Title/Author: *Our Solar System* by Seymour Simon

Suggested Time to Spend: 4 Days (Recommendation: one session per day, 20-30 minutes)

Common Core grade-level ELA/Literacy Standards: RI.2.1, RI.2.2, RI.2.3; W.2.2, W.2.8; SL.2.1, SL.2.2, SL.2.4, SL.2.5, SL.2.6; L.2.1, L.2.2

Lesson Objective:

Students will understand and be able to articulate how scientists explain the natural world.

Teacher Instructions

**Before the Lesson**

1. Read the Big Ideas and Key Understandings and the Synopsis below. **Please do not read this to the students**. This is a description to help you prepare to teach the book and be clear about what you want your children to take away from the work.

Big Ideas/Key Understandings/Focusing Question

Even though the sun is an ordinary star in the galaxy, the sun is spectacular and is at the center of our solar system. How does the author describe the sun?

Synopsis

The text describes the organic composition of the sun, along with information about the size and location relative to other

objects in the solar system. The text also discusses the functions of the sun, and its role in regulating life on Earth.

1. Go to the last page of the lesson and review “What Makes this Read-Aloud Complex.” This was created for you as part of the lesson and will give you guidance about what the lesson writers saw as the sources of complexity or key access points for this book. You will of course evaluate text complexity with your own students in mind, and make adjustments to the lesson pacing and even the suggested activities and questions.
2. Read the entire book, adding your own insights to the understandings identified. Also note the stopping points for the text-inspired questions and activities. *Hint: you may want to copy the questions vocabulary words and activities over onto sticky notes so they can be stuck to the right pages for each day’s questions and vocabulary work.*

The Lesson – Questions, Activities, and Tasks

|  |  |
| --- | --- |
| **Questions/Activities/Vocabulary/Tasks** | **Expected Outcome or Response (for each)** |
| FIRST READING:  Read aloud the entire book (or chapter) with minimal interruptions. Stop to provide word meanings or clarify only when you know the majority of your students will be confused. | The goal here is for students to enjoy the book, both writing and pictures, and to experience it as a whole. This will give them some context and sense of completion before they dive into examining the parts of the book more carefully. |
| SECOND READING:  **Reread Page 5:**  Q.1 According to the text, how did the sun come into being?  Q.2 What happened as a result of the sun coming into being?  Draw a series of pictures to illustrate the formation of the sun, and the solar system. Label the pictures with captions to describe what is occurring. | Q.1 Large amounts of dust and gasses started to pull together, and form a globe. As they pulled in closer, they created a lot of heat. The heat built up until it got too hot, and finally caused an explosion.  Q.2 The sun’s heat blasted away the rest of the dust and gasses, which formed a spinning oval ring. When these gasses cooled, they became the planets and the rest of the Solar System. |
| THIRD READING:  **Reread pages 7 and 8:**  Q.1 The text describes the sun as an ordinary star, and states that it is not the biggest or brightest star in the galaxy. Why then is the sun so important to us?  Q.2 What is the difference between the inner planets and the outer planets?  Draw a T Chart to sort the planets into two categories. | Q.1 The sun is important because it is the star that is the closest to our planet, and it is the center of our Solar System. (p.7)  Nothing on Earth could live without the sun. Plants need it to make food and grow. Animals and humans eat plants, and humans also eat the animals that eat plants. We also need the sun for heat and light, and it is responsible for our weather and climate. (p.8)  Q.2 The inner planets are small and rocky, and the outer planets are much larger and made up of mostly gasses. |
| FOURTH AND BEYOND:  **Reread Page 11:**  Q.1 What is the function of the sun’s core?  Q.2 What are the other components (parts) of the sun?  Draw a diagram of the sun and label the parts. | Q.1 The core creates the sun’s heat. There are constant explosions that make the sun’s temperature go as high as 27 million degrees.  Q.2 The other parts of the sun are the radiative and convective zones that surround the core. The photosphere is the sun’s surface, where the temperature is about 10 thousand degrees.  Sunspots are giant storms on the surface, and prominences are flames of gasses that shoot up from the sunspots.  The sun has two atmospheres: an inner one, called the chromosphere, and an outer one called the corona. |

FINAL DAY WITH THE BOOK - Culminating Task

* The author describes the sun as the center of our solar system. The words that the author uses, shows that he thinks that the sun is a spectacular thing. What makes the sun spectacular in the author’s eyes?

Sample answer: If the sun were hollow it could hold 1.3 million earths! The sun is also 600 times bigger than all the planets, asteroids, moons, comets, and meteoroids in the Solar System all put together! Nothing on Earth could live without the sun. The sun is needed to grow plants and make food. The sun actually controls the climate, weather, and even the clouds. Without the sun, there wouldn’t be any light, heat, or rain. Giant storms constantly are erupting on the sun. The sun could shine for another 5-6 billion years.

Vocabulary

|  |  |
| --- | --- |
| **These words merit less time and attention**  (They are concrete and easy to explain, or describe events/process/ideas/concepts/experiences that are familiar to your students) | **These words merit more time and attention**  (They are abstract, have multiple meanings, and/or are a part  of a large family of words with related meanings. These words are likely to describe events, ideas, processes or experiences that most of your student will be unfamiliar with) |
| **Page 5:**  solar – of or relating to the sun  Solar System – our sun and the planets that move around it  dust – fine particles of matter (such as earth)  particles – a very small piece of something  globe – an object that is shaped like a large ball  enormous – very great in size or amount  blasted – damaged by an explosion or some other force  oval ring – a ring that has an egg shape  clumped – a small ball or mass of something  **Page 7:**  hundred billion – a lot of stars!  orbits – a circular path  **Page 9:**  hollow – an empty space in something  fuel – a material that is used to produce heat or power  tons – a large quantity  all-important – of very great importance  **Page 11:**  temperature – a measurement that indicates how hot or cold something is  layers – one thickness of something that lays over another  sunspot – a dark spot on the sun  solar eclipse – when the sun looks like it has disappeared (caused by blockage of the moon)  halo – a circle of light appearing to surround the sun | **Page 5:**  blazing – very hot, fast, or powerful  planetesimals – small celestial bodies that existed at an early stage of development of the solar system (planets, moons, asteroids, meteorides, and comets)  **Page 7:**  ordinary – with no specials or distinctive features; normal  minor – not very important or small in size  Asteroid Belt – the region in space between the orbits of Mars and Jupiter where most asteroids are found  **Page 9:**  climate – the usual weather conditions in a particular place  **Page 11:**  core – the central part of a celestial body  corona – a bright circle seen around the sun  atmosphere – a mass of gas that surrounds a planet or star |

Fun Extension Activities for this book and other useful Resources

1. This read-aloud lesson on the sun could be used as a companion lesson to reading aloud a creation tale from Australia (*Emu and Eagle’s Great Quarrel; When the World Was Young, by Magaret Mayo)* that explains how the sun came to be. This text would be an excellent anchor text for an earth and space unit. The following matrix could be used to compare the two texts.
   * Students will use a Comparison Matrix to analyze the differences between how native cultures and scientists explain the birth of the sun.

|  |  |
| --- | --- |
| How Native Culture Explains the Creation of the Sun | How Scientists Explain the Creation of the Sun |
|  |  |
|  |  |
|  |  |
|  |  |

2. Watch a video on National Geographic to see the sun up close and in action. The following link will take you up close and personal to the sun. Your students will have an opportunity to better understand what the sun actually looks like in real time!

<http://video.nationalgeographic.com/video/science/space-sci/solar-system/sun-101-sci/>

3. Watch *The Birth of the Sun* by clicking on the link below. Have students create a 3D model of the sun after watching the video. Provide materials for students to create models depicting the sun.

<http://www.sciencekids.co.nz/videos/space/solarsystem.html>

Note to Teacher

* This book provides concrete information. Some of the information and content vocabulary would be addressed in more depth if being used in a science unit around earth and space. The questions were designed to move you and your students through to gain necessary information about the origin of the sun. As already mentioned, there is a lot of content vocabulary that should be addressed as needed through the reading.
* This is a great book to generate interest for second grade students. There is a lot of content vocabulary that would make this text an excellent starting point for an earth and space integrated unit. The video links listed above in the extension activities, are excellent and may be motivation for classroom research projects.

**What Makes This Read-Aloud Complex?**

1. **Quantitative Measure**

Go to <http://www.lexile.com/> and enter the title of your read-aloud in the Quick Book Search in the upper right of home page. Most texts will have a Lexile measure in this database.

Most of the texts that we read aloud in K-2 should be in the 2-3 or 4-5 band, more complex than the students can read themselves.

2-3 band 420-820L

4-5 band 740-1010L

1020L

1. **Qualitative Features**

Consider the four dimensions of text complexity below. For each dimension\*, note specific examples from the text that make it more or less complex.

Explicitly stated information, clear and concrete with a narrow focus makes this a complex text with regard to the meaning or purpose.

The ideas are well organized, and the text provides clear connections between related ideas. The narrative format and concrete examples put this text in the “slightly complex” range. However, the text features and use of graphics make this fall into the moderate to very complex range.

The content specific vocabulary and terminology makes this a very complex text in terms of language. Words such as “planetesimals” and “prominences” will require more scaffolding than most domain specific words like “corona”. This vocabulary would receive more attention in subsequent lessons.

Some knowledge of the sun and solar system will make this text and the information presented more readily accessible to students, but no extensive background knowledge is required.

**Meaning/Purpose**

**Structure**

**Language**

**Knowledge Demands**

1. **Reader and Task Considerations**

What will challenge my students most in this text? What supports can I provide?

This text uses domain specific vocabulary that is extremely challenging. I will support my students by

providing explicit instruction in structural analysis to decode the meaning of some of these words, and

provide the meaning for other words that cannot be understood through this method.

How will this text help my students build knowledge about the world?

This text will help students begin to formulate an understanding of the inception and role of the sun

and solar system from a scientific perspective.

1. **Grade level**

What grade does this book best belong in? 2nd grade