

2101(c)(4)(B)(xvii): PD promoting high-quality instruction and leadership, including in STEM fields

Background

It is our belief that all state plans should describe PD promoting high-quality instruction and leadership, and that mathematics should be explicitly referenced when possible. According to a series of white papers from 100Kin10, targeted PD opportunities tailored to the needs of mathematics teachers should be responsive to teacher input and the learning trajectories they are on. Comprehensive systems of support cannot be approached as remediation, but should be job-embedded and engage the characteristics shown to be effective, including (i) a focus on specific content; (ii) opportunities for active learning; (iii) coherence with other policy and practice; (iv) collective participation of teachers from the same school, grade, or subject; and (v) sufficient duration. In STEM PD in particular, closely tying the activities to practice, such as using student work, teaching videos, or other artifacts from classrooms, is also considered an important characteristic of effective PD.

According to the Conference Board of the Mathematical Sciences (CBMS) Mathematical Education of Teachers II report, PD “should develop the habits of mind of a mathematical thinker and problem-solver, such as reasoning and explaining, modeling, seeing structure, and generalizing” (p. 19). Forms of PD meeting these criteria that are specifically recommended by the CBMS report include immersion experiences (e.g., one- or two-week intensive courses or research experiences), teacher-driven professional experiences (e.g., lesson study), and teacher-mathematician partnerships (e.g., Math Teachers’ Circles).

As states work to promote high-quality instruction and leadership, the It’s TIME-Themes and Imperatives for Mathematics Education framework from the National Council of Supervisors of Mathematics (NCSM) can provide additional guidance for developing the opportunities for professional learning, collaborative structures, and coaching that are imperative to fostering systemic change that will lead to improved student achievement.

Look Fors

States promote high-quality professional development opportunities in mathematics by describing ways in which they will—

1. ensure PD is sustained, intensive, and focused on increasing teachers’ knowledge of mathematics content, pedagogy, and curriculum;
2. embed PD within collaborative structures designed to enhance professional learning, foster community, strengthen retention, and build greater capacity for high-quality instruction and leadership;
3. promote partnerships with institutions of higher education and nonprofit or for-profit organizations that can enhance SEA and LEA capacity to implement and sustain high-quality programs; and
4. gather input from educators in order to create responsive, strategic PD opportunities that are job-embedded and centered around their unique needs and challenges.

States with Promising Features

The following states were identified as a result of the Promising Features Survey in which 13 state plans were reviewed by mathematics leaders across the country. Related text from the full state plans mentioned below can be found in Tool #12 at <http://nctm.org/essatoolkit>.

- **Massachusetts** is proposing regional networks and statewide professional learning opportunities for middle grade teachers that focus on deepening teachers’ understanding of mathematical rigor.
- **New York** is proposing a framework for differentiated professional development that will include the development of statewide supports available across the state.
- **Wisconsin** will provide PD focused both on subject area standards and equity.