Strategies to Create a Coherent Science Content Storyline
Analysis Guide F:
Making Explicit Links between Science Ideas and Activities

Part 1

Activity Description	Using a lightbulb (representing the Sun), a Hula Hoop (representing Earth's orbital path), and a Styrofoam ball (representing Earth), students simulate Earth's orbit around the Sun to explain why it's warmer at opposite times of the year in the Northern and Southern Hemispheres.
Main Learning Goal and/or Focus Question	**Main learning goal:** Earth's consistent tilt and the angle at which sunlight strikes the surface at different times of the year cause the Northern and Southern Hemispheres to experience different intensities of sunlight and, as a result, opposite periods of warmer and cooler temperatures (seasons).
Supporting Science Ideas Intended to Be Developed through the Activity Setup, the Activity Itself, and the Activity Follow-Up (*Number Each Idea*)	1. Earth is tilted on its axis at 23.5 degrees from a line perpendicular to its orbital plane around the Sun. 2. Earth's axis always tilts toward the North Star, regardless of the Sun's position. 3. Because of Earth's tilt and yearly orbit, the Sun at the equator isn't directly overhead (at a perpendicular angle) at midday all year long. This only occurs twice a year—March 21 and September 21—during the solar equinox. 4. From June through August, the entire Northern Hemisphere tilts toward the Sun, and the angle of sunlight is more direct and concentrated, resulting in warmer temperatures (summer). This pattern occurs in the Southern Hemisphere from December through February. 5. Earth maintains a consistent 23.5-degree tilt toward the North Star as it orbits the Sun during the year, but the locations on Earth that receive the most direct sunlight vary. The Northern Hemisphere receives the most direct sunlight (intense, concentrated, and closest to a perpendicular angle) between the spring and fall equinoxes. The Southern Hemisphere receives the most direct sunlight between the fall and spring equinoxes.

Part 2

Criteria for Explicit Links between Science Ideas and Activity	Analysis of Explicit Links between Science Ideas and Activity		
1. Setup for the Activity	**Yes**	**No**	**Your Analysis of Links in the Setup**
a. Are students prompted to think or write about the focus question or goal statement? b. Are explicit links made between science ideas and the activity? c. Does the setup help students understand why they're doing the activity (e.g., what ideas they will learn from it)?			
2. During the Activity	**Yes**	**No**	**Your Analysis of Links during the Activity**
a. Do students think about science ideas during the activity? (*Consider: Do students use ideas, or are they focused on procedures?*) b. Do students know they're expected to connect science ideas with what they're doing in the activity? (*Consider: Does the activity or the teacher help students connect science ideas to what they're doing?*)			

Criteria for Explicit Links between Science Ideas and Activity	Analysis of Explicit Links between Science Ideas and Activity		
3. Follow-up to the Activity	**Yes**	**No**	**Your Analysis of Links in the Follow-up**
a. Are science ideas explicitly linked to the activity in the follow-up? If so, indicate what the teacher does or what the students do to link ideas and the activity. b. Are *students* involved in making links between the science ideas and the activity?			

Part 3: Are the linked science ideas well matched to the main learning goal and/or focus question of the lesson? Explain your reasoning.