

PEER-LED TEAM LEARNING SUSTAINABILITY

THE SCHOLARSHIP OF TEACHING

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Successful teachers have obviously learned important things about their craft. For some, key ideas about students and learning were introduced in education courses, explored in structured apprenticeships and refined in practice. At the other extreme, the insights were developed slowly through processes of trial/error and observation/reflection. This empirical approach tends to be disconnected from the research literature and often results in reinventing the wheel.

The desire to teach is a basic human instinct; we are eager to share our knowledge. Our social structures rely on this instinct and the generosity of the teachers. At all levels, we do not have good mechanisms to identify and encourage potential teachers and faculty. While our Schools of Education may serve to prepare future teachers, Brian Coppola at the University of Michigan has analyzed the asymmetry in the preparation of future faculty for college and university positions. We have in place a comprehensive, refined structure to develop research scholars. In contrast, there are few established mechanisms to develop teaching scholars. Surely, both are important.

PLTL has the potential to make significant contributions to the development of leaders for teaching at all levels. The identification, support and education of the peer leader through a structured program of leader training and the associated practical applications in the PLTL Workshop provides the central connection between the PLTL Project and the preparation of leaders and scholars for academic careers. This connection was recognized and highlighted by the reviewers of our recent National Dissemination proposal. Most reviewers also pointed to the need to focus on long-term issues of sustainability. Specific commitments to the preparation of teachers and future faculty by the project could provide significant sources of continuing support for PLTL.

Although it is always timely to think about education, this is an especially good time to think about preparing teachers. A recent report of the National Research Council (2000) recommends that science and year colleges and universities should assume greater responsibility in the education of prospective teachers, especially in the introductory science and mathematics courses. Additionally, some of their key recommendations are that teachers should develop communities of science learners, have an understanding of students as learners, and have knowledge of pedagogical strategies. Their recommendations read like they had PLTL in mind! The National Science Foundation's Division of Undergraduate Education (NSF-DUE) has identified preparation of future teachers as a crosscutting theme that may be integrated, as appropriate, into projects funded through DUE programs. This emphasis is based on the premise that the preparation of prospective teachers is the responsibility of STEM faculty and departments, as well as of colleges and schools of education.

In fact, we have made a good start. From the first days of Workshop Chemistry, Ellen Goldstein, City College of New York (CCNY) recognized the potential of PLTL to contribute to the preparation of teachers

at all levels. Ellen and Mike Weiner (CCNY) have been supported by the Fund for the Improvement of Post-Secondary Education (FIPSE), NSF and the Greenwall Foundation to build bridges between PLTL and the School of Education at CCNY. Their Teacher Preparation Program provides science and mathematics majors with the 21 education course credits necessary for New York State Secondary School Certification.

While the program is based at City College, it has expanded and built partnerships with four City University of New York (CUNY) community colleges: Borough of Manhattan Community College (BMCC), New York City College of Technology (NYCCT), LaGuardia Community College (LGCC), and Bronx Community College (BCC). All of these colleges are minority-serving institutions. Web-based learning materials and video conferencing are used to offer peer leader training and education courses to these other colleges in the CUNY system. Two faculty liaisons at each community college campus, one in mathematics and one in science serve as local mentors to the students and supervise their activities.

The PLTL Leader Training course is coupled to the Teacher Prep Program in two ways. Peer Leaders at CCNY can follow their interests in teaching into the Teacher Prep courses and activities. Alternatively, Teacher Prep students at the community colleges take the PLTL Leader Training course and become peer leaders as part of their program requirements. Once students complete this course, they are paired with teachers in school districts proximal to their college and work in the classroom with secondary school students.

The PLTL Leader Training course provides a common ground where PLTL students and faculty can interact and join activities with their counterparts in the Teacher Prep Program. The result has been beneficial to both programs. The PLTL leaders constitute a new kind of teacher preparation participant; generally they have higher academic achievement and more career choices than the typical teacher preparation participant. They are candidates for leadership in teaching. In turn, the PLTL Leader Training course serves as a bridge for the Teacher Prep students from the community college to the four-year college. An unexpected benefit has been that four of the eight faculty liaisons of the Teacher Preparation Program have written WPA grants and are now doing PLTL.

A parallel venture at San Jose City College (San Jose, CA) got started in January 2003 with a conference on "Becoming a Teacher Prep Site." Madeline Adamczeski was the organizer and Ellen Goldstein served as consultant. The intended outcome of this conference was to formalize a second regional PLTL -Teacher Prep Site at SJCC. In a different initiative, Lydia Tien has submitted a paper to the *Journal of Chemical Education* on the structure and content of the Leader Training course for Organic Chemistry at the University of Rochester; she argues that comparable courses would be useful to prepare graduate assistants and future faculty for other roles in teaching. Lydia's companion article in the most recent *Progressions* makes the explicit connection between leader training and the scholarship of teaching .

Finally, in a variety of informal ways, we have all noticed that our peer leaders are strongly influenced to think about teaching careers and opportunities. These observations were formalized in a pilot study by Leo Gafney and Pratibha Varma-Nelson on the impact of PLTL leadership (*Progressions*, 3, (2), 2002). A larger study is in progress, surveying more than 200 Leaders in Organic Chemistry at Rochester over the period 1995-2003. Among the graduate students and postdocs who were Peer Leaders at Rochester, two are in high school teaching jobs, four are in faculty positions and two will be in the academic job at Rochester have acted on their interests in teaching by enrolling in education courses and entering Master's programs in education. Undoubtedly, other PLTL programs have similar stories to tell.

The challenge to the Project is to develop a multiplicity of programs that make productive working connections between PLTL and the preparation of future teachers and faculty. We need programs that allow students to enter at all levels, undergraduate, graduate and postdoctoral. We need programs that make significant contributions to the preparation of leaders for high school teaching and administration and for all kinds of faculty positions, from two-year colleges to research universities. We need a graded series of PLTL opportunities that start by identifying potential undergraduate and graduate leaders and gradually increase the scope of responsibility, opportunity and commitment. The penultimate stage in this process includes PLTL postdocs working on the design and implementation of research projects on PLTL, new leader training courses, new technologies for PLTL Workshops and new course implementations. We need to make connections to existing Future Faculty Programs and to Schools of Education. We need to find ways to cross-list leader training and Workshop so students can earn legitimate credit in science and education.

Start-Up Funds Available [Editor's Note: The following pertains to the NSF PLTL National Dissemination grant, 1999-2005]

To facilitate the development of hard-wired connections between PLTL and the preparation of teachers and future faculty, the Project can provide start-up funds up to \$3000 per initiative. The purpose of these initiatives is to develop productive models for teacher preparation and future faculty development and to demonstrate that PLTL can be a critical factor in providing a significant number of practitioners of the scholarship of teaching. To obtain funds, a site should be an established PLTL implementation with a strong leader training program and commit to:

- 1) developing a plan of coordination with a school of education or Future Faculty Program;
- 2) cooperating with other programs in the Project to form a working interest group; and
- 3) participating in a central database of undergraduate and graduate peer leaders who continue to develop their interests in teaching careers.

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Reference

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