Unit 6/Week 5

Title: Voyage Across the Solar System

Suggested Time: 4 days (45 minutes per day)

Common Core ELA Standards: RI.3.1, RI.3.2, RI.3.4; RF.3.4; W.3.2, W.3.4; SL.3.1, SL.3.2; L.3.1, L.3.2, L.3.4

Teacher Instructions

*Refer to the Introduction for further details.*

**Before Teaching**

1. Read the Big Ideas and Key Understandings and the Synopsis. Please do **not** read this to the students. This is a description for teachers, about the big ideas and key understanding that students should take away **after** completing this task.

Big Ideas and Key Understandings

We know facts about the planets in our solar system. The farther a planet is from the sun, the colder it is. Planets close to the sun are so hot that man-made material cannot stand the heat. A ship powered by solar energy would go faster the closer it travels to the source of solar energy, the sun. Earth is the only planet with water in liquid form, although Mars has evidence of ice at the poles.

Synopsis

This selection is written as a Readers’ Theater where the students read the script aloud. The script is written as a fictional travel journal in which the characters record their travel experiences in space. The journal entries highlight facts about the sun and the planets in our solar system.

1. Read entire main selection text, keeping in mind the Big Ideas and Key Understandings.
2. Re-read the main selection text while noting the stopping points for the Text Dependent Questions and teaching Vocabulary.

**During Teaching**

1. Students read the entire main selection text independently.
2. Teacher reads the main selection text aloud with students following along. (Depending on how complex the text is and the amount of support needed by students, the teacher may choose to reverse the order of steps 1 and 2.)
3. Students and teacher re-read the text while stopping to respond to and discuss the questions and returning to the text. A variety of methods can be used to structure the reading and discussion (i.e.: whole class discussion, think-pair-share, independent written response, group work, readers’ theater, etc.)

Text Dependent Questions

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| **Text Dependent Questions** | **Answers** |
| Orbiting means to travel in circles around an object. At the beginning of the story, what planet is the Explorer orbiting?  | The spaceship Explorer is orbiting Pluto.  |
| Where was the spaceship Explorer going?  | The spaceship Explorer is going back across the solar system, heading toward the sun.  |
| How does the reader know the ship is powered by solar energy? What changes about the location of the ship that affects the amount of energy it has and how fast it can go? | The first mate says that the ship is powered by sunlight. The ship drew closer to the sun, so it has more solar energy and can go faster. |
| Scientists use telescopes to magnify views. What does it mean to magnify? | To enlarge an object so that it can be seen better.  |
| Using evidence from the story, give two examples of how Earth and Neptune are alike and different.  |  Both are planets in our solar system. Earth is a solid and has water. Neptune has no water and is a ball of swirling gases.  |
| Why does the sun look so tiny from Uranus?  | The sun looks so tiny because it is more than a billion miles away from Uranus.  |
| What is the largest planet in the solar system?  | The largest planet in the solar system is Jupiter.  |
| In *Space Log Entry Number 103,* what planet gives the space crew trouble and why? | The planet that gives the space crew trouble is Saturn. It gives them trouble because they got stuck in the pieces of ice that make up the rings around Saturn.  |
| One planet has many moons. Which planet is this?  | Jupiter has more than sixty moons.  |
| The spaceship is closer to the sun. What effect does being closer to the sun have on the spaceship? | Since the spaceship is closer to the sun, they are getting more energy so they can move a little faster.  |
| What planet is known for its distinctive color?  | Mars is known as the red planet because of its color.  |
| What forms of water are found on Mars?  | Solid water and ice caps are found on Mars.  |
| How is Earth like Mars? How is it different?  | Both are planets in our solar system. Earth has all three forms of water but Mars only has solid water.  |
| The author explains that Mercury and Venus are too hot for the spaceship Explorer to land on. Why can the spaceship Explorer land on the planet Earth? What attribute makes this possible?  | The spaceship can land on Earth because it is farther from the sun than Mercury and Venus and it is made mostly of water.  |
| Why is it hotter on Venus than on Mercury even though it is farther away from the sun?  | It is hotter on Venus because Venus’ atmosphere traps the heat from the sun.  |

Vocabulary

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|  | **KEY WORDS ESSENTIAL TO UNDERSTANDING** | **WORDS WORTH KNOWING** General teaching suggestions are provided in the Introduction  |
| **TEACHER PROVIDES DEFINITION** not enough contextual clues provided in the text | System, solar Energy Solid, gases (gas) Orbiting Generates Liquid  | Dwarf Observed Craters Picturesque Expedition“set a steady course” ***or*** *separate each word* Ex: Set, steady , course (acknowledge that both set and course are multiple meaning words) |
| **STUDENTS FIGURE OUT THE MEANING**sufficient context clues are provided in the text | Nuisance  | Magnify Martians Safeguard “homeward bound” |

Culminating Task

* Re-Read, Think, Discuss, Write
1. In the story, “Voyage across the Solar System”, the spaceship Explorer started the journey back across the solar system towards the sun. List in order the planets that were observed and write a short description of each planet. Finally, draw a diagram of the solar system. Remember to draw the planets with relative size and distance from the sun, including the dwarf planet Pluto.

Answer:

Pluto- Pluto is called a dwarf planet.

Neptune- Neptune is a giant blue ball of swirling gases.

Uranus- Uranus is more than one billion miles from the sun.

Saturn- Saturn has rings around it.

Jupiter- Jupiter has more than 60 moons. Jupiter is the largest planet in our solar system.

Mars- Mars is called the red planet.

Earth- More than half of earth is covered in water.

Venus- The surface of Venus is actually hotter than the sun.

Mercury- Mercury is the last planet before the sun.

1. Students re-write one “log entry” from the point of view of one of the characters, describing what happens, what they see, feel, and notice. (This would require the students to examine the text for facts and details as well as what different characters are feeling. The written piece would be in first person and could be in the form of a journal entry, an email back home to a friend or loved one, or a report back to the space agency.)

Additional Tasks

* Have students perform the Readers’ Theater script of, “Voyage across the Solar System”, using their science diagram as props/visuals for their performance. The students could move the spaceship along the diagram as they perform.
* Students research the distance between each of the planets and the sun and then discuss how long it might take a spaceship to travel from Pluto to Mercury, as the spaceship in the story did.

Note to Teacher

* This text is part fiction and part non-fiction. The facts about the planets are non-fiction, but the characters and their situation (traveling the solar system in a solar powered space ship) are fictional. The text makes no distinction between the fictional and non-fictional aspects, so this would be important for the teacher to discuss with students.

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**“Voyage Across the Solar System”**

1. Orbiting means to travel in circles around an object. At the beginning of the story, what planet is the Explorer orbiting?
2. Where was the spaceship Explorer going?
3. How does the reader know the ship is powered by solar energy? What changes about the location of the ship that affects the amount of energy it has and how fast it can go?
4. Scientists use telescopes to magnify views. What does it mean to magnify?
5. Using evidence from the story, give two examples of how Earth and Neptune are alike and different.
6. Why does the sun look so tiny from Uranus?
7. What is the largest planet in the solar system?
8. In *Space Log Entry Number 103,* what planet gives the space crew trouble and why?
9. One planet has many moons. Which planet is this?
10. The spaceship is closer to the sun. What effect does being closer to the sun have on the spaceship?
11. What planet is known for its distinctive color?
12. What forms of water are found on Mars?
13. How is Earth like Mars? How is it different?
14. The author explains that Mercury and Venus are too hot for the spaceship Explorer to land on. Why can the spaceship Explorer land on the planet Earth? What attribute makes this possible?
15. Why is it hotter on Venus than on Mercury even though it is farther away from the sun?