PEER-LED TEAM LEARNING
SUSTAINABILITY

PLTL AT THE UNIVERSITY OF KENTUCKY

JOSEPH W. WILSON

Five years ago, in the fall of 1997, Peer- Led Team Learning (PLTL) was born at the University of Kentucky (UK). About 45 students in six groups, each with a peer leader, met once a week for two hours to work problems in General Chemistry. In the two years before the birth of PLTL, collaborative learning in Chemistry at UK was initiated on a small scale (about 25 students) using the Excel model of Uri Treisman as it was pioneered on the UK campus by Professor Mike Freeman of the Math Department. During that period, the chemistry program acquired the name ChemExcel, and the PLTL program still carries that name on campus. Despite the confusion the Excel name may cause for some folks off campus (including, recently, confusion with the Microsoft spreadsheet), it is a brand of considerable reputation on the UK campus and one that we are reluctant to change.

The pilot PLTL program was supported for a year by the College Dean. Then, from the fall of 1998 through the spring of 2000, UK was part of a coalition of several universities that received a National Science Foundation "Adapt and Adopt" grant. Those were critical years for establishing a solid record of achievement and developing a reputation on campus for academic excellence.

If 1997 was the birth year for PLTL, the millennial year, 2001, was the year it achieved immortality. In the fall of 2001 the president of the university included recurring funds for ChemExcel (and Math- and BioExcel) in his annual budget. Until temporary funding was replaced by recurring funding, the long-term survival of the PLTL program was far from assured.

From its inception, students in the PLTL program typically have had Success Rates (percentage of grades of C or better) about 20 points higher than the Success Rates for the class as a whole (see chart, page 14). "Class as a whole" refers to all the students in General Chemistry. About 1100 students are enrolled in General Chemistry I in the fall semester. They include students majoring in science, engineering, pre-professional studies, and agriculture. They meet in large (two to three hundred students) lecture sections with no accompanying recitation or laboratory sections. About 750 students are similarly enrolled in General Chemistry II in the spring semester, this time with an accompanying laboratory course. Because all students in General Chemistry take the same common exams, it is easy to compare the performance of PLTL students with that of the rest of the class.

PLTL is not a required part of the General Chemistry courses. First-year students may elect to enroll in PLTL for one credit (pass-fail grading) when they arrive on campus for advising and registration in the summer preceding fall matriculation. Their awareness of the PLTL program comes from information mailed to all admitted students and from an oral presentation available during the registration period. Close cooperation with the Advising Network on campus has been important in

promoting PLTL. Enrollment can be matched to supporting funding to some extent by limiting the advertising and by close communication with the advising staff. Currently we can enroll about 130 students. The maximum demand for PLTL, though not yet measured, may be a fourth to a third of the total enrollment in General Chemistry. Many students don't want to spend an extra two hours a week working problems if they don't have to.

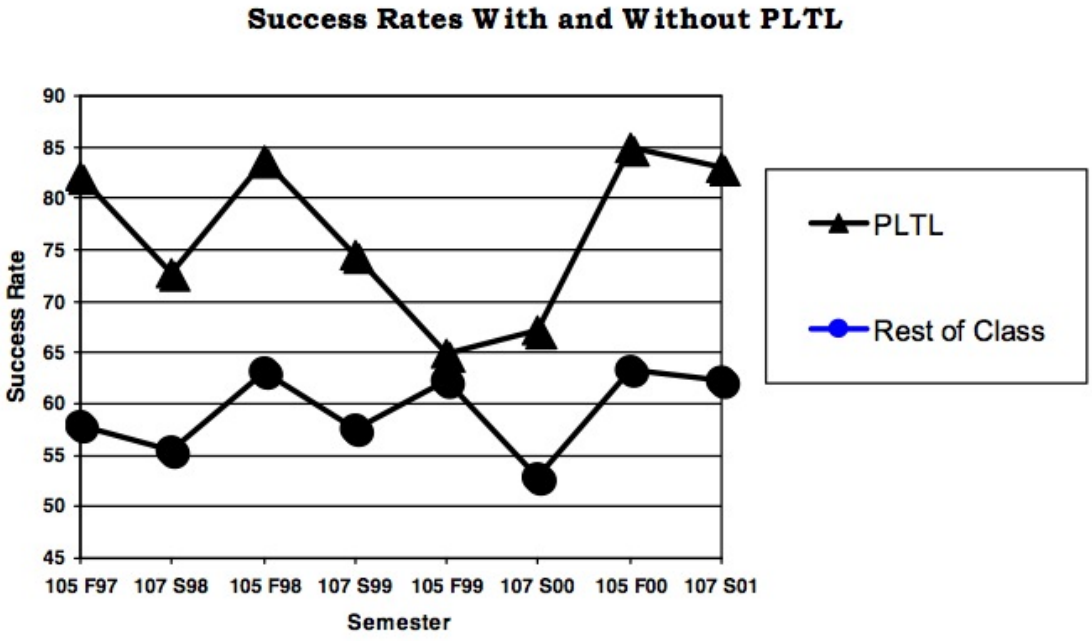
Potential peer leaders are recruited by invitation from a list that includes students who excelled in General or Organic Chemistry, former ChemExcel students recommended by their leaders, students recommended by the Honors Program, and walk-ons who have heard about it from friends. Those who apply are interviewed, and successful applicants are paid about $400 per semester. There has been no shortage of high quality leaders; most love the job. Leader training consists of an orientation session before classes begin, weekly journal reports, and monthly leader meetings.

Although 70 to 80 percent of PLTL students earn A's, B's or C's compared to 50 to 60 percent of the class as a whole, the composite ACT scores of the two groups are similar. Those who choose PLTL aren't smarter than the others. Can the Success Rate difference be explained by assuming that only well motivated students (that is, those who would be successful without PLTL) choose ChemExcel? As yet there are no data to answer that question definitively, although a test is in progress. A prior experiment shed some light on the question. During the 1999–2000 academic year, all students in one of the three lecture sections were required to enroll in ChemExcel. In the fall semester the Success Rate for the 278 students in the lecture section with ChemExcel attached was 65.0 compared to 62.2 for the rest of the class. (Although the students knew in advance about the extra time required when they chose that particular lecture section, it probably was not a free choice. That section has always been the last to fill because it meets for 75 minutes starting at 8 a.m. and has historically performed below the rest of the class.) In the spring semester, the same conditions applied (except that the lecture time was more favorable). This time the Success Rate for the 257 students in ChemExcel was 67.1 compared with 45.1 for the rest of the class. Although we can speculate about these two widely differing results, probably the fairest conclusion is that we need more data.

It seems likely that self-selection makes some contribution to the elevated Success Rates but cannot account for most of the difference. Student evaluation of the PLTL program is consistently enthusiastic. Students overwhelmingly agree with statements like "I believe that the workshops are improving my grade." It becomes harder to attribute the results solely to motivational differences when one repeatedly reads handwritten, anecdotal statements like "ChemExcel was much more effective than lecture in helping me understand chemistry;" and the classic, "without ChemExcel class I wouldn't understand hardly anything."

The immediate future for PLTL at the University of Kentucky looks brighter than it has for some time. Next year will see a change in the faculty leadership of the program, a critical step if it is to survive in the long term. Although the term "recurring funding" has a comforting ring, it will probably recur only so long as the administration favors it. The self-promotion that was a feature of the beginning years and surely one of the reasons for reaching more permanent funding, must continue unabated. More funds are needed to accommodate all students who want the PLTL experience. Students frequently ask for a PLTL program to accompany the courses in Organic

Chemistry. More direct involvement of all the General Chemistry lecturers with the PLTL program, a stronger leader training program, and continuing review of the problem sets and group meeting styles are needed.



At the end of each semester before the Success Rate is calculated, there is always the worry whether the ChemExcel advantage can be sustained for yet one more time. We hope to avoid complacency and turn a successful first five years into at least a decade of success.

At the end of each semester when the Success Rate is calculated, the heart skips a beat, wondering whether the large 20-point difference can be maintained for yet one more time. That the promise of the successful first five years *not* be taken for granted is probably another essential element needed for the survival of PLTL at the University of Kentucky.

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