

Caltech Center for Teaching, Learning, and Outreach Progress Report: Winter 2014

Since launching in Fall 2012, the Caltech CTLO has made substantial progress on supporting the educational part of the Caltech mission. Here are a few highlights from our first year and a half of operations.

Location: CTLO is now in Building #86, Center for Student Services, 3rd Floor North



Conveniently co-located with the Hixon Writing Center, CTLO facilities include:

Flexible workshop space with integrated A/V and floor-to-ceiling whiteboard (up to 30 people).

Meeting room with floor-to-ceiling whiteboard (up to 10 people).

Staff offices and small meeting rooms.

Excerpt from “The Science of Teaching Science” White Paper:

At Caltech, we investigate the most challenging, fundamental problems in science and technology in an environment of intellectual creativity and freedom. And as one of the leading educational institutions worldwide, we are also committed to shepherding the next generation of leaders to continue this tradition.

That is why Caltech has established the *Center for Teaching, Learning & Outreach (CTLO)*. Our vision: make Caltech a national and international center of teaching excellence that parallels our standing as one of the world’s leading science and engineering research universities, and establish new models for educating future leaders, researchers and educators in science, technology, engineering and mathematics (STEM).

The activities of the CTLO are centered on two core areas:

- **Instructor Support:** Provide evidence-based support for innovative and effective course design and teaching methods to university instructors, including faculty and teaching assistants.
- **Outreach:** Support faculty and students in developing K-12 outreach, including collaborations with schools and districts in Pasadena and Greater Los Angeles.



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1. Who we are:

Director

Cassandra Volpe Horii, Ph.D.



- Oversees CTLO staff, budgets, planning, and programming.
 - Focuses on supporting Caltech faculty and graduate students through consultations, trainings, workshops, course offering(s), and other programs.
 - Advises and contributes to Caltech committees, university-level educational grant proposals, and new initiatives.
 - Coordinates and assists faculty with online and innovation in education projects.
- Background in Atmospheric Chemistry (Ph.D.) and Physics (B.A.).
 - Prior experience founding and leading teaching centers and programs for faculty and graduate students.

Assoc. Director for Educational Outreach

Mitch Aiken, M.Ed.



- Leads educational outreach efforts.
 - Focuses on supporting Caltech faculty and staff in developing educational components of new grant proposals; supports students and others in conducting effective educational outreach.
 - Coordinates existing educational outreach programs across divisions and centers.
 - Serves as a central liaison between Caltech and local/regional K-12 schools.
- Background in Educational Media and Instructional Design (M.Ed.).
 - Prior experience directing education/media in public television and nonprofits, in K-12 teacher professional development, and in new curricula and materials.

Assistant Director

Melissa Dabiri, Ed.D.



- Focuses on working with Caltech undergraduates as peer tutors and TAs and student leaders on academic issues; and with graduate students as TAs and future science educators, mentors, and/or faculty.
 - Provides support to divisions and departments on learning outcomes assessment, for accreditation and other needs.
- Background in Educational Leadership (Ed.D.), teaching (California credential), and English (B.A.).
 - Prior experience in teacher training, educational outreach, online teaching, and assessment.

Administrative Coordinator

Tina Lai Zelaya, B.A.



- Works with both CTLO and Hixon Writing Center
 - Coordinates CTLO space, budgets, operations, and websites.
 - Plans and implements program logistics.
 - Assists with data collection and management, via databases and surveys.
 - Contributes to written materials, in print and online.
 - Provides administrative support to CTLO staff.
 - Guides work-study students.
- Background in English (B.A.) and Engineering.
 - Prior experience in institutional research, administration, data analysis, editing, and event planning.

2. First Year Data (August 2012 – September 2013)

During the first year of operation, a key goal was to engage the Caltech campus community through focused programs and services—to reach a significant number of faculty and students with enhanced support for teaching, learning, and educational outreach.

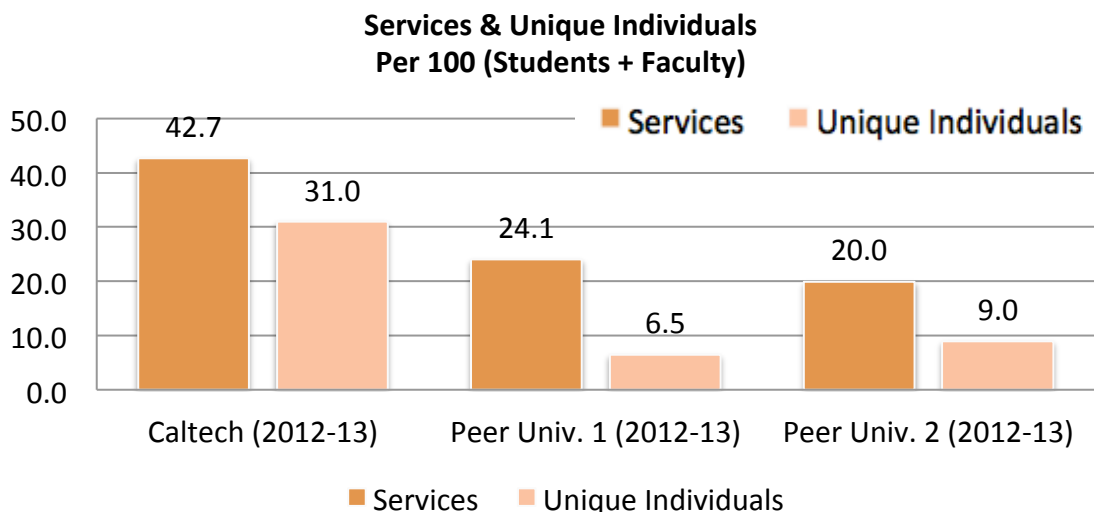
Participation:

We report participation by Caltech faculty, students, and staff in CTLO offerings from August 2012 through September 2013 (prior to Orientation Week)—just over one year. Both **services** and **unique individuals** are shown. One individual may participate in multiple services. We categorize services into **consultations** (individual, customized interactions) and **group events**, such as workshops, talks, and trainings.

| | Services | Unique Individuals |
|--------------------|---|-------------------------------------|
| Faculty | 186 | 122 |
| | 91 in Consultations | 103 Professorial |
| | 95 in Group Events (Workshops, Talks) | 19 Other (lecturer, visiting, etc.) |
| Students | 628 | 489 |
| | 61 in Consultations | 352 Grads |
| | 567 in Group Events (Workshops, Talks, Trainings) | 137 Undergrads |
| Staff/Other | >211 | >132 |
| | >132 staff (undercounted) | Including regular staff |
| | 79 uncategorized (role data unavailable) | and postdocs |
| TOTAL: | >1025 Services | >743 Unique Individuals |

In addition, CTLO has engaged **well over 100 unique external contacts**, including alumni, campus guests, community and K-12 partners and teachers, elected officials, and others.

Compared to peer universities' centers for teaching and learning with published data and lengthy histories (20 to 50 years), Caltech has high levels of participation per 100 (students + faculty).



3. 2013-14 Highlights to Date

- **Inaugural Teaching Conference:** The Teaching Conference is a new format for the teaching orientation day during graduate orientation week. Evaluations provided recommendations for next year (More advanced content and examples, more option-specific sessions) and positive reviews, e.g.: “I believe this was a short, but effective training day for our teaching assignments.” “This is the best part for me for the whole orientation week!”
- **E110, Principles of University Teaching in STEM:** Pilot 2-credit course enrolled 23 students (22 graduate, 1 undergraduate), plus ~25-30 serious and regular auditing participants (graduate students, faculty, postdocs).
- **Workgroup on Educational Science and Technology (WEST):** This workgroup engages faculty, postdocs, staff, and graduate students in innovative projects, and will begin hosting open seminars in Winter 2014.
- **Head TA initiative:** The new Head/Lead TA “Network” is a popular source of helpful tips for being organized, efficient, and effective in these important roles. It will continue in future quarters.
- **Peer tutor needs assessment and planning:** In collaboration with the Undergraduate Deans Office, CTLO surveyed former peer tutors and tutees and is in the process of developing programs to meet needs.
- **S.D. Bechtel, Jr. Foundation Support for Educational Outreach:** A wide variety of enhanced support for Caltech and the CTLO’s Educational Outreach efforts is now in place, including regular meetings of outreach coordinators, deeper connections with local and regional schools, a new series of seminars for PIs, and assistance with “broader impacts” portions of grant proposals.
- **Institutional hosting of the Siemens Regional Finals Competition:** Together with Campus and Community Relations, CTLO’s hosting for 2013 including recruiting and coordinating faculty judges, student/postdoctoral presenters, and guests.
- **American Geophysical Union Educational Expo:** Representation of Caltech and JPL projects at the public science expo in San Francisco, CA at the annual AGU meeting.

4. Recent Articles:

E&S, Fall 2013, "Evolving Education" Feature & Photo Essay:

<http://viewer.zmags.com/publication/e9a5c23c?page=30#/e9a5c23c/30>

ENGenious, Issue 10, "Campus Resource" Interview:

http://eas.caltech.edu/engeniou/ten/campus_resource