# Summary of the 5E Instructional Model

**Engagement**

The teacher or a curriculum task accesses the learners' prior knowledge and helps them become engaged in a new concept through the use of short activities that promote curiosity and elicit prior knowledge. The activity should make connections between past and present learning experiences, expose prior conceptions, and organize students' thinking toward the learning outcomes of current activities.

**Exploration**

Exploration experiences provide students with a common base of activities within which current concepts (i.e., misconceptions), processes, and skills are identified and conceptual change is facilitated. Learners may complete lab activities that help them use prior knowledge to generate new ideas, explore questions and possibilities, and design and conduct a preliminary investigation.

**Explanation**

The explanation phase focuses students' attention on a particular aspect of their engagement and exploration experiences and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviors. This phase also provides opportunities for teachers to directly introduce a concept, process, or skill. Learners explain their understanding of the concept. An explanation from the teacher or the curriculum may guide them toward a deeper understanding, which is a critical part of this phase.

**Elaboration**

Teachers challenge and extend students' conceptual understanding and skills.  Through new experiences, the students develop deeper and broader understanding, more information, and adequate skills. Students apply their understanding of the concept by conducting additional activities.

**Evaluation**

The evaluation phase encourages students to assess their understanding and abilities and provides opportunities for teachers to evaluate student progress toward achieving the educational objectives.

# 5E Model

Teacher's Role and Actions in the 5E Teaching Model

| "5E"s | Consistent with Model | Inconsistent with Model |
|---|---|---|
| Engage | • Creates curiosity<br>• Raises questions<br>• Elicits responses that uncover what the students know or think about the concepts | • Explains concepts prematurely<br>• Provides definitions and answers<br>• States conclusions |
| Explore | • Encourages students to work together without direct instruction<br>• Observes and listens to students' interactions<br>• Asks probing questions to redirect students' investigations when necessary<br>• Acts as consultant for students | • Provides answers and closure<br>• Lectures as a main delivery<br>• Informs students about mistakes<br>• Leads students step by step to a solution<br>• Acts as the sole source of information |
| Explain | • Encourages students to explain concepts and definitions in their own words<br>• Asks for justification (evidence) and clarification from students<br>• Formally provides definitions, explanations, and new labels<br>• Uses students' previous experiences as basis for explaining concepts | • Neglects to solicit students' explanations<br>• Accepts explanations that have no justification<br>• Introduces unrelated concepts or skills.<br>• "Plays around" with no goal in mind |
| Elaborate | • Expects students to use formal labels, definitions, and explanations provided previously<br>• Encourages students to apply or extend concepts and skills in new situations<br>• Refers students to existing data and evidence and asks questions such as "What do you already know? Why do you think so?" | • Provides definitive answers<br>• Tells students that they are wrong<br>• Lectures<br>• Leads students step by step to a solution<br>• Explains how to work through problems |
| Evaluate | • Observes students as they apply new concepts and skills<br>• Assesses students' knowledge and skills<br>• Provides students with formative feedback to enhance their thinking or behaviors<br>• Allows students to assess their own learning and group-process skills<br>• Asks open-ended questions such as "What do you know about x? How would you explain x? Based on what evidence?" | • Tests vocabulary words, terms, and isolated facts<br>• Introduces new ideas or concepts<br>• Creates ambiguity<br>• Promotes open-ended discussion unrelated to concepts or skills<br>• Provides only summative feedback |

# Students' Role and Actions in the 5E Learning Model

| "5E"s | Consistent with Model | Inconsistent with Model |
|---|---|---|
| Engage | • Asks questions such as" why did this happen? What do I already know about this? What can I find out about this?"<br>• Shows interest in the topic | • Asks for the "right" answer<br>• Offers the "right" answer<br>• Insists on answers or explanations<br>• Seeks one solution |
| Explore | • Thinks freely but within limits of the activity<br>• Tests predictions and hypotheses<br>• Forms new predictions and hypotheses<br>• Tries alternatives and discusses them with others<br>• Records observations and ideas<br>• Suspends judgment | • Passive involvement<br>• Works quietly with little or no interaction with others<br>• "Plays around" indiscriminately with no goal in mind<br>• Stops with one solution |
| Explain | • Explains possible solutions or answers to others<br>• Listens critically to others' explanations<br>• Questions others' explanations<br>• Listens to and tries to comprehend explanations offered by teacher<br>• Refers to previous activities<br>• Uses recorded observations in explanations | • Proposes explanations from "thin air", with no relationship to previous experiences<br>• Brings up irrelevant experiences and examples<br>• Accepts explanations without justification<br>• Does not attend to other plausible explanations |
| Elaborate | • Applies new labels, definitions, explanations and skills in a new but similar situation<br>• Uses previous information to ask questions, propose solutions, make decisions and design experiments<br>• Draws reasonable conclusions from evidence<br>• Records observations and explanations<br>• Checks for understanding among peers | • "Plays around" with no goal in mind<br>• Ignores previous information or evidence<br>• Draws conclusions from "thin air"<br>• In discussion, uses only labels provided by teacher |
| Evaluate | • Answers open-ended questions by using observations, evidence, and previously accepted explanations<br>• Demonstrates understanding or knowledge of concept or skill<br>• Evaluates his or her own progress and knowledge<br>• Asks related questions that would encourage future investigations | • Draws conclusions without using evidence or previously accepted explanation<br>• Offers only "yes" or "no" answers and memorized definitions or explanations as answers<br>• Fails to express satisfactory explanations in his or her own words<br>• Introduces new, irrelevant topics |