

EDTP 301 General Methods Teaching Philosophy Packet

A teaching philosophy is a self-reflective statement of your beliefs about teaching and learning. In addition to general comments, your teaching philosophy should discuss how you put your beliefs into practice by including concrete examples of what you do or anticipate doing in the classroom.

Teaching philosophies are typically between one and four double-spaced pages but may be longer or shorter depending on your circumstances. They are written for two particular audiences. The first is search committees, since teaching philosophies are increasingly becoming part of the academic job search dossier. The second audience is yourself and your colleagues. In this case, the teaching philosophy serves a formative purpose — a document that helps you reflect on and improve your teaching.

Starting a teaching philosophy can be a difficult task, but it need not be. The steps outlined in this packet provide a structure for taking you through the drafting process step by step. Of course, there are as many different ways of writing teaching philosophies as there are writers. What we suggest here is one possible approach to drafting the essay. Feel free to deviate from this plan, skipping or adding steps to accommodate your personal writing style.

This packet follows a basic three-part process.

1. You'll begin by generating ideas for your teaching philosophy based on your attitudes, values, and beliefs about teaching and learning.
2. Next, you'll organize your ideas and create a working draft. You'll also check to make sure that you've illustrated your personal beliefs with specific examples of classroom practice that take into account disciplinary contexts and constants.
3. Finally, you'll assess your first draft, comparing it to a rubric — a set of guidelines — for effective teaching philosophies. Your assessment should point the way toward gaps in the essay or areas that need to be reworked during subsequent revisions.

Keep in mind that the teaching philosophy is a document in progress. As your teaching changes and your professional identity grows, your teaching philosophy will also change and grow. So revisit it periodically and rewrite it as your beliefs and experiences progress and change.

Getting Started on Your Teaching Philosophy

Generating Ideas

Teaching philosophies express your values and beliefs about teaching. They are personal statements that introduce you, as a teacher, to your reader. As such, they are written in the first person and convey a confident, professional tone. When writing a teaching philosophy, you should use specific examples to illustrate your points. You should also discuss how your values and beliefs about teaching fit into the context of your discipline.

Below are categories you might address in your teaching philosophy with question prompts that may help you begin generating ideas for your draft. Work through each of the categories, spending time thinking about the prompts and writing your ideas down. Your list of ideas for each category will become the material that will comprise the first draft of your teaching philosophy.

Note your answers to the following prompts. For those of you who are visual learners, consider doing a bit of "clustering." As a way to sketch out themes that hold the pieces together, feel free to draw lines, overlap components, or in some other way trace out interplay among the pieces.

Getting Started Exercise

1. Your concept of learning: Ask yourself such questions as "What do I mean by learning?" and "What happens in a successful learning situation?" Make sure to note what constitutes "learning" or "mastery" in your discipline.
2. Your concept of teaching: Note your values, beliefs, and aspirations as a teacher. (For example, do you wish to encourage mastery, competency, transformational learning, life-long learning, general transference of skills, critical thinking, etc.) What does a perfect teaching situation look like to you? Why do you consider this "perfect"? What is your role as a teacher? Are you a coach, a general, an evangelist, an entertainer?
3. Your goals for students: What skills should students obtain as the result of your teaching? You may think about your ideal student and what the outcomes of your teaching would be in terms of this student's knowledge or behavior. You may address the goals you have for specific classes or curricula and the rationale behind them (i.e., critical thinking, writing, or problem solving).
4. What methods will you consider to reach these goals and objectives? What are your beliefs regarding learning theory and specific strategies you would use such as case studies, group work, simulations, interactive lectures, etc.? You might also include any new ideas or strategies you have used or want to try.
5. Your interaction with students: What are your attitudes toward advising and mentoring students? How would an observer see you interact with students? Why do you want to work with students?
6. Specific examples: How are the values and beliefs noted above realized in classroom activities? You may discuss course materials, lesson plans, activities, assignments, assessment instruments, etc.

7. How will you assess student understanding? What are your beliefs about grading? Do you grade students on a percentage scale (criterion referenced) or on a curve (norm referenced)? What different types of assessment will you use: traditional tests, projects, portfolios, or presentations?
8. Professional growth: How will you continue growing as a teacher? What goals do you have for yourself and how will you reach them? How have your attitudes toward teaching and learning changed over time? How will you use your student evaluations to improve your teaching? How might you learn new skills? How do you know when you have taught effectively?

Creating Your Teaching Philosophy Draft

Two Ways of Organizing Your Draft

Now that you've written down your values, attitudes, and beliefs about teaching and learning, it's time to organize those thoughts into a coherent form. Perhaps the easiest way of organizing this material would be to write a paragraph covering each of the eight questions you answered in the previous activity: your concept of teaching, your concept of learning, your goals for students, etc. These would then become the eight major sections of your teaching philosophy.

Another way of knitting your reflections together—and one that is more personal—is to read through your notes and underscore ideas or observations that come up in more than one place. Think of these as "themes" that might point you toward an organizational structure for the essay.

For example, say you read through your notes and realize that you spend a good deal of time writing about your interest in mentoring students. This might become one of the three or four major foci of your teaching philosophy. You should then discuss what it says about your attitudes toward teaching, learning, what 's important in your discipline, etc.

Using Specific Examples

As noted previously, it's important that you provide concrete examples from your teaching practice to illustrate the general claims you make in your teaching philosophy. In most cases, initial drafts of teaching philosophies don't include enough specifics. The following general statements about teaching are intended as prompts to help you come up with examples to illustrate your claims about teaching.

Prompts for Adding Specific Examples to Your Draft

- General Statement: "I value helping my students understand difficult information. I am an expert, and my role is to model for them complex ways of thinking so that they can develop the same habits of mind as professionals in the medical field."

Given the statement above, how would you describe what happens in your classroom? Is your description specific enough to bring the scene to life in a teaching philosophy?

- General Statement: "I enjoy lecturing, and I'm good at it. I always make an effort to engage and motivate my students when I lecture."

Given the statement above, how would you describe what happens in your classroom? Is your description specific enough to bring the scene to life in a teaching philosophy?

- General Statement: "It is crucial for students of geology to learn the techniques of field research. An important part of my job as a professor of geology is to provide these opportunities."

Given the statement above, how would you describe what happens in your classroom? Is your description specific enough to bring the scene to life in a teaching philosophy?

- General Statement: "I believe that beginning physics students should be introduced to the principles of hypothesis generation, experimentation, data collection, and analysis. By learning the scientific method, they develop critical thinking skills they can apply to other areas of their lives. Small group work is a crucial tool for teaching the scientific method."

Given the statement above, how would you describe what happens in your classroom? Is your description specific enough to bring the scene to life in a teaching philosophy?

- General Statement: "As a teacher of writing, I am committed to using peer review in my classes. By reading and commenting on other students' work in small cooperative groups, my students learn to find their voice, to understand the important connection between writer and audience, and to hone their editing skills. Small group work is indispensable in the writing classroom."

Given the statement above, how would you describe what happens in your classroom? Is your description specific enough to bring the scene to life in a teaching philosophy?

Assessing Your Teaching Philosophy Draft

Check Your Draft

Now that you've completed an initial draft, you should compare it to other teaching philosophies by instructors in your discipline. You might also ask a colleague to review your draft and offer you recommendations for revision. (Use the Rubric as a guideline) These exercises will give you the critical distance necessary to see your teaching philosophy objectively and revise it accordingly.

To begin, look at the following guidelines to assess your draft for tone and content. In particular, pay attention to whether you've included relevant examples to support your points and whether you've adequately situated your draft in the context of your discipline.

Teaching Philosophy Checklist *(this information is included in your Rubric)*

Purpose & Audience

Given the intended audience and purpose that the writer has shared with you:

1. Is there a clear focus or theme(s)?
2. Are the language and tone appropriate without relying on trite phrases or jargon?
3. Would it hold the audience's attention?

Voice

1. Is it "authentic" - focused on the writer and personal? Do you have an idea of who this person is as a teacher (or aspires to be)?
2. Does the writer reveal self and personal/political/pedagogical commitments?
3. Is enthusiasm for teaching evident?
4. Does it sound as though the writer cares about the beliefs expressed and the arguments being made?
5. Would you like to take a course taught by the writer?

Beliefs/Arguments/Claims & Illustrative Support

1. Does it detail what the writer believes in a way that is engaging, specific, and easy to understand?
2. Does it detail why these beliefs are held?
3. Does it detail how these beliefs came to be held?
4. Does it define the writer's goals for and expectations of learners?
5. Are the beliefs/arguments/claims grounded in the writer's discipline?
6. Is the relationship between the writer's discipline and beliefs about teaching and learning made clear?
7. Does the organization/structure support the arguments/claims being made?
8. Are the beliefs/arguments/claims supported by evidence, examples, anecdotes, etc.?
9. Are there specific examples of strategies, methods, or theories used to achieve teaching and learning goals and to help students meet or exceed expectations?

Conventions

1. Are headings, transitions, and paragraph design appropriate to the content?
2. Are length and thematic structure appropriate to the content?
3. Are the elements presented in a parallel style and format across and within sections/paragraphs?
4. Are there any distracting grammatical, typographical, or spelling errors?

Sample Teaching Philosophies

Be very careful when using these samples, I will give you a zero if they are plagiarized.

Sample Teaching Philosophy: History (D. Rayson)

Studying history involves both student and instructor in interactive conversations about historical events created by the actions (or inactions) taken by both elite and non-elite people in the course of their daily lives. My role as the teacher is to enable students to obtain an historical context through which they can understand the motivations behind the decisions made by historical figures, critically evaluate those motivations, and assess the significance of the actions taken as they analyze the events themselves. More importantly, I want my students to understand, intellectually and emotionally, that their present lives are the result of these historical events, events created by imperfect beings very much like themselves who often did not completely understand the implications of nor foresaw the consequences which resulted from the actions they undertook.

I want all my students to understand that their present is the consequence of those historical events so that they are better prepared to act as conscious historical actors themselves once they leave my classroom. My goal is to show that the study of history is a creative process based upon the analysis of historical evidence which results in a "conversation" between the historian and the historical actors being studied. With my help, therefore, students begin to engage in their own historical conversations ó with myself, with the "past," and with each other, creating a process which enriches the understanding of past events for both teacher and student. As part of this process, it is also my task to ensure that this dialogue is conducted in an atmosphere of mutual respect and toleration of diverse opinions, an atmosphere "safe" enough so that candid discussion of often uncomfortable topics can take place. Finally, since history in general and U.S. history in particular is created by various individuals and groups operating from various cultural frameworks, beliefs and practices, it is crucial that history be presented within a multicultural framework.

I am a proponent of active learning and use a variety of methods to encourage discussion and interaction on the issues the course presents. One method that I frequently use in small classes is to assign students to come to class in the role of particular historical characters (a female slaveholder who favors secession, a southern unionist residing in the hills of western Virginia, a northern businessman whose business is based on access to cheap cotton, an escaped slave active in the abolition and women's rights movements, etc.) in order to debate the issue of secession, for example, as that character. As part of this process, I ask each person to base their "character's" point of view on specific historical documents to demonstrate that those experiencing the same events often believed, and acted upon, different "truths." I also organize debates in which the student is asked to support or oppose specific arguments advocated by various historians in order to demonstrate that historical analysis is a creative process, one in which the historian must marshal factual evidence in order to present a persuasive reconstruction of past events. Students are also empowered to take responsibility for their own learning by preparing their own questions designed to promote class discussion as well as help other students learn by preparing

and presenting short analyses of specific readings to begin class discussions or working together on research projects.

In large lecture courses, often survey courses where organizing discussion is more difficult, I set aside one day of a course (which meets three days a week) for group discussion of a central issue raised during the week's class sessions. When necessity compels a primarily lecture presentation, I intersperse my talk with questions designed to allow students to reflect on important points I have raised during the class session, share their reflections with surrounding classmates, and briefly discuss the insights gained from this "think-pair-share" activity as a group before continuing with my discussion. In order to encourage cooperative and collaborative learning among students in such courses, I facilitate the organization of study and peer review groups as well. By distributing a short outline of the main issues raised in each class and using overhead transparencies to present a "rolling," more detailed outline of any interactive lecture sessions, I allow the student to reflect on the central points of the class session without feeling compelled to concentrate simply on note-taking. Using these "class notes" also allows me the flexibility to pursue important points raised by the students through discussion or incorporate other active learning techniques during a "lecture" without sacrificing coverage of important course material.

I am a proponent of requiring students to engage in extensive written, as well as spoken, discourse. Short lists, or quickly-written responses to a central question, have often helped to begin or facilitate a discussion. While I require students to write a formal 6-8 page paper which they have the opportunity to revise if dissatisfied with their initial grade, I also require them to keep a regular journal of informal responses to weekly questions, analysis of readings, and a "free write" in which the student can engage in self-reflection on both the issues raised by the course and on the importance of history to their lives in general. Journals are also useful in allowing me to engage in a private dialogue with students who may be reluctant to attend office hours but who feel comfortable in raising issues within the context of journal-writing. Allowing students to express themselves informally through journal writing, furthermore, affords me the opportunity for a more complete assessment of a student's ability than would be possible by relying only on a combination of formal papers and examinations.

In summary, then, I am very committed to providing a learning environment that is both exciting and rigorous, one that empowers both student and teacher in pursuing learning. I devise various assessment strategies that allows me to fairly assess student learning regardless of the student's learning styles. Above all, I treat my students with the utmost respect, creating an environment where students feel safe to candidly discuss topics which they might otherwise be hesitant to address. For all my classes, regardless of size, I pride myself on learning the names of all my students and treating each student as an individual. Students reward my commitment to them by committing themselves to the class as a whole as well as to the furtherance of their own education.

Sample Teaching Philosophy: Biology (Anonymous)

Teaching allows me to fulfill what I believe to be a fundamental responsibility of biologists: to communicate information to the public so they can make informed decisions regarding the environment. There are basic biological principles that should be understood by college-educated citizens. Among these are the process of evolution and a basic understanding of genetics, the interdependence of biological systems, levels of organization in biology, basic human anatomy and physiology, and the basics of scientific decision making. I also want students to appreciate and value biological diversity and to leave my class with an increased sense of stewardship for the earth. I have several objectives as an educator in addition to teaching these basic principles.

Objective 1: Students should understand the relevance of biology to their lives. I emphasize relevance by discussing current events pertinent to biology, by asking students to share their knowledge of the subject, and by discussing how I have found the knowledge useful. For example, I share my brother's struggle with Hodgkin's disease when teaching students about the lymph system. As a professor, I want students to have input into the course content so that the issues we address are relevant to them. Independent research projects are one means to accomplish this goal because they allow students to choose the subject matter in which they are most interested.

Objective 2: Students should know where to find information, how to evaluate that information, and how to make an informed decision based on their understanding of the issues. To encourage excellent library skills, I developed an annotated bibliography exercise for an animal behavior class. This exercise gives students the opportunity to investigate a topic in which they are interested, teaches them how to locate and read primary journal articles, and challenges them to synthesize and evaluate the information they find. I also developed a laboratory exercise on human population growth for an ecology class that requires students to critically evaluate predictions of population growth models and to discuss the implications of their findings.

Objective 3: Students should understand that biological issues are interconnected with economics, politics, history, and culture and should be addressed in context. One tool I use to reinforce this is role-playing. I helped develop an ecology lab in which students watch a video of the Yellowstone fires, then are assigned roles and are asked to reach a consensus on fire policy in the National Parks. Roles include tourists, local business people, ranchers, congressional representatives, biologists, park service employees, and others. This activity demonstrates the complexity of the issue, shows the value of multiple points of view, and teaches skills of debate and persuasion. Teaching biology as part of a liberal arts curriculum is an ideal setting in which to stress the interrelationships between disciplines.

Objective 4: Students should be actively engaged in the learning process. I have taken coursework in cooperative and active learning techniques and I incorporate these techniques into my teaching. For example, I have created a model of mitosis by having general biology students act as chromosomes and walk through the processes of DNA replication and cell division. I find students learn and retain the material more effectively with these activities. Comments from student evaluations support this view:

I enjoyed the labs where the class participated in setting up the example, i.e. chromosome division. These models tend to really stick with me. The visual teaching, such as meiosis, mitosis, etc. was extremely helpful. It was made much more clear than in the lab manual.

I have also taken the initiative to get students into the field in classes that do not include laboratory exercises; for example, by volunteering to meet with animal behavior students on weekends to observe animals and conduct short experiments. In part, my commitment to active learning comes from my experiences as an undergraduate at Earlham College. Biology professors taught investigatory rather than "cook-book" laboratory exercises and encouraged us to design our own research projects. The research skills I developed in those labs have been invaluable in my graduate studies and I will continue to emphasize them to my students.

Objective 5: Racial diversity and gender balance should be encouraged in all areas of science. Greater diversity will bring fresh insight into our investigation of scientific problems and will demonstrate that science is inclusive rather than exclusive. For my master's research in environmental education, I asked a racially and professionally diverse panel of environmental educators to re-evaluate an influential model of environmental education. The changes suggested by the panel, such as incorporating multicultural perspectives into environmental education, are applicable to encouraging greater diversity in biology education as well. As an outgrowth of this project, I am co-editing a monograph on multicultural environmental education for the North American Association for Environmental Education. I have also been active in the University of Minnesota's summer program to encourage minority undergraduates to conduct research in biology. This program allows students to conduct their own research on critical questions such as whether certain drugs are effective in controlling corneal transplant rejection and on the mechanism of tumor development in ovarian cancer.

Objective 6: We should reach out to elementary and secondary school students to encourage interest in science and math early in the students' development. This is especially important for women and minorities who are traditionally underrepresented in these fields. Toward this end, I have visited local schools to talk about my research and led programs on bats and ecology for school groups at Hancock Field Station in Oregon. My goal is to introduce students to basic biological principles by arousing their curiosity about the natural world. Discussing cooperative food sharing in vampire bats seems to be especially effective in achieving this goal! I also want students to see that the stereotypical "scientist" in a lab coat carrying beakers of boiling solutions does not accurately reflect the diverse nature of the field.

My commitment to education can be seen in the work I have done to provide opportunities for graduate students and other educators to improve their teaching skills. Currently, I am an education specialist for the Teaching Opportunity Program for Doctoral Students, a program designed to give doctoral students throughout the University of Minnesota training and experience in teaching so that they will be more effective faculty members. I developed and coordinated College Biology Teaching, a University course that brings together graduate students, university faculty, high school teachers, and community college instructors to improve the quality of biology teaching. The integrated nature of the course allows new teachers to learn from those with more teaching experience while introducing everyone to innovative approaches to biology education. In addition, the course allows participants to learn about biology education

and biological research at other institutions. I also lead workshops sponsored by the Teaching Assistant Development Program on laboratory teaching skills for graduate students. All of these activities help develop my own teaching skills and enable me to improve the quality of biology education for others. I am excited about being part of a faculty that supports and encourages innovative teaching and I look forward to the opportunity to share teaching strategies.

Sample Teaching Philosophy: Speech Communication (S. Smith)

Over the course of my twelve years as a college instructor, my approach to student education has shifted from an emphasis on my *teaching*, to a more central focus on *student learning*, and finally to a more holistic realization that the two are inseparable aspects of the same whole. I would define "teaching and learning" much as I would define "communication" as a holistic process in which there is a co-creation of meaning between student and teacher. In order to accomplish this "co-creation of meaning," I struggle constantly to balance five basic classroom dialectics: giving knowledge and facilitating understanding; theory and application, helping and challenging; maintaining rigor and encouraging creative experimentation; and respecting and supporting a wide diversity of students and student needs while maintaining balance and fairness.

Giving Knowledge And Facilitating Understanding: Students come to my classes with many layers of knowledge about course materials. I try to help these students tap into their prior knowledge, test it against what is presented in class, and use that knowledge as a base on which to build a greater understanding of more complex networks of theory and behavior.

Theory and Application: Like Emerson, I believe that learning requires deep understanding that can only come when students internalize and actively apply knowledge in creative and meaningful ways. In any class I teach, I hope that students will be able to wrestle with the course material in their own lives, applying abstract theories to what they experience in their everyday world. Ideally, this approach should empower students to articulate ideas and process concepts in ways that are meaningful to them.

Helping and Challenging: I also understand that part of a student's everyday world is the university itself. Thus, my role as a teacher includes helping students succeed in the unique culture of higher education. While I want students to be able to personalize their education via active learning, I also recognize that I have expertise from which students may benefit. I believe most students will rise to the challenge when quality work is demanded of them if they are also helped to develop the skills necessary to make that possible. For this reason I encourage critical thinking and the improvement of oral and written skills in all of my classes.

Maintaining Rigor and Encouraging Creative Experimentation: I believe students are best served when they are actively and rigorously engaged in the pursuit of knowledge. A teacher may inspire, but students should be actively engaged in the learning process for it to be successful. In an effort to give students greater ownership of the knowledge they encounter, I use cooperative and active learning strategies as well as lecture in my classroom and try to develop assignments that foster both analytical and critical thinking and opportunities for creative application.

Respecting and Supporting a Wide Diversity of Students and Student Needs While Maintaining Balance and Fairness:

The study of communication is, I believe by its very nature, imminently practical; it is practiced and applied by our students and ourselves on a daily basis. As a result, we teach by what we do in the classroom as much as by what we say. By modeling good communication, concern and compassion for our students, and a real enthusiasm for our subject matter we also teach the value of our subject. As an interculturalist, I strongly value the diversity of learning styles and the unique perspectives - both individual and cultural - that my students may bring to the classroom. As a result, I strive to provide an environment where students feel comfortable in expressing their needs and opinions and believe that the entire class benefits and learns from that process.

Like all values, these are ideals for which I am constantly striving but not always fully successful in achieving. I have also found that each institution and each class provides new challenges and opportunities for my own learning as an instructor and a scholar. As my students change, I change. As my discipline grows and matures, I am constantly struggling to meet the challenge of passing that knowledge on to my students. But ultimately, I also hope to give them the curiosity and skills that will allow them to participate in the genesis of that knowledge.

Sample Teaching Philosophy: Education (Deb Wingert)

My philosophy of teaching evolved from many years of teaching experience. As I reflect on my beliefs regarding teaching and learning, I find that my mission as a teacher is threefold:

- to promote positive learning;
- to spark learner enthusiasm for learning;
- and to provide a strong foundation for lifelong learning.

To accomplish this, I enjoy applying a wide variety of strategies based on essential educational principles encompassing cognitive functioning, learning theory, diversity issues, instructional planning and assessment.

Cognitive functioning level(s) of the learner: Considering the cognitive functioning of learners is essential in order to implement and apply strategies that are appropriate for either concrete operational and/or formal operational learners. I routinely plan activities, such as brief writings, that can help me determine the cognitive levels of my students and tailor my instruction accordingly. Without this consideration, I would risk the possibility of my students experiencing 'hit or miss' learning.

Learning theory: I have valued many years of opportunities to apply significant contributions from various learning theories. Behavioral theory offers a wealth of principles that, when used appropriately, can benefit classroom learning and management at all levels. In concert with this, cognitive learning principles offer significant contributions from the state-of-the-art neurosciences, particularly in brain-based research regarding memory systems and active processing of intellectual operations. Some of my favorites that are well received by students include: think-pair-share, classroom jigsaw activities, constructive controversies, and interactive lectures.

Cultural diversity, group culture and learning style: Understanding both the learning style of individual learners and the cultural diversity of the class/group helps me both design and tailor effective instruction by implementing appropriate global and/or concrete strategies. Although a variety of learning styles are likely represented by learners in any large class/group setting, I routinely design my instruction using the research-based learning cycle; this cycle provides the framework for me to encompass a repertoire of effective strategies, which can both accommodate individual preferences, engage diverse learners, and help establish a respect for differing preferences and perspectives.

Curriculum and Instructional Planning: An essential consideration for teachers pertains to overall curriculum and instructional planning. Whether the instructional approach is based on a behavioral model (direct instruction, mastery learning), a cognitive model (exposition/presentation), or a constructivist model (inquiry-based/Socratic methods, cooperative learning), I plan and implement lessons that clearly identify the lesson objective, anticipatory set, strategies for effective student engagement, and assessment options to measure student mastery. This helps me teach with both clarity and focus.

Assessment: I strongly believe that one can employ numerous options to accurately assess understanding of course content among diverse groups of learners. To this end, I have developed (and continually use!) a firm foundation in assessment basics, from alternative types of assessment (rubrics, checklists, projects, portfolios, performance/diagnostic checks, presentations, etc.) to traditional exams/test construction.

Following these basic principles helped me grow in my love for teaching and learning. More importantly, I have discovered that, by sharing my 'passion' for teaching and learning, and using these principles with enthusiasm and empathy connects with learners. As a result, teaching with clarity, passion, empathy, and sincere enthusiasm, effectively impacts learners, ultimately connect them to their 'passion' and lifelong learning.

Sample Teaching Philosophy: Atmospheric—Ocean and Space Sciences (M. A. Carroll)

My move from a research laboratory to an academic setting was motivated by a desire to teach. Therefore, being a member of a university where attention to teaching and learning has a high priority is important to me. My interest in teaching comes from my own positive experience as an undergraduate and from a love of learning. It also stems from a belief that environmental issues are intricately connected with technology and a sense of responsibility to educate a citizenry that is "literate" in environment sciences.

In considering how one goes about sharing one's love of learning, it is important to consider that learning strategies differ widely and that teaching strategies are not always easily matched with students' needs. In addition, students bring widely varying knowledge bases to the table in each course, so each course is different according to the background and learning preferences of that particular class. A further complication is that students also bring different levels of maturity, interest and motivation. The challenge is to make course materials accessible to all students and to be responsive to individuals who are having difficulty integrating new material without boring others. Is this possible?!

I believe that learning can and should be fun and that students who are active participants learn much more than those whose participation is largely passive. Teaching and learning involves an inherent contract. Students must agree to take responsibility for their learning in order to engage, and teachers must be willing to be engaged, as well. When students are so engaged, their learning is not solely dependent upon the rate of the delivery of lectures, so a mix and match of pace and teaching strategies designed to meet the needs of a range of learning skills need not be debilitating to the progress of any students. I welcome a group of students who are actively involved, thinking and questioning the material presented to them whether presented by me or by another student.

Part of the contract involves the completion of homework assignments so that classroom periods can be used for group work and other activities that involve students and encourage their learning from each other. Although I initially felt the need to lecture in detail on all topics covered, my perspective has changed as my level of familiarity with the course material has increased. I believe that a teacher is not a giver of knowledge but rather a facilitator or a guide for the student. As a guide, it is my responsibility to find or create alternate presentations of the material that I feel help clarify key points and to design class contacts.

Sample Teaching Philosophy: Biochemistry and Chemistry (T. G. Oas)

Most of my teaching involves instructing graduate students in the thermodynamics, statistical mechanics and spectroscopy of biological systems. Given the varied backgrounds of our students, this can sometimes be a challenging task. In our Physical Biochemistry course we have had students with no training in multivariate calculus or physical chemistry and others with undergraduate degrees in physics or mathematics. To each, I have tried to present the aspects of biochemistry missing in their undergraduate training. The goal of my lectures is generally to acquaint students with a physical description of biological systems using the quantitative language of mathematics. This approach is sometimes met with some resistance: often students pursuing degrees in biochemistry have chosen the field in part for its non-physical aspects. However, when I am most successful even these students come to appreciate the quantitative facets of problem they have studied in less mathematical ways in other classes. I try to convey the importance of a rigorous chemical view of the molecules in molecular biology, the avocation of almost all modern biochemists. The modern literature is rich in proposed biological mechanisms that demand the close scrutiny of thermodynamics; and some of them fail. I use some of these examples in my lectures to emphasize the relevance of thermodynamics to modern biology. Whenever possible, I try to present the intuitive non-mathematical description that accompanies the mathematical one. The goal is to reinforce this association so that it might be useful when the student re-encounters the problem later in his/her career.

It is my firm belief that physical concepts cannot be taught or learned merely through lectures and/or reading. These concepts demand the use of an entirely different part of the brain than language and therefore must be examined and practiced in non-verbal ways. For this reason, I use problem sets extensively in all of my teaching. Because I consider the problem-solving process so important, most of my grading is based on problem assignments. I find that by frequent assignment of problems I can assure that the students have thoroughly studied the concepts I've presented in my lectures. Often, I set up problem sets in my lectures and then, in

the problem set, lead the student through a derivation or analysis in a step-by-step fashion. Many times the problem sets present new material that is never covered in class. This can often be a very time-consuming way for the students to learn, but I have been pleased to hear from many of them that they consider it time well spent. I also encourage the students to collaborate on the problems and often hold help sessions so that this process can occur with some guidance from either myself or a teaching assistant. This not only helps the students overcome some of the thorny concepts but also provides useful feedback to me to improve my lecture presentations and problem writing.

As course director of physical biochemistry, I have continually varied its structure and composition in an attempt to find the most effective format. The constant feature of the course has been its focus on fundamental principles in kinetics, statistical thermodynamics, spectroscopy (quantum mechanics) and diffraction theory. Many physical biochemistry courses around the country are taught as technique surveys. It has been the collective agreement of the primary instructors of our course that it is more important to expose our students to the underlying principles behind these techniques than it is to teach them the details of the techniques themselves, which are often rapidly changing and may be very different by the time the student encounters them in their work.

Typical of most medical school courses, our physical biochemistry course has traditionally been taught by several instructors. This has both benefits and liabilities. The broad range of instructors' expertise improves the veracity of the lectures. However, the lack of continuity from topic to topic reduces the chances that the students will see the interconnections between subjects. In some years, I have attended most of the lectures and have tried to point out the places in one lecturer's presentation that relate to others'. Most recently, I have decided to drastically reduce the number of lecturers from a maximum of eight to four. This required that I present more lectures, but I was concerned that the course had become too fragmented. I have attempted to improve the communication between instructors so that we are all aware of the places in our lectures that interrelate. In the future, I plan to continue to keep the number of instructors small and work to further improve the continuity of the course.

Under many circumstances, I have been fortunate to work with a group small enough to engage in discussion. I am sure I am not alone to say that this is my favorite form of teaching. I enjoy the Socratic method, particularly when one or two students and I can work through a problem together. I also use this approach when training the undergraduate and graduate students in my laboratory. We spend a great deal of time at my white board discussing derivations, designing experiments, and analyzing data. In my opinion, this is the time when the most long-lasting learning takes place. When a student sees the way in which quantitative theory relates to his/her own work, the concepts become an integral part of how they perceive the world from that point forth. I consider this the most important contribution that I can make