

5E Learning Sequence

Stage	Teacher Does Learning Experience ... strategies/activities	Student Does	Concept
<p>ENGAGE</p> <p>Initiates the learning task. The activity should make connections between past and present learning experience and anticipate activities and organize students' thinking toward the learning outcomes and current activities.</p>	<ul style="list-style-type: none"> • creates interest • generates curiosity • raises questions and problems • Elicits responses that uncover students' current knowledge about the concept/topic 	<p>Asks questions such as, Why did this happen? What do I already know about this? What can I find out about this? How can this problem be solved?</p> <p>Shows interest in the topic.</p>	<p>Prior knowledge of concept to be learned</p>
<p>EXPLORE</p> <p>Provides students with a common base of experiences within which current concepts, processes, and skills are identified and developed.</p>	<ul style="list-style-type: none"> • encourages students to work together without direct instruction from the teacher. • observes and listens to students as they interact. • asks probing questions to redirect students' investigations when necessary. • provides time for students to puzzle through problems. • acts as a consultant for students 	<ul style="list-style-type: none"> • thinks creatively within the limits of the activity • tests predictions and hypotheses • forms new predictions and hypotheses • tries alternatives to solve a problem and discusses them with others • records observations and ideas • suspends judgment • tests ideas 	<p>Concepts to explore to build understanding of "explain" concept</p>
<p>EXPLAIN</p> <p>Focuses students' attention on a particular aspect of their engagement and exploration experiences; provides opportunities to demonstrate their conceptual understanding, process skills, or behaviors. This phase also provides opportunities for teachers to introduce a concept, process, or skill.</p>	<ul style="list-style-type: none"> • encourages students to explain concepts and definitions in their own words. • asks for justification (evidence) and clarification from students • formally provides definitions, explanations, and new vocabulary • uses students' previous experiences as the basis for explaining concepts 	<ul style="list-style-type: none"> • explains possible solutions or answers to other students • listens critically to other students' explanations • questions other students' explanations • listens to and tries to comprehend explanations offered by the teacher • refers to previous activities 	<p>Concept students knows or understands</p>

<p>EXTEND Challenges and extends students' conceptual understanding and skills. Through new experiences, the students develop deeper and broader understanding, more information, and adequate skills.</p>	<ul style="list-style-type: none"> • expects students to use vocabulary, definitions, and explanations provided previously in new context • encourages students to apply the concepts and skills in new situations • reminds students of alternative explanations • refers students to alternative explanations 	<ul style="list-style-type: none"> • applies new labels, definitions, explanations, and skills in new, but similar, situations • uses previous information to ask questions, propose solutions, make decisions, and design experiments • draws reasonable conclusions from evidence • records observations and explanations 	<p>Concept application</p>
<p>EVALUATE Encourages students to assess their understanding and abilities and provide opportunities for teachers to evaluate student progress.</p>	<ul style="list-style-type: none"> • refers students to existing data and evidence and asks, "What do you already know?" Why do you think ...? • observes students as they apply new concepts and skills • assesses students' knowledge and/or skills • looks for evidence that students have changed their thinking • allows students to assess their learning and group process skills • asks open-ended questions such as, Why do you think...? What evidence do you have? What do you know about the problem? How would you answer the question? 	<ul style="list-style-type: none"> • checks for understanding among peers • answers open-ended questions by using observations, evidence, and previously accepted explanations • demonstrates an understanding or knowledge of the concept or skill • evaluates his or her own progress and knowledge • asks related questions that would encourage future investigations 	<p>Concept(s) students know or understand at any stage of the learning sequence where evaluation occurs</p>