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Ms. Miller

Thematic Unit- EDU 315 Final

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Text Set: The following books will be placed on a table for the students to reference and read independently. *13 Planets: The Latest View of the Solar System* (by: David Aguilar), *All About Space: The Universe, Our Solar System and Space Travel* (by: Sue Becklake), *Astronauts* (by: Carmen Bredeson), *Destination: Space* (by: Seymour Simon), *Our Solar System: A Nonfiction Companion to the Original Magic School Bus Series* (by: Tom Jackson), *Postcards from Pluto: A Tour of the Solar System* (by: Loreen Leedy), *Solar System* (by: Gregory Vogt), *Space and the Planets* (by: Kris Hirschmann), *Stargazers* (by: Gail Gibbons), *The Magic School Bus Lost in the Solar System* (by: Joanna Cole), *The Moon* (by: Carmen Bredeson), *The Planets* (by: Gail Gibbons), *The Solar System: An A to Z Guide* (by: Christina Wilsdon), and many more.

Word Wall: The word wall for this unit will consist of the following words: Solar System, Stars, Moon, Astronaut, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, Constellation, Big Dipper, Orbit, Rotation, Phases, and Reflection.

Technology Resources: <http://solarsystem.nasa.gov/kids/> , <http://www.planetsforkids.org/> , https://www.youtube.com/watch?v=BZ-qLUIj_A0 , <http://www.kidsastronomy.com/mars.htm>, <https://www.youtube.com/watch?v=ZHAqT4hXnMw>, <https://www.youtube.com/watch?v=t-kzdR93bqw> , <https://www.youtube.com/watch?v=i235Y2HRksA>. <https://www.youtube.com/watch?v=7t3aXb3LpWg>, <http://interactivesites.weebly.com/solar-system.html> , http://www.softschools.com/science/space/solar_system_kids_games/ , http://www.softschools.com/science/space/phases_of_moon/ , http://sciencenetlinks.com/interactives/moon/moon_challenge/moon_challenge.html, <https://www.quia.com/jg/431146.html>, <http://matchthememory.com/BESLclass>, <https://www.youtube.com/watch?v=rVE8PFYIwSM>

Assessment: Students will be assessed throughout the course of the thematic unit using both formal and informal assessments. The formal assessment will be the student's learning logs in which they will write any work for their experiments, notes, questions, and a small journal entry on what they have learned each day. The Learning Log is the major assessment. Each day the teacher will be assessing the students also by the work and projects they complete. The informal assessment will be done by having the teacher walk around during projects to see student knowledge and learning.

Learning Logs: At the beginning of the thematic unit, the students will be given a notebook in which they will write notes, questions, work for experiments, and what they have learned for the day. The learning log will begin with the student writing everything they know on the solar system so the teacher can see where the students are in their learning. The notebook will be filled out every day, and at the end of the unit, the students will write again what they know about solar systems. The learning logs allow for the teacher to monitor student progress and learning, and to find out where the students are struggling in their learning.

Differentiation: Each lesson is created with the student in mind. With that said, each lesson has elements that speak to each type of learning style; visual, auditory, and tactile-kinesthetic. Each lesson also has accommodations for special needs students and enrichment for the high flyers.

Projects: Each of the projects at the end of the lesson is geared toward reinforcing the concept that was learned that day. The projects are easy enough for the students to do yet challenge them to think about what they have learned and put it to use.

Subjects Integrated: The subjects that have been integrated into the following lessons are Language Arts, Writing, Science, Math, Technology, Art, Health, and Movement.

Overall Objective of the Unit: The learner will **discover** how the solar system and its many elements work.

Thematic Unit Schedule

Week 1: The Moon and Stars

Day 1: The moon and reflection (Reflection Project)

Day 2: Phases of the moon (Oreo Project)

Day 3: Eclipses (Solar and Lunar Eclipse Model)

Day 4: Types of Stars (Research Project)

Day 5: Constellations (Short Research Project and Make own constellation)

Week 2: The Sun

Day 6: Source of energy (Create a poster advertising how sun can be used.)

Day 7: Seasons (Create a season's chart for the sun. Ex. The sun is far away in winter.)

Day 8: Center of life (Write a story as a news reporter on what happened when the sun died out.)

Day 9: Health Benefits (Create a poster that shows all of the health benefits of the sun.)

Day 10: The Sun and the Water Cycle (Create a diorama on how the sun affects the water cycle.)

Week 3: The Planets

Day 11: Names of the planets and their features (First 4) (Planet Trivia Game)

Day 12: Names of the planets and their features (Last 4) (Planet Trivia Game)

Day 13: Measuring Planet distance (Research and measure out planet distance in simple terms.)

Day 14: Balloon Planets (Students research how quick each planet moves, they are given a balloon and move accordingly around a center which is the sun.)

Day 15: The Solar System (Create a model of the solar system.)

Week 4: Astronauts

Day 16: Astronauts Introduction (Writing on why/why not they would be an astronaut.)

Day 17: Famous Astronauts (Research project on astronauts)

Day 18: Astronaut Transportation (Research and measure out how bit a rocket it.)

Day 19: Astronaut Food (Make astronaut food)

Day 20: Walking on the Moon (Activity: Students pretend they are astronauts.)

Grade Level: Grade 4

Subject(s) Area: Language Arts and Science

Materials Needed: Student Learning Logs, flashlights, mirrors, *The Moon* by Elisa Peters, a computer to play the video.

Standards:

RI.4.4.4 Determine the meaning of general academic and domain specific words or phrases in a text relevant to a grade 4 topic or subject area.

SL.4.4.2 Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

W.4.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic.

Objectives:

The learner will **develop** knowledge of the moon and its characteristics.

The learner will **discover** how the moon reflects the sun.

Learning Activities: (1 hour)

1. On the board the teacher will write the learning target: I can learn all about the moon.
2. The teacher will then hand out a learning log notebook out to each student
3. Instruct the students to write their name on their notebook and stress the importance of the notebook.
4. Have the students journal in their Learning Logs for about 15 minutes (time depending) on what they know about the solar system.
5. Show video to open the lesson <https://www.youtube.com/watch?v=i235Y2HRksA>
6. Introduce that today the students will be learning about the moon,
7. Discuss some things that the students learned about the moon from the video. (Video can be played again if they do not know.)
8. Read the book *The Moon* by Elisa Peters to the students
9. See if they have learned any more facts about the moon.
10. Do a minilesson on the moon and its characteristics.
 - a. How does it get its light?
 - b. What is its purpose?
 - c. What is it made out of?
 - d. Why do we see it only at night?
11. Add the words moon and reflection to the word wall and discuss with the students.

12. Split your students into groups of two or three by use of popsicle sticks.
13. Explain that the students are going to experiment with reflecting light just like the moon does.
14. Provide your students with the materials: a flashlight and a mirror.
15. Explain to the students that they must see if they can make the light to reflect off of the mirror. Have them experiment with different angles and different lengths of the light away from the mirror.
16. Explain the rules:
 - a. Don't shine the light in people's eyes.
 - b. Be careful with the mirror.
 - c. Don't look directly at the mirror when shining the light into it.
17. Allow the students to begin their experiment keeping in mind that they are writing their observations of the experiment down in their Learning Log.
18. Allow the students to do this for 15-20 minutes (time permitting). While they experiment, the teacher will observe the students.
19. Bring the students back together and talk about the results of the experiment.
20. Have the students do a small journal entry on what they have learned for the day.

Assessment:

Students will be assessed on their daily participation in class and their journal entry for the day.

Students will listen to the video presented in class and to the book *The Moon* by Elisa Peters. After a short minilesson on the moon and its characteristics, the students will be split into groups and do an experiment on reflection to see how light reflects. This reflection experiment can be related to how the moon reflects the sun's light.

Students who need accommodation can orally tell their journal entry to someone who will write for them or may orally tell the teacher what they learned. During the experiment they will work closely with their peers to participate in any way they can (ex. Holding the flashlight)

Students who need enrichment will be required to prove their understanding of the moon and how reflection works by completing the experiment on reflection. They will later be allowed to read books and do research on the moon to further their knowledge.

Reflection:

Grade Level: Grade 4

Subject(s) Area: Literature and Science

Materials Needed: Oreos, black construction paper, glue, plastic knives, visual of the phases of the moon, *Moon Phases* by Zaria Brown

Standards:

RI.4.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text; including what happened and why, based on specific information in the text.

RI.4.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.

W.4.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

Objectives:

The learner will **discover** what the different phases of the moon are and how they are formed.

The learner will **show** their knowledge of the phases of the moon by **constructing** an accurate depiction of the phases.

Learning Activities: (1 hour)

1. The teacher will write the learning target on the board: I can learn about the phases of the moon.
2. Review with the students what they learned yesterday about the moon and reflection.
3. Introduce the phases of the moon by reading *Moon Phases* to the students.
4. Do a minilesson on the phases of the moon. Use visual 1 to aid you. Be sure to explain to the students all about orbit and how the moon and planets move.
 - a. New Moon
 - b. Waxing Crescent
 - c. First quarter
 - d. Waxing Gibbous
 - e. Full Moon
 - f. Waning Gibbous
 - g. Third Quarter
 - h. Waning Crescent
5. Explain to the students that they will be making a project on the phases of the moon. (Show them example)
6. Demonstrate to the students how to create the perfect moon shape on their Oreo.

- a. Twist the Oreo so all the cream is on one side. To create a full moon, leave the cream. To create a new moon, get rid of all the cream. To create a crescent moon, gently scrape off the cream until you have a crescent shape.
7. Demonstrate to the students how to finish the project.
 - a. Glue your Oreos to the construction paper in order of how the phases of the moon go.
 - b. Students can use the chart for a reference.
8. Go over the rules
 - a. You can eat the remaining Oreo you don't use or scrape off.
 - b. No poking each other with the knives.
 - c. Don't go overboard with the glue.
 - d. If you need help ask a peer or the teacher.
9. Distribute a piece of black construction paper, a plastic knife, and 7 Oreos to each student. Post the visual on the board.
10. Let the students begin their project.
11. The teacher will walk around to make sure the students are doing the moon phases correctly and assessing if the students are learning about the phases.
12. Once the students are done, have them place their creations to dry.
13. (Time permitting) Allow students to visit the following websites to play games on the phases of the moon
 - a. http://www.softschools.com/science/space/phases_of_moon/
 - b. http://sciencenetlinks.com/interactives/moon/moon_challenge/moon_challenge.html
 - c. <https://www.quia.com/jg/431146.html>
 - d. <http://matchthememory.com/BESLclass>
14. Come back together as a class and discuss the phases of the moon.
15. Have the students write in their Learning Logs what they learned.

Assessment:

Students will be assessed on their daily participation in class, their daily journals, and their ability to put the phases of the moon in correct order during the project.

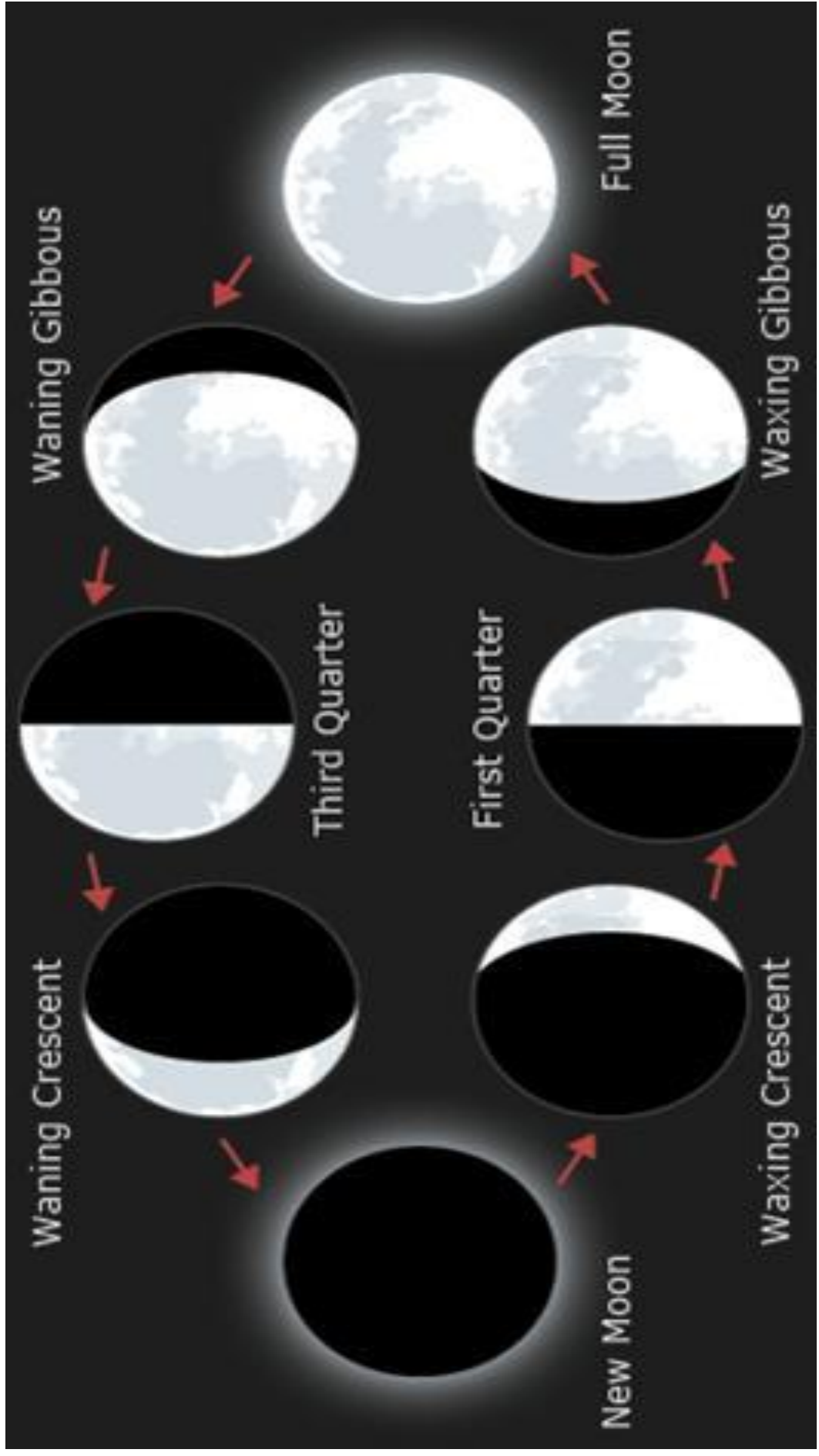
Students will listen to the book *Moon Phases* by Zaria Brown. After a minilesson on the different phases of the moon and how they are created, students will create their own phases of the moon chart based on what they have just learned.

Students who need accommodation can have help creating their phases of the moon project and can orally tell the contents of their journal to someone who will write it down. They may also tell the teacher what they learned for the journal.

Students who need enrichment will be required to prove their understanding of the phases of the moon by completing the moon phase project. Later on in the class, they can back up their

understanding of the phases of the moon by reading books about the phases or playing the phases of the moon games on the websites provided.

Reflection:



Grade Level: Grade 4

Subject(s) Area: Language Arts and Science

Materials Needed: flashlight, ping pong balls, apples, construction paper, scissors, pencil.

Standards:

RI.4.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

RI.4.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.

Objectives:

The learner will **distinguish** between solar and lunar eclipses.

The learner will **produce** an accurate portrayal of both a lunar and a solar eclipse.

Learning Activities: (1 hour)

1. The teacher will write the learning activity on the board: I can distinguish between solar and lunar eclipses.
2. Ask the students about the moon to check for understanding from the previous lesson.
3. Explain to the students that sometimes the moon can do some pretty interesting stuff such as move in front of the sun. This is called an eclipse.
4. Play the video for the students <https://www.youtube.com/watch?v=rVE8PFYlwSM> (stop at 2:00)
5. Discuss with the students what happened in the video and how to distinguish between a solar and lunar eclipse.
6. Teach a minilesson on solar and lunar eclipses.
 - a. Give facts.
 - b. Use the example from the video as a visual demonstration of how to tell the difference between a solar and lunar eclipse.
 - i. Shine a flashlight on an apple and move a ping pong ball in front of it. Note the shadow.
 - ii. Move the apple in front of the ping pong ball. Notice how it goes dark
7. Allow the students to get into groups to try out this experiment. (Don't forget the Learning Logs!)
8. After 10-15 minutes, bring the class back together and talk about the student's findings.
9. Next, explain to the students they will be making their own eclipse pictures. (Show an example)
10. Tell the students the directions.

- a. Cut out two circles from construction paper for earth, two circles for the sun, and two circles for the moon. Make sure they are size appropriate.
 - b. Next get two pieces of black construction paper. On one arrange the sun, moon, and earth for a lunar eclipse, and on the other arrange them for a solar eclipse.
 - c. Next, cut out the shadows. Make sure they are appropriate for the eclipse.
 - d. Glue each piece on.
11. Allow the students to begin working.
 12. The teacher will walk around assessing how the students are doing and if they are placing the sun, moon, and earth in the right position for the right eclipse.
 13. Once the students are done, review eclipses.
 14. Allow the students to write in their Reading Logs about what they learned.

Assessment:

Students will be assessed on their daily participation in class and their solar/lunar eclipse project.

Students will watch a short video on eclipses. After the video, they will be taught a minilesson and allowed to experiment with how eclipses are created. They then will create their own solar and lunar eclipses on paper to show their knowledge.

Students who need accommodation will be allowed to have someone do the project for them (the student must tell the helper where everything goes) and they will also be allowed to demonstrate their knowledge of eclipses by showing with the apple and ping pong ball or verbally telling.

Students who need enrichment will be required to demonstrate their knowledge of eclipses by doing the eclipse project. Later on, the student can watch videos on eclipses and read books to further their knowledge on the subject.

Reflection:

Grade Level: Grade 4

Subject(s) Area: Language Arts and Science

Materials Needed: *Once Upon a Starry Night* by Jacqueline Mitton, black construction paper, push pins, pencil, flashlight, Constellation Organizer sheet

Standards:

W.4.4.7 Conduct short research projects that build knowledge through investigation of different aspect of a topic.

SL.4.4.4 Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly and at an understandable pace.

RI.4.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.

Objectives:

The learner will **discover** what constellations are and how to identify them.

The learner will **construct** a basic knowledge of the different types of constellations.

The learner will **design** their own constellation based on what they have learned.

Learning Activities: (1 hour- 1:30)

1. The teacher will write the learning target on the board: I know what constellations are and how to identify them.
2. Review with the students what they learned the previous day about stars.
3. Explain that sometimes the stars create pictures in the sky.
4. Read *Once upon a Starry Night* by Jacqueline Mitton to the students.
5. Review the book and discuss what the students learned about constellations.
6. Do a minilesson for the students
 - a. What is a constellation?
 - b. How are they formed?
 - c. Do they ever disappear?
 - d. What types of constellations can you see?
 - e. How do you find a constellation?
7. Group the students into pairs and allow them to research constellations on the internet. Have them fill out the Constellation Organizer sheet. (See attachment 1)
8. Bring the students back together as a class and discuss their findings.

9. Explain to the students that they will be creating their own constellations. (Show them a visual)
10. Explain the steps to the process
 - a. On the black construction paper use a pencil to draw dots to outline your constellation.
 - b. Next, take a push pin and poke through all of the dots you made.
 - c. Once finished, take a flashlight and shine it through the paper to show a constellation.
11. Explain the rules
 - a. The push pins are for poking the paper only; nothing else.
 - b. Take your time.
 - c. Be responsible with the flashlights.
12. Distribute 1 piece of black construction paper and 1 push pin to each student and instruct them to begin.
13. After the students are finished, shut off the lights and display the new constellations.
14. Review constellations and have the students write in their Learning Logs for the day.

Assessment:

Students will be assessed on their daily participation in class, their Constellation Organizer, and the effort they put into their constellation project.

Students will listen to *Once upon a Starry Night* by Jacqueline Mitton. After a minilesson on constellations, the students will be split into pairs and have to complete a short research project and organizer. Lastly, the students will create their own constellations and display them for the rest of the class to admire.

Students who need accommodation can have assistance with poking their constellations or will be permitted to draw it instead. Students who need accommodation can also have someone assist them in filling out the Constellation Organizer sheet.

Students who need enrichment will be required to prove their understanding of constellations by completing the research project and the Constellation Organizer. Later on, they will be allowed to read books about constellations to further learn more.

Reflection:

Constellation Organizer

Name:

Details/Interesting Facts:

Draw the Constellation:

Name:

Details/Interesting Facts:

Draw the Constellation:

Name:
Constellation:

Draw the

Details/Interesting Facts: