

## DEFINITIONS

**High-Need District:** A high-need district in **science and technology/engineering** is a district that has a grade 8 Composite Performance Index (CPI) of less than 60 *and* a high school science CPI of less than 75. A high-need district in **mathematics** is a district that has been identified for corrective action in mathematics, or districts with one or more Commonwealth Priority Schools identified for mathematics.

**Instructional Leadership:** The efforts of educational leaders (Superintendents, Principals, Central Office Staff, Curriculum Coordinators, Instructional Coaches, Mentor Teachers) to support the implementation of standards-based curriculum and instruction and ensure the school's/district's instructional systems are properly aligned.

**Inquiry-Based Learning Experiences:** Problem-based activities that actively engage learners in understanding science content and its application to the natural and human-made world. Inquiry-based learning experiences engage the learner in using analytical methods (making observations, posing questions, formulating hypotheses, designing and conducting scientific investigations/experiments, analyzing and interpreting data or other evidence, and communicating and applying the results of scientific investigations/experiments) to construct an accurate understanding of scientific concepts, ideas, and principles.

**Professional Development:** Instructional activities that:

1. improve and increase teachers' knowledge of the academic subjects they teach;
2. are sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teacher's performance in the classroom;
3. enable teachers to become licensed in the subject area(s) and grade level(s) they teach; and
4. are based on scientifically based research and state academic content standards, student academic achievement standards, and assessments.

**Scientifically Based Research and Rigorous Summative Evaluation:** Research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs. Includes research that:

1. employs systematic, empirical methods that draw on observation or experiment and involve rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
2. relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, and across studies by the same or different investigators;
3. is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions, with appropriate controls to evaluate the effects of the condition of interest and with a preference for random-assignment experiments or other designs to the extent that those designs contain within-condition or across-condition controls;
4. ensures that experimental studies are presented in sufficient detail and clarity to allow for replication or, at minimum, to offer the opportunity to build systematically on their findings; and
5. has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

**Supplemental Activities:** Activities following the 45 hour course that facilitate teachers' application of their learning in the professional development course to their classroom instruction.