RESPeCT Summer Institute Professional Development Leader Guide (PDLG)

Grade Level	5	Day	5	STeLLA Strategy	Science Content Storyline Lens (SCSL) Strategy A: Identify One Main Learning Goal	Subject Matter Focus	Food Webs
Focus Questions	• What is the Science Content Storyline Lens (SCSL)? • Why is one main learning goal essential for science content storyline coherence? • How can we trace the matter and energy in food?						
Main Learning Goals	Participants will understand the following: • Research from the TIMSS Video Study of Science Teaching emphasizes the importance of creating science content storylines that support students in making links between classroom activities and science ideas. • The SCS Lens and strategies empower teachers to think in new ways about planning and teaching science lessons. • Identifying and focusing on one main learning goal in a lesson is an important strategy for creating a coherent science content storyline. • Food provides matter and energy for living things. • Matter is conserved in chemical reactions. • All the matter in a closed system remains in the system and can be traced. • Energy is conserved in a closed system, but it can also be transformed and transferred. • Matter cycles between the air and the soil and among plants, animals, and microbes as these organisms live and die. • As organisms use the energy stored in food, they also give off heat energy into the environment. • Energy flows through food webs, is released as heat, and is not recycled.						

Preparation	Materials	Videos

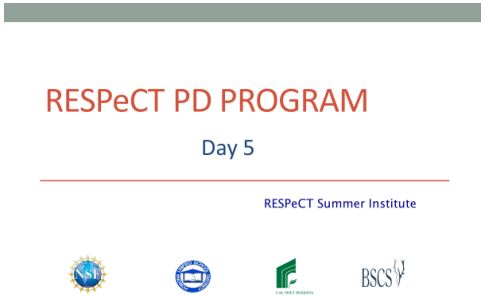
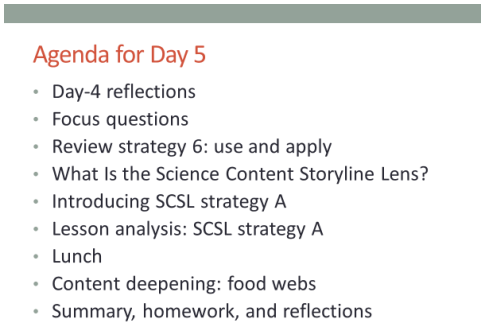
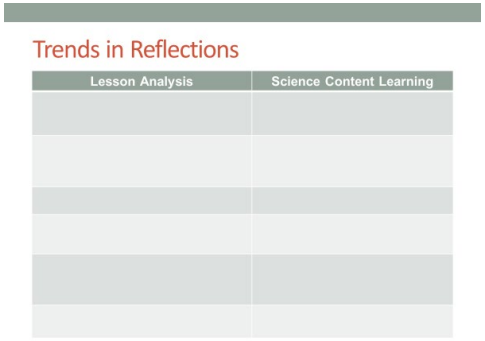
Daily Setup Tasks
• Check that video clips are correctly linked to PowerPoint (PPT) slides.
• Set up PowerPoint.
• Make sure video clips play correctly with good sound.
• Arrange furniture and food.
• Arrange participant materials.
• Put up posters and charts.
 	
Planning and Preparation Tasks
• Study the PDLG, PowerPoint slides (PPTs), video clips, and handouts. Make changes to PPTs if needed.
• Review the content deepening slides and determine the amount of time to allot for each
	Posters and Charts
	• STeLLA Framework and Strategies poster
	• Day-5 Agenda (chart)
	• Norms for Working Together (chart)
	• Day-5 Focus Questions (chart)
	• Effective Science Teaching chart (from day 1)
	• Strategy charts from days 1–4 (STL strategies 1–6)
	• Parking Lot poster
	
	Handouts in RESPeCT PD Binder Front Pocket
	• Z-fold summary chart: Science Content Storyline Lens Strategies (blank)
	
	Handouts in RESPeCT PD Binder, Day 5
	• 5.1 Analysis Guide A: Identifying One Main
		• Video clips from one Food Webs lesson:
		  • Video Clip 5.1: Amy Belcastro classroom (beginning of lesson); 5.1_stella_FW_belcastro_L1_c1
		  • Video Clip 5.2: Amy Belcastro classroom (during lesson); 5.2_stella_FW_belcastro_L1_c2
		  • Video Clip 5.3: Amy Belcastro classroom (end of lesson); 5.3_stella_FW_belcastro_L1_c3
		• Video clip of food burning (corn chip or peanut)
		  • Corn chip video: https://youtu.be/lp8Nppmm11k
		  • Peanut video: https://youtu.be/uz6201OJ1Qo

slide based on the needs of your group. Add timing cues to PPTs, if desired, to help you stay on track.
• Review the reflections from day 4 and create a summary slide.
• Watch video clips and anticipate participant responses.
• Prepare charts for the day's agenda and focus questions.
• Content deepening:
  • Make copies of nutrition labels from Food Webs lesson 1b (1 set per pair).
  • Ensure the link for the food-burning video is working properly (PPT slide 43).
	Learning Goal (2 copies)
	• 5.2 Practice Identifying One Main Learning Goal
	• 5.3 Transcript for Video Clip 5.1
	• 5.4 Transcript for Video Clip 5.2
	• 5.5 Transcript for Video Clip 5.3
	• 5.6 Food versus Not Food (from Food Webs lesson 1b)
	• 5.7 Extended Homework: RESPeCT Lesson Plan Analysis
	• 5.8 Daily Reflections—Day 5
	
	PD Leader Masters, Days 5–8
	• PD Leader Master: 5th-Grade Guide to Video Clips for Day 5
	• PD Leader Master: Practice Identifying One Main Learning Goal (Answer Key)
	
	Supplies
	• Science notebooks
	• Chart paper and markers
	• Pens or pencils (different colors)
	• Nutrition labels from Food Webs lesson 1b (for items listed on PD handout 5.6) (1 set per pair)
	• For Alka-Seltzer activity (1 set per pair):
	  • Empty 500-ml water bottles
	  • 3 graduated cylinders (25, 50, or 100 ml)
	  • At least 3 Alka-Seltzer tablets (or equivalent)
	  • Scale
	
	PD Resources
	• STeLLA strategies booklet
	• RESPeCT PD program binder
	• RESPeCT lesson plans binder
	
	Resources in Lesson Plans Binder
	Resources section:
	• Food Webs Content Background Document
	• Common Student Ideas about Food Chains and Food Webs	

DAY 5 SESSION OUTLINE

Time	Activities	Purpose
8:00–8:25 25 min	**Getting Started: Housekeeping, Agenda, Day-4 Reflections, Norms, Focus Questions**	• Build community by sharing participants' reflections from day 4. • Set the stage for a day of learning.
8:25–8:40 15 min	**Review of Strategy 6: Use and Apply**	• Review STL strategy 6 (use and apply) and deepen participants' understandings of this strategy and the Water Cycle lesson content.
8:40–8:55 15 min	**What Is the Science Content Storyline Lens (SCSL)?**	• Help participants develop strong initial understandings of the Science Content Storyline Lens.
8:55–10:10 75 min (Includes 10-min break)	**Introducing SCSL Strategy A**	• Clarify and deepen participants' understandings of SCSL strategy A: Identify one main learning goal. • Clarify the distinctions between science ideas, student ideas, and main learning goals.
10:10–12:00 110 min	**Lesson Analysis: SCSL Strategy A**	• Use lesson analysis of classroom videos to better understand SCSL strategy A. • Deepen participants' science-content knowledge of food webs through lesson analysis.
12:00–12:45 45 min	**LUNCH**	
12:45–3:10 145 min (Includes 10-min break)	**Content Deepening: Food Webs**	• Deepen participants' understandings of the science content that is part of the Food Webs lesson series.
3:10–3:30 20 min	**Wrap-Up: Summary, Homework, and Reflections**	• Summarize and reflect on key ideas from today's learning, including the Science Content Storyline Lens, STeLLA strategy A, and the Food Webs science content.

DAY 5

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
8:00–8:25 25 min **Getting Started** Slides 1–8	**Purpose** • Build community by sharing participants' reflections from day 4. • Set the stage for a day of learning. **What Participants Do** • Review the day's agenda. • Discuss the reflections from day 4. • Review and discuss progress on the RESPeCT program norms. • Read the focus questions for day 5. **Posters and Charts** • STeLLA Framework and Strategies poster • Day-5 Agenda (chart) • Norms for Working Together (chart) • Day-5 Focus Questions (chart)		**Display Slide 1.** RESPeCT PD Program (5 min) a. Take care of any housekeeping issues.
			**Display Slide 2.** Agenda for Day 5 (2 min) a. Talk through the agenda for the day.
			**Display Slide 3.** Trends in Reflections (5 min) a. Give participants time to review your feedback on their reflections from day 4 and offer reactions, comments, or follow-up questions.

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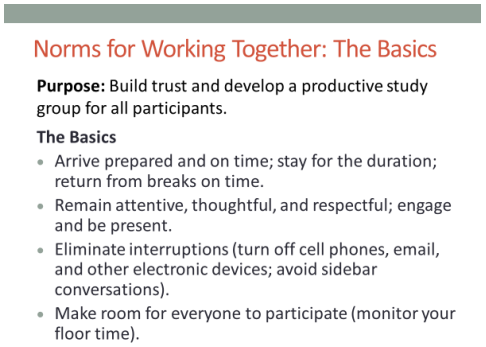
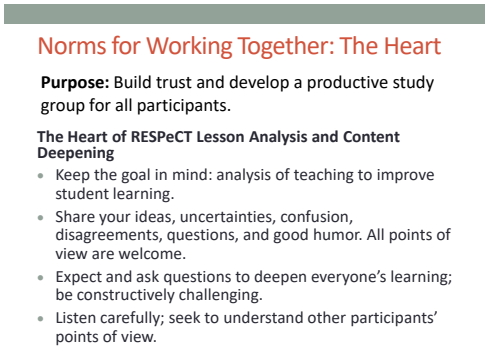
			**Display Slide 4.** Norms for Working Together: The Basics (5 min) a. Review the norms as a group. b. **Ask:** "Any comments or suggested changes? How are we doing with applying these norms?"
			**Display Slide 5.** Norms for Working Together: The Heart (5 min) a. Review these norms as a group. b. **Ask:** "Any comments or suggested changes? Which of these norms do you think we could get better at applying individually and as a group?" c. **Remind participants:** "These norms will become increasingly important during the Summer Institute and throughout the academic year as we analyze one another's classroom videos and learn together."

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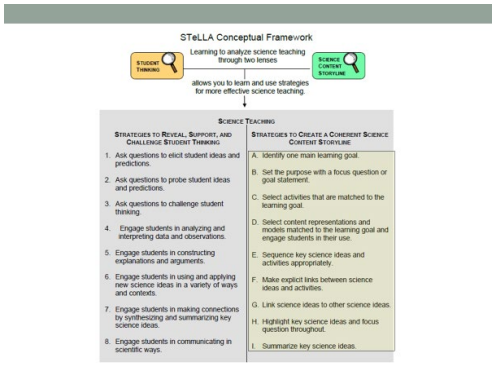
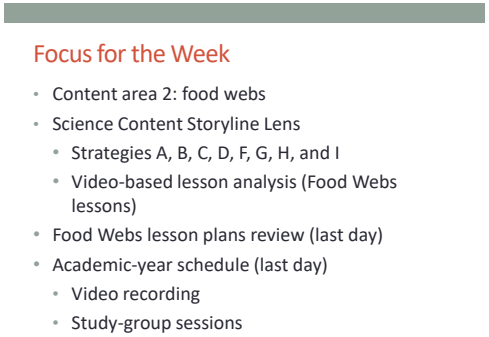
			**Display Slide 6.** STeLLA Conceptual Framework (1 min) a. **Transition:** This slide marks the transition from the STL strategies to the Science Content Storyline Lens strategies. b. "Throughout the PD program, we'll continue learning about the Student Thinking Lens (STL) strategies, but today we'll transition to the Science Content Storyline Lens strategies." c. Highlight the SCSL strategies on the slide.
			**Display Slide 7.** Focus for the Week (1 min) a. "This week we'll focus on a new content area: food webs. We'll also examine the Science Content Storyline Lens strategies and the Food Webs lessons you'll be teaching in the fall, analyze video clips of those lessons, and deepen your science-content knowledge related to the lesson plans." b. "On the last day of the RESPeCT PD program, we'll review the lesson plans and the schedule for the academic year." c. "You may notice that we skip strategy E: Sequence key science ideas and activities appropriately. This strategy will be addressed during the school year as you teach the STeLLA lesson plans and analyze how they're sequenced within each lesson and across lessons."

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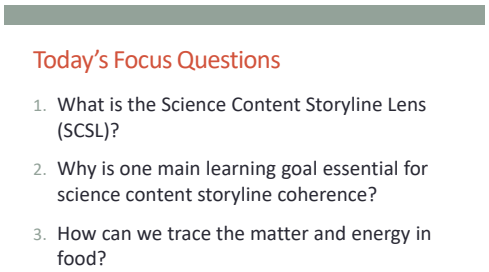
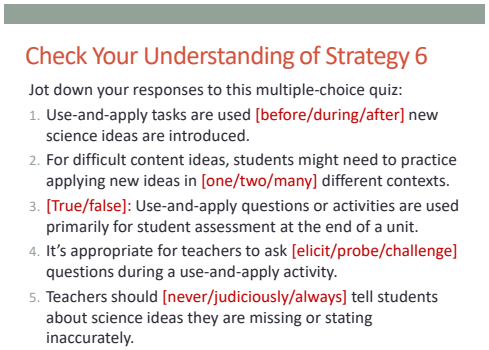
			**Display Slide 8.** Today's Focus Questions (1 min) a. Introduce the focus questions that will guide today's work.
8:25–8:40 15 min **Review of Strategy 6: Use and Apply** Slides 9–10	**Purpose** • Review STL strategy 6 (use and apply) and deepen participants' understandings of this strategy and the Water Cycle lesson content. **Content** • STL strategy 6 engages students in using and applying new science ideas in a variety of ways and contexts. **What Participants Do** • Take a multiple-choice quiz to check their understanding of STL strategy 6. • Work on a scenario that engages them in using and applying strategy 6 and the Water Cycle lesson content.		**Display Slide 9.** Check Your Understanding of Strategy 6 (7 min) **Note:** Display this slide only if it wasn't used on day 4. a. "To check your understanding of STL strategy 6, jot down your responses to this multiple-choice quiz in your science notebooks." b. Have participants discuss their answers either in pairs or as a group. (If time is short, just read the answers aloud.) **Answer key:** 1. After 2. Many 3. False 4. Challenge (and probe) 5. Judiciously (defined as "good or discriminating judgment; wise, sensible, or well advised")

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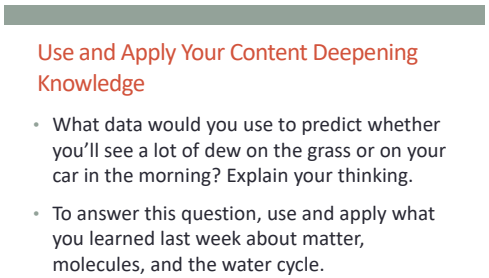
	Supplies • Science notebooks		**Display Slide 10.** Use and Apply Your Content Deepening Knowledge (8 min) a. **Turn and Talk (4 min):** "Discuss the use-and-apply question on the slide with a partner, and be ready to share your ideas with the group." b. **Whole-group share-out (4 min):** "What ideas do you have for answering this question?" **Note:** Participants should recognize the scenario as an example of condensation and should reason that water vapor in the air must cool to form droplets of liquid water. **Ideal response:** Dew is liquid water that appears when water-vapor molecules in the air lose heat energy (cool), which makes them slow down and join together to form droplets of liquid water on objects near Earth's surface (like grass or cars). This process is called *condensation*. Factors that enable us to predict whether we'll see liquid-water molecules in the environment are (a) temperature (if the temperature drops below freezing, frost would be seen rather than dew), and (b) humidity. There needs to be sufficient water vapor in the air for condensation to occur. It the humidity is very low, we wouldn't expect to see a lot of dew formation.

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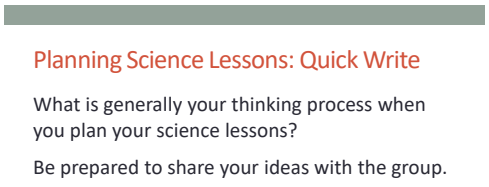
8:40–8:55 15 min **What Is the Science Content Storyline Lens (SCSL)?** Slides 11–13	**Purpose** • Help participants develop strong initial understandings of the Science Content Storyline Lens. **Content** • A science content storyline brings coherence within and across science lessons. **What Participants Do** • Write about and discuss their typical process of planning science lessons. • Discuss their reading about the definition of a science content storyline. • Review and discuss the TIMSS (Trends in Mathematics and Science Study) research basis for the Science Content Storyline Lens. **Posters and Charts** • STeLLA Framework and Strategies poster **PD Resources** • STeLLA strategies booklet		**Display Slide 11.** Planning Science Lessons: Quick Write (6 min) **Note:** This activity is a lead-in for thinking about specific SCSL strategies. When planning science lessons, are participants thinking primarily about (1) SCSL issues, such as learning goals, (2) student misconceptions (an STL issue), which is a great start but doesn't include SCSL strategies, or (3) activities and/or classroom management and timing issues? a. **Individuals:** Direct participants to take 2–3 minutes to write down the key things they think about when planning science lessons. b. **Whole group:** Ask participants to share their reflections with the group. c. **Tell participants:** "The Science Content Storyline Lens strategies should provide some new or additional ways of thinking about planning your science lessons."

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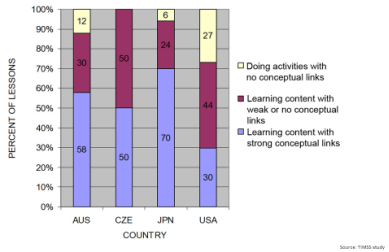
		Lesson Analysis: Focus Question 1 What is the Science Content Storyline Lens (SCSL)? • What is a science content storyline, and why is it important? • What is challenging about developing a science content storyline?	**Display Slide 12.** Lesson Analysis: Focus Question 1 (7 min) a. **Small groups:** Direct half the group to focus on the first bulleted question on the slide, and the other half to focus on the second. Allow groups 2 minutes to think about their assigned questions as they review "Introduction to the Science Content Storyline Lens" in the STeLLA strategies booklet. b. **Whole group:** Have each group share their ideas and responses for these questions. c. As you listen to participants, make sure that what they're saying is consistent with the strategies booklet. If you aren't sure they're interpreting the text accurately, ask them to identify the specific text they're drawing from.
		The TIMSS Video Study Findings and the Science Content Storyline Lens  	**Display Slide 13.** The TIMSS Video Study Findings and the Science Content Storyline Lens (2 min) a. Emphasize the research basis for the Science Content Storyline Lens and its importance. Remind participants that the data on the slide was presented on day 1 of the PD program. b. **Ask:** "What does this graph reveal about US science lessons compared with higher-achieving countries?" **Ideal response:** According to the study, US

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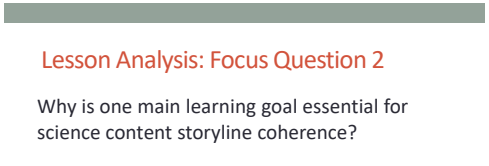
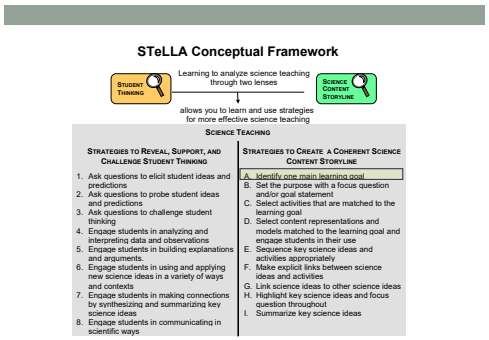
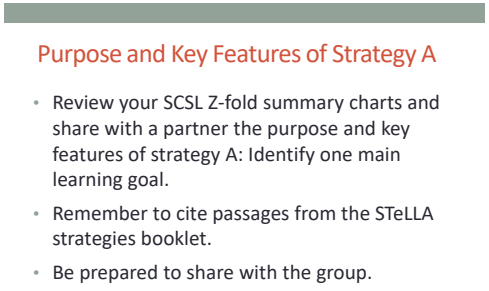
			science lessons didn't do as well linking science ideas to lesson activities; in fact, many lessons were activity focused and included significantly fewer science ideas compared to other countries. c. **Summarize:** Point to strategies F and G on the STeLLA strategies poster: Make explicit links between science ideas and activities (strategy F) and link science ideas to other science ideas (strategy G). These strategies and the idea of a Science Content Storyline Lens grew out of the TIMSS research findings. d. "Today we'll begin our study of the Science Content Storyline Lens, with a focus on strategy A: Identify one main learning goal."
8:55–10:10 75 min (Includes 10-min break) **Introducing SCSL Strategy A** Slides 14–23	**Purpose** • Clarify and deepen participants' understandings of SCSL strategy A: Identify one main learning goal. • Clarify the distinctions between science ideas, student ideas, and main learning goals. **Content** • A main learning goal is a big idea that students are expected to learn and take away from a lesson or series of lessons. Everything in the lesson supports the development of this one main learning goal.		**Display Slide 14.** Lesson Analysis: Focus Question 2 (1 min) a. Read the focus question on the slide.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	What Participants Do • Make a chart highlighting the purpose and key features of SCSL strategy A. • Review the differences and relationships among student ideas, science ideas, and main learning goals. • Practice identifying student ideas and science ideas in a written list. • Practice identifying strong main learning goals using the analysis guide for strategy A. **Handouts in PD Binder** • 5.1 Analysis Guide A • 5.2 Practice Identifying One Main Learning Goal **PD Leader Masters** • PD Leader Master: Practice Identifying One Main Learning Goal (Answer Key) **Supplies** • Chart paper and markers **PD Resources** • STeLLA strategies booklet • SCSL Z-fold summary chart (blank copy in front pocket of PD binder) **Resources in Lesson Plans Binder** *Resources section:* • Content background document • Common Student Ideas		**Display Slide 15.** STeLLA Conceptual Framework (1 min) a. "Now let's dig into SCSL strategy A!" b. "As you can see, strategy A is the first of nine Science Content Storyline Lens strategies. It appears first because it's the foundation on which all the other SCSL strategies are built. This will become clearer as we delve into the other strategies and see how important it is that each of them is matched to the lesson's main learning goal."
			**Display Slide 16.** Purpose and Key Features of Strategy A (25 min) a. **Pairs:** "Share with a partner what you wrote on your Science Content Storyline Lens Z-fold summary chart about the purpose and key features of strategy A." b. **Whole group:** Have one or two participant volunteers lead the group in creating a chart that describes the purpose and key features of strategy A. c. **Transition:** "Next, we'll review the difference between a science idea and the main learning goal of a lesson. Then you'll practice identifying and clarifying this distinction."

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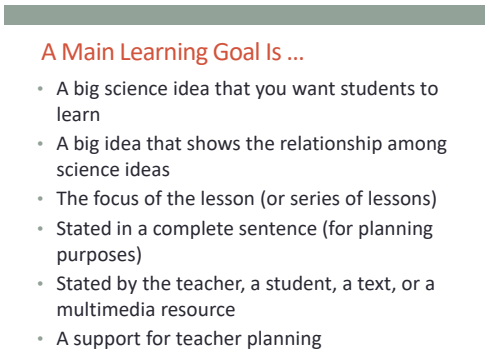
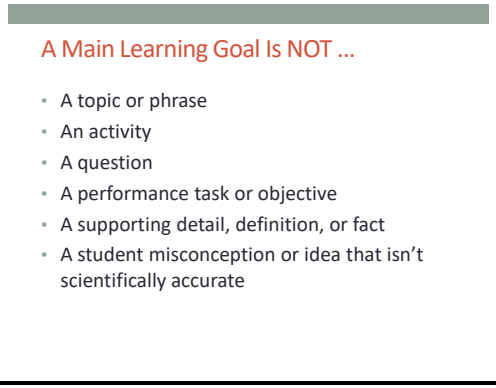
			**Display Slide 17.** A Main Learning Goal Is … (1 min) a. "This slide lists some key ideas about the definition of a main learning goal." b. Read through the ideas. c. **Emphasize:** "Notice the parenthetical reference to 'lessons' in the third bullet point. Each lesson should have only one main learning goal, but you might need two or more lessons to help students accomplish a difficult goal. So it's often necessary to spend more than one lesson on a specific learning goal."
			**Display Slide 18.** A Main Learning Goal Is NOT … (1 min) a. Review what is **not** considered a main learning goal.

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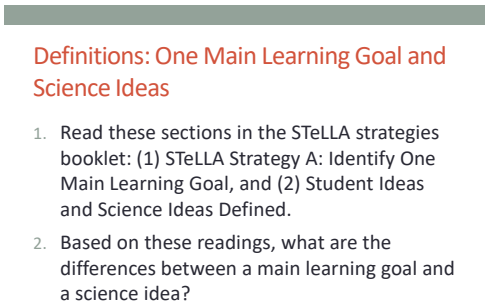
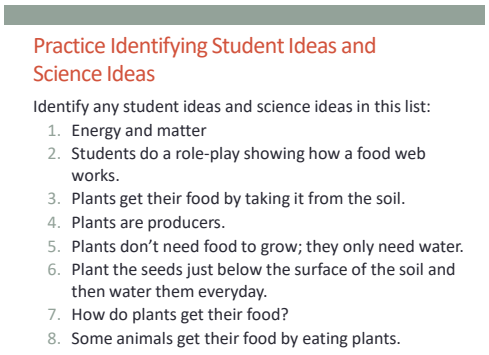
			**Display Slide 19.** Definitions: One Main Learning Goal and Science Ideas (10 min) a. Have participants locate these two readings in the strategies booklet: (1) STeLLA Strategy A: Identify One Main Learning Goal, and (2) Student Ideas and Science Ideas Defined. b. "After you read these sections in the strategies booklet, we'll discuss the differences between a science idea and a main learning goal." c. **Individuals (3 min):** Give participants time to read the specified sections in the strategies booklet. d. **Whole group (7 min):** Discuss the question on the slide. e. **Emphasize:** "While you might incorporate several science ideas that support the main learning goal of a lesson, be careful not to plan an 'all about' lesson with too many different science ideas that will likely come across to students as a bunch of disconnected facts to be memorized."
			**Display Slide 20.** Practice Identifying Student Ideas and Science Ideas (5 min) a. "Next, we'll practice identifying student ideas and science ideas just to make sure you understand the way we're defining these terms." **Note:** As needed, refer participants to the section in the strategies booklet where student ideas are defined (Student Ideas and Science Ideas Defined). b. **Individuals:** "First, identify examples of **science**

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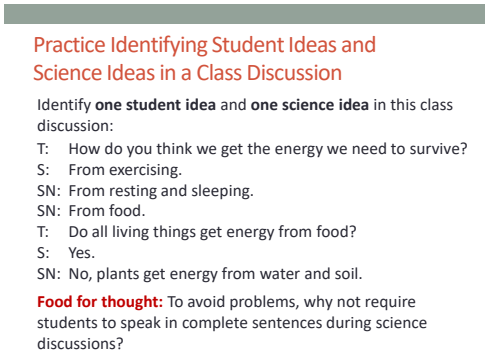
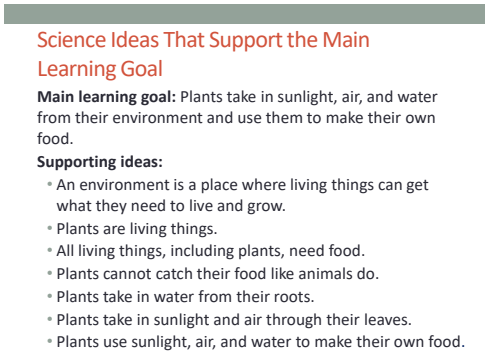
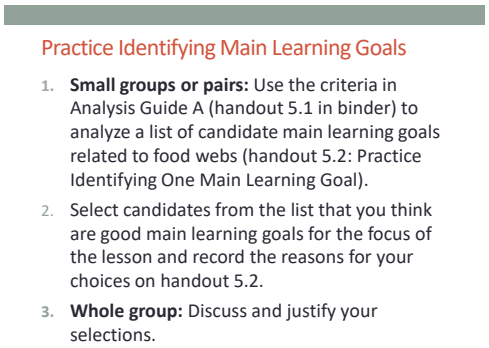
			ideas on the slide. If you need help, refer to the document in your lesson plans binders titled Common Student Ideas about Food Chains and Food Webs. Then identify examples of **student ideas** on the slide." c. **Whole group:** Discuss participants' responses and the correct answers (see answer key). **Answer key:** • Science ideas: 4, 8 • Student ideas: 3, 5
			**Display Slide 21.** Practice Identifying Student Ideas and Science Ideas in a Class Discussion (5 min) a. "It's a little trickier to recognize student ideas and science ideas in class discussions because students sometimes give only one- or two-word answers to teacher questions. But if you link the teacher's question with a student's response, you can sometimes find a science idea or a student idea." **Note:** In the RESPeCT PD program, we encourage students to speak in complete sentences as much as possible. b. "Let's practice linking the teacher's question with student responses in the sample discussion on the slide." c. **Pairs:** "Work with a partner to see if you can identify one student idea and one science idea in this discussion." d. **Whole-group share-out:** Have participants share the ideas they identified in the sample discussion. Then review the answers (see answer

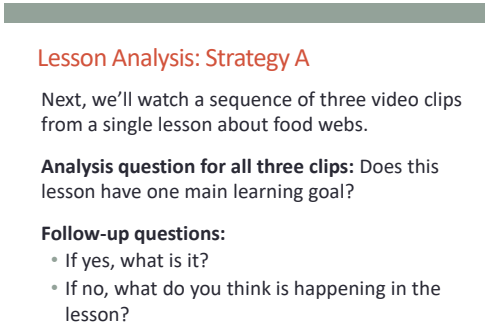
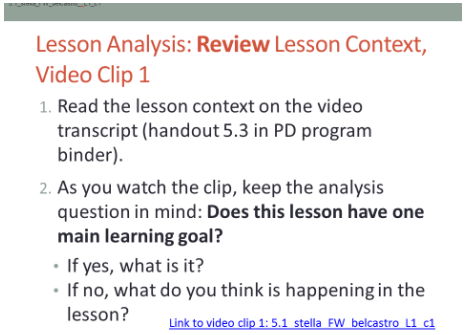
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process

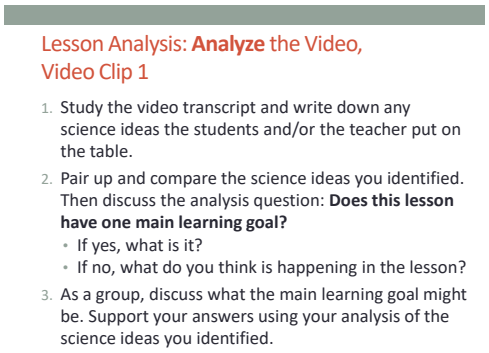
			key).
			e. **Emphasize:** "Here's some food for thought: To make student thinking more visible, why not require students to speak in complete sentences during classroom discussions about science ideas?"
			Answer key:
			• *Student ideas/misconceptions:*
			  • We get energy we need to survive from exercise.
			  • We get energy from resting and sleeping.
			  • Plants get energy from water and soil.
			• *Science ideas:*
			  • We get energy from food.
			  • All living things get energy from food.

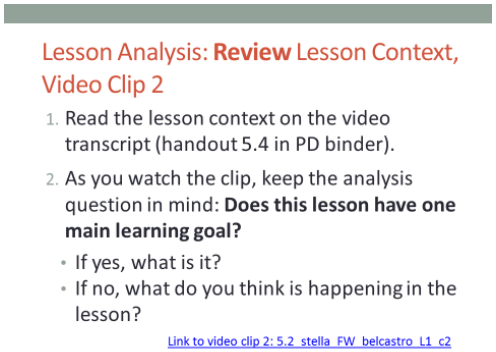
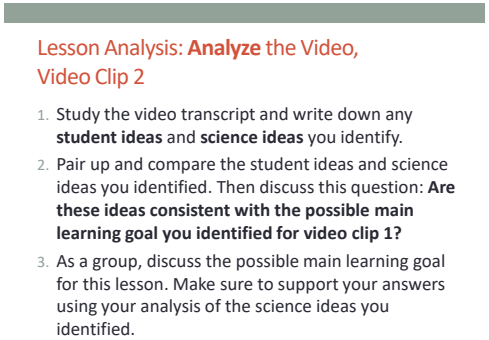
			**Display Slide 22.** Science Ideas That Support the Main Learning Goal (6 min) a. Display **only** the main learning goal on the slide. b. **Pairs:** "Work with a partner to come up with two or three science ideas that might support the development of this main learning goal. Use the Food Webs Content Background Document and the Common Student Ideas chart as resources." c. **Whole group:** Have pairs share the supporting science ideas they came up with. d. Next, reveal the list of possible supporting science ideas one by one on the slide and compare them with participants' ideas. e. **Highlight:** "Some of these supporting science ideas could also be a lesson's main learning

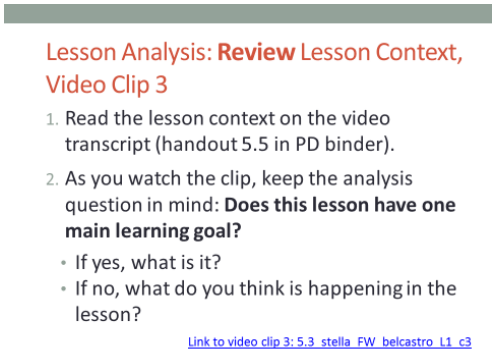
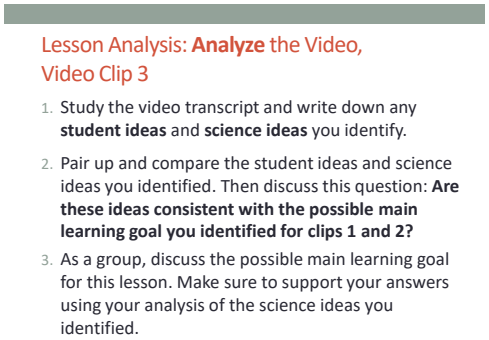
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			goal." **Display Slide 23.** Practice Identifying Main Learning Goals (10 min) a. Direct participants to locate handout 5.1 (Analysis Guide A: Identifying One Main Learning Goal) and handout 5.2 (Practice Identifying One Main Learning Goal) in their PD program binders. b. **Small groups/pairs:** Have participants form small groups or pairs and use the criteria from Analysis Guide A to analyze the list of possible learning goals on handout 5.2. c. Direct participants to write yes or no on the handout to indicate whether the statement is or is not a good candidate for a lesson's main learning goal. Then have them state the reason for each assessment using criteria from the analysis guide. d. **Whole-group share-out:** Have participants share and discuss their selections. e. Be sure to highlight what distinguishes a main learning goal from supporting science ideas, topics, phrases, activities, or questions. f. Also use this discussion to clarify science content. **Answer key:** See PD Leader Master: Practice Identifying One Main Learning Goal (Answer Key).

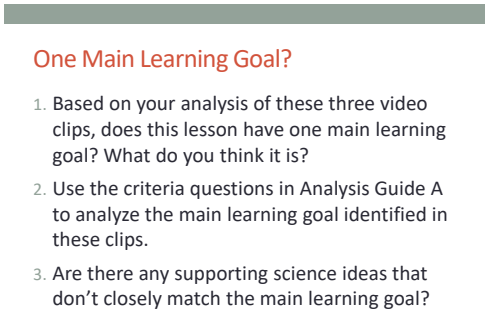


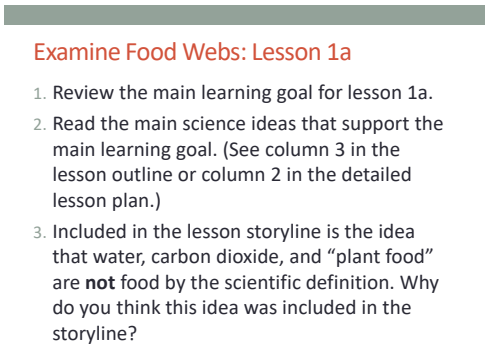
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
10:00–10:10 10 min	**BREAK**		
10:10–12:00 110 min **Lesson Analysis: SCSL Strategy A** Slides 24–32	**Purpose** • Use lesson analysis of classroom videos to better understand SCSL strategy A. • Deepen participants' science-content knowledge of food webs through lesson analysis. **Content** • Using one main learning goal brings coherence within and across lessons. • A main learning goal is a big idea that students are expected to learn and take away from a lesson or series of lessons. Everything in the lesson supports the development of this one main learning goal. • Food provides both matter (mass) and energy that living things use to live and grow. Water is not food by this definition because it doesn't provide energy for living things. **What Participants Do** • Watch a sequence of three video clips from one lesson. Analyze the science ideas in each clip and determine whether they're organized to support one main learning goal. • Use the criteria in Analysis Guide A		**Display Slide 24.** Lesson Analysis: Strategy A (1 min) a. Make sure participants understand that they will be viewing a sequence of three video clips from the same Food Webs lesson. b. "For all three clips, we'll answer the analysis question, *Does this lesson have one main learning goal?*" c. "If the answer is yes, what is the learning goal? If no, why do you think that's the case? What do you think is happening in the lesson?"
			**Display Slide 25.** Lesson Analysis: Review Lesson Context, Video Clip 1 (5 min) a. Have participants read the lesson context at the top of the video transcript (handout 5.3 in PD program binder). (Less than 1 min) b. Read the information on the slide. (Less than 1 min) c. Show the video clip. (4 min)

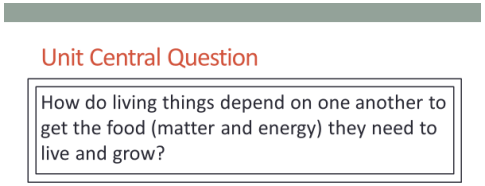
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	to determine the quality of the main learning goal identified for this lesson. • Examine a Food Webs lesson plan to see how the main learning goal and supporting science ideas are identified. **Videos** • Video Clip 5.1, Amy Belcastro classroom (beginning of lesson) • Video Clip 5.2, Amy Belcastro classroom (during the lesson) • Video Clip 5.3, Amy Belcastro classroom (end of lesson) **Handouts in PD Binder** • 5.1 Analysis Guide A • 5.3 Transcript for Video Clip 5.1 • 5.4 Transcript for Video Clip 5.2 • 5.5 Transcript for Video Clip 5.3 **PD Leader Masters** • PD Leader Master: 5th-Grade Guide to Video Clips for Day 5 **Supplies** • Science notebooks • Chart paper and markers **PD Resources** • RESPeCT lesson plans binder		**Display Slide 26.** Lesson Analysis: Analyze the Video, Video Clip 1 (25 min) a. Before participants analyze the video transcript, remind them of these key points: (1 min) • A science idea is a full-sentence idea that students could take away as something they learned during the lesson. • Science ideas are sometimes identified by linking the teacher's question with the student's response. b. **Individuals (8 min):** "Study the video transcript and write in your notebooks any science ideas you identify in the discussion." c. **Pairs (5 min):** "Pair up and compare the science ideas you identified in the transcript. Then discuss the questions on the slide." d. **Whole group (11 min):** Have participants share what they think might be the main learning goal of this lesson, using their analyses of the science ideas they identified to support their suggestions. e. List the possible learning goals on chart paper. f. Let participants know they'll revisit this list of possible main learning goals for the lesson after they watch the remaining video clips. **Note:** For examples of student ideas, science ideas, and a possible main learning goal for the lesson, see PD Leader Master: 5th-Grade Guide to Video Clips for Day 5.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 27.** Lesson Analysis: Review Lesson Context, Video Clip 2 (5 min) a. Have participants read the lesson context at the top of the video transcript (handout 5.4 in PD binder). (Less than 1 min) b. Review the instructions on the slide. (Less than 1 min) c. Show the video clip. (4 min)
			**Display Slide 28.** Lesson Analysis: Analyze the Video, Video Clip 2 (25 Min) a. Review the definitions of a science idea and a student idea. Remind participants that students can express correct science ideas and inaccurate student ideas at the same time. (1 min) b. **Individuals (8 min):** "Study the video transcript and write in your notebooks any student ideas and science ideas you identify." c. **Pairs (5 min):** "Pair up and compare the student ideas and science ideas you identified in the transcript. Then discuss the question on the slide." d. **Whole group (11 min):** Have participants share what they think might be the main learning goal of this lesson, using their analyses of the science ideas they identified to support their suggestions. e. List the possible learning goals on chart paper. f. Let participants know they'll revisit this list of possible main learning goals for the lesson after

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			they watch one more video clip. **Note:** For examples of student ideas, science ideas, and a possible main learning goal for the lesson, see PD Leader Master: 5th-Grade Guide to Video Clips for Day 5.
			**Display Slide 29.** Lesson Analysis: Review Lesson Context, Video Clip 3 (5 min) a. Have participants read the lesson context at the top of the video transcript (handout 5.5 in PD binder). (Less than 1 min) b. Review the instructions on the slide. (Less than 1 min) c. Show the video clip. (4 min)
			**Display Slide 30.** Lesson Analysis: Analyze the Video, Video Clip 3 (24 min) a. **Individuals (8 min):** "Study the video transcript and write in your notebooks any student ideas and science ideas you identify." b. **Pairs (5 min):** "Pair up and compare the student ideas and science ideas you identified on the transcript. Then discuss the questions on the slide." c. **Whole group (11 min):** Have participants share what they think might be the main learning goal of this lesson, using their analyses of the science ideas they identified to support their suggestions. d. List the science ideas and possible learning goals

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			on chart paper. e. **Ask:** "Did the three video clips develop coherence across the lesson or include too many ideas that didn't support the main learning goal?" **Note:** For examples of student ideas, science ideas, and a possible main learning goal for the lesson, see PD Leader Master: 5th-Grade Guide to Video Clips for Day 5.
			**Display Slide 31.** One Main Learning Goal? (15 min) a. **Whole group:** Discuss the first question on the slide and reach a consensus on the main learning goal for the lesson. **Ideal response:** *Food has both matter [mass] and energy that living things need to live and grow*. b. **Pairs:** Have participants work in pairs to answer the criteria questions in Analysis Guide A for the main learning goal they agreed upon for this lesson. Also have them identify any supporting science ideas that don't closely match the main learning goal. c. **Whole group:** Discuss participants' responses to the questions in Analysis Guide A and the final question on the slide. **Note:** For ideal responses to the questions in Analysis Guide A, see the final section of the PD Leader Master: 5th-Grade Guide to Video Clips for Day 5.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 32.** Examine Food Webs: Lesson 1a (5 min) **Note:** This slide is **optional** if time is running short. It's designed to help participants see how the lesson plans are written to highlight the main learning goal and science ideas that support the main learning goal. a. Have participants look at Food Webs lesson 1a in their lesson plans binders and compare the main learning goal with the goal they came up with in their analyses of the Belcastro video clips. It should be a pretty close match. b. Show participants how to find the main science ideas for the lesson in the lesson plans binder—column 3 of the lesson outline (How the Science Content Storyline Develops) or column 2 of the detailed lesson plan under the Main Science Idea(s) heading. All of these ideas should support the main learning goal. c. Pose the question on the slide. **Ideal responses to the slide question:** The ideas about water, carbon dioxide, and "plant food" are included in the science content storyline for two reasons: (1) They represent common misconceptions (of adults as well as children), and (2) to understand the meaning and power of the phrase "plants make their own food," you have to appreciate that plants are taking matter (such as water and carbon dioxide) that cannot provide energy to living things and are transforming it into energy-supplying food. Living things cannot live off water, carbon dioxide, and minerals or fertilizers from the soil. They need energy-supplying food that

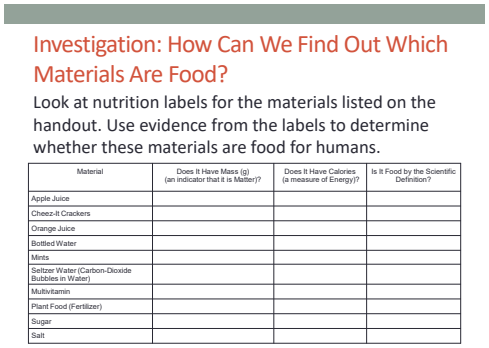
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			only plants can make.
12:00–12:45 45 min	**LUNCH**		
12:45–3:10 145 min (Includes 10-min break) **Content Deepening: Food Webs** Slides 33–60	**Purpose** • Deepen participants' understandings of the science content that is part of the Food Webs lesson series. **Content** • Food provides matter and energy for living things. • Matter is conserved in chemical reactions. • All the matter in a closed system remains in the system and can be traced. • Energy is conserved in a closed system, but it can also be transformed and transferred. • Many systems that are closed for matter are open for energy. **What Participants Do** • Learn about the definition of *food* used in the RESPeCT program and analyze nutrition labels to determine whether different substances are food. • Consider food as a source of chemical energy that can be transformed into other forms of energy. • Practice accounting for matter in a		**Display Slide 33.** Content Deepening: Food Webs **Note:** Throughout this content deepening phase, refer as needed to the Food Webs Content Background Document and Common Student Ideas about Food Chains and Food Webs. **PD leader talk:** "Now let's begin the content deepening phase on food webs." **Timing note:** To keep things moving so you don't run out of time during this phase, adhere as closely as possible to the time you've allotted for each slide. If you're running short on time, you may need to abridge or skip some of the group discussion.
			**Display Slide 34.** Unit Central Question **PD leader move:** Remind participants of the unit central question students will answer in the Food Webs lesson sequence. Tell them you'll work together to understand the major science concepts needed to answer this question. **PD leader talk:** "Write this unit central question in your notebooks and draw a double-lined box around it. This reinforces an important practice you should have your students follow."

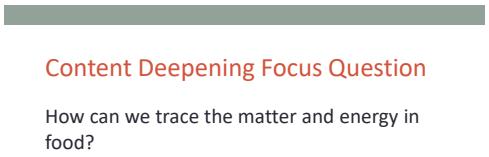
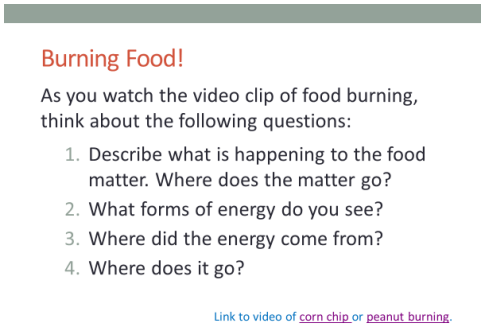
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	closed system and in a chemical reaction. **Supplies** • Science notebooks **PD Resources** • RESPeCT lesson plans binder **Resources in Lesson Plans Binder** *Resources section:* • Content background document • Common Student Ideas	Content Deepening Focus Question How can we trace the matter and energy in food? 	**Display Slide 35.** Content Deepening Focus Question **PD leader move:** Introduce the content deepening focus question. **PD leader move:** "Write this focus question in your science notebooks and draw a box around it. This reinforces a practice your students should follow."
	Purpose • Begin with an activity directly from the lessons that will build in participants a sense of ownership and comfort with the lessons and confidence in being able to administer the lessons in their classrooms.	Defining *Food* 1. Define *food* in your notebooks. 2. Which of these materials IS food? Why? Orange juice Sugar Water Vitamins Plant food (fertilizers, minerals) Seltzer water (carbon dioxide) Salt Mints 3. Which is NOT food? Why?	**Display Slide 36.** Defining *Food* **PD leader talk:** "Now I'd like you to define *food* in your notebooks and then determine whether the items listed on the slide are food or are not food according to your definition. Make sure to record your decisions and reasoning in your notebooks." **PD leader move:** Have participants share with a partner their food definitions and their decisions about each item on the slide. Remind them to use their definitions when explaining their decisions. **PD leader move:** Have some participants share their decisions. During the share-out, ask questions that will probe participants' thinking.

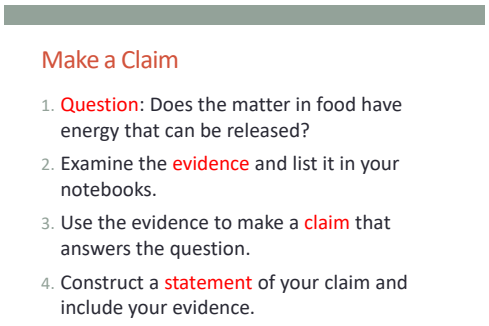
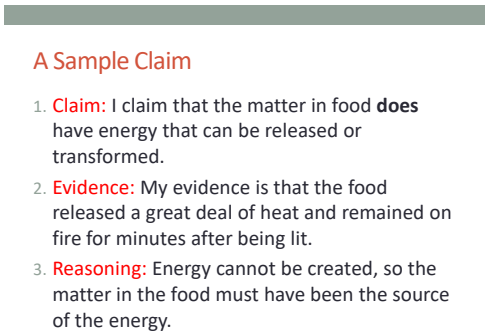
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	Purpose • Learn about the scientific definition of *food*.	The Scientific Definition of *Food* Food is matter (building materials) that contains energy living things can use to live and grow, to heal wounds, and to keep all their parts working.	**Display Slide 37.** The Scientific Definition of *Food* **PD leader move:** Read the scientific definition of *food* used in the RESPeCT program. **PD leader talk:** "Compare your original definitions with the scientific definition and make any necessary revisions to your definitions using a different colored pen or pencil."
	Purpose • Clarify the way participants talk about energy.	Defining *Energy* 1. Write your own definition of *energy* in your notebooks. 2. Read section 3.4 of the Food Webs Content Background Document. 3. How does the definition in the reading compare to your definition of *energy*?	**Display Slide 38.** Defining *Energy* **PD leader talk:** "One of the key terms in the definition of *food* is **energy**. To better help our students understand this definition, it's important to make sure everyone is using energy terms in the same way." **PD leader move:** Ask participants write a definition of *energy* in their notebooks. **PD leader move:** After 1 minute, ask participants to read section 3.4 of the content background document. **PD leader talk:** "How does the scientific definition of *energy* compare with your definitions?"

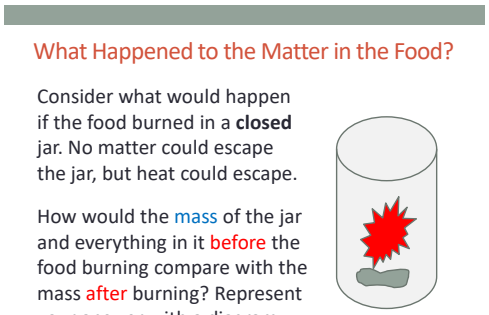
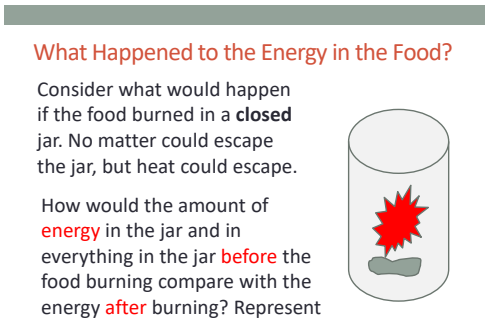
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
		Useful and Common Ways of Talking about Energy • Many different units are used to quantify energy. The common unit in the United States is the calorie. • A **calorie** (lowercase *c*) is the amount of energy required to heat 1 gram of water 1 degree Celsius. • The energy content of food is measured in **Calories** (capital *C*), called **dietary calories**. • 1 Calorie = 1,000 calories	**Display Slide 39.** Useful and Common Ways of Talking about Energy **Note:** At first, display only the slide title. **PD leader talk:** "The content background document states that energy can be measured." **PD leader move:** Reveal the bullet points on the slide. **PD leader move:** Read the definitions of a *calorie* and a *dietary calorie* (Calorie), pointing out the distinctions.
		Energy Terms Some ways to talk about energy: Potential Energy / Kinetic Energy Chemical Energy / Light Energy Thermal Energy	**Display Slide 40.** Energy Terms **PD leader move:** Reveal the energy terms on the slide. **PD leader talk:** "These are some of the words scientists use to talk about energy." **PD leader move:** You may want to refer to some of the student-teacher learning goals from the 4th-grade Energy Transfer lesson set: 1. The production of heat, light, sound, or motion indicates that an object has energy. 2. The energy of an object depends on its mass, its velocity (during motion), or its position/composition. 3. **Kinetic energy** is the energy of motion. 4. **Potential energy** is the energy of position or composition. 5. **Thermal energy** is the energy of moving

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			particles of matter. Heating causes systems to lose energy to the environment. 6. **Heat** is the transfer of thermal energy from matter of a higher temperature to matter of a lower temperature.

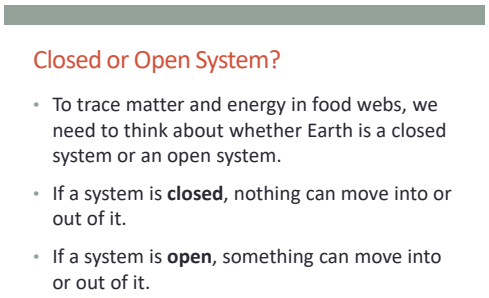
	Purpose
	• Learn the scientific definition of *food* and become familiar with an activity from Food Webs lesson 1.
	Videos
	• Video clip of burning food (corn chip or peanut)
	  • Corn chip video: https://youtu.be/Ip8Nppmm11k
	  • Peanut video: https://youtu.be/uz6201OJ1Qo
	Handouts in PD Binder
	• 5.6 Food versus Not Food (from Food Webs lesson 1b)
	Supplies
	• Nutrition labels for items listed on handout 5.6 (1 set per pair)
			**Display Slide 41.** Investigation: How Can We Find Out Which Materials Are Food?
			PD leader talk: "Next, I'd like you to work with a partner on an activity from lesson 1."
			PD leader move: Distribute the nutrition labels from Food Webs lesson 1b and ask participants to locate handout 5.6 (Food versus Not Food) in their PD program binders. Direct participants to the section on the handout titled "Are These Materials Food?"
			PD leader talk: "Work with your partner to fill in the chart using evidence from the nutrition labels to determine whether each substance is food for humans."
			PD leader move: Discuss each pairs' decisions, making sure to highlight that for a substance to be considered food, it needs to have both matter **and** energy that humans can use to live and grow. Use probe questions to help participants clarify their thinking.
			PD leader talk: "Since all matter has energy, we need to be deliberate when we talk about energy for humans. For example, a glass of water has energy (as we'll learn about in the Water Cycle lessons), but it isn't energy humans can use to live and grow."

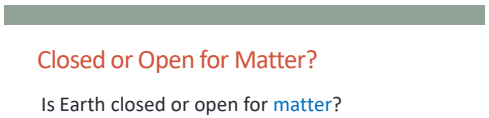
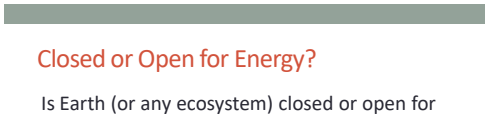
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 42.** Content Deepening Focus Question **PD leader talk:** "Now that we have a working definition of *food*, let's return to our focus question for this content deepening phase: *How can we trace the matter and energy in food?*" **PD leader talk:** "What progress have we made so far in answering this question?" **PD leader move:** Highlight any progress the group has made, such as reaching an agreement on what food is and how to talk about energy. **PD leader talk:** "Next, we'll think about the amount of chemical energy in a sample of burning food."
			**Display Slide 43.** Burning Food! **PD leader talk:** "So how can we trace the matter and energy in food? To find out, let's watch some food burn!" **PD leader move:** Introduce the questions on the slide; then show the video clip. Note that most people are surprised at how long the food remains on fire and how much energy is released. **PD leader talk:** "Record in your notebooks your ideas for answering the questions on the slide. You'll have an opportunity to revise your answers later."

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 44.** Make a Claim **PD leader move:** Direct participants to make a claim that answers the question on the slide. This practice reinforces STeLLA strategy 5: Engage students in constructing explanations and arguments. **PD leader talk:** "As we reflect on the food-burning experiment and discuss your claims and evidence, I'll use a series of challenge questions to help push your thinking forward." **Sample challenge questions:** • How do you know that the energy released in the food-burning video was from the food matter and not just from the initial flame? • Do you think the matter in liquid food like orange juice also has energy that can be released? How might you collect evidence to support your claim?
			**Display Slide 45.** A Sample Claim **PD leader move:** Read through the sample claim on the slide. **PD leader talk:** "How does this sample claim compare with your own claims?" **Note:** Participants will likely not have included reasoning in their claims, since they weren't asked to provide it, but it's helpful to see how a claim relates to a major scientific principle that is useful in the Food Webs lessons.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	Purpose • Consider how calorimeters are used to measure energy released when substances combust or are burned. **Content** • Calorimeters are used to measure the energy released when substances combust or are burned. A spark from the ignition box sets the substance on fire. Thermal energy that is released in the water is measured as a change in temperature.		**Display Slide 46.** What Happened to the Matter in the Food? **PD leader move:** Present the scenario and question on the slide. **PD leader talk:** "Discuss this question with a partner and then make a diagram representing your ideas." **PD leader move:** Briefly discuss participants' ideas for answering the question and probe their thinking. **PD leader move:** After a few participants have shared, reveal that the mass in the closed jar would **not** change, since all the matter (and therefore mass) in the jar **before** the food was burned would still be in the jar afterward, just in different forms.
			**Display Slide 47.** What Happened to the Energy in the Food? **PD leader move:** Present the scenario and question on the slide. **PD leader talk:** "Discuss the question on the slide with a partner and then represent your ideas in a diagram." **PD leader move:** Briefly discuss participants' ideas for answering the question and probe their thinking. **PD leader move:** After participants share their ideas, reveal that the energy in the closed jar would change after the food burns, because some of the energy is used to heat the jar and is released outside the system.

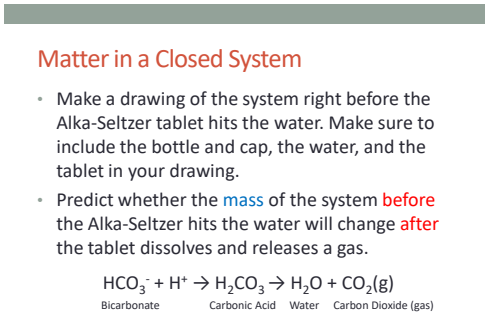
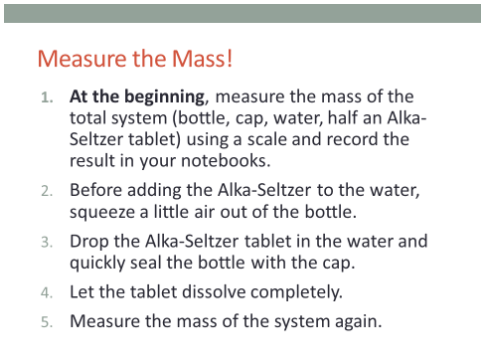
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	Purpose • Clarify major ideas associated with energy. **Content** • Rules regarding energy are a major focus of one of the 4th-grade Energy Transfer lesson sets in the RESPeCT program.	Some Energy Rules 1. Energy cannot be created or destroyed. • How does this apply to your answer about what happened to the energy in the food after it burned? 2. Energy can change from one form to another. • What major forms of energy were present in the food before it burned? After it burned? Find evidence of these rules in the content background document and answer the questions in your notebooks.	**Display Slide 48.** Some Energy Rules **PD leader move:** Remind participants of today's content deepening focus question: "How can we trace the matter and energy in food?" Then read the rules and questions on the slide. **PD leader talk:** "These rules must be kept in mind whenever we trace the energy in a system: All the energy that enters a system must stay in the system or leave. It cannot be created or destroyed, but it can change forms." **PD leader talk:** "Spend a couple of minutes looking for evidence of these rules in the content background document and then answer the questions on the slide." **PD leader move:** Have participants share their findings from the content background document. Remind them to refer directly to the passage in the reading that supports their responses. **Note 1:** Reinforcing the practice of providing evidence for their answers will be useful during lesson analysis when participants are required to supply evidence from transcripts and/or video clips. **Note 2:** Participants should note that chemical energy is present in the food before it burns, and chemical and thermal energy are present after it burns. **PD leader move:** After the discussion, have participants revise their answers to the energy-related questions for the burning-food activity (slide 43).

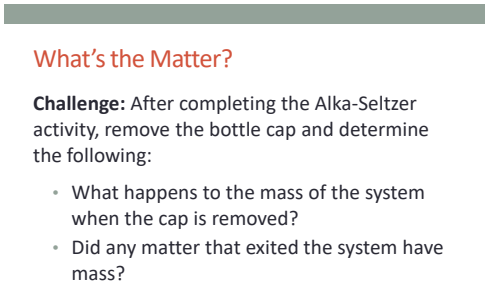
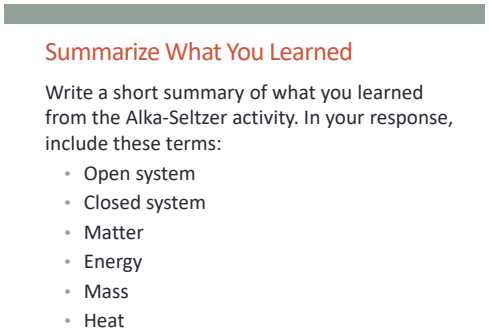
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
	Purpose • Clarify major ideas about open and closed systems. **Content** • An open system allows something to move into or out of it, but nothing can move into or out of a closed system. • A system may be closed for matter but open for energy, or it may be open for matter but closed for energy.		**Display Slide 49.** Closed or Open System? **PD leader talk:** "The Food Webs unit central question is 'How do living things depend on one another to get the food (matter and energy) they need to live and grow?' To answer this question, we need to understand the movement of matter and energy in food webs. And this requires thinking carefully about closed and open systems." **PD leader move:** Have participants work in groups of three to come up with two examples of the following systems: • Open for matter • Closed for matter • Open for energy • Closed for energy **PD leader move:** Briefly discuss one example of each type of system. If the example doesn't come up during the discussion, ask whether an animal is an open or closed system for matter. **Answer:** An animal is an open system for matter, since matter enters and exits its body.

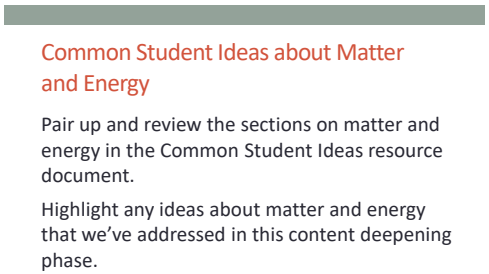
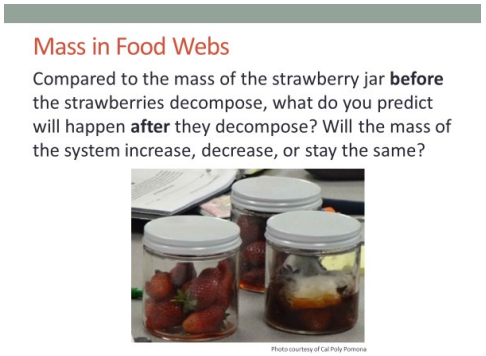
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 50.** Closed or Open for Matter? **PD leader move:** Read the question on the slide. **PD leader talk:** "To answer this question, gather evidence from section 2.3 in the content background document." **PD leader move:** Have participants share their evidence from the reading. **PD leader move:** After the share-out, reinforce the idea that Earth is a **closed system** for matter.
			**Display Slide 51.** Closed or Open for Energy? **PD leader move:** Read the question on the slide. **PD leader talk:** "To answer this question, gather evidence from sections 3.3 and 3.4 of the content background document." **PD leader move:** Have participants share their evidence from the reading. **PD leader move:** After the share-out, reinforce the idea that Earth is an **open system** for energy.

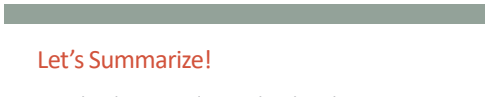
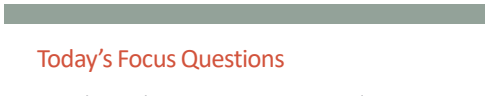
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
		Representations of Closed and Open Systems Develop one representation of a system that is **closed** for matter, and one representation of a system that is **open** for energy.	**Display Slide 52.** Representations of Closed and Open Systems **PD leader talk:** "Now spend a few minutes developing one representation of a system that's closed for matter, and one representation of a system that's open for energy. For example, you could draw and label a diagram that represents a closed system for matter."
	10-MINUTE BREAK		

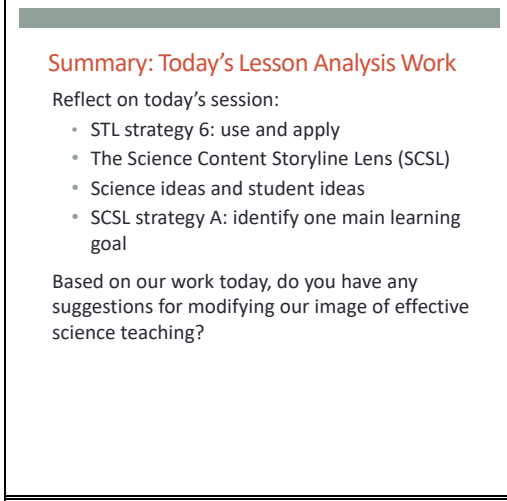
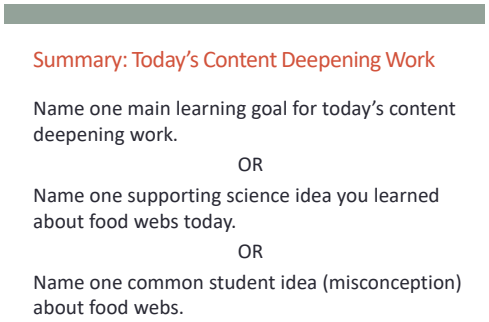
	Purpose
	• Develop an understanding of matter in a closed system.
	Supplies
	• For Alka-Seltzer activity:
	  • Empty 500 ml water bottles (1 per pair)
	  • 3 graduated cylinders (25, 50, or 100 ml) (1 per pair)
	  • At least 3 Alka-Seltzer tablets (or equivalent)
	  • Scale
		Practice Tracing Matter in a Closed System
		We'll use these materials to create a closed system for matter:
		• A bottle filled with 25 ml of water
		• Half an Alka-Seltzer tablet containing sodium bicarbonate (baking soda) and citric acid
		• A cap to seal the bottle
			Display Slide 53. Practice Tracing Matter in a Closed System
			
			Note: Set up the Alka-Seltzer activity now.
			PD leader move: Remind participants of the content deepening focus question: *How can we trace the matter and energy in food?*
			PD leader talk: "Now let's practice tracing matter in a simple closed system using some of the representations from the Food Webs lessons."
			PD leader move: Direct participants to pair up for this activity; then hand out the materials listed on

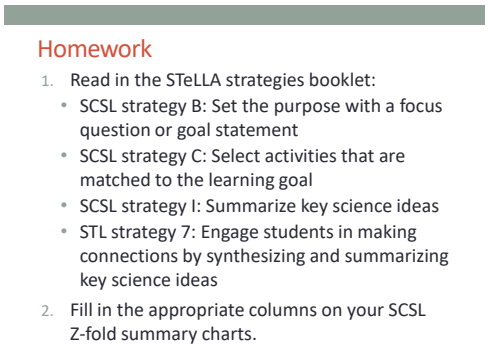
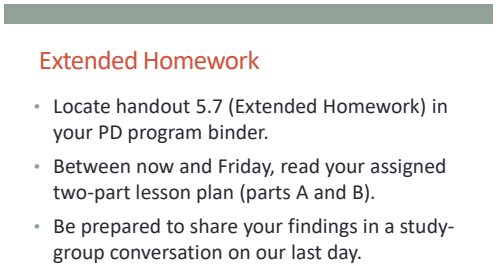
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			the slide. **PD leader move:** Have pairs use the graduated cylinder to measure out 25 ml of water and add it to the water bottle. **PD leader talk:** "Alka-Seltzer contains sodium bicarbonate and citric acid. In this activity, we'll focus on what happens to the bicarbonate as the citric acid dissolves in solution but doesn't undergo a chemical reaction."
			**Display Slide 54.** Matter in a Closed System **PD leader move:** Read the information on the slide. **PD leader talk:** "First make a drawing of the system, and then work with your partner to predict whether the mass of the system **before** the Alka-Seltzer is added to the water will change **after** the tablet has dissolved." **PD leader move:** You may need to explain that the (g) symbol in the slide equation means that the carbon dioxide is a gas.
			**Display Slide 55.** Measure the Mass! **PD leader move:** Have pairs complete the steps outlined on the slide. **PD leader talk: "**Make sure to measure the mass of the system **before** you begin the activity! It's easy to forget this step." **PD leader move:** Following the activity, emphasize that the mass of the system at the beginning and at

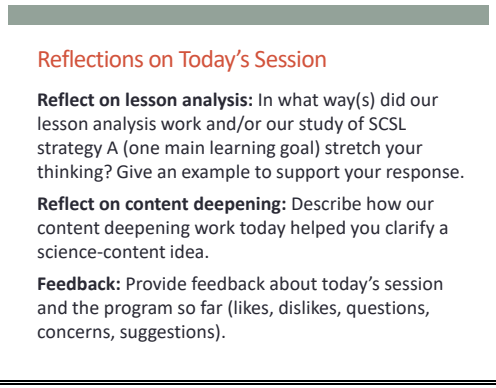
PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			the end should be **approximately** the same. (Some gas may escape the system during the activity, so the mass may not be **exactly** the same.)
			**Display Slide 56.** What's the Matter? **PD leader move:** If you have time after the Alka-Seltzer activity, have participants work with a partner on the challenge. **Note:** The mass of the system should decrease a small amount when the bottle cap is removed.
			**Display Slide 57.** Summarize What You Learned **PD leader talk:** "Spend the next few minutes summarizing what you learned from the Alka-Seltzer activity. Make sure to use the energy terms on the slide in your responses." **PD leader move:** Check that participants are using the energy terms correctly and understand the main point of the activity: Matter was conserved in the chemical reaction because the bottle was a closed system for matter. The bottle could lose or gain heat and other forms of energy, however, so the system was open for energy.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 58.** Common Student Ideas about Matter and Energy **PD leader talk:** "Review the Common Student Ideas resource document with a partner and highlight any ideas about matter and energy that we've discussed during this content deepening phase." **Note:** Participants may mention these common student ideas about matter and energy: • Decomposers create matter. • Matter and energy are the same thing. • Matter can turn into energy, and energy can turn into matter. • Energy can be recycled in a food chain or food web. (Participants may think that energy is never created or destroyed, so it can be used over and over again.) • Decomposers release some energy back to plants. • The expression "Energy gets used up" means that energy disappears.
	Purpose • Relate previous activities to upcoming activities.		**Display Slide 59.** Mass in Food Webs **PD leader talk:** "What do you predict will happen to the mass of the strawberry jar **after** the strawberries decompose compared to the mass **before** decomposition? Will the mass of the system increase, decrease, or stay the same? Be prepared to share your predictions with the group." **PD leader move:** Have participants share their predictions and reasoning. Then emphasize that the mass of the system should stay the same before

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			and after decomposition. **PD leader talk: "**Students will complete a similar activity in lesson 5, and we'll examine that lesson later in the RESPeCT PD program."
			**Display Slide 60.** Let's Summarize! **PD leader talk:** "Now take a few moments to summarize what you learned about mass and energy today and note any questions you still have about the focus question. Write your responses to the slide questions in your notebooks." **PD leader move:** Discuss participants' responses to gain insight into questions they may still have about the content deepening focus question. **Note:** If time is running short, collect the responses and review them later, noting any questions or confusion that needs to be addressed.
3:10–3:30 20 min **Wrap-Up: Summary, Homework, and Reflections**	**Purpose** • Summarize and reflect on key ideas from today's learning, including the Science Content Storyline Lens, STeLLA strategy A, and the Food Webs science content. **What Participants Do** • Review today's focus questions. • Share key ideas from today's lesson analysis (SCSL strategy A) and content deepening work. • Copy down the homework		**Display Slide 61.** Today's Focus Questions (1 min) a. Review the focus questions addressed during today's session.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
Slides 61–66	assignment for day 6. • Discuss expectations for the extended homework assignment (Food Webs lesson plan review). • Write reflections on today's learning. **Posters and Charts** • Effective Science Teaching chart **Handouts in PD Binder** • 5.7 Extended Homework • 5.8 Daily Reflections—Day 5 **Supplies** • Science notebooks		**Display Slide 62.** Summary: Today's Lesson Analysis Work (3 min) a. **Individual think time (1 min):** Ask participants to reflect on the work they accomplished during today's lesson analysis and think about the question on the slide. b. **Whole-group share-out (2 min):** Invite participants to share their ideas for modifying the image of effective science teaching based on today's work. Revise the chart as needed.
			**Display Slide 63.** Summary: Today's Content Deepening Work (3 min) a. **Individual think time (1 min):** Present the options on the slide and give participants 1 minute to come up with a statement that summarizes today's content deepening work in one of these areas. b. **Whole-group round-robin (2 min):** Go quickly around the room and have each participant share one summarizing statement. **Push for complete sentences!**

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 64.** Homework (3 min) a. Review the homework assignment on the slide and have participants write it in their notebooks. b. Make sure participants are clear about the reading and writing tasks.
			**Display Slide 65.** Extended Homework (3 min) a. Go over the information on the slide. b. Have participants review the Extended Homework assignment sheet (handout 5.7), which provides further details about the assignment. c. Remind participants that like the extended homework on the Water Cycle lessons that they were assigned during week 1, participants are responsible for reading parts A and B of their assigned lesson plan. d. Assign a two-part lesson plan to each participant. e. Ask if there are any questions about the assignment. f. **Emphasize:** The group share-out on the last day of the PD program (day 8) should focus on the assignment-sheet questions (section 2). Participants won't have time to share all the details of each lesson plan.

PD Model: Time/Phase	Purpose, Content, and What Participants Do	Slides	Process
			**Display Slide 66.** Reflections on Today's Session (7 min) a. Allow **at least 5 minutes** for participants to think about today's session and write their reflections and feedback on the Daily Reflections sheet (handout 5.8 in PD program binder).