In Spring 2011, Acting Provost Diane Alperin graciously purchased California Critical Thinking Skills Test (CCTST) pre- and post-tests for General Microbiology (GenMicro), Biotechnology (Biotech) and Biology of Cancer (BioCancer) students. GenMicro Lecture, GenMicro Lab. and Biotech all had one Calibrated Peer Review (CPR) cycle written and assigned. BioCancer had no CPR and served as controls.

One hundred ninety two students from all 3 classes took the CCTST pre-test; 64 (1/3) scored below the 25th percentile of 4 year US college students and were judged at high-risk of failure (Insight Assessment, 2011; N. Facione, 2012). One hundred fifty two students took the post-test and 32.1% scored below the 25th percentile. Over 52% of GenMicro and 60% of Biotech students improved or had identical post-test scores; ~43% of BioCancer students had improved/identical scores. These results neared significance (0.05 < P < 0.10) by Analysis of Covariance (top figure, below).

Fifty one of the low-achievers on the pre-test (<25th percentile) took the post-test, 38 (~75%) of whom were GenMicro students. Predictably, only 18 (35%) of these low-achieving students raised their scores above the 25th percentile while also increasing them >six percentile points and met the criteria for success for genuine improvement. Seventeen of these 18 students were in General Microbiology and 16 of the 17 had completed at least CPR assignment (11 did both). When the expected vs. observed results were tested by the binomial and chi-square tests, significant results were seen (p=0.031 and p=0.035, respectively, bottom figure below).

These results suggest using CPR and the CCTST together specifically identifies low-achieving students at high risk of failure and may also target a significant proportion of them to improve significantly.



