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? (Pg. 413) | The spaceship Explorer is orbiting Pluto. |
| Where was the spaceship Explorer going? (Pg. 413) | The spaceship Explorer is going back across the solar system, heading toward the sun. |
| Reread pages 414 to 415. 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. |
| On page 414, 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. (Pg. 415) | 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? (Pg. 416) | 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? (Pg. 416) | 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? (Pg. 417) | Jupiter has more than sixty moons. |
| On page 417, 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? (Pg. 418) | Mars is known as the red planet because of its color. |
| What forms of water are found on Mars? (Pg. 418) | Solid water and ice caps are found on Mars. |
| How is Earth like Mars? How is it different? (Pg. 421) | 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? (Pg. 423) | 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? (Pg. 423) | 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 (pg. 413)  Energy (pg. 414)  Solid, gases (gas) (pg. 415)  Orbiting (pg. 416)  Generates (pg. 417)  Liquid (pg. 421) | Dwarf (pg. 413)  Observed (pg. 415)  Craters (pg. 416)  Picturesque (pg. 421)  Expedition  “set a steady course” (pg. 423)  ***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 (pg. 417) | Magnify (pg. 414)  Martians (pg. 418)  Safeguard (pg. 423)  “homeward bound”(pg. 423) |

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.

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**“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? (Pg. 413)
2. Where was the spaceship Explorer going? (Pg. 413)
3. Reread pages 414 to 415. 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. On page 414, 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. (Pg. 415)
6. Why does the sun look so tiny from Uranus? (Pg. 416)
7. What is the largest planet in the solar system? (Pg. 416)
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? (Pg. 417)
10. On page 417, 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? (Pg. 418)
12. What forms of water are found on Mars? (Pg. 418)
13. How is Earth like Mars? How is it different? (Pg. 421)
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? (Pg. 423)
15. Why is it hotter on Venus than on Mercury even though it is farther away from the sun? (Pg. 423)

Supports for English Language Learners (ELLs) to use with Basal Alignment Project Lessons

When teaching any lesson, it is important to make sure you are including supports to help all students. We have prepared some examples of different types of supports that you can use in conjunction with our Basal Alignment Project Lessons to help support your ELLs. They are grouped by when they would best fit in a lesson. While these supports reflect research in how to support ELLs, these activities can help ALL students engage more deeply with these lessons. Note that some strategies should be used at multiple points within a lesson; we’ll point these out. It is also important to understand that these scaffolds represent options for teachers to select based on students’ needs; it is not the intention that teachers should do *all* of these things at every lesson.

**Before the reading:**

* Read passages, sing songs, watch videos, view photographs, discuss topics (e.g., using the [four corners strategy](http://www.theteachertoolkit.com/index.php/tool/four-corners)), or research topics that help provide context for what your students will be reading. This is especially true if the setting (e.g., 18th Century England) or topic (e.g., boats) is one that is unfamiliar to the students.
* Provide instruction, using multiple modalities, on selected vocabulary words that are *central to understanding the text*. When looking at the lesson plan, you should note the Tier 2 words, particularly those words with high conceptual complexity (i.e., they are difficult to visualize, learn from context clues, or are abstract), and consider introducing them ahead of reading. For more information on selecting such words, go [here](https://achievethecore.org/page/3167/selecting-and-using-academic-vocabulary-in-instruction). **You should plan to continue to reinforce these words, and additional vocabulary, in the context of reading and working with the text. (See additional activities in the During Reading and After Reading sections.)**

**Examples of Activities:**

* Provide students with the definition of the words and then have students work together to create [Frayer models](http://www.theteachertoolkit.com/index.php/tool/frayer-model) or other kinds of word maps for the words.
* When a word contains a prefix or suffix that has been introduced before, highlight how the word part can be used to help determine word meaning.
* Keep a word wall or word bank where these new words can be added and that students can access later.
* Have students create visual glossaries for whenever they encounter new words. Then have your students add these words to their visual glossaries.
* Create pictures using the word. These can even be added to your word wall!
* Create lists of synonyms and antonyms for the word.
* Have students practice using the words in conversation. For newcomers, consider providing them with [sentence frames](https://achievethecore.org/page/3159/ell-supports-for-writing-and-discussion) to ensure they can participate in the conversation.
  + Practice spelling the words using different spelling practice strategies and decoding strategies. Students could take turns spelling with a partner.
* Use graphic organizers to help introduce content.

**Examples of Activities:**

* Have students fill in a [KWL chart](http://www.nea.org/tools/k-w-l-know-want-to-know-learned.html) about what they will be reading about.
* Have students research setting or topic using a pre-approved website and fill in a chart about it. You could even have students work in groups where each group is assigned part of the topic.
* Have students fill in a bubble map where they write down anything that they find interesting about the topic while watching a video or reading a short passage about the topic. Then students can discuss why they picked the information.

**During reading:**

* Read the text aloud first so that ELLs can hear the passage read by a fluent reader before working with the text themselves.
* Allow ELLs to collaborate in their home languages to process content before participating in whole class discussions in English. Consider giving them the discussion questions to look over in advance (perhaps during the first read) and having them work with a partner to prepare.
* Encourage students to create sketch-notes or to storyboard the passage when they are reading it individually or with a partner. This will help show if they understand what they are reading as they are reading it.
* Ask questions related to the who, what, when, why, and how of the passage. For students that may need a little more help, provide them with [sentence stems](https://achievethecore.org/page/3159/ell-supports-for-writing-and-discussion).
* Continue to draw attention to and discuss the words that you introduced before the reading.

**Examples of Activities:**

* Have students include the example from the text in their glossary that they created.
* Create or find pictures that represent how the word was used in the passage.
* Practice creating sentences using the word in the way it was using in the passage.
* Have students discuss the author’s word choice.
* Use graphic organizers to help organize content and thinking.

**Examples of Activities:**

* Have students fill in a chart to keep track of their 5ws while they read to help them summarize later and figure out the central idea of a passage.
* It may again be beneficial to have somewhere for students to store new words that they encounter while reading the text. Students could use a chart to keep track of these new words and their meanings as they read.
* If you had students fill in a KWL, have them fill in the “L” section as they read the passage.
* Utilize any illustrations or text features that come with the story or passage to better understand the reading.
* Compare/contrast the passage with what the illustrations convey about the passage. Have students consider if the illustrations look the way they visualized the passage in their own minds or if the passage matches their predictions based on the illustrations.
* Identify any text features such as captions and discuss how they contribute to meaning.

**After reading:**

* Present directions for any post-reading assignments orally and visually; repeat often; and ask English Language Learners to rephrase.
* Allow ELLs to use English language that is still under development. Students should not be scored lower because of incorrect spelling or grammar (unless the goal of the assignment is to assess spelling or grammar skills specifically). When grading, be sure to focus on scoring your students only for the objective(s) that were shared with students.
* Scaffold questions for discussions so that questioning sequences include a mix of factual and inferential questions and a mix of shorter and more extended responses. Questions should build on each other and toward inferential and higher-order-thinking questions. There are not many factual questions already listed in the lesson instructions, so you will need to build some in as you see fit. More information on this strategy can be found [here](https://achievethecore.org/aligned/creating-sequencing-text-dependent-questions-support-english-language-learners/).
* Reinforce new vocabulary using multiple modalities

**Examples of activities:**

* Using the words that you had students work with before reading, have students write sentences in reference to the passage that you just finished reading.
* Require students to include the words introduced before reading in the culminating writing task.
* For newcomers, print out pictures that represent the words that you focused on and have students match the words to the pictures.
* Based on different features of the words, have the students sort them into different categories and explain their choices. For example, the students could sort the words by prefixes, suffixes, connotation, etc.
* After reading the passage, continue to examine important sentences (1–2) in the text that contribute to the overall meaning of the text. Guide students to break apart these sentences, analyze different elements, and determine meaning. More information on how to do this, including models of sentence deconstruction, can be found [here](https://achievethecore.org/page/3160/juicy-sentence-protocol).
* Provide differentiated scaffolds for writing assignments based on students’ English language proficiency levels.

**Examples of Activities:**

* For all students, go over the prompt in detail, making sure to break down what the prompt means before having the students get to work. Then have the students explain the directions back to you.
* Have students create an evidence tracking chart during reading, then direct them to look back over their evidence chart and work with a group to see if their evidence matches what the rest of the class wrote down. If some of the chart does not match, students should have a discussion about why.
* For students who need more support, model the proper writing format for your students and provide them with a properly formatted example for reference.
* For newcomers, you may consider creating sentence or paragraph frames to help them to write out their ideas.
* To further discussion about the passage, have students create their own who, what, when, where, why, and how questions related to the passage to ask each other and have students pair up and practice asking each other the questions. If available, pair students of the same home language to support the use of language still under development.