Lesson 1.1
Pre-Unit Assessment
Lesson Overview

Students' Initial Explanations

This lesson introduces students to the scientific phenomenon that they will investigate in this unit: why we see stars at different times. Students are introduced to their role as astronomers who are being asked to help determine what the missing piece of an archaeological artifact might look like. They write initial explanations about why the sky depicted in the artifact looks different at different times. The explanations students provide in this lesson serve as a Pre-Unit Assessment for formative purposes, designed to reveal students’ initial understanding of some of the unit’s core content, both unit-specific science concepts and the crosscutting concept of Patterns, prior to instruction. As such, students’ explanations offer a baseline from which to measure growth of understanding over the course of the unit. These explanations can also provide the teacher with insights into students’ thinking as they begin this unit. This three-dimensional assessment will allow the teacher to draw connections to students’ experiences and to watch for preconceptions that might get in the way of students’ understanding. Students also receive their Patterns of Earth and Sky Investigation Notebooks and learn how scientists use notebooks as an investigation tool. Finally, they familiarize themselves with Handbook of Stars and Constellations, a reference book that they will use throughout the unit.

Anchor Phenomenon: Different sections of an ancient artifact show what the sky looked like from one location and depict different stars.

Students learn:

- Reflecting on what you do and don’t understand allows you to prepare for learning new things.
- Astronomers are scientists who study stars, planets, and other objects in space.
- Archaeologists are scientists who study people and cultures from long ago.
- Scientists refer to reference books when they need to look for information.
Students familiarize themselves with the reference book.

Instructional Guide

1. Introduce the reference book, *Handbook of Stars and Constellations*. Hold up a copy of the book. Point out that scientists often refer to reference books when they are looking for information about a topic they are studying. Explain that the students will be using the reference book throughout the unit.

2. Organize students into pairs and distribute books. Distribute one book to each pair. Give partners a few minutes to preview the book and talk to each other about things they notice. Then, regain the class’s attention. Review the Partner Reading Guidelines posted on the wall, if necessary.

3. Call on students to share something interesting. Ask a few students to share something interesting they read or saw in the book.

4. Discuss how to look for information in the book. Ask students to point out how they might locate specific information in the reference book. If it is not mentioned, point out the table of contents, the glossary, and the index.

5. Conclude the lesson. Let students know that they will continue to investigate the artifact as they learn more about stars and other objects in the universe.

Teacher Support

Background

Literacy Note: About *Handbook of Stars and Constellations*

*Handbook of Stars and Constellations* is the reference book for this unit. Students can look up specific constellations and astronomical objects, such as stars and nebulae. The book introduces constellations and some of the objects within them, then lists 28 constellations that students might be able to see for themselves, either with the unaided eye or a pair of binoculars. Each constellation entry includes a brief note about how it got its name, interesting facts, and viewing hints for its most visible objects. Star maps for each season of the year (in the Northern Hemisphere) are
included so students can go outside at night and discover the constellations for themselves. Photos and diagrams throughout the book provide students with rich visual evidence. This book supports students’ firsthand investigations, as they learn about the sun and constellations and when they are visible.

Background

Literacy Note: About Reference Books
Reference books provide in-depth information about specific topics and are typically read for particular purposes. For this reason, students do not read every section in reference books, nor do they read reference books from beginning to end. Rather, they search for the information they need, and then read the relevant sections carefully. In this lesson, students will be introduced to the table of contents, introduction, and glossary, after which they will be given time to explore the book. This will prepare students to use the reference book in later lessons in this unit, as a scientist might, and it encourages students to read complex text both purposefully and carefully.
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