



SPEAKING OF TEACHING

STANFORD UNIVERSITY NEWSLETTER ON TEACHING

WINTER 1996 Vol.7, No. 2

From Research *or* Teaching To Research *and* Teaching

In general, research should be teaching-fed, and teaching should be research-led.

—John Clayton

To discover knowledge and to communicate it to others—in other words, to teach and to do research—are no longer regarded as separate activities. As President Gerhard Casper notes, they are two sides of the same coin: the search to know. Though they are obviously related, how to combine the two successfully is not always clear. Because Stanford faculty members continually revisit the issue in order to reinvigorate their teaching, and willingly share the results of their efforts at bringing research into the classroom, there are a variety of models available to their colleagues. Experienced instructors show by example how to energize both activities, and they inspire others to move into new territory along with them.

For more and more faculty, the way to make even the most basic course the site of intensive learning and to keep it “fresh” is through imaginative use of faculty research. This is especially relevant to teaching assistants and tenure-track professors, who may teach large introductory courses in their disciplines. To ensure that they construct intellectually challenging courses, they may take advantage of new models for combining research and teaching developed by their colleagues. Graduate students who offer their own courses and new assistant professors may be particularly motivated to learn ways to avoid “reinventing the wheel” for each new course.

From Juggling to Synergism

Because of innovations facilitated by the broadening of research since the 1970s, which has made scholarship in some disciplines more adaptable to the classroom, this is a particularly interesting time to re-examine the issue. Even the metaphors which faculty use to describe the new ways to combine both activities are changing. Rather than speaking of the “tradeoffs” between teaching and research, of balancing or “juggling” the two, faculty and teaching assistants at Stanford are likely to speak of “interaction,” “interpenetration,” “symbiosis,” or “synergy” between them.

Contributors to this issue include faculty at all ranks, from teaching assistant to holder of an endowed professorship. They come from science, social science, engineering, and humanities, as well as from two interdiscipli-

nary programs. They describe different ways to combine their work as scholars and as teachers, including teaching the methodology of their research, if not its current topic; designing or adapting research projects to the classroom; teaching texts that keep themselves as well as students abreast of developments in their field; even testing a working hypothesis. When teaching and scholarship feed off each other, teachers at all levels say, they’ve got it made—and so do students.

The centerpiece of this issue is a talk by Professor William Durham, who has won awards for both teaching (including the Bing, ASSU, Gores, and Dean’s Awards at Stanford) and scholarship (including one of the first MacArthur Prize Fellowships, the so-called genius awards). Professor of Anthropology and since 1994 Bing Professor in Human Biology, Durham is currently a Fellow at the Center for Advanced Study in the Behavioral Sciences. His lecture, in last fall’s CTL brown-bag lunch series, “Award-Winning Teachers on Teaching,” provides a strong rationale for combining teaching and research and provides an overview of the ways “synergism” occurs—as well as ways to foment it.

Promoting Synergism Between Teaching and Research

A Talk by William H. Durham

To explain my conception of the synergism between teaching and research, and to account for the tension we sometimes experience between them, I have borrowed a metaphor from Jon Barwise. Jon taught in the Philosophy Department and headed the Center for Study of Language and Information from 1983 to 1985, before he left Stanford for the University of Indiana. The metaphor, which I have embellished somewhat, is especially appealing to me as an anthropologist, for the university is likened to a big archeological site, a buried city.

To make the image your own, pick your favorite site (from ancient Egypt or Greece, a Mayan Ceremonial Center, one in the Far East) and imagine it buried. Ancient structures at the site, much of it still covered by dirt, sand, or vegetation, represent knowledge. The parts sticking out, “exposed” by our dig to date—a temple here, a few residential buildings there, perhaps a marketplace—correspond to knowledge acquired so far.

Synergism in Practice

This knowledge may seem somewhat disconnected; structures appear to be far apart and unrelated. The whole makes little sense until knowledge is sorted and interpreted.

The more uncovered of the emerging buildings are the conventional disciplines, each with its own tools and excavation techniques. The floor of the excavation, the base of the existing buildings, and the top of any new buildings that emerge represent current research activity. The proverbial cutting edge is where the trowel goes into the ground.

Higher learning at this excavation can refer to two different kinds of activity. Faculty are the archeologists, and we have two roles: giving tours of the upper floors of famous old ruins (explaining already established bodies of knowledge); and excavating ever deeper and wider, making new finds, exploring new structures that emerge.

No wonder digging and guiding are often taken as separate activities, for they involve different skills and often are fueled by different sources of revenue. There's the fee for the guided tour, which may or may not spill over to help with trench costs, and the research grant, which may help with the indirect costs of keeping the site open and functioning.

There is a dilemma here, and Barwise put it nicely: "Many freshmen arrive at a prestigious university expecting to explore the famous old ruins only to discover that the famous faculty they counted on for guides are off in the trenches." More and more, we are reminded, at a research university faculty cannot opt for just one activity. We must both lead tours and dig. The question becomes how to make the two kinds of activities more compatible. Can we go farther than that, to promote synergism? Can we use our own digging to make us better guides, and are there ways that conducting tours can improve our excavating?

Why Synergism?

If you find yourself resisting what seems like one more demand on your time, consider some "selfish" reasons:

- You may be able to reduce the tension you feel at trying to meet these two goals—the feeling you get at 11:00, when you've got to guide the tour and you really want to be (or need to be) in the trenches. You'd save some time if only you could bring the morning tour into your trench. Your audience just might find that the best tour yet.

- You might get more credit in the Head Guide's record book—that is, in the dean's eyes—while accomplishing more. You might expand your trench *and* give excellent tours.

There are also more "altruistic" reasons:

- Wouldn't taking students on a dig be likely to offer a deeper educational experience by providing a context for the knowledge you were imparting? That is, you can show where your trench fits in and why you work there.

- A second byproduct is the opportunity to introduce students to research processes and techniques in your field. You can teach specialized skills, such as lab, library, statistics, and computer skills. You might stimulate honors work and influence students' career directions (they, too, might become archeologists).

I said the disciplines require different digging tools and techniques. Teaching, too, may be more discipline-specific than we thought. I have tried to take these differences into account by suggesting general strategies for bringing research into the classroom—or the classroom to the field—that may work in other departments, as well as recounting my own experience of combining the two in anthropology and human biology.

Give a course in your area of research. Consider an upper-division seminar, for example, to bring students right up to the trowel's "cutting edge." I sometimes do a course like this, called "Evolutionary Anthropology," where most of the entries on the reading list (including one or two of my own) are no more than a couple of years old. Here are a few suggestions to help make a course like this a synergistic experience:

- Be sure to contextualize or "situate" the topic. Students need to know why this area is worth excavating, what's at stake, and how it relates to larger issues in your field.

- Put your own work on the table early so that students know your views straight away. I usually begin "Evolutionary Anthropology" with a few chapters from my own book, *Coevolution*, so that students don't waste time wondering what I do and how I do it.

- By the same token, don't dwell on your own work. After a few class meetings, move on to major works by other authors. I have found it works well to move right away from something I've written to one of the most contrasting good works I know of on the same subject. The contrast gives students an idea of the range of approaches in the field. And it is a good way to show your respect for the views and theories of others in the field.

- It's important to include some form of self-criticism; for example, I like to work with the class to make a list on the board of the "pro's" and the "con's" for *each* work we read, including my own.

Work your research into your regular teaching. At an appropriate place in the syllabus for a class—even an introductory course—build in an example or two from your own work. Take the time to give the class a good sense of both the "problem" at hand and your methods for working on it. Share some of the frustrations and failures, as well as the successes.

- Be certain that your unit or example is a good fit for the syllabus. Be explicit about what your work exemplifies or illustrates that is of broader interest. This is very important. (By the same token, if you have some research that isn't an easy or smooth match, don't use it. Don't force a fit, or the whole class will know it!)

- Consider using your research to motivate standard subjects or topics that a course in your field routinely has to cover. For example, in the Human Biology core, I teach a unit on population genetics as part of our treatment of evolution. Population genetics boils down to some pretty

dry, lifeless equations. So I try to motivate the unit with some of my own work on the sickle cell gene in West Africa, and I find that students are much more interested and engaged in the mathematics that comes with it.

- Many disciplines have courses in which the objective is not so much content, but methods or procedures, such as the scientific method, survey techniques, or experimental protocols. Consider teaching such a course using your own research. (But be careful: ask yourself, will students need too much content to see the point? If so, it's not worth it.)

- Sometimes in introductory courses, one of the main goals is to build interest in and motivation for the study of a subject. In such cases, consider visits to research sites, such as lab tours, field trips, museums, and birthplaces.

- Another option to consider is experiential learning connected to your research. While not always practical, field courses and extended field trips have much to recommend them. In spring 1994 I taught a course on Darwin, Evolution, and Galapagos, which was followed by a Galapagos Field Seminar. Students earned additional units for intensive study during the nine-day trip and by completing a rigorous project begun in the course: a 15- to 20-page term paper that they presented to the other participants in the field.

Organize a course on current faculty research in your department with colleagues as rotating speakers. This works especially well for students early in their junior year when they are casting about for honors projects.

- Because honors students are likely to be working in fields close to yours, consider a research forum for student research—in the Summer Honors College or as a Senior Honors Seminar. You provide the structure and format and the students become one another's colleagues.

- In some disciplines pre- and post-fieldwork seminars offer similar opportunities, at both undergraduate and graduate levels.

Bring students into your research. There are many reasons to involve students in a project as research assistants, for they bring enthusiasm, time and energy, and a fresh perspective to the work. There are some drawbacks, such as the training and start-up time, and there can be problems of quality control, variability of commitment, turnover, and the potential for costly mistakes. On the other hand, the rewards are also great.

In order to get the most from student involvement, it is important for you as faculty member to design appropriate student-sized projects and pace them well, and consider the content very carefully. You should build in plenty of time at the start, have explicit written goals, organize students into groups with designated leaders, and take your role seriously as supervisor. They should submit written progress reports with immediate verbal and written feedback from you (this is very important). Then, when the project is over, give credit where it is due—not just in units and grades, but in acknowledgments. Since there is a lag between the work and publication, tell them how their help will be acknowledged.

- Student projects that work well include literature reviews, data collection (but be careful with data analysis),

graphics, simulations, and multimedia presentations.

- You can also use your teaching to “proof” your research. Solicit student feedback on your work. Their response is especially useful on monographs, articles, chapters, and books that you assign as course reading, acknowledging it as work in progress that they can affect. Less formally, you can organize a study group or directed reading on your work with advanced students.

- It's very practical to develop and practice research talks with student audiences, especially to help you gear the level of presentation and visual aids to a specific audience. You are also teaching when you reciprocate by listening to their research presentations.

So you see, there are many pathways to synergism between teaching and research. With all these possibilities, my final bit of advice is not inappropriate: don't get too busy to notice how exciting it is to guide and dig in the same place.

