

Elementary Science Instructional Delivery using the 5 E's Model

The 5 E's model is used for planning lessons within the unit. Lessons require **several days** of instruction. How many days are needed to move from **engage** to **evaluate** within the lesson depends on the concepts being taught. For example, a lesson on one science concept could have students **engage and explore** the first day, **explain and extend** the next, and **extend and briefly evaluate** the next. A longer lesson on several concepts could require five or more days from engage through evaluate.

Students engage by		Teachers help students engage by	
<ul style="list-style-type: none"> • Demonstrating background knowledge on a topic or • Viewing and questioning a discrepant or novel (surprising) event or • Pondering an essential, open-ended question or problem-based scenario or • Participating in a discovery activity 		<ul style="list-style-type: none"> • Checking students' background knowledge with <ul style="list-style-type: none"> ○ the K and W of K-W-L, ○ a preconception quiz, ○ an anticipation guide, ○ a Think-Pair-Share, or ○ other research-based strategy • Demonstrating a discrepant event or • Providing an open-ended question, problem-based scenario, or discovery activity 	
Students explore by		Teachers help students explore by	
<ul style="list-style-type: none"> • experiencing an inquiry activity or investigation introducing one or more concepts and • sharing ideas and • building common knowledge base, and • identifying further questions and • analyzing and interpreting data from inquiry activity 		<ul style="list-style-type: none"> • planning and preparing a directed or guided inquiry activity and • organizing how students will get, use, and return materials safely and • clarifying procedures and • monitoring student interactions, and • monitoring data interpretation and asking questions and • identifying students' misconceptions 	
Students explain by		Teachers help students explain by	
<ul style="list-style-type: none"> • sharing interpretations of data with other students and the teacher and • constructing scientific concepts and • building mental and/or concrete models and • writing about concepts and • creating vocabulary maps 		<ul style="list-style-type: none"> • directing whole group discussion of data interpretations and • clarifying concepts and • providing pertinent information through direct instruction and • determining levels of understanding and • addressing students' misconceptions 	
Students extend by		Teachers help students extend by	
<ul style="list-style-type: none"> • making connections to related concepts and • applying what they have learned to new problems or situations and • clarifying concepts and explanations with teachers and other sources of scientific knowledge by reading, researching, and discussing 		<ul style="list-style-type: none"> • asking questions that encourage transfer and application of concepts and • guiding connections to related concepts and • posing new problems or situations and • providing textbooks, trade books, periodicals, reference materials, and technology resources and • making science materials and tools available and • guiding further explorations in or outside of class 	
Students evaluate understanding by		Teachers help students evaluate by	
<ul style="list-style-type: none"> • reviewing what they have learned and • completing short-answer and extended response items and scoring them with a rubric and • organizing information needed for the unit performance task and • discussing written items and performance tasks with others and the teacher and • taking quizzes and tests 		<ul style="list-style-type: none"> • providing written practice with concepts, including short answer and extended response items with rubrics and • allowing students to discuss rubrics and self-score selected items and • providing opportunity to organize information related to the unit performance task and its rubric and • observing and questioning and • giving quizzes and tests 	

Directed or Guided Inquiry

Sources: National Research Council (2000). *Inquiry and the National Science Education Standards*. Washington, DC: National Academy Press. [pp. 25, 29, 35]
 Barton, M. L., & Jordan, D. L. (2001). *Teaching Reading in Science*. Aurora, CO: McREL. [p. 40]