STEM Graduate Student Professional Development at Stanford: A Customized Partnership Model

Faculty Senate and Teaching Assistant Oversight Committee (TAOC)

The Faculty Senate implemented legislation mandating department-based TA training throughout the University. This mandate mobilized many STEM departments to evaluate needs and to design new programs or significantly redesign existing programs.

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Departmental Self-Assessment from the Faculty Senate TA Training Guidelines

To develop training which meets the Faculty Senate TA Training Oversight Committee Guidelines and allows TAs to receive acknowledgment of having received sufficient training in teaching, departments/programs are asked to respond to the following:

1) **What are the teaching skills needed by your department's TAs in their various teaching roles?**
2) **How is the department developing these skills in TAs? Do you have a program for training?**
3) **Which faculty member in the department is responsible for overseeing TA training?**
4) **What means is the department using to evaluate its program's effectiveness for the TAs and for the students the TAs are teaching?**

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The deans, vital partners in both enforcing the Faculty Senate mandate and in supporting departments in efforts to meet the mandate, heard progress reports from the TAOC and helped highlight school-specific goals and challenges for TAOC focus. As discipline-based department offerings grew, the TAOC used its umbrella role to promote active exchange of program details and "What's Working" on campus.

STEM Departments

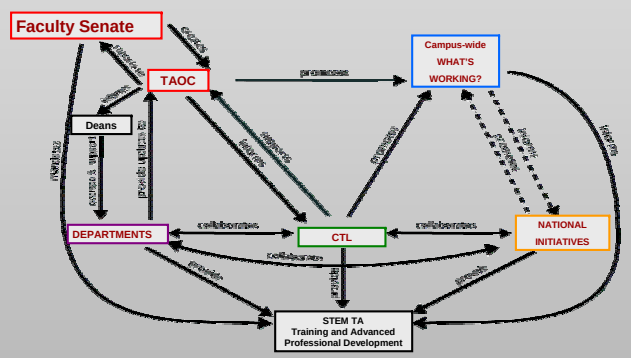
Schools of Engineering, Humanities and Sciences, and Earth Sciences

A key to the success of graduate professional development programs at the department level is flexibility to define goals and craft customized programs that help meet those goals. These programs include brief (one–three hour) orientations for new TAs, multi-day training courses, informal teaching lunch series, and extended, even multi-year, pedagogy courses. Emphasis ranges from basic TA skills to more broadly defined academic professional development. A sampling of departmental programs can be found in the binder that accompanies this poster.

A new Chemistry TA practices teaching a problem in front of peers who play the role of students in a segment of the department's three-day fall program.

Physics graduate students discuss how to "pitch" their sections in a session focused on learning styles and motivating learners. The session is part of a quarter-long pedagogy course taught in partnership between the department and the Center for Teaching and Learning.

Stanford STEM Resources and Partners



CTL

Center for Teaching and Learning

The CTL applies a campus-wide perspective on graduate development to customized programs at the department level as well as to Center offerings for the broader STEM community. With the 1999 hiring of an Associate Director for Science and Engineering, the Center stepped up its efforts on behalf of STEM support.

CTL Courses and Workshops

CTL 201: Science Course Design
Primarily for students interested in an academic career and who anticipate designing science courses at the undergraduate or graduate level. Become familiar with research on science learning and apply this knowledge to the design of effective course materials in your own discipline. Topics include: syllabus design, making course content and format decisions, assessment planning and grading, and strategies for teaching improvement. *2-3 units, Aut , (Dunbar)*

CTL 219: Oral Communication for Grad Students This course addresses a range of graduate speaking activities such as teaching, giving professional presentations and conference papers, and preparing for orals or theses defenses. In-class projects, discussion, and individual evaluations assist students in developing effective techniques for improving oral communication skills. *1-3 units, Sum, (Allen)*

Selected Workshops:

- Inquiry and Science Teaching
- Developing your Teaching Portfolio
- Launching a Faculty Career
- Science Course Design
- Effective Lectures
- Testing and Grading
- Active and Collaborative Learning
- Learning Styles and the Science Learner
- Classroom Assessment, Getting Feedback!

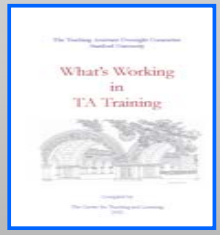
CTL 201 students apply research on science teaching and principles of course design to develop course materials in their own discipline.

"What's Working?"

Best Practices and Information Exchange

Our "distributed partnership model" would readily breakdown into a "disconnected anarchist model" without a structure within which the various STEM partners, especially departments, stay informed and connected to resources. As the central reporting unit, the TAOC remains current with the STEM departmental programs and promotes information exchange through its bi-annual publication ***"What's Working in TA Training"***

CTL's role is as a central teaching and program resource as well as a customized departmental partner. The Center supports graduate student liaisons in each of the major STEM departments and a cadre of STEM graduate consultants who provide teaching and evaluation support to graduate students as they teach. In addition to linking individuals and departments to teaching resources, these graduate students form a cohort in and of themselves to exchange ideas and best practices. On a more structured level, CTL hosts the annual Faculty/TA conference which brings teams from all STEM departments together in a rich, resource-sharing environment that has clearly fostered program growth and efficient resource sharing.



"What's Working in TA Training"

Attributes of Effective Programs

- Orientation/training seminars at the beginning of the school year or quarter for new TAs
- Pedagogy courses or opportunities for ongoing discussion with peers and faculty during the first year of teaching
- Mentor TA or peer mentoring structures
- Customized departmental TA handbook, online or in print
- Opportunities for practice or simulated teaching
- A midterm or "formative" TA evaluation, as well as an end-of-term or "summative" evaluation process
- An archive system for TA training materials and courses
- Customized presentations by CTL staff

National Initiatives

Professional Societies and National Programs

We are increasingly forging national-level partnerships on our campus that help leverage professional development resources, bring visibility to our programs, and promote a sense of teaching community among STEM departments and university units. Some of these resources originate at Stanford, such as the Tomorrow's Professor Listserve and the I-RITE program, but we increasingly tap into the resources of STEM professional societies, many of which have substantive graduate student development programs and resources.

Participants craft a 750-word statement of their research describing what they do and why it is important in a broader context.