Institute Objective

To improve science instruction by providing district-level trainers with professional development resources focused on facilitating students' scientific content understanding through science processes and practices.

Time	Notes	Materials
8:30 – 9:30 (60 min)	**Opening Session: VDOE**	
9:35–10:00 (25 min)	**Welcome and Introductions:** • Facilitators introduce themselves • Ask participants to introduce themselves to other people at their tables **Getting Started with the Standards** • **ENGAGE:** Personal Response – "When I consider student mastery of the Standards of Learning, what nouns and verbs come to mind? What would be some of the key words I would see reflected in units? Lessons? Assessments?" • **EXPLORE:** Tagxedo image – What similarities and differences do I see in comparing my personal response to the words in the Tagxedo image? What 'jumps out' at me? What surprises me? • **EXPLAIN:** Table talk – Participants will summarize the trends in our individual responses among tablemates • **ELABORATE:** Thinking map – Participants will use a thinking map / graphic organizer of their choice to summarize the relationships between the topics / words within the Tagxedo image • **EVALUATE:** Tablemates will choose 1 thinking map to share with the larger group, group & facilitator asks questions	Computer, Projector, Document camera, Screen, Speakers, PowerPoint presentation will be used throughout lesson - Tagxedo image - Paper - Thinking Map templates
10:00-12:00 (120 min)	**Investigate** – Instructional strategies that promote student investigation • **ENGAGE:** Water in the Cup Activity – Participants will engage in a shared experience to explore scientific phenomena by collecting evidence and explaining thinking. • **EXPLORE:** Modified Jigsaw – Participants at each table choose between three articles in the binder – "BSCS 5E Instructional Model," "Talk Science Primer" (parts 1 and 2), and "Simplifying Inquiry Instruction" – and highlight any portions of the article that resonate regarding the shared experience with the Water in the Cup Activity. • **EXPLAIN:** Table talk – Participants will compare similarities and differences among the strategies described within the articles, summarizing the highlighted portions so that every group member has a summary of each article on hand. • **ELABORATE:** Lesson Plan – Participants will reorganize into groups based on content area / background – all groups should be at least 3 people, but no more than 5. Each group will develop a lesson within their chosen content area, using the Water in the Cup Activity as a model.	- Water in the Cup (see lesson for materials list) - Articles: "BSCS 5 E Instructional Model," "Talk Science Primer", "Simplifying Inquiry Instruction" - Summarizing template - 9-12 VA SOLs

	• **EVALUATE:** Each group posts their lesson on chart paper, participants "gallery walk" the lessons and offer feedback on Post-It notes – one "thumbs up" comment, one question.	- Chart paper - Post-Its
12:00-12:45	**Lunch**	
12:45-1:45 (60 min)	**Understand** – Learning experiences that promote student understanding • **ENGAGE:** *A Private Universe* (chapters 2 and 3) – Participants will discuss the contents of the video, make comparisons between these students and the students of today. • **EXPLORE:** Mining the Curriculum Framework – With a partner, participants will use the New Bloom's flip chart to analyze the verbs within the Curriculum Framework. • **EXPLAIN:** Participants will analyze trends within the curriculum framework related to the predominant thinking levels of students. • **ELABORATE:** Investigate and Understand "Mad Lib" – Participants will complete a summary document for one selected standard in the content area of their choice using the "Mad Lib" template. • **EVALUATE:** Within the content area, participants will share examples of their summary documents – group members provide feedback.	- A Private Universe DVD - New Bloom's flip charts (Edupress) - Chart paper - Mad Lib template
1:45-3:15 (90 min)	**Investigate to Understand** – Learning experiences that promote student understanding through investigation Participants will use rubber band cars to investigate various topics, including Newton's Laws of Motion, energy, etc. and will demonstrate understanding using various methods of assessment. • **ENGAGE:** Rubber band cars activity – Participants will engage in a shared experience to explore, observe and collect and present evidence in a scientific activity. • **EXPLORE:** Small groups (by content area)– Using the wooden cars, small groups (3 or 4 people maximum) get a car and have the option to choose/use additional rubber bands and different surfaces as they need in order to investigate the question posed which is to "Support Newton's First Law which in part says an object in motion stays in motion unless acted upon by another force" (A second supplemental question could be to investigate the potential/kinetic energy relationship within the car involving the rubber band). • **EXPLAIN:** Coming together by content area, participants will offer evidence to support Newton's law and the data they were able to collect. • **ELABORATE:** Lesson Plan – Participants still in their content area will explore where this lesson could be adapted or adjusted to meet a Standard(s) of Learning in that content area. Highlighted Standards that will be discussed whole group. Using a fundamental law or theory from each content area as a exemplar, each content area will develop/collaborate on a similar activity. • **EVALUATE:** Whole group sharing.	- Rubber band cars (Education Innovation)
3:15-3:30 (15 min)	**Concluding comments, questions, topics for further exploration, exit slip**	