Susan Godfrey

Department of Biological Sciences, University of Pittsburgh

Teaching Philosophy

Objectives

In teaching microbiology I aim to communicate the role microbes play in world affairs. I want students to know that microbes are not just "germs", to know how microbes differ from larger organisms, that several types of them are more numerous than any other life forms on the planet, that because of their metabolic diversity they can live in places we can't and also serve us, and that without them no other life would continue for long on earth. Every student, no matter what the eventual career choice, will need to understand these things to be a responsible citizen and voter in our increasingly technological world, as citizens are asked to vote on matters ranging from cloning to genetically modified foods, and to understand the action and risks of biological weapons (which are microbes).

More generally, I teach because I believe that every person deserves, needs, and has a right to the power that comes with knowledge. By knowledge I mean not only information but the experience and understanding that promote effective use of information, and the means to learn new skills as needed. By power I mean the ability to set one's own goals, work towards those goals within a society, whether or not they are commonly held, and gain control over one's own environment.

I know learning to be an active process that requires active participation by both teacher and student. I see my role in this process to be that of guide and facilitator, and to provide opportunities for students to explore my field. I like best for the student role in this process to include an appropriate level of work, willingness to work with me to provide suitable direction to this work, and letting me know what teaching & learning styles are most helpful to them. I seek to help students recognize themselves as professionals-to-be, who differ from their teachers principally by degree of knowledge and experience.

Teaching methods

By curricular choices, assignments, and assessments, I seek to show students what are the major concepts and basic information sets expected of someone with elementary education in my field.

Biology today is intensely collaborative, and peer evaluation is the norm in the working world. But successful participation in this work requires a sound information and experience base. Therefore in both lecture and lab courses I integrate a set curriculum with various types of open-ended cooperative learning materials. I design lab exercises around student-derived materials so that results are not pre-ordained and students develop "ownership" of their materials. Lab students do investigative group projects that require them to plan strategies, protocols, and materials needs, complete experimental sequences, and work toward poster presentations, a style of communication of results common in both the academic and the corporate/industrial working world in biology. Since commercially available lab manuals are cookbook oriented, or in some fields simply unavailable, I write lab manuals that show how different standard methods can be applied to various situations and sequences of dependent experiments that constitute investigations. In both lab and lecture courses I use guided discussion methods. In the lab these begin with student group planning or discussion events leading to instructor feedback.

By basing class materials on class websites I encourage students to be better-informed users of the internet. Class sites provide links supplementary to class materials to guide students who wish to explore a topic further. Links are frequently annotated to point up their relevance or reliability for our use. In lecture courses web site discussion boards are used to encourage students to seek new information (web-based or otherwise) to support their arguments in on-line discussion fora. Basing class materials such as lecture notes and review documents on the class website allows students independent access to materials they have mislaid.

In teaching TAs I am responsible for guidance in teaching methods and strategies as well as for the content of the courses we teach together. And for all of us I am responsible for communicating how we can perform laboratory methods so as to protect the safety not only of ourselves but of the support staff who make our work possible.

Evaluation of success

To get mid-term feedback from students, for each course I have developed and continue to redesign methods by which students who wish to may make comments anonymously during the term so that I may make immediate adjustments in style and approach, or discover whether I need to revisit material. In lab classes some required assignments are un-graded (but marked ✓, ✓+, or ✓–, to give the student feedback). In lecture courses I occasionally use such an assignment as optional and anonymous, feedback in such cases is given generically on the web site or in the next lecture. Other methods include telling students in the presence of lab teaching staff that they may make anonymous comments via the lab staff (lab courses), keeping a working copy of the lab manuals in the lab where students may make anonymous annotations (lab courses), providing a web-based discussion forum on course methods and policies that allows anonymous postings (most courses), and various in-class group activities that reveal how students are responding to specific material (lecture courses). To guide my redesign of curriculum and methods the next time I teach a course, each term I seek student evaluation of my courses by the impartial methods practiced by OMET, using both their standard questionnaire and supplemental questions of my own tailored to specific issues posed by the course.

By the manner of assessment grading I show what level of performance an employer or admissions committee might typically expect of someone with undergraduate training in microbiology. The type of assessment and types of assignments are graduated according to the experience students have in the field. For example, in sophomore-level courses assignments are very specific and detailed, whereas assignments for 4th or 5th year students require some initiative or independence in use of text resources, to develop a level of skill expected for successful employment or graduate or professional school performance. I am at pains to be very accessible to help students achieve these goals. In some lab courses I provide a mid-term summary to each student showing progress toward course goals and class standing.

Please see also my Exam Philosophy, posted to www.pitt.edu/~ssg1/.

Professional development

I pursue many activities for professional development and to keep up-to-date in fields I teach. Besides reading the literature appropriate for my teaching, these include workshops on teaching methods, workshops on specific subdisciplines in microbiology, attendance at local, national, and international conferences, participation in local research group meetings and teaching clubs, attendance of weekly seminars in biology, and peer review of textbooks (e.g. for Jones & Bartlett), lab manuals (e.g. for Addison Wesley & Benjamin Cummings), and grant applications (e.g. for NSF).

What's in it for me

For me there are many individual rewards. A student comes to me in the lab to trouble-shoot an experiment that is not working and gets it right without assistance. A student explains how new information about microbiology was used to change behavior outside the classroom. A student gets excited about some news item about microbiology, or tells of explaining (correctly) such an item to a friend or family member. A student returns from interviews to say that s/he has learned at Pitt, or got hands on experience with, things about microbiology that competitors did not learn or do at other institutions, and that this helped them get the job. A student asks questions that prod me to deepen my own understanding of microbiology, or shift my perspective.

And for me there are two global rewards. I just think microbiology is the lobster's dress shirt, and I enjoy trying to convince other people of that. And I am grateful for the lifelong love of learning fostered in me by others, and want to pass that along.