



SCALE Key Concepts



This series of articles illustrates key concepts of the SCALE five year National Science Foundation-funded project.

The SCALE partnership aims to improve K-12 mathematics and science teaching and learning working with four urban school districts: Los Angeles Unified School District, Denver Public Schools, Madison Metropolitan School District, and Providence Public School District. Other partners include California State University, Dominguez Hills; California State University, Northridge and University of Wisconsin-Madison. These articles reflect the major themes of the National Science Foundation's Math and Science Partnership (MSP) Program: Partnerships Across Institutions; Challenging Courses and Curricula; Evidence-based Design and Outcomes; Teacher Quality, Quantity and Diversity; and Institutional Change and Sustainability.

Learning Communities Across Educational Continuum

Typically, teacher professional development includes one-or-two day opportunities jammed with information about new teaching approaches. Little attention is devoted to improving content knowledge levels and integrating that knowledge into a teaching conceptual framework. After the in-service trainings are over, little support is given throughout the year for implementing the changes in the classroom. Fortunately, current research has enhanced our understanding of how people learn, and how professional development for teachers can be structured for long-term success and better learning for teachers and ultimately students.

SCALE has adopted many of the advances in teacher professional development in its strategies, and through experience, incorporated a few of its own. The professional development aspects of SCALE are targeted to meet districts' needs, yet are flexible enough to allow for individual requirements. SCALE has integrated into its program the characteristics of a professional learning community, as summarized by DuFour & Eaker (1998): 1) shared vision, mission and values; 2) norms of continuous learning and improvement; 3) collective responsibility for and a relentless focus

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on learning for all students; 4) collaborative and collegial relations so that teachers share ideas and practice with one another; 5) regular opportunities for collective inquiry and reflective dialogue. Two years ago, a SCALE team comprised of science faculty, curriculum specialists, and teachers worked on providing teacher professional development for a science immersion unit in the Los Angeles Unified School District (LAUSD). An important aspect of the immersion units is developing and engaging collaborative teams that reflect the entire educational continuum. In the SCALE model, collaboration is not merely pooling of expertise or resources, but a process for developing a shared vision and structure for sustained



professional support. The collaborative approach is based on an established body of research on successful change initiatives in large organizations. Collaborative teams develop common understanding of the desired outcomes and rationale for achieving them.

SCALE Key Concepts: Learning Communities Across Educational Continuum

The SCALE collaborative approach is continued in professional development called Science Institutes for teachers. These week-long summer learning opportunities facilitated by a team of professors,

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K-12 content area specialists, and lead teachers focus on science immersion units, giving teachers valuable practice and learning time for using inquiry-based techniques in the classroom. SCALE also offers a series of Leadership Study Group sessions, planned throughout the year. These eight sessions provide important face-to-face working time where faculty, administrators and lead teach-

ers can identify key elements of the implementation process that need refinement.

At about the same time LAUSD implemented its science immersion unit with SCALE's help, Madison Metropolitan School District (MMSD) received assistance from SCALE in implementing its Math Masters professional development program. Math Masters is specifically designed to support the implementation of a research-based mathematics curriculum called Connected Mathematics Project. University of Wisconsin mathematics professors and MMSD math educators collaborated to teach four content area courses for middle school mathematics and how students learn these concepts. Participating teachers took pre- and post-tests and results showed all had statistically significant gains in all four content areas. Teachers reported that not only did they learn important math content and related instructional strategies, they also increased their confidence in understanding math content.

"I was learning ... a lot of [the reasoning behind theory], which I didn't learn in school because it wasn't taught," said one teacher who had taken all four Math Masters courses as well as a number of math courses in college.

Continual learning efforts by all—students, teachers, faculty and administrators—is a priority for schools and their university partners that have firmly adopted learning community norms. Roles of student and teacher shift according to context and ultimately learning is valued as a function of effort. In this way, schools are able to foster continual improvement.

For more information about concepts and ideas discussed in this article, go to these links:

http://www.scalemsp.org/files/research/Products/Halverson_DistributedLeadershipPerspective.pdf

http://www.scalemsp.org/index.php?q=immersion_units

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