

5E Instructional Framework

Engage		
<p>The first phase is to engage the student in learning. The teacher devises hands-on activities that provide shared experiences and stimulate thinking and access to prior knowledge while capturing the attention of the students.</p>		
Student Behavior	Engage	Teaching Strategy
<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 topic.</p>	<p>Initiates learning so that all students have common, concrete experiences upon which they can continue building concepts, processes, and skills.</p>	<p>Generates interest and curiosity.</p> <p>Raises questions and problems.</p> <p>Elicits responses that uncover students' current knowledge about the concept/topic.</p>
Explore		
<p>Students need time to explore ideas. The aim of exploration activities is to provide experiences that allow direct involvement as students collect additional information, inquire, probe, analyze, consider connections and relationships, make inferences, and problem-solve.</p> <p>The teacher's role in the exploration phase is that of facilitator or coach. The teacher initiates activities that allow students time and opportunity to investigate objects, materials, and situations based on each student's own ideas.</p>		
Student Behavior	Explore	Teaching Strategy
<p>Thinks creatively within the limits of the activities.</p> <p>Gathers additional information from various sources.</p> <p>Tests predictions and hypotheses.</p> <p>Tries alternatives to solve a problem and discusses them with others.</p> <p>Records observations and ideas.</p> <p>Suspends judgment.</p> <p>Tests ideas.</p>	<p>Provides students opportunities to broaden and deepen their thinking through investigation and research.</p>	<p>Encourages students to work together without prescriptive instruction from the teacher.</p> <p>Observes and listens to students as they interact.</p> <p>Asks probing questions to redirect students' investigations when necessary.</p> <p>Provides time for students to puzzle through problems.</p> <p>Acts as a consultant for students.</p>

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Explain

Explanation means the act or process in which concepts, processes, or skills become plain, comprehensible, and clear. The “explain” portion of this model provides opportunities for students to clarify or modify their understanding by verbalizing or otherwise communicating learning. At the same time, the teacher determines understanding and possible misconceptions, offering further information as needed.

The process of explanation provides the students and teacher with a common vocabulary relative to the learning experience. The key to this phase is to present concepts, processes, or skills briefly, simply, clearly, and directly, and then continue to the next phase.

Student Behavior	Explain	Teaching Strategy
<p>Explains possible solutions or answers to other students.</p> <p>Listens critically to other students' explanations.</p> <p>Questions other students' explanations.</p> <p>Listens to and tries to comprehend explanations offered by the teacher.</p> <p>Refers to previous activities.</p> <p>Uses recorded observations in explanations.</p>	<p>Focuses students' attention on a particular aspect of their previous 5E experiences within the unit of study.</p> <p>Provides opportunities to demonstrate their conceptual understanding, process skills, or behaviors.</p> <p>This phase also provides opportunities for teachers to introduce a concept, process, or skill.</p>	<p>Encourages students to explain concepts and definitions in their own words.</p> <p>Asks for justification (evidence) and clarification from students.</p> <p>Formally provides definitions, explanations, and new vocabulary.</p>

Extend/Elaborate

It is important to involve students in further experiences that apply, extend, or elaborate the concepts, processes, or skills. Some students may still have misconceptions, or they may understand a concept in only limited terms. Elaboration activities provide further time and experience that contribute to learning by offering opportunities for students to expand or solidify thinking and apply it to a real world situation. To formulate, invent, cultivate or synthesize is the goal.

Student Behavior	Extend/Elaborate	Teaching Strategy
<p>Applies new labels, definitions, explanations, and skills in new, but similar, situations.</p> <p>Uses previous information to ask questions, propose solutions, make decisions, design experiments.</p> <p>Draws reasonable conclusions from evidence.</p> <p>Records observations and explanations.</p>	<p>Challenges and extends students' conceptual understanding and skills. Through new experiences, the students develop deeper and broader understanding, more information, and adequate skills.</p>	<p>Expects students to use vocabulary, definitions, and explanations provided previously in new context.</p> <p>Encourages students to apply the concepts and skills to new situations.</p> <p>Reminds students of alternative explanations.</p> <p>Refers students to alternative explanations.</p>

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Evaluate

At some point, it is important that students receive feedback based on opportunities for students and/or teachers to assess performance or understanding. Informal evaluation can occur from the beginning of the teaching sequence. A formal evaluation can occur at any appropriate time later in the cycle.

Not only will teachers administer tests to determine each student's level of understanding, but also students will use the skills they have acquired and evaluate their own understanding.

Student Behavior	Evaluate	Teaching Strategy
<p>Checks for understanding among peers.</p> <p>Answers open-ended questions by using observations, evidence, and previously accepted explanations.</p> <p>Demonstrates an understanding or knowledge of the concept or skill.</p> <p>Evaluates his or her own progress and knowledge.</p> <p>Asks related questions that encourage future investigations.</p>	<p>Encourages students to assess their understanding and abilities and provides opportunities for teachers to evaluate student progress.</p>	<p>Refers students to existing data and evidence and asks, What do you already know? What do you think?</p> <p>Observes students as they apply new concepts and skills.</p> <p>Assesses students' knowledge and/or skills.</p> <p>Looks for evidence that students have changed their thinking.</p> <p>Allows students to assess their learning and group process skills.</p> <p>Asks open-ended questions such as, What do you think? What evidence do you have? What do you know about the problem? How would you answer the question?</p>