**SSU SSUP: Summer Institute PD Leader Guide Day 4 Sun’s Effect on Climate and Seasons**

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| Grade Level | 5 | Day | 5 | STeLLA Strategies Focus | SCSL F, G, H | Subject Matter Focus | Sun’s Effect on Climate and Seasons |
| Teacher Learning Goals | * The goals of the STeLLA PL program are to deepen knowledge of teaching and learning, increase ability to analyze and reflect on teaching and learning, increase ability to use content knowledge and knowledge of teaching and learning to transform classroom practice, deepen teacher content knowledge, and increase student learning in science. * The coherence of a lessons is strengthened when teachers make explicit links between science ideas, other science ideas, and activities, and highlight the focus question throughout the lesson, or better yet, when teachers support students in making these connections. * Coherent lessons attend to a structure that includes an activity set-up, activity, and activity follow-up. | | | | | | |
| Focus Questions | * How can we build coherence within and between lessons to help students craft a storyline of key science ideas? * How can we be intentional about how we move student thinking forward? * How could the strategies we’ve learned so far support your planning and enactment of lessons? | | | | | | |
| Ideal Teacher Response | How can we build coherence within and between lessons to help students craft a storyline of key science ideas?  Lessons with a strong science content storyline include a connected thread of content-related talk and activities leading from the focus question through a flow of events and science ideas to the summary of the lesson. For students to construct a coherent science content storyline, activities should have a purposeful set up, be designed to require links between the activity and science ideas, and a follow-up that focuses attention on how the activity contributed to the storyline.  How can we be intentional about how we move student thinking forward?  Science ideas should be explicitly linked to other science ideas, both within the lesson and between lessons so that students can construct a coherent science content storyline and develop an explanation of phenomena and/or design solutions to problems, Further, the key science ideas and focus question should be highlighted throughout the lesson. Teacher’s intentional use of elicit, probe, and challenge questions help students make links and progress toward a more accurate understanding of science.  How could the strategies we’ve learned so far support your planning and enactment of lessons?  Intentional use of the STeLLA Strategies in planning lessons, leading classroom learning, and reflecting on practice increase the likelihood that students will have multiple opportunities to learn in a classroom culture of student thinking. | | | | | | |

| Preparation | Materials | Videos and Transcripts |
| --- | --- | --- |
| **Planning/Preparation Tasks:**   * Study PDLG, PPTs, video clips, and handouts. Make changes to PPTs, if needed. * Link clips * Content Deepening Prep (if any)   **Daily Set Up Tasks:**   * Check that video clips are correctly linked to PPT * Set up PowerPoint and speakers * Check video & sound * Arrange furniture, food (include social distancing protocols in set up) * Arrange posters/charts   **Day 5 Set Up Task:**  Arrange teacher materials on tables:   * Tabletop name cards * Table boxes   **Daily Follow-up Tasks:**   * Archive final PPT * Collect and turn in daily feedback * Disinfect common materials, tables and common areas per protocol | **Posters/Charts:**   * STeLLA Conceptual Framework poster * Day 5 Agenda chart * Program Goals chart * Norms chart * Day 5 Focus Questions chart * Effective Science Teaching chart * Parking Lot chart * Blank Purpose/Key Features Charts for Strategies F, G, & H   **Handouts in SSUP PD binder front pocket:**   * Z-fold chart: Student Thinking Lens Strategies * Z-fold chart: Science Content Storyline Lens Strategies   **Handouts in SSUP PD binder, Tab 5:**   * Classroom transcripts (F, G, H): Charles, Duin * Lesson Analysis Protocol for each transcript (blank) * Day 5 Daily Reflection   **Supplies:**   * Syn/Summ (Model Development) Supplies (if any)   **Resources:**   * STeLLA strategies booklet * BSCS Journal * Content Deepening Notebook * Classroom Curriculum Binder | Linking ideas to activities (F) and link science ideas to other science ideas (G)  **SSUP\_Charles\_G5\_SEC\_L1**   * Clip 1: Teacher introduces the FQ for L2 and a student question. * C2: Teacher works with a student about a question he has about the influence of day/night. She asks him to hold that question. * C3: Teacher works with small groups to answer the question and then whole group.   Highlighting (H)  **SSUP\_SEC\_TN\_GR5\_SG4\_L6\_RachelCox\_C1-C2**   * Clip 4: Set up: Can the curve of the earth alone explain the pattern of temperatures that we see? Why or why not? Talk to your teams. * Clip 5: Follow up: Discussion about their ideas. Tomorrow we’ll try testing some of the ideas out using lamps and globes. |

**DAY 5 SESSION OUTLINE: 8:30 a.m. – 3:00 p.m.**

| **Time** | **Purpose** | **Content** | **Activities** |
| --- | --- | --- | --- |
| 8:30 – 8:50  20 min  Slides 1-6 | **Purpose:** The purpose of the opening is to continue to build community and set the stage for today’s learning | **Content**: Focus Questions   * How can we build coherence within and between lessons to help students craft a storyline of key science ideas? * How can we be intentional about how we move student thinking forward? * How could the strategies we’ve learned so far support your planning and enactment of lessons? | **Opening**   * Norms * Goals/Agenda * FQs |
| 8:50 – 10:20  90 min  Slides 7-10 | **Purpose:** The purposes of this session are to: 1) develop a shared understanding of STeLLA Strategies F, G, and H: Make explicit links between science ideas and activities, Link science ideas to other science ideas, and Highlight key science ideas and focus questions throughout; 2) continue to refine understanding of STL Strategies 1, 2, and 3; and 3) develop a shared understanding of the LAP process. | **Content:** Lessons with a strong science content storyline include a connected thread of content-related talk and activities leading from the focus question through a flow of events and science ideas to the summary of the lesson. For students to construct a coherent science content storyline, activities should have a purposeful set up, be designed to require links between the activity and science ideas, and a follow-up that focuses attention on how the activity contributed to the storyline.  So that students can construct a coherent science content storyline and develop an explanation of phenomena and/or design solutions to problems, science ideas should be explicitly linked to other science ideas, both within the lesson and between lessons. Further, the key science ideas and focus question should be highlighted throughout the lesson.  The LAP supports a deep dive into a teacher’s practice and student understanding through intentional inquiry into evidence provided in analysis of classroom video. | **Lesson Analysis SCSL F, G, H**   * Charting * Lesson Analysis R1 F-G-H * Lesson Analysis R2 F-G-H * Meta Moment |
| 10:20 – 10:25 | **Break** | | |
| 10:25 – 11:25  60 min  Slides 11-12 | **Purpose:** The purpose of this session is to develop a shared understanding of how STeLLA Strategies are enacted and the science ideas developed throughout the lessons and prepare to teach the lessons in the fall. | **Content:** STeLLA lesson plans are structured to make explicit the integration of STL and SCSL strategies and support teachers in enacting the strategies. Three dimensional, phenomena/problem-driven learning is highlighted throughout the lessons. The ability to identify and articulate what students are learning, as opposed to what students are doing, is important to successfully enacting the STeLLA lessons. | **Lesson Analysis**   * Articulate coherence across lessons (scope and sequence) * Tell the story across the unit |
| 11:25 – 1:05  100 min including break | **Purpose:** The purpose of this work is to plan for ongoing program activities. |  | **Working Lunch**  Researcher interviews & planning for fall  Check calendars to find a good group time for synchronous work  Identify who will be able to teach a lesson and sign up for filming (Round 1 and Round 2?) |
| 1:05-2:15  70 min  Slides 13 | **Purpose:** The purpose of this session is to engage participants in making connections among ideas, evidence, and experiences with which they have engaged over the week. Creating a visual representation of the week’s learning supports learners in pulling together, organizing, and finding relationships between important ideas. Presenting and explaining the representation publicly helps to further elaborate and make meaning of learning. | **Content:** The STL and SCSL work together to support effective teaching and improve student learning. The STeLLA approach promotes a culture of student-centered teaching and learning. | **Synthesize & Summarize**  Represent the Lenses and Strategies  Present the Lenses and Strategies |
| 2:15 – 3:00  45 min  Slides 14-16 | **Purpose:** Transformative professional learning experiences require sustained, collaborative work. It is important to reflect on and celebrate the work together and prepare for continued learning and reflection. Celebration of the work and learning of the week provides closure to the institute. | **Content:** A strong culture of ideas and trust contributes to the development of a community of teacher learners where we can learn while deprivatizing our practice. Analysis of practice based on a conceptual framework and done through video, student work, and common units of instruction provide a powerful focus for PLCs/study groups. | **Closing**   * Celebration and final reflection * Distribute CSW posters and kit materials as appropriate |

**DAY 5 Detail Agenda**

| **Time and Focus** | **Purpose and Content &**  **What Participants Do** | **Slides** | **Process** |
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| 8:00 – 8:30 | **Coffee & Conversation** |  | Need several hands on deck to help participants complete paperwork, registration, and logistics. |
| 8:30 – 8:50  20 min  Slides 1-6 | **Opening**  **Purpose:** The purpose of the opening is to continue to build community and set the stage for today’s learning  **Content**: Focus Questions   * How can we build coherence within and between lessons to help students craft a storyline of key science ideas? * How can we be intentional about how we move student thinking forward? * How could the strategies we’ve learned so far support your planning and enactment of lessons?   **What participants do**  Participants reconnect with one another and with the goals and content of the program.  **Resources**   * Name Tags * BSCS Journal * Norms poster * PD Binder * Classroom Curriculum Binder * STeLLA Conceptual Framework poster * Charts   + Program Goals chart   + Day 5 Agenda chart   + Day 5 Focus Question chart   + Parking Lot chart   + Effective Science T&L chart   + Blank Purpose/Key Features charts for F, G, and H |  | 1. **SSUP Program Day 5 (0 min)** 2. Greet participants as they enter the room. Help them pick up their materials and find their spots. |
|  | 1. **Reflections (5 min)** 2. Share patterns in reflection from Day 4. Link to program goals and agenda for the day as appropriate.   **Transition:** *To continue our reflections, let’s consider the STeLLA norms.* |
|  | 1. **STeLLA Norms (10 min)** 2. Revisit the norms. Ask participants to identify one norm that will be important as they move into the fall study groups and will be analyzing one another’s classroom videos. |
|  | 1. **Program Goals (Slides 4-7: 5 min)** 2. Revisit program goals. Ask participants to identify one goal we are doing particularly well with and one we could work on as a team. 3. Invite participants to consider the progress we’ve made toward these goals this week? Possible questions.    1. What contributed to progress on that goal?    2. Where have we made less progress? What will it take to make progress? |
|  | 1. **Week-at-a-Glance (0 min)** 2. Refer to the daily agenda chart. |
|  | 1. **Day 5 Focus Questions (0 min)** 2. Share focus questions for the day. |
| 8:50 - 10:20  90 min  Slides 7-10 | **Lesson Analysis: SCSL F, G, H**  **Purpose:** The purposes of this session are to: 1) develop a shared understanding of STeLLA Strategies F, G, and H: Make explicit links between science ideas and activities, Link science ideas to other science ideas, and Highlight key science ideas and focus question throughout; and 2) continue to develop a shared understanding of the LAP process.  **Content:** Lessons with a strong science content storyline include a connected thread of content-related talk and activities leading from the focus question through a flow of events and science ideas to the summary of the lesson. For students to construct a coherent science content storyline, activities should have a purposeful set up, be designed to require links between the activity and science ideas, and a follow-up that focuses attention on how the activity contributed to the storyline.  So that students can construct a coherent science content storyline and develop an explanation of phenomena and/or design solutions to problems, science ideas should be explicitly linked to other science ideas, both within the lesson and between lessons. Further, the key science ideas and focus question should be highlighted throughout the lesson.  The LAP supports a deep dive into a teacher’s practice and student understanding through intentional inquiry into evidence provided in analysis of classroom video. |  | 1. **STeLLA Conceptual Framework (0 min)**    1. Orient participants to the Strategy focus for the day. |
|  | 1. **STeLLA SCSL Strategies F, G, & H (15 min)**    1. Provide jig-saw strategy instructions for participants to chart the purpose and key features of SCSL Strategies F, G, and H.    2. Review charts and listen to conversations to ask probe or challenge questions and to identify ideas that should come before the whole group during the negotiation across the strategies. |
|  | 1. **Viewing & Analysis Basics (0 min)** 2. Remind participants of the Viewing and Analysis Basics (STeLLA Strategies Booklet pp. 1-2). Ask them to comment on why these have been important during the week. If you have time, ask them how these basics will be important in the fall as they are analyzing their own video. |
|  | 1. **Lesson Analysis Protocol (25 min)** 2. Refer participants to the transcript and LAP (PD Binder p. \_\_\_). Provide the context for the videoclip. 3. Note that for this video, we’ll just do the identify phase of the analysis. Participants should consider the presence of Strategies F in the Identify phase. 4. Cue participants to consider the three stages of Strategy F: set-up to the activity, during the activity, and follow-up to the activity. Invite participants to have their Strategy Booklet open to Strategy F to help justify their responses. They can also use their lesson plan binders and look at lesson 1 as a resource if that helps. If participants use their lesson plan binders, they should be ready to justify the timestamps they identify using evidence from the Strategy Booklet. 5. Show the video. 6. Ask for clear examples and remind participants to share their justification from the Strategies Booklet. 7. Possible responses:    1. 04:27 F setup – the teacher is helping the students make sense of the task for how they’ll organize data and lets them know they’re focusing on identifying patterns (focusing on science ideas rather than procedures)    2. 6:03 F during – Students are identifying patterns they notice on the map    3. 7:18 F during – Students are identifying patterns on the map    4. 8:39 F during – Students are identifying patterns on the map    5. 10:08 F follow-up – Sharing science ideas out from the activity 8. Transition to the next question. Drawing participants back to the findings of the TIMSS study, have them consider what a typical setup and follow-up could look like. 9. Possible response: The setup might just focus on procedures without a link to science ideas. There might not be a follow-up or it might be procedural. 10. If a participant doesn’t note it, it might be helpful to call out that participants will note the three stages of Strategy F in every lesson in the SEC unit with the “setup, during, follow-up" sections called out in the lesson plans.   ***Transition:*** *Now that we’ve identified what Strategies F looks like in practice and we’ve reminded ourselves where we started the unit storyline we’ll do a full analysis from Lesson 6 to see how ideas have developed by the end of the unit.* |
|  |  |  | 1. **Lesson Analysis Protocol (40 min)** 2. Refer participants to the transcript and LAP (PD Binder p. \_\_\_). Provide the context for the videoclip. 3. Note the Identify question at the top of the LAP and the focus on Strategy F and G: Highlight the focus question and key science ideas throughout. **During the Identify phase, as participants share out the timestamps, invite them to share the science idea that is surfaced at that timestamp in a complete sentence.** 4. Possible responses (Identify)    1. 00:38: G- T: When, when you say...    2. 00:41.9: G- T: Okay, so is that 24 hours...    3. 01:05: F - T: You’re keep point to this... 5. Move participants onto the Analyze phase. Give the group four minutes to fill in their full LAP. 6. Do a whip around with claims. Invite the group to add onto each others claims or to note where their claims differ from one anothers. 7. Possible responses: 8. The teacher’s use of Strategy H helped prepare students to use key ideas from throughout the unit to craft their own ideal response by summarizing the key science ideas from throughout the unit. 9. The teacher supported students in representing key science ideas by highlighting those key ideas both in words and in a visual model. 10. Invite participants to move into the Reflect and Apply stage of the analysis. |
| 10:20 - 10:25 | **Break** |  |  |
| 10:25 - 11:25  60 min  Slides 11-12 | **Lesson Analysis: Unit & Lesson Plans**  **Purpose:** The purpose of this session is to develop a shared understanding of how the STeLLA strategies are enacted and the science ideas developed throughout the lessons and prepare to teach the lessons in the fall.  **Content:** STeLLA lesson plans are structured to make explicit t he integration of STL and SCSL strategies and support teachers in enacting the strategies. Three dimensional, phenomena/problem-driven learning is highlighted throughout the lessons. The ability to identify and articulate what students are learning, as opposed to what students are doing, is important to successfully enacting the STeLLA lessons.  **What Participants Do**: Participants will retell the story of the unit in their own words. They will take turns stating what was learned in the previous lesson, what is figured out in the current lesson and what will be the focus of the next lesson.  **Resources**  Additional participant resources in curriculum binder   * Content Deepening * Scope and Sequence * Standards Match * Common Student Ideas |  | 1. **Lesson Plan Analysis (5 min)**    1. Provide instructions for the task. |
|  | 1. **Tell the Story (20 min)**    1. Invite participants to stand in a circle and begin telling the story of the unit from lesson 1. Encourage them to check for additions or revisions between handing off to the next group.    2. If there’s time, tell the story again, but with different lesson leads. |
| 11:25 - 1:05  100 min  Slide 13 | **Working Lunch**  **Purpose:** The purpose of this work is to plan for ongoing program activities. |  | 1. **Planning for Fall (\_ min)** 2. Provide instructions for fall planning. 3. Ashley will provide logistics for scheduling videotaping, SWIVL, etc. |
| 1:05 – 2:45  105 min  Slide 14-16 | **Closing**  **Purpose:** Transformative professional learning experiences require sustained, collaborative work. It is important to reflect on and celebrate the work together and prepare for continued learning and reflection. Celebration of the work and learning of the week provides closure to the institute.  **Content:** A strong culture of ideas and trust contributes to the development of a community of teacher learners where we can learn while deprivatizing our practice. Analysis of practice based on a conceptual framework and done through video, student work, and common units of instruction provide a powerful focus for PLCs/study groups.  **What participants do:** Participants will use various materials to represent the relationship between the STeLLA Approach, Lenses and Strategies. Participants will also reflect on their learning and work for the week.  **Resources**   * BSCS Journal * Miscellaneous materials * Wrapped chocolate |  | 1. **Day 5 Focus Questions (5 min)** |
|  | 1. **Synthesize & Summarize (55 min)** 2. Provide materials and instructions for the task. Form groups of 3-4 participants and offer up to 20 minutes of time. 3. Offer more time as needed. 4. Invite groups to share their representations. 5. Provide a few minutes for a Meta Moment.    1. What did you learn? How did this syn/sum task contribute to your learning (or not)?    2. Which representation spoke to you the most? How? Why? |
|  | 1. **Reflection (45 min)** 2. Provide instructions for responding to the prompt or completing the Day 5 Reflection Sheet and sharing with others. 3. Golden Nuggets will be the closing activity. Provide instructions and time for responding and sharing in the whole group. |
|  | 1. **BSCS (0 min)** |