Previous analyses from a study of teacher professional learning (PL) demonstrated statistically significant, lasting gains in both teacher knowledge and student learning as the result of 4th grade teachers’ participation in a science professional learning program about electric circuits. This analysis showed why and how the professional learning worked to produce these positive results by studying students’ opportunity to learn in the classroom.

**Study Overview**

This study analyzed video from a prior randomized control trial that examined the effects of Making Sense of SCIENCE professional learning on classrooms and students. Video footage from 30 randomly selected focal teachers was analyzed. Each video consisted of two consecutive science lessons centered on electric circuits.

Researchers rated the classroom videos using a project-generated rubric with five dimensions that reflect generally accepted best practices of high-quality instruction with a specific focus on scientific sense making, as well as the methods and goals of the professional learning course.

Rubric dimensions include (1) student cognitive engagement, (2) focus on core science ideas, (3) use of representations, (4) engagement in scientific sense-making practices, and (5) teacher elicitation of, and attention to, student thinking.

Permutation tests compared ratings for treatment and control classrooms for each dimension and for overall classroom quality, which is a weighted average of all dimensions identified by a principal component analysis. For each test, researchers controlled for geographic location and incoming teacher knowledge (from content pretests).

**Promising Findings & Impact**

- The PL had a large, statistically significant, effect on the overall quality of classroom instruction demonstrating the connection between high-quality professional learning and students’ opportunity to learn science in the classroom.
- Classroom ratings were moderately correlated with student gains beyond what could be explained by teachers’ incoming content knowledge, thus demonstrating the connection between strong classroom instruction and student learning.
- The rubric created to support this analysis can now be utilized as a tool for analyzing classroom science instruction. Follow the link below to download a shareable copy of the rubric.

For a more complete report of this research, please visit our website: we-mss.weebly.com/research