

Table 13. The BSCS 5E Instructional Model: What the Student Does

Stage of the Instructional Model	The BSCS 5E Instructional Model: What the Student Does	
	That Is Consistent with This Model	That Is Inconsistent with This Model
Engagement	<ul style="list-style-type: none"> ▪ Asks questions such as, “Why did this happen?” “What do I already know about this?” “What can I find out about this?” ▪ Shows interest in the topic 	<ul style="list-style-type: none"> ▪ Asks for the “right” answer ▪ Offers the “right” answer ▪ Seeks one solution
Exploration	<ul style="list-style-type: none"> ▪ Thinks freely, within the limits of the activity ▪ Tests predictions and hypotheses ▪ Forms new predictions and hypotheses ▪ Tries alternatives and discusses them with others ▪ Records observations and ideas ▪ Asks related questions ▪ Suspends judgment 	<ul style="list-style-type: none"> ▪ Lets others do the thinking and exploring (passive involvement) ▪ “Plays around” indiscriminately with no goal in mind ▪ Stops with one solution
Explanation	<ul style="list-style-type: none"> ▪ Explains possible solutions or answers to others ▪ Listens critically to others’ explanations ▪ Questions others’ explanations ▪ Listens to and tries to comprehend explanations that the teacher offers ▪ Refers to previous activities ▪ Uses recorded observations in explanations ▪ Assesses own understanding 	<ul style="list-style-type: none"> ▪ Proposes explanations from “thin air” with no relationship to previous experiences ▪ Brings up irrelevant experiences and examples ▪ Accepts explanations without justification ▪ Does not attend to other plausible explanations
Elaboration	<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 ▪ Checks for understanding among peers 	<ul style="list-style-type: none"> ▪ Plays around with no goal in mind ▪ Ignores previous information or evidence ▪ Draws conclusions from thin air ▪ In discussion, uses only those labels that the teacher provided
Evaluation	<ul style="list-style-type: none"> ▪ 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 	<ul style="list-style-type: none"> ▪ Draws conclusions, not using evidence or previously accepted explanations ▪ Offers only yes-or-no answers and memorized definitions or explanations as answers ▪ Fails to express satisfactory explanations in his or her own words

Table 14. The BSCS 5E Instructional Model: What the Teacher Does

Stage of the Instructional Model	The BSCS 5E Instructional Model: What the Teacher Does	
	That Is Consistent with This Model	That Is Inconsistent with This Model
Engagement	<ul style="list-style-type: none"> ▪ Creates interest ▪ Generates curiosity ▪ Raises questions ▪ Elicits responses that uncover what the students know or think about the concept or topic 	<ul style="list-style-type: none"> ▪ Explains concepts ▪ Provides definitions and answers ▪ States conclusions ▪ Provides closure ▪ Lectures
Exploration	<ul style="list-style-type: none"> ▪ Encourages the students to work together without direct instruction from the teacher ▪ Observes and listens to the students as they interact ▪ Asks probing questions to redirect the students' investigations when necessary ▪ Provides time for the students to puzzle through problems ▪ Acts as a consultant for students ▪ Creates a "need to know" setting 	<ul style="list-style-type: none"> ▪ Provides answers ▪ Tells or explains how to work through the problem ▪ Provides closure ▪ Directly tells the students that they are wrong ▪ Gives information or facts that solve the problem ▪ Leads the students step by step to a solution
Explanation	<ul style="list-style-type: none"> ▪ Encourages the students to explain concepts and definitions in their own words ▪ Asks for justification (evidence) and clarification from students ▪ Formally clarifies definitions, explanations, and new labels when needed ▪ Uses students' previous experiences as the basis for explaining concepts ▪ Assesses students' growing understanding 	<ul style="list-style-type: none"> ▪ Accepts explanations that have no justification ▪ Neglects to solicit the students' explanations ▪ Introduces unrelated concepts or skills
Elaboration	<ul style="list-style-type: none"> ▪ Expects the students to use formal labels, definitions, and explanations provided previously ▪ Encourages the students to apply or extend the concepts and skills in new situations ▪ Reminds the students of alternate explanations ▪ Refers the students to existing data and evidence and asks, "What do you already know?" "Why do you think ...?" (Strategies from exploration also apply here.) 	<ul style="list-style-type: none"> ▪ Provides definitive answers ▪ Directly tells the students that they are wrong ▪ Lectures ▪ Leads students step by step to a solution ▪ Explains how to work through the problem
Evaluation	<ul style="list-style-type: none"> ▪ Observes the students as they apply new concepts and skills ▪ Assesses students' knowledge and skills ▪ Looks for evidence that the students have changed their thinking or behaviors ▪ Allows students to assess their own 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 x?" "How would you explain x?" 	<ul style="list-style-type: none"> ▪ Tests vocabulary words, terms, and isolated facts ▪ Introduces new ideas or concepts ▪ Creates ambiguity ▪ Promotes open-ended discussion unrelated to the concept or skill