

PEER-LED TEAM LEARNING IMPLEMENTATION

INSTITUTIONAL SUPPORT FOR WORKSHOPS AT CITY TECH; MISSING: INTEGRATION WITH COURSES AND FACULTY

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Peer Led Team Learning at New York City College of Technology

Peer Led Team Learning (PLTL) was first introduced in the late 1990's at New York City College of Technology (City Tech), part of the City University of New York (CUNY). Dr. Victor Strozak, now a retired professor in the Chemistry department, had initiated PLTL Workshops in General Chemistry. Sustaining the initial efforts, Dr. Pamela Brown was awarded a Workshop Project Associate (WPA) grant from the PLTL National Dissemination Project in fall 2000 to continue the effort in embedding workshops in General Chemistry. It was not until spring 2003 that the Workshop model was expanded to the field of mathematics. Dr. Janet Liou-Mark also received a WPA grant to develop workshops in Fundamentals in Mathematics (MAT 1175), the first credit-bearing mathematics course offered at the college. A year after the external support ended, workshops were absent between 2004 and 2006 because City Tech lacked the funds to support peer leaders. Only in fall 2006, when new grant funding became available, were PLTL workshops again offered in mathematics and expanded to the sciences.

City Tech's Peer-Assisted Learning Project

The six critical components for successful PLTL workshops are: (1) workshops are an integral part of the course; (2) faculty is closely involved, (3) peer leaders are trained, (4) workshop modules are challenging, (5) organizational arrangements are optimized and (6) there is institutional support. At City Tech, the Peer Assisted Learning (PAL) project is a variation of the PLTL instructional model. City Tech is able to integrate four of the six critical components: the peer leaders are trained in a one-credit independent study course; the workshop modules are fundamental and yet challenging; organizational arrangements are optimized; and most importantly, there is institutional support and external and internal funding. Although the workshops are not an integral part of the course, some instructors are supporting the project by providing incentives to attend workshops.

Even with only four of the critical components interfacing, the PAL workshops have been flourishing for the past three years. This success is mainly due to both the institutional support from administrators and funding. Dr. Pamela Brown, now the Dean for the School of Arts and Sciences, has provided resources that allowed the continuation and expansion of PAL workshops along with a supportive team of faculty and staff.

PAL began with one Precalculus workshop in the fall 2006 semester and has grown to workshops in seven courses, spanning different levels of mathematics and science. These courses are Fundamentals of Mathematics (MAT 1175), College Algebra and Trigonometry (MAT 1275), Precalculus (MAT 1375),

Calculus I (MAT 1475), Physics 1.2 (PHYS 1433), Biology I (BIO 1101), and Organic Chemistry I (CHEM 2223). Furthermore, through the enthusiasm and request of student participants, other courses are being explored to further the expansion of the PAL effort.

Peer Leader Recruitment and Training Efforts

The recruitment process for peer leaders is based on recommendations through the institution's Honors Scholars program, City Tech Women in Science, Technology, Engineering, and Mathematics (CTW-STEM) program, Navigation by Mentoring and Leadership (NML) project, and faculty. The Honors Scholars program has access to students with strong backgrounds in the STEM disciplines. To sustain and support more women in the STEM fields, peer leaders were also recruited from the CTW-STEM program, an ongoing program funded by the U.S. Department of Education's Minority Science and Engineering Improvement Program, and the NML project, a women and mathematics grant funded by Tensor Foundation and the Mathematical Association of America. Faculty, when asked, also recommend students who have previously done well in their advanced mathematics courses. Potential peer leaders are identified and invited to complete an application form. They attend an informational session on the PAL project and are interviewed in a formal group setting with the PAL coordinators.

Qualifications for the peer leader position include having good communication skills and demonstrating an understanding of the course material, as well as passing the course and receiving a grade of B+ or higher, and having a GPA of 3.0 or above. Students who facilitate workshops in mathematics must have completed the subsequent mathematics course in order to be considered for the position. As a result of this requirement, peer leaders are more confident and effective since more courses in mathematics are successfully completed.

To learn how to facilitate workshops, first-time peer leaders are enrolled in an independent study course that focuses on Peer Leader Training. The course supports their practicum and provides a forum to learn pedagogical issues in teaching and learning. The class meets once a week for one hour. Students are required to post a reflective journal online after every class, relating theory to their workshop experience. A research project on a topic of interest covered in the course is required and is presented at the end of the semester at the institution's Honors and Emerging Scholars Poster Presentation.

City Tech has also implemented a peer leader shadowing component in training new leaders. Novice peer leaders are paired with experienced peer leaders for one semester. This training experience allows the new leader to observe the techniques and skills engaged in by the experienced leader. Positive feedback from this type of training includes increased confidence in leading their own workshops for the next semester, better preparation in handling situations, and experiencing effective group dynamics and decreased anxiety in speaking to a group.

In situations when an experienced peer leader is unavailable, the new peer leaders are sometimes paired with each other for the first semester. This arrangement provides a structure where the responsibility is shared, opportunity for exploration is supported, and course material is discussed since faculty members are not actively involved. New leaders have reported feeling more secure knowing that they have another leader present especially when they encounter difficult situations. Peer leaders lead two one-hour workshops a week, meet with the program coordinator for an hour a week to review content, and new leaders participate in the one-hour training class.

Enrollment of Workshop Participants

Enrollment of workshop participants has been challenging since workshops are not an integral part of the

course and most faculty are not actively involved. Workshops are advertised through fliers and posters in campus buildings at the beginning of each semester. Peer leaders visit classes to recruit students to join during the first two weeks of the semester. Generally, this recruitment effort has been more effective than the professor announcing the opportunity to their class. Peers have a way of communicating to peers, which is very different from faculty. It is particularly effective when the peer leader was a past participant in a PAL workshop and their testimony is helpful to motivate students to attend.

Based on the data collected over the past few years, faculty members who provided students with an incentive to attend workshops tend to have their students come consistently every week. Common incentives entail a few extra points toward the students' final grade or exam. A couple of faculty members even have workshop attendance constitute one exam grade.

At the beginning of the semester, workshop participants are asked to sign a contract which commits them to attend workshop for one hour a week for 12 weeks. Participants also are asked for their permission, by signing a letter of consent, to complete a survey on mathematics self-efficacy, task values and goal orientation, once at the beginning and once at the end of the semester. In addition, a questionnaire about their workshop experience is solicited on the last day of workshop. This information has provided feedback on how to improve the modules and the workshop environment.

Overall, the participants have been very satisfied with the help they received from the workshops. They believed workshops helped them to do better on their exams, and the modules covered were relevant to their coursework. At times when the modules were not synchronized with the lecture because faculty members are not closely involved, the peer leaders provided a preview of the concept. Students felt they had a better understanding of the concepts when it was subsequently taught in lecture by the professor.

Establishing Campus-wide Collaborations

The exponential expansion of the PAL Project at City Tech over the past four years has been successful because of the collaborations established with some of the major projects of the college. The City University of New York (CUNY) Compact Funds have provided funding for student stipends. The National Science Foundation STEP grant supports the training of peer leaders. The Black Male Initiative (BMI) at City Tech, a CUNY-wide initiative funded by the New York City Council and under the leadership of Dr. Reginald Blake, has provided stipends for peer leaders and a coordinator. Since one of the goals of the BMI is to increase the success of underrepresented students, particularly African-American male students, the PAL project has provided an academic support mechanism to help students in areas of mathematics and science. Moreover, through this collaboration, students in the BMI program are presented with a unique opportunity to build up their leadership and communication skills through peer leading.

The Peer-Led Team Learning (PLTL) model is a resilient and dynamic form of instruction. The Peer-Assisted Learning program, as a variation of PLTL, can be implemented across the institution and in different disciplines. With adequate support from the institution and funding, a vibrant program can be established to help students succeed in the STEM fields, particularly those who are underrepresented.

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