Unit 2/Week 4

Title: Mae Jemison, Space Scientist

Suggested Time: 3-4 days (45 minutes per day)

Common Core ELA Standards: RI.5.1, RI.5.2, RI.5.4; RF.5.3, RF.5.4; W.5.1, W.5.4, W.5.9; SL.5.1; L.5.4, L.5.5, L.5.6

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

With hard work, perseverance, and support you can achieve your goals. African Americans women have the same abilities needed to succeed as any other group of people. People can use their knowledge and talents to help others.

Synopsis

Throughout her life, Mae Jemison demonstrated perseverance in the pursuit of her childhood dream of becoming a space scientist.

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.)

1. 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, etc.)

Text Dependent Questions

|  |  |
| --- | --- |
| **Text Dependent Questions** | **Answers** |
| p. 211 How did Mae Jemison “make history” on September 12, 1992? | She was the first African-American woman in space. |
| Reread the first paragraph on p. 212. The text states *Mae’s dream didn’t come true overnight*. What does this mean? | Her dream came true after many long years of hard work, training and preparation. |
| p. 213 Read the first two paragraphs. Why did the kindergarten teacher say “Don’t you mean a nurse?” | Very few African Americans or women were scientists at this time in history. Second paragraph also states “although all the astronauts at that time were white and male” |
| p. 212-213 How did Mae’s parents encourage her, and what might have discouraged her? | Her parents supported her by finding the money, time and energy to support her interests like science and dance. Other adults could have discouraged her with comments about how astronauts were all white and male. “Many people like Mae’s teacher couldn’t imagine a little black girl growing up to be a scientist.” |
| What evidence is there of Mae’s fascination with space travel?  p. 213 | She liked to look up at the stars and dream of traveling in space. She was fascinated by real-life space flights and moon landings that she watched on television. |
| p. 214 How did Mae demonstrate her desire to help people throughout the world? | She worked in Cuba and rural Kenya and a Cambodian refugee camp in Thailand; she worked in Los Angeles and then she joined the Peace Corps, an organization that works to improve conditions in poor countries around the world. |
| At this point in the reading, what do we know about the type of person Mae Jemison is? | She loved science and learning; she worked to achieve goals even if there were obstacles; she wanted to help people |
| p. 215 Mae said, “…I had to learn to deal with how people reacted to my age, while asserting myself as a physician.” What does this mean? What does “assert” mean in this sentence? | She was only 26 and she looked young; she was one of the youngest doctors, and an African American woman. She had to prove herself as a doctor. Because of this some people might not have thought she could do such a big and important job.  Assert means to show to others that she can do the job and to make sure that other people respect her knowledge as a doctor and leader though she was younger than many of them. |
| p. 216 *Mae didn’t let success go to her head*. What does that mean? | She was very aware of the fact that she was not the first African American who had the skills, talent and desire. She said she just happened to be the first one NASA selected. |
| p. 217 What is something that is very different between life on earth and life in space? How did Mae prepare for this? | On Earth gravity keeps us from floating but in space people and objects float because it is a weightless environment- there is less gravity. She prepared for this by flying in a special training jet that simulates zero gravity. |
| p. 218 The author writes, Space shuttle Endeavor perched on the launch pad like a great white bird waiting to take flight? What is the author comparing in this simile? How does this help the reader’s understanding of the mood at this moment? | Comparing the space shuttle perched on the Launchpad to a great white bird perched and waiting to take flight. The mood is one of anticipation and excitement. The comparison to the great white bird emphasizes the size, beauty and importance of the Endeavor. |
| p. 219 What is Spacelab and where is it located? | Spacelab is the lab where the experiments are conducted. It is located near the front of the shuttle. |
| Pages 219-221. What are the three experiments designed and investigated by Mae? For each one explain what the experiment was and why it was important. | Loss of bone cells- astronauts lose bone cells in weightlessness and the longer they stay in space the more they lose; controlling space motion sickness- half of all astronauts experience space sickness and the medicine makes them tired; the frog experiment- to find out if tadpoles develop normally in space |
| P.221 How were Mae’s accomplishments celebrated? | Six days of parades, speeches and celebrations; received the Trailblazer award; inducted into the National Women’s Hall of fame. |
| p.222 How did Mae’s experiences ultimately lead to the formation of the Jemison Group? | Throughout her life, Mae’s work showed her passion for science and helping others. The goal of the Jemison Group is to use science and technology to improve the quality of life- especially in poor and developing countries. |

Vocabulary

|  |  |  |
| --- | --- | --- |
|  | **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 | asserting p.215  orbit p.211 | Aleut (pg. 637)  filets (pg. 638) |
| **STUDENTS FIGURE OUT THE MEANING**  sufficient context clues are provided in the text | resumed p.215  encouraged p.212  discouraged p.213  excelled p.213  accomplished p.213  demanding p.214  weightless/weightlessness p.217  perched p.218  designed p.219  investigated p.219  trailblazer p.221  motto p.222 | refused p.213  entered p.213  participate p. 214  provide p.214  completed p. 214  drift p.217  develop/developing p.218, 221, 222  devoted p.218  resigned p.221  established p.222 |

Culminating Task

* *Mae’s motto is “Don’t be limited by others’ limited imaginations.” Explain the meaning of this motto. How does Mae’s life exemplify this motto? Use specific evidence from the text to support your answer. (Teachers may want to have students create a timeline of key events before answering the question)*

Answer: This motto encourages people to pursue their goals and visions, even if others discourage them. Mae’s life: teacher said “be a nurse” because African American women weren’t scientists or astronauts- astronauts were male and white at the time; These things could have discouraged her, and she could have chosen a different career path, but she persisted despite being discouraged p.213 quote bottom of first paragraph; she excelled in school; specialized in Afro –American studies and chemical engineering, president of black student union; became a doctor and helped others in need; joined the Peace Corps; proved herself as a young doctor; became an astronaut; started the Jemison Group

Additional Task

* *This task should be completed in groups of two or three after working with the four stories in this theme (Michelle Kwan, Fear Place, La Bamba, Mae Jemison). Why do you think the stories of Mae Jemison, Michelle Kwan, Doug Grillo, and Manuel Gomez all belong in a theme titled Give It All You Got? What qualities do they share?*

Answer: All four of these people used personal skills, intelligence, and courage to succeed in difficult situations. Michelle was young and went against her coach because of her strong desire to get to the top level. She then worked hard to prove herself. Doug Grillo faced enormous challenges alone in the wilderness and overcame his fear in the end. Manuel Gomez had to make the best of a bad situation in the middle of the talent show. And Mae Jemison used her intelligence and drive to press forward until she succeeded.

*A graphic organizer might help students before they begin writing:*

|  |  |
| --- | --- |
| Character | Qualities |
|  |  |
|  |  |
|  |  |

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.