DEFINITIONS

Essential Questions: Key questions that raise important conceptual issues, provoke and sustain engaged inquiry, stimulate debate, raise further questions, and require problem solving.

Formative Assessment: “Formative assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students’ achievement of intended instructional outcomes. Formative assessment is not an adjunct to teaching but, rather, integrated into instruction and learning with teachers and students receiving frequent feedback.” (The Council of Chief State School Officers (CCSSO) http://www.ccsso.org/publications/details.cfm?PublicationID=362)

High-Need District: For the purpose of the MMSP, Level 3 & 4 districts are considered high need districts. Level 3 districts with one or more schools among the lowest-performing 20% based on quantitative indicators. Level 4 districts identified by quantitative and qualitative indicators through a district review; districts with one or more schools among the lowest-performing and least improving 2% based on quantitative indicators. Level 5 is a “chronically underperforming” school and is both low performing and not showing signs of substantial improvement over time. It is the most serious category in Massachusetts’ accountability system, representing receivership.

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.

*Please see Table 1: Criteria for Quasi-Experimental Design

Supplemental Activities: Activities following the 45 hour course that facilitate teachers’ application of their learning in the professional development course to their classroom instruction.
<table>
<thead>
<tr>
<th>Table 1: Criteria for Quasi-Experimental Design</th>
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<tbody>
<tr>
<td><strong>Criterion</strong></td>
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<tr>
<td>A. <strong>Baseline Equivalence of Groups</strong></td>
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<tr>
<td>B. <strong>Sample size</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>C. <strong>Quality of the Measurement Instruments</strong></td>
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<tr>
<td>D. <strong>Quality of the Data Collection Methods</strong></td>
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<tr>
<td>E. <strong>Data Reduction Rates (i.e., Attrition Rates, Response Rates)</strong></td>
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<td>F. <strong>Relevant Statistics Reported</strong></td>
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<sup>1</sup> The critical sample size here is related to the unit of grouping. For example, if the grouping is made at the school level, the relevant sample size is the number of schools involved.