Module 3: Geometric Measurement and Spatial Reasoning in Elementary Mathematics Teaching

Scope of the module

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 1	• recognizing the mathematical goal as the first component of a complete Learning Trajectory • understanding principles of measurement (e.g., attribute, conservation, transitivity, equal partitioning, units and unit iteration, accumulation, origin, and relation between number and measurement) • understanding how measurement of length, area, and volume are represented and developed in the CCSS • understanding how measurement connects with the CCSS standards for mathematical practice • understanding concepts and skills involved in measuring length, area, and volume	• recognizing principles of measurement in student work		

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 2		• recognizing principles of measurement in student work • understanding children's development of measurement through Learning Trajectories for length, area, and volume • interpreting student work on measurement tasks using the levels of the Learning Trajectory for length measurement	• using anecdotal notes to document what students say and do when working on measurement tasks	
Session 3	• understanding concepts and skills involved in measuring length, area, and volume	• interpreting student work on measurement tasks using the levels of the Learning Trajectory for length measurement	• recognizing instruction as the third component of a complete Learning Trajectory • connecting measurement activities in curricula to measurement Learning Trajectory levels • modifying measurement tasks to target different and/or particular Learning Trajectory levels	• understanding the anecdotal notes workshop process

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Session 4	• recognizing the mathematical goal as the first component of a complete Learning Trajectory • understanding principles of measurement (e.g., attribute, conservation, transitivity, equal partitioning, units and unit iteration, accumulation, origin, and relation between number and measurement) • understanding how measurement of length, area, and volume are represented and developed in the CCSS • understanding how measurement connects with the CCSS standards for mathematical practice • understanding concepts and skills involved in measuring length, area, and volume	• recognizing principles of measurement in student work		

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 5		• recognizing principles of measurement in student work • understanding children's development of measurement through Learning Trajectories for length, area, and volume • interpreting student work on measurement tasks using the levels of the Learning Trajectory for area measurement	• using anecdotal notes to document what students say and do when working on measurement tasks	
Session 6	• understanding concepts and skills involved in measuring length, area, and volume	• interpreting student work on measurement tasks using the levels of the Learning Trajectory for area measurement	• recognizing instruction as the third component of a complete Learning Trajectory • connecting measurement activities in curricula to measurement Learning Trajectory levels • modifying measurement tasks to target different and/or particular Learning Trajectory levels	• understanding the anecdotal notes workshop process • using the anecdotal notes workshop to improve the practice of note taking • using the anecdotal notes workshop to improve teaching

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 7	• recognizing the mathematical goal as the first component of a complete Learning Trajectory • understanding principles of measurement (e.g., attribute, conservation, transitivity, equal partitioning, units and unit iteration, accumulation, origin, and relation between number and measurement) • understanding how measurement of length, area, and volume are represented and developed in the CCSS • understanding how measurement connects with the CCSS standards for mathematical practice • understanding concepts and skills involved in measuring length, area, and/or volume	• recognizing principles of measurement in student work		

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 8		• recognizing student development as the second component of a complete Learning Trajectory • understanding children's development of measurement through Learning Trajectories for length, area, and volume • interpreting student work on measurement tasks using the levels of the Learning Trajectory for volume measurement	• using anecdotal notes to document what students say and do when working on measurement tasks	
Session 9	• understanding concepts and skills involved in measuring length, area, and/or volume	• interpreting student work on measurement tasks using the levels of the Learning Trajectory for volume measurement	• recognizing instruction as the third component of a complete Learning Trajectory • connecting measurement activities in curricula to measurement Learning Trajectory levels • modifying measurement tasks to target different and/or particular Learning Trajectory levels	• understanding the anecdotal notes workshop process • using the anecdotal notes workshop to improve the practice of note taking • using the anecdotal notes workshop to improve teaching

Session	Mathematics	Student thinking	Teaching practice	Learning from practice
Session 10	• understanding connections between length, area, and volume measurement and between metric measurements for each	• interpreting student work on measurement tasks using the levels of the Learning Trajectory for length measurement • interpreting student work on measurement tasks using the levels of the Learning Trajectory for area measurement • interpreting student work on measurement tasks using the levels of the Learning Trajectory for volume measurement		• using the anecdotal notes workshop to improve teaching