Standards Alignment and Assessment Outcomes
TOPS Physics labs are designed for students to learn that “scientific progress is made by asking meaningful questions and conducting careful investigation” as specified by the California State Science Standards. The TOPS experiments are designed to integrate into Los Angeles area teacher’s current curriculum and align with the California State Science Standards. The experiments utilize modern technology including computer-driven instruments and commercially available data analysis software.

Circuits: Three Labs
1. Series and Parallel Resistors
2. Series and Parallel Capacitors
3. Verification of Kirchoff’s Laws

Conservation of Energy and Momentum Standards 2h
Electric and Magnetic Phenomena Standards 5a*, 5b*, 5c, 5d
Investigation and Experimentation Standards: 1a, 1b*, 1c*, 1d, 1e, 1j*, 1l


Assessment of TOPS Circuits Labs for 2008-2012
Direct assessment using release questions drawn largely from the California Standards Test (CST Physics 2005 & 2009) shows the following effect on student conceptual understanding of topics associated with the hands-on activity:
Topic: Series and Parallel Resistors
Number of participating students: 617
Change in score: 17% increase (post-pre)
Analysis of variance shows this change is highly statistically significant (F (1,616) = 202.4, p < 0.001, η² = 0.247) with a very large effect size of the activity on the student’s scores.