world examples are useful motivational tools, since the examples show real world applications. Similarly, discipline-related examples motivate students from different disciplines by identifying how this concept can be applied to the student’s field of study.

INCREASING STUDENT INTERACTION
Increasing participation has the side effect of increasing both student understanding and motivation. While teaching the Logic and Computation tutorials, I modified my teaching style to include more interactive learning techniques (e.g., questions, learning names, walking around the room), the result was an improvement in class participation and a better understanding of the material by my students. Below are several useful techniques that I have found increase student interaction.
The first technique is calling on individuals directly by learning the student’s names. This personalized approach makes students feel recognized and increases student participation.

One of my more successful techniques for encouraging student interaction is through the use of questions. I like to ask questions during lectures; this allows me to ensure that the class understands what is being presented. I also encourage questions by always acknowledging the student who asks a question (i.e., “good question”, “interesting thought”) and by repeating the question for the rest of the class before answering. When asked a question that is off topic and that would distract the rest of the class I ask the student to see me after class for the explanation. If a student asks a question that I cannot answer, I make a point of discovering the answer and presenting the information during the next class, or posting the answer to the course webpage or newsgroup.

I used both a course newsgroup and webpage when teaching Data Structures and Algorithms (CS 234) that the students checked regularly. All announcements, assignments, lecture notes, etc, were posted to the course webpage. The students were encouraged to use the newsgroup to interact with each other and to ask questions, such as for clarification of assignment questions. The newsgroup was a useful tool to distribute information to the students, it provided a forum to address common problems, and allowed students to interact with one another.

Another tool to increase student participation is group work: a well designed group project will allow students to learn from each other, which can be very rewarding, especially when students from different disciplines work together as they see the same problem from multiple points of view.

Mathematics
Maxim Yattselev

Being a mathematician consists not only of doing research on mathematics but also teaching students. I believe mathematics is still underrated by most undergraduate students, who are usually eager to learn applied subjects that they can relate to in daily life. Mathematics, however is not only about understanding concepts, being able to operate with them, and knowing their applications in real life, but also about developing logical and critical thinking. As a graduate student at the mathematics department of Vanderbilt University I teach introductory calculus courses. This experience has taught me not only basic didactics and general presentation skills but also the value of teaching mathematics to entry-level students.

While delivering lectures, I try to draw students attention to the logical link that connects all the presented topics, even though they may seem unrelated at the
first glance. This forms a frame where topics fall into the right place constituting a meaningful picture of the course as the whole. I believe that before giving the formal definition of a concept one should explain the reasoning behind that notion, preferably from different points of view. This allows students to develop better intuition of how this concept is used and what it is serves for. I devote a bigger part of a class period to problem solving, since one learns math by doing it. I usually ask my students to solve some problems on the blackboard during the class. This helps both me and them to realize which skills they have already mastered and which need further work. Despite the introductory character of the course, I present formal proofs every now and then to give students a flavor of higher mathematics and expose them to the beauty of it. Creating exams I include both easy problems to build up students confidence and problems that are challenging slightly above students abilities to keep them alert and help them understand the importance of individual preparation.

Working as a tutor at the Learning Center of VU during my first years at the graduate program I have learned that personal attention significantly helps some students to get comfortable with mathematical concepts, since there are reasons that may prevent them from fully grasping the presented material during the class period. Each term I put strong emphasis on my availability outside of the classroom and try to double the number of office hours I am required to hold (in general, I am helping students as much as they need and my time allows). Students evaluations show that individual work is my major strength as an instructor and is appreciated by my students.

Mathematics
Aaron Wangberg
Oregon State University
http://oregonstate.edu/~wangbera/teaching_philosophy.pdf

As I watched a professor initiate three student debates, encourage interruptions, and lead the class towards an ethical discussion about scientific research, I realized teaching involves much more than coherent lectures, well-thought out assignments, and good communication. Three years ago, I began attending teaching seminars and finding good teaching opportunities in both the mathematics and physics departments. As a result of my experiences working with The Bridge Project, Math Excel, and Making Connections, I developed a deep appreciation of various approaches available for teaching mathematics. I was awarded our department’s 2005-2006 graduate teaching award, and started a teaching seminar this year to expose graduate students to our own faculty’s various teaching techniques.

Beyond the traditional approaches toward teaching, I shape math courses to help students develop their overall mathematical abilities and their logical maturity. I incorporate over-looked skills, such as dimensional analysis, geometric reasoning,
speaking effectively using mathematical language, and knowing when to trust one's own intuition into courses because they can help students develop their understanding of mathematics beyond computations and algorithms. For instance, from my work with Making Connections, I saw students dismayed and confused by exponential growth problems in chemistry, even though they had solved similar "context-free" problems in their math courses. After they developed dimensional analysis skills, however, these students formulated correct expressions for the problem using thought rather than textbooks. This experience has not been limited to physical science courses, however. In Math Excel, I routinely asked students to solve problems which were just beyond their individual mathematical abilities. Often, students became frustrated due to ineffective communication and mixing up the meanings of various numbers and variables. After helping these students develop the above skills, however, their group's communication improved and they began to know when and why their solutions were correct. When teaching, I emphasize these skills by pushing students to practice them during lectures, office hours, tests, homework, and group work. Ultimately, these skills help students trust their own thinking, and I believe these students will further develop their mathematics skills throughout life.

This approach requires an interactive classroom, and I work hard to have students talk and be involved in every course. When I taught three weeks of Math 255: Vector Calculus due to the professor's illness, I began the course by tossing a balloon globe to different students and having them answer questions about vectors. I goaded the class into discussions about review topics, and they voted on intuitive concepts. By the third day, the class was interactive, involved, and even a bit interruptive - but the benefits were worth it! Students thought aloud during lectures and provided the class with multiple solutions to a given problem. Incorrect answers encouraged others to think for themselves and correct their own understanding of the material, if necessary. In the first recitation, after a few groups had presented their work, I asked the class to evaluate the work (not the group). I chimed in myself, and as a class, we discussed the importance of presenting solutions clearly and concisely, both verbally and visually. Subsequent recitations became filled with debates as students discussed each other's solutions and the overall relevance of certain concepts and calculations. In addition to keeping the students engaged during class, an interactive classroom helps students learn from each other and develop a deeper understanding of the course material.

I love to teach. I incorporate different teaching techniques when they will help the students develop a deeper understanding of the material, and believe the same approach should be applied to the use of technology in the classroom. For instance, graphing technology should not replace a student’s ability to graph a vector field, but it can help students understand the local behavior of a vector field with positive divergence. I look forward to further developing an effective teaching style with and without the use of technology.
As a Ph.D. student in mathematics, I have taught calculus to life science students and linear algebra to engineering students. Through my teaching, I hope to not only motivate students to learn but to instill in the students the desire and need to learn as well as to perform to the best of their abilities. My teaching is currently guided by the following principles:

**To Motivate My Students To Learn**
When I think of the mathematics courses from which I retained the most, I recall motivated teachers who were passionate about the course material being taught. Their interest in the material not only encouraged me to want to learn mathematics but showed me that mathematics can be beautiful. I hope to engage my students in the courses I teach and bring mathematics to life for them as it was for me. In order to do this I try to find aspects of the material that interest me and share these with my students. I also encourage my students to share aspects of the material that interest them.

**To Talk With My Students**
The majority of the mathematics which I have learned has been through conversations with other people. These conversations have taken place during classes and in private meetings with other students and teachers. I believe that these conversations had such a positive impact on me because they gave me a chance to clarify facts and my own confusion. A student’s misunderstanding can have serious implications in the learning of the material. For this reason, it is very important that I talk with my students rather than at them. I hope to encourage my students to ask me questions by demonstrating that I will sincerely listen and attempt to provide answers.

**To Teach My Students To Think For Themselves In Logical, Creative Ways**
I realize that not all my students will appreciate mathematics as I do. I believe that a university should prepare students to become productive citizens in society. With this in mind, I try to keep the courses I teach interesting by showing that the material is relevant to other fields of study. By linking students’ other courses to the material seen in my course I express that an individual never knows when their thoughts will influence the face of a subject. For example, I often tell the story of how Gaussian elimination, a topic seen in an introductory linear algebra course, was described by Gauss who needed the process for studying an asteroid! I hope to instill in my students the pleasure of thinking for themselves in logical, creative ways. In class we examine how to analyze mathematical problems and discuss numerous creative possible methods to solve them. I also challenge my students to further pursue what has been seen in class and give weekly challenge questions.
To Improve My Teaching
I admire the teachers who have taught me difficult courses in an effective manner. I believe that the best way to say thanks to these teachers is to strive to also be an effective teacher. In order to do this I need preparation, practice, and feedback from self-reflection, students, and colleagues. I always work to improve my teaching abilities because I desire that my students get from me the personal best that I can give them (afterall, I do expect my students to perform to the best of their abilities so they should not expect any less from me).

Engineering / Mathematics
Caner Kazanci
http://www.math.cmu.edu/~ckazanci/home/teaching_statement.pdf

I believe the most important qualities in a teacher are organization, clear presentation of the material, stimulating student interest and curiosity, and encouraging student involvement.

From my experience as a teacher, I have discovered how important it is to be clear, effective, and thorough in my presentations. I always carefully consider how to present new material. It is essential to view the material from a student’s perspective and realize that, for him, it is new information. This allows me to structure concepts and examples in an easy-to-understand step-by-step sequence. It is easier for students to grasp new ideas if they are related back to previous knowledge, and if I clearly explain topic’s relevance and give the appropriate mathematical context. In course evaluations, many students compliment me on my clear, concise, and thorough explanations. Students have mentioned that I stood out among their teachers as one with whom they were able to learn mathematics that had eluded them in the past.

Although organization and preparation are extremely important, flexibility is also crucial in teaching, and instructors must be open to feedback from their students. I observe the expressions on students’ faces as I am teaching, which allows me to know when to give another explanation or clarify the solution. Also, I can tell when students will be receptive to new material and not feel overwhelmed by new concepts.

The enthusiasm and caring that an instructor shows help create a friendly and positive atmosphere in the classroom. The teacher’s enthusiasm attracts students’ attention, interest and curiosity and makes them feel that the material is worth learning. The instructor’s caring allows active student involvement, with the students and the instructor forming a team. I always remind students that I already know the material so I am there to help them learn it. I encourage them to feel free to interrupt me, ask questions, or request that an explanation be repeated. This not only helps me shape my presentation according to their needs, but also allows me to gain experience on how to teach that particular concept next time.
My experience as a teacher started in my freshman year of college. After receiving a bronze medal in the 36th International Mathematical Olympiad, I was asked to tutor talented high school students in the Olympiad’s practice sessions. I really enjoyed tutoring these bright young students, and I continued to teach these practice sessions throughout college. During my college years, my friends and I organized the bi-weekly public mathematics seminars on behalf of TUBITAK (The National Science Foundation of Turkey). The audience was large and included high school students, teachers, and general math enthusiasts. We had to choose our topics carefully: they had appeal to our diverse audience, and the presentations needed to contain some elegant and interesting results without too many technical details. This seminar series was a unique experience because it enabled me to introduce math concepts to people who normally did not study math in an interesting and comprehensible manner.

As a graduate student at Carnegie Mellon University, I have been solely responsible for teaching four under-graduate courses: AP/EA (Advanced Placement/Early Admissions) Calculus, Calculus I, Differential and Integral Calculus and Differential Equations (twice). In all of these courses, I designed the syllabi, exams, quizzes and homeworks, held office hours and assigned final grades. I also served as a teaching assistant for eleven semesters where I led recitations for a variety of courses. The associate department head chose me to teach the summer AP/EA calculus course, which is aimed to recruit students to Carnegie Mellon. During the past five years I have taught a diverse collection of students, from high school students to college juniors, and from humanities to engineering majors. Realizing that different audiences have different backgrounds, talents, and expectations for the course, I was able to develop teaching strategies that I feel are optimum for the students. The graduate class I took entitled Math Course Design also provided me with a myriad of course organization and teaching techniques, and advice about situations that can be encountered in the classroom.

Undeniably, teaching well requires effort. I think that a teacher should obtain intrinsic rewards and satisfaction from his or her job and be willing to go the extra mile for the students. Witnessing the difference I make and knowing that I help my students succeed, together with the satisfaction of a job well done, motivate me to do my best as a teacher. I find teaching to be a very rewarding experience which I would like to continue.

Engineering / Computer Science
Michail G. Lagoudakis
http://www2.isye.gatech.edu/~mlagouda/DOCS/mgltp.pdf

I cannot teach anybody anything, I can only make them think. – Socrates (470–399 B.C.)
Hundreds of years ago, the Greek philosopher Socrates introduced the obstetric method of teaching. For Socrates, teaching is a process of drawing forth, rather than a process of telling. The teacher does not tell the student the proper answer; instead, she draws from the student the probable answer. This Socratic view has been a major inspiration in the development of my own teaching philosophy.

I view the role of the teacher as the bridge between two worlds, the body of scientific knowledge and the eager student learner; the teacher is not the source, nor is the student the drain. In my view, the teacher must make sure that the student learns not only what is out there, but more importantly how to reach to it. These two worlds are constantly changing and the teacher is called to establish a healthy relationship between them that will eventually continue on its own. I also believe that in standing between these two worlds there is a fine line that every responsible teacher needs to maintain. On one hand, she needs to demonstrate sufficient proficiency on the subject matter allowing the students to build confidence in their teacher, but she also needs to abstain from demonstrating arrogance. I consider this stance to be an important factor in the development of the student's own stance between respect and criticism.

My main concern in teaching is to understand my audience and to communicate in a “common language”. I am trying to use technology (slide presentations, mathematical packages, computer-generated graphs, videos) as needed and always as means to an end. I promote both individual and group work inside and outside the classroom; the first makes the student independent, whereas the latter sparks collaboration. A unilateral approach harbors the danger of making the student selfish and unable to cooperate or heavily dependent on others and barely self-motivated. In developing and teaching a course, I consider the following ingredients necessary and valuable: 1) an up-to-date textbook, serving as the back-bone of the subject being taught, 2) supplemental readings, for discussing the current trends in the field, 3) lectures, as the vehicle for accessing the material effectively, 4) discussion, as a way of developing critical thinking, 5) regular homework and exams, as evaluative feedback and as a safeguard for having all students on the same page, and finally 6) a course project, as an exercise in creativity.

In my journey as a graduate student I had several opportunities to learn from different teachers and develop my own teaching skills beyond the typical teaching assistant duties (grading, office hours, recitations). At the University of Louisiana, Lafayette I was responsible for teaching the undergraduate introductory programming lab to a quite diverse class. Given the huge size of the class (2 faculty members, 4 lab instructors, over 150 students) I played a key role in devising mechanisms for ensuring fairness and indiscriminate treatment across all sessions and over all students. I also served on the advanced class on user interfaces. At Duke University, I was involved in advanced graduate classes on the design and analysis of algorithms, numerical analysis, planning under uncertainty, and numeric artificial intelligence. The first two classes draw
significant numbers of non-majors and my main challenge was to fill the gaps of students with no or minimum computer science background. For the last two classes, I contributed significantly to the development of the syllabus, designed assignments and programming projects, and organized and carried out software agent competitions. My commitment was rewarded twice with the outstanding teaching assistant award. In addition to the above university-level teaching experience, I have been successful in teaching Sunday School to all ages of K-12 education and Byzantine music to individuals of various ages.

I feel confident in teaching computer science or mathematics courses and, in general, courses where reasoning is more important than memorizing. Given my background and expertise, I am mostly inclined toward courses on artificial intelligence, machine learning, decision making under uncertainty, robotics, multi-agent systems, and complex systems, as well as, design and analysis of algorithms, systems theory, control theory, combinatorial mathematics, numerical analysis, and theory of computation. I am particularly interested in developing modern courses that cross the lines between disciplines, such as bioinformatics, artificial intelligence methods in medical or industrial applications, and machine learning methods in operations research.

It has been said that a teacher plants seeds in the student’s soul. She may not live long enough to see the fruits of that effort, but the student’s life is inevitably touched for ever. As I am constantly trying to become a better teacher, I also realize deeper the great responsibility that comes with it.

Engineering / Computer Science
Kelly Cannon

What some might consider a mistake, others find to be an opportunity. Throughout elementary and middle school, I was drawn to English and reading despite an undeniable proclivity towards math and science. Why? The humanities provided me with an opportunity to express myself through discussion, debate, and discovery, while sciences required memorization. While a “good” book could make me cry or laugh, a “good” equation merely made me shrug with bored acceptance. In part because of this misconception, I entered college believing I wanted to be a lawyer. In my mind, only through the humanities could I possibly make the world a better place. How wrong I was.

The first time I was forced to choose between humanities and computer science was as a senior in high school. Both Mercer University and Georgia Tech offered me full scholarships, but I chose Mercer because although I loved computer science, I was unable to imagine any future other than toiling mindlessly in industry. Through law, I could help people. Through computer science, I could only help line my pockets. The choice seemed obvious. Fortunately, I decided to
pursue a minor in computer science starting my sophomore year. Working with caring, holistic professors helped me to realize that computer science has endless applications which do help people. One night during my junior year while studying for the LSAT, I realized that I was secretly hoping to do so poorly that I would be forced to resort to my backup plan--pursuing a graduate degree in computer science. That night I e-mailed my advisor and revamped my schedule. In five years I obtained not only B.A.'s in political science and Spanish but also a B.S. in computer science.

It is from these experiences that I draw the foundation for my own teaching philosophy, a philosophy centered around three base assumptions. First, no student can or should be expected to become excited about a subject unless the applications have been explained as solutions to real world problems. When taking calculus as an undergrad, I only learned enough to ace basic exams. Why? In my wildest imagination, I could never foresee a time when calculus might serve a purpose in my life. There was no mention of physics, artificial intelligence, robotic kinetics, or pattern recognition. I was learning calculus simply to learn calculus. No student will ever leave my classroom without realizing the value of what is being taught, be it through domain specific research such as asking a business major to write a paragraph over possible uses of sorts in business applications or through open classroom discussion such as a debate over the importance of conserving memory versus reducing runtime in various types of software. I believe a strong emphasis on this understanding is key to an introductory level class in order that students become energized, but I also believe that that continuing reminders as to the value of computer science are important in higher level classes to ensure that students do not begin to feel disillusioned.

Second, a student cannot be motivated in a class where the subject matter may be obtained directly through a textbook. If the textbook alone were adequate to cover the material, why have a professor in the room? Attending a liberal arts school taught me, if nothing else, the value of being well read. When an operating systems class drags down with the particulars of scheduling, assigning a book such as "The Cuckoo’s Egg: Tracking a Spy Through the Maze of Computer Espionage" can revive the excitement for many. Bringing in controversial chapters or excerpts from papers or textbooks that contradict commonly accepted principles also draws students into what originally might seem a dry subject. Even giving students the opportunity to do research on topics of personal interest makes a class more individualized and thus makes the students feel more involved.

Finally and perhaps most importantly, no student can be inspired by a subject that requires solely memorization. Anyone can memorize, but only dedicated students can take that knowledge and apply it in new and exciting ways. Critical thinking is key for the success of any student, regardless of his or her future life plans. Accordingly, I will expect students, once armed with the fundamental building blocks, to be able to construct knowledge above and beyond that which is explicitly covered in class or in textbooks. A homework set consisting of questions
found in the back of a book implies that students are no better than the book itself. An exam with multiple choice or fill in the blank questions implies that students are nothing more than blank disks where I can write information and later recover that same information unaltered. I will never insult my students in this manner. Discussion and essays are invaluable to an education in the humanities, and I personally believe they are essential to any learning environment. When students are forced to relay more than a single word or phrase, they are forced to think, not simply memorize. Perhaps more importantly, I never want a student to tell me what I want to hear. I want a student to tell me what he or she believes and to have the knowledge and background to support that belief. A well-argued incorrect answer will always receive more credit than a correct unfounded answer in my classroom. Similarly, a student with the ability to hypothesize and support his or her arguments will go further in life than a student who must wait for someone else to formulate the answer and then cling mindlessly to that belief.

What happens when these three assumptions are addressed? If students understand the value of computer science in addressing real world problems, they will value computer science. If students understand that no textbook alone addresses the material to be covered in any given computer science class, they will value computer science classes. If students understand that their own ideas can and will shape the future of computer science, they will value their own involvement with the subject. The result is an excited, inspired, and motivated student who respects the subject, the class itself, and his or herself. In this type of environment, learning comes naturally.

However unfortunate it might seem that I discovered computer science so late in my academic career, it has given me the opportunity to truly experience the other side. I have not only taken humanities classes, but I've taught them as well having served as a co-facilitator for a freshman English class for three years. The techniques I learned and the responses I received from the students have helped me recognize the shortcomings in traditional computer science classrooms. When walking by my classroom, observers will not see a dark room with the monotone voice of a bored professor trudging through PowerPoint slides. They will find a classroom with comfortable discourse, a sense of community, and perhaps most importantly, a shared purpose.

Engineering -- Electrical and Computer
Jennifer Price

Ensuring that students have a thorough understanding of the course material is, of course, a critical aspect of any teaching strategy. This is by no means, however, the only objective of teaching. In my own educational experience, the most effective and memorable professors have been the ones that convey more than the course content to their students; rather, they are the professors that display a
passion and enthusiasm not only for the subject matter, but for helping students discover and develop their own strengths and interests. I believe my role as a professor would be not only to help students learn the material, but to provide them with the tools necessary to succeed outside of the classroom.

It is important to remember that the comprehensive educational process is one of growth. As such, I believe that teaching strategies should be tailored to the various stages of education. At the undergraduate level, the most important objectives are mastery of the content, the development of enthusiasm for the material, and the development of critical thinking skills. The goal here is not only to give students a sense of “life outside the classroom,” but also to teach them how to apply their knowledge to new problems, reducing their reliance on memorization and formulaic application of theory. At the advanced undergraduate and introductory graduate level, the most important objectives are developing both an intuition and a deeper theoretical understanding of the material, and developing the confidence and resources to facilitate independent learning. At this stage, it is important for students to develop a systematic and rigorous approach to problem solving that includes effectively using the myriad of outside resources at their disposal. Finally, at the advanced graduate level the most important objectives are to gain an appreciation of issues raised by modern research topics, to view the material in an inter-disciplinary context, and to develop the ability to formulate and solve problems independently.

As part of my teaching, I would incorporate the following strategies:
· emphasize application of theory to real-world problems through the use of long term, hands-on projects
· contextualize theoretical material by having students read current research papers
· employ active learning strategies that encourage class participation
· incorporate the use of relevant software and technology, where appropriate

In addition, I believe that both the classroom environment and personal interaction with students plays a key role in the educational process. The classroom environment should be one in which active participation is encouraged, and students are comfortable raising questions and giving feedback. The personal interaction of a professor with his or her students is equally as important. Many students are more comfortable in a smaller setting, and office hours or discussion sections are a valuable tool for reaching these students. Particularly at the graduate level, mentoring is a critical aspect of furthering a student’s education. As a woman in engineering, I believe I am in a unique position to further the successful encouragement and education of women in science and engineering. My educational experience as a student has played a strong role in the development of my teaching philosophy. Like most students, I have seen professors use successful, and sometimes unsuccessful, teaching strategies and am eager to put my own experiences to use. One strategy that I found particularly effective was the use of pre-class preparation assignments. While taking a graduate level class in Stochastic Processes at the University of Washington, I
had a professor ask students to complete a one or two question preparation assignment online before each class. Although the additional workload seemed burdensome at first, it quickly became clear that these preparatory assignments allowed me to better understand the very theoretical material we covered in class. It not only ensured that I had seen the material before being exposed to it in lecture and allowed me to participate more fully in the discussion, but it gave the instructor the opportunity to focus on the material that seemed most confusing to the students.

My experiences as a discussion instructor and teaching assistant at University of Oklahoma, University of Washington, and University of California San Diego have given me invaluable insight into the teaching process. As a discussion instructor and teaching assistant, I have been responsible for preparing and teaching discussion sections, helping to prepare homework assignments, solutions and programming projects, and holding office hours with students. I believe my general background in computer science and electrical engineering, as well as my specialized background in wireless communications, networking, convex optimization, game theory and microeconomics, distributed control systems, queueing theory, and stochastic processes will allow me to teach a wide range of courses at both the graduate and undergraduate level. I am particularly excited to develop advanced graduate-level courses based on my own research topics. Although I expect the transition to teaching my own classes to be a continual learning process, I am confident in my ability to be a thoughtful and effective instructor.

Engineering -- Biological Systems
Candice Piercy
http://twosweet.bse.vt.edu/Candice/GEDI.htm

Teaching engineers can be a challenging task. Often the material is perceived as dry, tedious and often difficult. This means many “pure engineering” courses can be discouraging to many students, both undergraduate and graduate. I do not believe engineering classrooms need be dull places. Most engineering students really like to solve problems – that is why they are engineering students. If my teaching could somehow enable them to actively engage with the material and see the connection to the world around us, real, active learning could take place. Teaching is not simply about transferring knowledge from teacher to student. Teaching engineers should be about teaching students how to think and solve problems. Too often, the goal is to cover material, to transfer the knowledge from teacher to student. And too often the material is simply transcribed into notes – no learning or knowledge transfer actually takes place.

My goal as a teacher is to ultimately change the perception that engineering courses must be presented as dry lectures with little in the way as far as student interaction. My ultimate goal as a teacher is to one day have a classroom in which the students are active and engaged in dialogue with myself or other students.
about the material. I believe the engineering classroom can be an exciting place. So much controversy exists in the engineering field. What are presented to undergraduates as basic theories and methods actually garner heated controversy among academics. I feel that any discussion of methods, techniques, equations, etc. should be presented with a very real discussion of what assumptions are made. Engineering students should realize that every equation presented to them is simply a model – a simplified representation of reality. When the assumptions that were made in the development of that equation are violated, the equation becomes inapplicable. I believe solid analysis of assumptions, and the ability to apply the analysis, can actually decrease the number of engineering disasters, both large and small. Engineering is not simply about how to apply equations and theories; it is also about when to apply equations and theories. Good engineers should know when to say more in depth analysis is needed.

Another problem I see in the engineering classroom is discouraged students. There are many reasons why students may be discouraged. One is the inability to connect what they are learning to the world around them. The material seems pointless. This is one area that case-based learning can really be applied. For instance, I recently taught a groundwater flow section of a general hydrology course. I talked about some of the problems that could occur due to the overpumping of wells: saltwater intrusion and land subsidence, for example. To highlight the problem of land subsidence, I presented a case involving coastal Louisiana. Land subsidence is a recognized problem in coastal Louisiana. I gave the students the list of potential causes and had them discuss which ones were the most likely. While the actual answer is still not truly known, the students were able to connect the material covered in the classroom with a current event, Hurricane Katrina, and talk and discuss a real scientific controversy. Suddenly the material becomes real, not simply a dry theory mentioned in a classroom.

I also try to inspire some excitement about the material. I tell the students when I think material is exciting and hope that my enthusiasm will transfer to them. I want students to discuss material. Often students expect engineering classrooms to be passive places: they sit, I talk. I want to change that perception. I want them to talk to me; I want them to talk to each other. If they are interested in a topic, I want them to stop me so we can spend more time on that topic. One way to facilitate discussions is the use of an online class discussion board. My role as teacher is to facilitate discussion by presenting interesting things to discuss. In the process of arguing a position on a topic, whether it is water law or global warming, students are forced to engage with the material and apply it. Real learning can take place in a way that does not happen in a traditional lecture classroom.

I believe student should be involved in some of the decision-making processes within the classroom. I want students to help design the rules that govern conduct. I want them to decide what penalties are assigned to late course work. I also believe students should play a role in their assessment. While I do believe student engineers should be tested on their knowledge and assessed.
believe students should have a role in designing that assessment. I accept student-submitted questions to tests and try to incorporate them as much as possible.

Too often the engineering classroom is treated as a one-way street. The teacher speaks, the students listen. I want to shift some of the power back to the students. I want them to be engaged and active. When they are engaged and thinking, real learning can take place. In my limited experience as a graduate teaching assistant, students can be resistant to this. Too long they’ve been asked to remain silent. I want them to be able to relate the material to their experience and to current issues. I hope that opening a dialogue will also allow students to feel comfortable giving me constructive feedback on my role as a teacher. I think of the students, not just as students, but also as junior engineers. It is my responsibility as a teacher to make sure they are not only knowledgeable but also capable of responsible application and analysis of their knowledge.
In my teaching I have always tried to keep in mind Plutarch's dictum that "a mind is a fire to be lighted, not a vessel to be filled." At Brown University I have taught Latin and Greek at the beginning and intermediate levels, as well as a course on Roman civilization, and assisted professors in courses on ancient literature, civilization, mythology, and language. These experiences have helped me form a successful philosophy of teaching as a collaborative enterprise requiring the engagement and effort of both the students and myself. I view teaching as an integral part of my intellectual and professional life as a scholar of the ancient world. My passion for the cultures, texts, and languages I study inspires students to learn about them with me, but equally important are the skills and techniques I have learned by watching my own talented professors, by refining my pedagogy in teaching programs, and by gaining experience in the classroom.

To teach students effectively I treat them not as an abstract "class" but as individuals, making sure that everyone is engaged and challenged, and ensuring that I present material in ways that allow everyone to understand it. For instance, in a course on Roman civilization I used PowerPoint presentations to make lectures more interesting and to reach students whose learning style is more visual than aural. Showing timelines and outlines of the material while I presented it orally helped students follow along, while presenting images of artifacts made the strange world of the Romans more concrete and accessible, and often spurred discussion. For an introductory Latin course I designed a website with online discussion groups in which students worked together on translations illustrating the grammatical concepts they were learning. I plan to expand my use of computers and the internet to enhance my courses, and I see great educational potential in emerging technologies such as podcasting. That said, the blackboard is still one of the most useful classroom tools, especially for ancient languages.

Whatever methods I use to reach students, I always strive to maintain a classroom atmosphere that, while serious and intense about learning, is also somewhat informal and friendly. My enthusiasm for the subjects I teach helps foster this atmosphere, and I also employ simple techniques to make a class more enjoyable. In the first week of some classes I have given a brief introduction to Roman nomenclature, after which students select names for themselves and for me, which we use in class instead of our real names. Such activities, while educational in their own right, add a necessary element of excitement into classes that are often perceived as boring (and are often under-enrolled), and many times I have heard my students using their Roman names around campus. By making classes more enjoyable, while keeping them academically challenging, I have
spurred the interest of students to the degree that most of them have taken more courses in Classics, and many have encouraged their friends to do the same.

As part of my philosophy of teaching and learning as a collaborative endeavor, from the first day of class I make clear to students that I rely on their feedback. Formal student evaluations at the end of the semester can help improve future teaching, but they are useless for improving a class in progress. Thus, I seek active input from students in and outside of class. I always make sure that students find me approachable, and I emphasize my availability at any time to help with any aspect of a course. This accessibility helps both the students and me as a teacher, since I can gain insight into how the class is learning. I also get feedback from students passively, in homework, quizzes, and exams, which I view not only as a way to motivate students to study and review, but as an essential tool to assess my own performance. For instance, in an intermediate Latin class quizzes and in-class translations showed me that several students were having problems translating poetry, both from inexperience and from rusty grammar, and that even the most advanced students were having trouble with confusing vocabulary. To respond to this I developed a handout on confusing words in the Aeneid, began incorporating more grammar review into the class meetings, and instituted optional sight translation sessions. These sessions helped me diagnose the problems of the less advanced students and helped them learn the step-by-step process of translating Latin poetry, while also providing an extra challenge for several more advanced and highly motivated students. The extra time I spent holding these meetings proved well worth it, since most of the students continued with Latin at the advanced level.

Another way I set students up to succeed is by clearly stating my expectations, and how those expectations can be met. A detailed syllabus is one of the most useful tools in this regard, and I usually spend a substantial portion of the first class meeting going over the syllabus and making sure that it is clear to everyone. Similarly, I give students detailed rubrics for assignments so that they know in advance how I will evaluate their work, and my comments on their papers and exams reflect their performance in respect to these rubrics.

I have come up with many of the techniques described here on my own, but some I have learned by actively seeking to improve my pedagogy. For a certificate program in Brown's Sheridan Center for Teaching and Learning, I participated in a year-long series of lectures and workshops and an in-class observation by teaching consultants during which I was videotaped. I have continued my association with the Sheridan Center by serving as its graduate student liaison for the Brown Classics Department, and I look forward to continuing to improve as a teacher through training as well as the experience of teaching itself. Seneca wrote, "homines dum docent discunt." I find teaching one of the most intellectually satisfying parts of academic life, and I eagerly anticipate new challenges and opportunities in and outside of the classroom.
Dilemmas come up every day. One that I faced at the University of Virginia was this: Should I stand up for my own ideas on teaching when they are different from the ideas of the two renowned, expert, and beloved professors in charge of this large lecture course, even though I am only a graduate student teaching small discussion sections? I had to marshal my courage even to ask Michael Levenson and Stephen Cushman (who later became my dissertation advisor) for permission to use my own writing assignments rather than those they had prescribed for History of English Literature III. For this survey course in twentieth-century British and American literature, Professors Levenson and Cushman set three five-page papers to fulfill the fifteen-page writing requirement. Having taught such survey sections before, however, I was convinced that it would be better for the students to write one to two pages every week.

It seemed to me then (and does still) that the focus of such a survey course for English majors is on reading, not writing: students need to learn the general character of a particular period, and therefore they need to read as many of its major texts as possible. In a seminar, by contrast, I ask my students to think deeply about at least one text and embody that thought in the form of a substantial essay. By assigning frequent short papers in my survey classes, I emphasized reading rather than writing--or rather, I emphasized the kind of writing that is an aid to further thought rather than a product of long thought. I developed a structured assignment to ensure that the students did not write vague "responses" but instead learned and practiced a particular way of approaching a text, and I was very happy with the resulting student work.

I explained my reasoning and related my experience to Professors Levenson and Cushman, knowing that I was putting them in a somewhat awkward position, since they very rightly realized that one of the tensions in a large team-taught course is perceived inconsistency. Students often complain when they think the work load in one section is less than the work load in another section, and in fact one of the other teaching assistants also protested a little at my asking for this exception. Professors Levenson and Cushman gladly granted my request, though, understanding that it came from tested conviction, and I promised to ask the students to comment specifically on this assignment in their end-of-semester course evaluations. The students were very definite in saying that it had been useful for them, even the students who had more trouble writing one page every week than they would have had writing one fifteen-page essay. Many students liked every aspect of the assignment, however, and it was a student in one of my History of English Literature III sections who nominated me for a prestigious campus-wide teaching award.
There really was no dilemma, then. My teaching philosophy, like anyone’s, is hard to define apart from my practice, and in practice I teach much more than just survey courses: introductions to methods of literary study, advanced seminars on focused topics, composition courses. But one thing I've learned is always to teach to a purpose: Professors Levenson and Cushman recognized and respected that, and indeed they themselves were models of inspiring and purposeful teachers. The language of education as a discipline includes some unpoetic phrases—"learning objective," "student outcome," "pedagogical goals," and so on—but these clunky terms refer to something real and valuable that I keep in mind no matter what course I teach.

Theatre
Jackie Rosenfeld
http://www.mhmm.org/teachphil.pdf

When I started graduate school at Texas Tech University in 2003, I was fortunate enough to be awarded a teaching assistantship. I expected this honor to allow me the opportunity to begin work on my degree in playwriting which would facilitate my dream of becoming the next great female playwright. What I didn’t expect was for it to change my career goals, my vision of self, and ultimately my biggest dreams.

For the first two years I taught Introduction to Acting to non-theatre majors. I had acted frequently in the past and enjoyed it a great deal, but it wasn’t my area of specialization. I compensated for this by reading, researching, and talking to as many acting professors as I could find. I took bits and pieces from everyone I spoke with, every book I read and every show I attended and managed to get through my first semester successfully—measuring my success by the enthusiasm my students showed despite the 8:00am class time.

Each semester my teaching skills improved immensely as I discovered that each class had its own personality and own set of needs while still working through the same course objectives. I found this both challenging and exciting. As I moved on to teach Introduction to Cinema, Theatre Appreciation, and Theory and Practice of Playwriting I found myself continually reading, researching and talking with other professors around the country about these subjects. As I found each class promising its own character and its own requirements, I adjusted. I began to perceive education as a continuous conversation with everyone taking part. I now believe that it is crucial for students to be an active participant in this conversation, and in their learning. I choose to always talk with my classes and never at them. This creates an atmosphere of learning that is far more layered and stimulating. And through this educational conversation, I realize that nothing, not even playwriting, excites me more than teaching.

For me, the best way to motivate my students is by displaying confidence and
enthusiasm. I have found that both are contagious and create an energetic environment. I model this behavior in my classroom and am amazed by how easily these attitudes rub off on my students. When they are confident and enthusiastic about learning, we are all successful.

As a theatre educator, it is my goal to share with my students the excitement, growth and satisfaction that come from collaborating on projects with other theatre artists. In order to do this, I believe it is crucial to establish a classroom environment—whether it is an acting class, a playwriting workshop, or a history lecture—where the students feel safe exercising their creativity. The most important thing I do to create this environment is to encourage trust and respect between the students as well as with me. I establish clear rules and manageable objectives. I approach each student as an individual, and give feedback regularly. I converse with the class about current topics of the day and then steer those ideas towards theatre and the projects they are working on. I emphasize the importance of process over product, freeing the students to take more chances and to feel freer creatively. Good theatre and thoughtful learning most often result when their participants feel uninhibited and unbound.

**History**
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http://www.dukemime.duke.edu/2005/12/fuentes.html

When I step in front of a classroom for the first time, I try to emulate. I’m trying to emulate my undergraduate history professor who made the distant history of the Maya so enthralling that he convinced me, a junior, to switch from studying immunology to studying Latin American history. I’m trying to emulate the Duke history professor who stumped me as a graduate student with a simple question: “What is history?” Baffled that I had no simple answer, I was amazed at the elegance of what he suggested: history is the study of change over time. These epiphanies stand out for me as moments when I discovered different and fascinating territories of knowledge and shocked myself into new ways of thinking. On the first day of class, I try to emulate what exemplary teachers taught me teaching could be: I strive to create opportunities for my students to stumble into their own epiphanies.

My experience teaching at Duke has convinced me that students have an intense interest in learning history -- an interest echoed in a broader culture where historical novels top bestseller lists and historical content proliferates in film and television. But I have found that many students come to my class, as I came to graduate school, without a clear sense of what makes history an academic discipline -- for them, history is a transparent telling of what happened. I want my students to learn instead that studying history means learning particular
methodologies and critically approaching historical texts, historiography, and our own historical writing.

In my courses, I have two broad sets of teaching goals. First, I want to cultivate a passion in my students for Latin American geographical, temporal, and cultural contexts. I try to capture my students’ interest by including a wide variety of material in the syllabus, and I work hard at making my lectures as engaging as possible; for instance, by incorporating new media.

When covering the South American military dictatorships of the late 1970’s and early 1980’s, I had students listen to Argentine popular music. I presented the lyrics in Spanish and in English translation while they listened to the familiar sounding pop music, destabilizing their easy familiarity with evocative images of torture and disappearance which they reflected on in their writing.

Second, I aim to teach my students how to be historians: how to read, write, and communicate about the critical study of change over time. To do this, I try to design courses with student goals stressing collaborative learning, critical reading and writing, and effectively communicating what they have learned to both academic and general audiences. Collaborative learning allows the class to cover more material, engages students as co-participants in their own learning, and allows them to develop as leaders and to practice communicating. In my classes, groups break out for ten to fifteen minutes to work on a task, and then report back to the larger group. In-class “breakout” groups work well for integrating historical content: for example, having three groups in my Spring 2004 survey course, Modern Latin American History, generate theme specific timelines on the nineteenth century. I have also found such group work useful for having students learn from each other and practice methodologies and skills, such as writing, revising, and taking notes.

A second student goal is learning how to read and write as historians. I teach my classes to read not just for content, but also to determine an author’s interpretation and to evaluate the argument themselves. I first tried to teach this on an ad-hoc basis with individual reading assignments throughout the semester in my Spring 2004 survey course, but found that some students felt lost and untrained in what I expected them to do. For my next course, a Junior-Senior seminar on “Students and Politics in Latin America,” I structured the syllabus around thematic multi-week units and designed the first unit to teach students how to read and evaluate a historical argument by introducing the historical method and conventions of academic argumentation while stressing discussions and short in-class writing assignments.

Throughout the next units that semester, students relied on the skills they had honed in the first unit to evaluate and contextually place the historiography they read. They also began to work on their research papers, learning how to research and craft their own historical arguments. To stress how important revising is to
writing, I included an opportunity for them to turn in multiple drafts. My work as a Writing Studio Tutor has convinced me that writing is thinking. I have learned from my tutees what they find most stressful and daunting about the writing process and have tried to translate what I learned to the classroom, tailoring three separate classroom sessions in my Fall 2004 seminar around the writing issues that my tutees complained were the most troublesome for them. Before they began their daunting 20 page research project, I provided my students with resources and models for effective writing and revising. We defused many of their fears by demystifying the process of writing. As a bonus, the drafts that my students generated were far superior to other student drafts I had seen before.

Finally, students learn in my class how to communicate their new knowledge effectively to others. Reaching out beyond the university is important to me, and something I have stressed in my own scholarly career by participating in community outreach efforts aimed at teachers and the general public. For the seminar "The Challenge of Latin American Liberalism, 1850-2001," which I will teach in Spring 2006 as a Gerst Pre-Doctoral Fellow, I have designed an assignment to help students reach out to their communities: a Curriculum Portfolio. This assignment gives students practice writing to a novice audience as experts in a subject field, a style of writing that much more closely resembles the writing they will engage in after graduation. Students design and assemble a multi-media Curriculum Portfolio that area high school teachers can use to teach both Latin American history content and the process of critical reasoning. Each Portfolio includes at least three elements, such as timelines, images, or analysis of primary texts. I tested this assignment in my Fall 2004 Seminar, and was pleased to learn from four of my students that they plan on taking their assignments with them as they pursue teaching related fields after Duke, in such programs as Teach for America.

For me, teaching is an opportunity to recapture my own interest in Latin America with every new syllabus and every new group of students arriving with their own interests and questions. But I also see it as a constant challenge to improve my own ability to transmit that excitement, enthusiasm, and knowledge as effectively as possible. To improve my own skills, I have taken several opportunities to learn about teaching and pedagogy. I was awarded a 2004 Center for Teaching, Learning, and Writing Mini Grant to design and coordinate a workshop series on teaching in the Duke History Department.

I also organized a panel on teaching for the American Historical Association’s 2004 Annual Meeting, which was published in the October 2004 issue of the AHA Perspectives as “Graduate Students’ Forum: Into the Classroom! Tips and Tricks to Succeed as a Teacher.” I know from my own experience as a student that the most valuable learning is student-centered; I am now learning how much skill, energy, and time it takes to lay the groundwork for students to stumble into their own epiphanies.
Function of Education in Today’s Society
The traditional role of education has been to transfer culture from one generation to the next. Formal education arose from the need to train skilled workers in an Industrial Age society. Today, as we proceed through the Information Age and into the Knowledge Age of societal development, we face the need to develop work force who can function effectively in a society rooted in technology and information processing.

Minimally, to become wise consumers, students must learn to reason and think critically about the world in which they live. Ideally, we must educate our children to become independent learners who are capable of locating, evaluating, processing, producing, and synthesizing information using a wide variety of resources and analysis techniques.

How Kids Learn
Students learn in different ways and at different rates. There are some ideas about way people learn that I believe are universal and which have helped to develop my instructional strategies.

1. Students learn best by "doing": Experiencing a cube is more potent than a teacher telling a student that a cube is a six-sided figure with squares on each side. Students need a rich supply of meaningful examples and manipulatives to help make ideas and relationships come to life.

2. Students make connections with past experiences: Cognitive psychologists tell us that knowledge is composed of vast connections made between bits of information stored in long-term memory. Learning is the process of building connections between new and existing (stored) information. Therefore, students learn best when new material is directly related to facts and ideas which have already been covered.

3. Students learn best if the material is relevant and interesting.: Learning is an active process. A student must give full attention to effectively engage in the material. The best way to captivate student attention is by making activities and discussion interesting, relevant, and (if possible) fun.

How Teachers Should Teach
Teachers should make every attempt to encourage all students to make the most of their education by becoming life-long learners. Teachers should emphasize critical thinking and problem solving skills by challenging students to question, reason, investigate, and conjecture. Students should relish in the thrill of learning
and discovery. Here are a few things I believe that teachers should do to facilitate learning and to develop the students' passion to become life-long learners:

1. Teachers should model ideal behaviors of a life-long learner without exception.
2. Teachers should create lessons which require active participation from every student.
3. Teachers should encourage cooperation and collaboration, as mutually beneficial interdependence.
4. Teachers should challenge students to take risks, to strive for excellence, and to go the extra yard.
5. Teachers should be patient and willing to work with students who have trouble catching on.
6. Teachers should have fun too! Enthusiasm is contagious!

How I Teach

My approach to teaching is to make math understandable, applicable, and enjoyable. I stress to the students that mathematics is not simply a collection of concepts, formulas, and calculation skills, but rather, a logical and analytical way of thinking about every day life. I place a very high emphasis on critical thinking and problem solving skills.

1. Learn by doing: I feel that math is not passively learned, and I therefore try to create lessons which actively engage my students in fun and interesting ways. I also require that students spend a good deal of time working on homework assignments and projects.
2. Cooperative learning: I am a firm believer in cooperative learning with individual accountability. Group work forces students to share and explain their ideas and strategies with others. Math is best learned by teaching others - individual mastery of a topic is demonstrated when the student can teach it to others.
3. Math should be fun and exciting: I try to greet every discovery or revelation with enthusiasm and surprise. I always encourage students who are willing to make an educated guess at a difficult question. I make every attempt to designing activities which I find fun, and which may grab the students' attention. If I don't like the activity, how can I expect the students to enjoy it!
4. High expectations: I have very high expectations for all my students. I expect that each student will come prepared to actively participate and to do their very best work each and every day. I believe that my expectations often transfer to higher expectations within the students. Of course, it is important to nurture those students who have difficulty with this concept.

Why I teach
My interest in teaching began the year I started graduate school. Although I was hired as a teaching assistant at the University of Minnesota for my potential as a research mathematician, it did not take long for me to realize that I enjoyed the teaching aspect of my assistantship more than the research aspect. Enjoyment has flowed through the contact with students, the sharing of ideas and strategies, and the feeling of accomplishment that can only occur when someone struggles through a difficult problem. It was clear that I was making a positive impact on many of my students - a profound realization to me - and that I could be a much better teacher than researcher. My love of math and my desire to reach and impact my students led me to pursue a career in math education.

Goals
The more I learn about education, the more I feel I do not know. I believe that every teacher can make improvements in his/her teaching. Education is an art - a symphonic blending of content, delivery, and assessment. Different students require different blends of this medley. Although my list of professional goals is long, a limited list might include:

- Make my student teaching experience an educational and rewarding one!
- Increase parental involvement through improved lines of communication between me, the student, and the parents.
- Work to improve the congruence between student and teacher expectation levels.
- Develop creative and effective uses of technology for my high school students.
- Become active and known in professional organizations such as MCTM and MEA.

Library and Information Science
Donald W. Drumtra
http://www.ischool.utexas.edu/~drumtra/website/philosophy.html

Kuan-tzu, a Chinese philosopher noted, if you give a man a fish he will have a single meal. If you teach him how to fish, he will eat all his life. This is the basis of my teaching philosophy-to teach students how to learn by themselves rather than giving them all the answers.

A university education should not only prepare students for their specific future professions at a level of detail above that which they may have received in their high schools, but it should provide them a broad basis of knowledge so that they can understand their profession in the context of the outside world. Universities provide students a unique opportunity to gain an understanding of many different disciplines and their relationship to each other. Although specialization in a particular college is important to obtaining high paying employment after school, each college has an obligation to ensure the students in its programs learn something about fields outside of the college's internal curriculum. That outside
education should include at least introductory courses in philosophy, humanities, and fine arts if the student is in a professional field (Law, Engineering, Business, etc.).

In the future, I plan to teach in the field of Library and Information Science (LIS). Although, there is not universal agreement on what is included in that field, most scholars would agree that it includes the research and study of information, its nature, management, and preservation. That information may be in books, records, computers, films, tapes, and all sorts of media. It includes study of the traditional institutions that manage information in our society including public libraries, school libraries, business libraries, archives, business record offices, and museums. It also includes less traditional institutions such as those that manage computer-generated information (such as Webpages), film, compact disks, and other media. Special sub-fields, called informatics, deal with the specialization in providing needed information to medical, law, and other professionals. Recent research and practice in the field over the last five years has also included knowledge management in corporate and government institutions.

Although the LIS discipline has been focused on graduate students, there is a growing movement in the U.S. to develop courses at the undergraduate level. I believe undergraduate courses would a valuable addition to the discipline. My goal is to concentrate on introductory courses both at the graduate and undergraduate level preparing for the future. I believe my background in science, engineering, political science, business, and information management provides me a unique understanding of the way that LIS fits into society. It is through that understanding I hope to help students understand the importance of information and how society benefits from its good management in the information institutions (libraries, archives, etc.). The teaching methods I have found successful in the past include a mixture of assigned reading of fundamental principles and student selected reading from a list of texts dealing with the fundamentals of the discipline. Students could substitute other readings on a case-by-case basis. Students may, by that approach, select topics that interesting them the most. Student response is in the form of discussion and short essays dealing with the selected topic. In addition, I believe team projects are useful, with several students participating in a essay or presentation on a team with selected topics. I have found that student presentations contribute more to learning than instructor lectures particularly with team projects. I support written examinations only if the course material lends itself to examination and then only to determine if students understand fundamentals principles of the field. The exam is thus valuable as a tool to evaluate both the student and the instructor.

Many have suggested that teaching at a research university is particularly challenging. In advanced courses, research results can sometimes be incorporated in course material. Most valuable research would, however, be more advanced than material taught in introductory courses.
Teaching introductory courses presents a second challenge with most departments because it requires that the curriculum be integrated into the curriculums of more advanced courses. This is particularly difficult in the field of LIS where there are not only different opinions on the relationship between library science and information science but fundamental differences in the definitions of the fields themselves.

A third challenge is teaching academic subjects to students who are most interested in the professional aspects of a field. At the Masters Degree level the LIS degree is considered to be professional degree rather than one that would lead to further academic work. Introductory courses also to be of much value to students would have to blend theory and application carefully to make them most useful to students. Marcia Bates, a LIS professor at UCLA, has written: It needs to be understood by all involved that the ability to translate between different intellectual and practice cultures is a very special talent, and not at all common in any field. Most researchers cannot do it and most practitioners cannot. Those who can should be treasured. . . . Few are the researchers who can take it still a step further and extract implications for practice and present those implications in a way that practitioners can make immediate use of. That is quite a challenge. Where that ability does exist however, it deserves to be richly rewarded.

My teaching goal is to become one of those rare individuals.