Teaching Using the 5E’s Instructional Model

1. Engage

*Activity which will focus student’s attention, stimulate their thinking, and access prior knowledge.*

**Sample Strategies:**
- Observe surroundings for points of curiosity
- Ask questions about the real world
- Consider possible responses to questions
- Note unexpected phenomena
- Identify situations where student perceptions vary

2. Explore

*Activity which gives students time to think and investigate/test/make decisions/problem solve, and collect information.*

**Sample Strategies:**
- Engage in focused play
- Brainstorm possible alternatives
- Experiment with materials
- Observe specific phenomena
- Design a model
- Collect and organize data
- Employ problem-solving strategies
- Select appropriate resources
- Discuss solutions with others
- Design and conduct experiments
- Evaluate choices
- Engage in debate

3. Explain

*Activity which allows students to analyze their exploration. Student's understanding is clarified and modified because of a reflective activity.*

**Sample Strategies:**
- Communicate information and ideas
- Construct and explain a model or new explanation
- Review and critique solutions
- Utilize peer evaluation
- Assemble multiple answers/solutions
- Determine appropriate closure
- Integrate a solution with existing knowledge/experiences
- Analyze data

4. Extend

*Activity which expands and solidifies student thinking and/or apply it to a real-world situation.*

**Sample Strategies:**
- Make decisions
- Transfer knowledge and skills
- Share information and ideas orally and in writing
- Ask new questions
- Develop products and promote ideas
- Use models and ideas to elicit discussions and acceptance by others
- Conduct more investigations
- Conduct activities in other disciplines

5. Evaluate

*Activity which allows the teacher to assess student performance and/or understandings of concepts, skills, processes, and applications.*

**Sample Strategies:**
- Journals, Logs, etc.
- Portfolios
- Constructs mental and physical models
- Student data sheets
- Performance assessments
- Produce a Product
- Rubrics and Scoring Tools
- Tests

http://www.smarterscience.ca/library/handout%20%285E%27s%20complete%29.pdf
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| **Engage** | - Demonstration  
- Reading  
- Free Write  
- Analyze a Graphic Organizer  
- KWL  
- Brainstorming | - Creates interest.  
- Generates curiosity.  
- Raises questions.  
- Elicits responses that uncover what the students know or think about the concept/topic. | - Asks questions such as, Why did this happen? What do I already know about this? What can I found out about this?  
- Shows interest in the topic. |
| **Explore** | - Perform an Investigation  
- Read Authentic Resources to Collect Information  
- Solve a Problem  
- Construct a Model | - 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 students to puzzle through problems. | - Thinks freely but 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.  
- Suspends judgement. |
| **Explain** | - Student Analysis & Explanation  
- Supporting Ideas with Evidence  
- Structured Questioning  
- Reading and Discussion  
- Teacher Explanation  
- Thinking Skill Activities: compare, classify, error analysis | - Encourages the students to explain concepts and definitions in their own words.  
- Asks for justification (evidence) and clarification from students.  
- Formally provides definitions, explanations, and new labels.  
- Uses students’ previous experiences as basis for explaining concepts. | - Explains possible solutions or answers to others.  
- Listens officially to others’ explanations.  
- Questions others’ explanations.  
- Listens to and tries to comprehend explanations the teacher offers.  
- Refers to previous activities.  
- Uses recorded observations in explanations. |
| **Extend** | - Problem Solving  
- Decision Making  
- Experimental Inquiry  
- Think Skill Activities: compare, classify, apply | - 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 alternative explanations.  
- Refers the students to existing data and evidence and asks, What do you already know? Why do you think…?  
- Strategies from Explore apply here also. | - 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 understandings among peers. |
| **Evaluate** | - Any of the Above  
- Develop a Scoring Tool or Rubric  
- Test (SR, BCR, ECR)  
- Performance Assessment  
- Produce a Product  
- Journal Entry  
- Portfolio | - Observes the students as they apply new concepts and skills.  
- Assesses students’ knowledge and/or skills.  
- Seeks 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? | - 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. |