Plan for Instruction

TEACHER: Ms. Lee	TIME FRAME: 5th six weeks (6 weeks unit)
CLASS: 4th grade science	TITLE OF UNIT: EARTH AND SPACE: A SOLAR TOUR

Unit/Key Standards:

4.6 Force, motion and energy. *The student knows that energy exists in many forms and can be observed in cycles, pattern, and systems.*

4.7 Earth and space. *The students know that Earth consists of useful resources and its surface is constantly changing.*

3rd TEKS	**4TH TEKS**	**5th TEKS**
3.8 Earth and Space. The students know that there are recognizable patterns in the natural world and among objects in the sky.	4.8 Earth and Space. The students know that there are recognizable patterns in the natural world and among the Sun, Earth and Moon System.	5.8 Earth and Space. The students that are recognizable patterns in the natural world and among the Sun, Earth Moon Systems.
3.8C Construct models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions.	4.8A Measure and record changes in weather and make predictions using weather maps, weather symbols, and a map key.	5.8 Identify and compare the physical characteristics of the Sun, Earth, and Moon.
	4.8B Describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process.	

ELAR TEKS:

4.1B: The student follows, restates, and gives oral instructions that involve a series of related sequences of action
4.1D: The student works collaboratively with others to develop a plan of shared responsibilities
4.6A: The student establishes purpose for reading assigned and self-selected texts
4.6C: The student makes and corrects or confirms predictions using text features, characteristics [of genre] and structures
4.6F: The student makes inferences and use evidence to support understanding
4.7A: The student describes personal connections to a variety of sources, including self-selected texts
4.7E: The student interacts with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating
4.8A: The student infers basic themes supported by text evidence

Brief Overview (Summary) of the Unit:

Earth is part of the solar system, which includes the Sun, Moon, and other bodies that orbit the Sun in predictable patterns that lead to observable paths of objects in the sky as seen from Earth.

Information from UbD Stage 1: Desired Results

Competency (Key knowledge, skill and/or misconceptions will be addressed):	The students will process content by looking at different perspectives and build on their own knowledge Students will know about planets, including earth

	Students will use real world experiences to identify objects and solve problems Students will read and understand riddles in relation to the content, i.e. planets ESTABLISHED GOALS Planets: A 4th Grade Science Thematic Unit To study other planets gives us a better understanding of how our planet Earth was formed. It follows aliteracy and science-based unit and teaches the students that there is more out there in the world than just Earth. It allows the student to be introduced to a more diverse learning atmosphere and can spark an interest in the learner for future benefits. OUTCOMES Students are introduced to numerous websites for future research Students share and expand their own thoughts and ideas on objects in the sky without further questioning/discussion but the word (PBL type of open ended thinking) Students are collaborating and comparing thoughts with group Students are using prior knowledge through perspective, assessment and reflection before diving into the unit Students are introduced to new content and corrected by skills of research and self learning/teaching Students provide new learning through numerous formats (assessment, think log, riddle, interactive notebook, etc.) Students combine learning all within the a form of an interactive notebook to keep organized and reflect throughout the entire unit Student differentiation is not as vital since the activities are reflective, opinionated and open ended Students use rubric to score their own engagement and level of understanding (self-reflection)
Enduring Understanding(s):	Students will understand the relationship of different systems and patterns in the solar system Students will understand the planets' relative distance from the sun and their approximate size in relation to the Earth Students understand that the Earth is one of several planets orbiting the sun and that the moon orbits the Earth. Students understand that planets look like stars but over time appear to wander among the constellations. Students understand that astronomical objects in space are massive in size and are separated from one another by vast distances (e.g., many stars are more massive than our sun but so distant they look like points of light).

Essential Question(s) – could be used as an Academic Prompt):	1. What patterns are in the sun, moon and planet systems? 2. How is space changing? 3. What is the relationship between sun and energy? Mini Lessons: (*resources for information that will be used to teach the lesson):* The teacher will do 15-20 minute mini lessons throughout the unit on top of Marzano strategy activities: - What is space weather? https://spaceplace.nasa.gov/spaceweather/en/ - What is the relationship between the sun and energy? https://spaceplace.nasa.gov/sun-heat/en/ - How far is the moon? https://spaceplace.nasa.gov/moon-distance/en/ - What is a planet? https://spaceplace.nasa.gov/planet-what-is/en/ - How does our sun compare to other stars? https://spaceplace.nasa.gov/sun-compare/en/ - What causes the season? https://spaceplace.nasa.gov/seasons/en/ - All about the planets: https://spaceplace.nasa.gov/planets/en/ - Earths atmosphere: https://spaceplace.nasa.gov/atmosphere/en/ - Whats in space? https://spaceplace.nasa.gov/story-whats-in-space/en/
Learning Goals	Students will be able to identify different objects in our solar system apart from Earth Students will be able to determine the position of the Earth from the sun and moon Student will build background knowledge of the content because they listened to peers perspectives and built upon their own perspective Students will be able to state their own perspective, explain where or how they came up with this and then compare it to the other students perspectives Students will be able to summarize their own perspective and be obvious that their perspective had either changed, broadened or is more in depth than at the start of the lesson Students will understand the relationship of different systems and patterns in the solar system. Students will know about planets, including earth

Differentiated Instruction needed to ensure all learners have access to this learning (including SPED, MTSS and Gifted)

Accommodations:
Classroom accommodations: ● students can complete KWL charts as the verbal discussion is being shared ● students can be given stem questions to answer and think about before small group begins (i.e. What do I already know? How does my perspective differ than my peers? How do I already know this new content? Why is my knowledge different from my peers?) ● students can be given visuals of new content (i.e. pictures of stars, planets, etc.) so they have an idea of new content rather than just verbally ● students can write their answers first and then share ● ELL and Special Ed will be given the graphic organizer to glue or staple into their interactive notebook ● ELL students will be given questions to answer to help with warm up ● Teacher will go to ELL/Special Ed students during independent work and clarify they understood the instructions of all tasks

- GT students will be asked to expand their thinking after warm up by writing in their interactive science journal a mind map

Pre-assessments/formative assessments:

- students will be able to verbally share what they know
- students will complete a sort and match for the “show”
- the students will have few multiple choice questions
- the teacher will ask questions for the student specifically

Academic Notebooks:

- teachers will provide students with the cut and paste graphic organizer for all activities and notes already in the journal
- students will write simple sentences
- students will only need to complete half page responses
- teacher will provide examples and stem sentences for students to finish or copy down

Independent work:

- students will have graphic organizer for all parts of activity
- students can verbally share the comparison rather than write it down
- students can work with a partner
- students can look at pictures when guessing what planet they compared
- students can use simple words to compare

Modifications

- Students will be put in groups that allow opinions from all levels of groups for the perspective analysis activity
- Students will be given clear instructions for how to do the walk around for warm up

Planetarium System:

Teacher will lead the class in creating a web of planet facts to tap students' prior knowledge of astronomy topics. When the web is as big as it's going to get, the teacher will share some basic planet facts with your students: *Mercury is closest to the sun, Venus is the hottest planet, Earth is mostly water, Mars is red because of rust, Jupiter is the largest planet and has a spot, Saturn's rings are made of ice and rock, Uranus spins like a bowling ball, Neptune's blue color is methane, and Pluto is the smallest planet.*

Plans for after this learning/competency is complete: *What will the students do if they finish early?*

- Students will be given pictures of the planets, then have them paint balloons—you can inflate them and cover them with paper ahead of time—to reflect what they have learned.

Information from UbD Stage 3 - Learning Plan, Experiences, Instruction and Learning Activities:
Consider the **WHERETO** elements

	The Teacher will…	The Student will…
W Where are we going? What is expected?	Sequence the weekly lessons with the end in mind of a planetary classroom tour	Transfer their prior knowledge to new knowledge and skills on content and the topic of the solar system and its patterns in order to properly present a tour to other classrooms/students
H How will we hook (Introduce this to) the students?	Model for students, use “I do, we do, you do” teaching methods, and ask open ended questions	Build prior knowledge from own perspective and collaboration to initiate interest and degree of already retained knowledge of topic

E How will we equip students for expected performances?	Will provide, explain and periodically check up on students with rubrics, reflections, and feedback	Listen and follow along with modeling by teacher, collaborate in groups and ask both teacher and students for help in completing specific tasks, and have clear idea of final project and outcomes from unit
R How will we rethink or revise?	Review reflections and at check points revamp lesson and/or extend lessons/unit as needed	Self-reflect and keep up to date in their interactive notebook and for checkpoints
E How will students self-evaluate and reflect their learning?	Provide proficiency, student friendly rubric and check point questions	Complete the rubric, ask questions, and reflect and keep up to date in their interactive notebook to ensure proper feedback by teacher and for self
T How will we tailor learning to varied needs, interests, and learning styles?	Provide resources accommodating to all students (technology via PDF), allow graphic organizers as needed, and adapt activities for individual or partner work as needed	Ask for assistance when needed, ask questions for clarifications and be honest with teacher at check points
O How will we organize the sequence of learning during the lesson?	Have a weekly schedule to follow, and keep students on target by ensuring they are added in the process (they are aware of check points, deadlines, and part of creating the weekly scheduled)	Put their input on timing, interest and level of rigor behind the weekly schedule and end final project

Information from Stage 2: Evidence

Sufficient and Revealing Evidence of Understanding: Briefly explain if and how it will be used.

Informal Check (formative evidence such as conferencing, group Q/A, Observation, Dialogue (Kid Talk and or Kid-Teacher happening during the learning):	The students will keep an interactive journal specifically for this unit and insert all parts of the process of the unit (i.e. notes, graphic organizers, reflections, warm ups, exit tickets, etc.) The students will reflect weekly on their process, including their questions and prior knowledge at the start each 'chunk' of the unit as well as summarize the ending and their built knowledge The students will give a few multiple choice questions for each chunk of process in the unit (from start to finish/change in rigor): Check point questions 1. Have you ever noticed how the moon is a different shape every night? Half of the moon is always lit up by the sun, but the half that's lit isn't always facing directly toward us. What if you were a moon creature looking at the Earth night after night? Would the Earth be a different shape every night too? Why? 2. Did you know that gravity is weaker on the moon than on the Earth? If you're standing on the moon, it's a lot easier to move around and lift heavy objects. Think of your favorite game or sport. How would it be different if you played it on the moon? 3. Uranus is different from the other planets. It spins like a bowling ball instead of like a top. Can you think of a reason why it does that? 4. Believe it or not, Pluto is actually smaller than the Earth's moon! Some astronomers say it's not really a planet. They think it used to be a moon that circled Neptune, but that it somehow got away. What do you think? Is Pluto a planet or a lost moon? Kahoot! (https://embed.kahoot.it/100a1837-f000-45e3-bd4b-f983186125ff) The class will play kahoot! throughout the unit to continue building their background and newly learned knowledge Think log/Interactive notebook

	Student friendly rubric/reflections/check points KWL Chart/graphic organizers
Quiz/Test (optional): (attach copy of assessment)	Pre-assessment: students will go to the website https://www.kidzworld.com/quiz/3072-quiz-test-your-space-smarts/ and take the 8 question quiz Students will use the proficiency scale throughout unit to provide feedback and check ins with teacher. PROFECIENCY SCALE Student friendly THE STUDENTS WILL BE ABLE TO DESCRIBE OBJECTS IN THE SOLAR SYSTEM THE STUDENTS WILL KNOW PATTERNS IN THE SOLAR SYSTEM SCORE 4.0 Students have a deep understanding of the learning standards and can demonstrate it in complex ways I understand this concept so well that I can apply it to other content, and explain it in my own words SCORE 3.0 Students meet the expectations described in the learning standard and can do them independently I understand what is going on here and I can show it SCORE 2.0 Students get close to meeting expectations and can do the simpler parts of the learning standards I am not sure if I understand this completely, but I have enough confidence to try and figure it out SCORE 1.0 Students need help and support from the teacher to do the simpler parts of the learning standard This looks familiar but I need help to do this SCORE 0.0 Students can't independently meet expectations described in the learning standard or work independently This is new to me and I still do not understand this concept
Closing/Summary/Recap	Students will be introduced to this rubric at the beginning of unit and reflect on it throughout the unit. At end of unit, after the planetary system tour, students will complete rubric. Both teacher and student will fill one out and then teacher will sit with each student at the end and review with student. Students will answer the following questions after completing rubric: 1. Give an example of something that made you proud during this project. Explain why! 2. What challenges did you have planning and creating the planetary system? 3. What did you learn about yourself in this project? (Student responses should demonstrate an ability to reflect on themselves and may be positive or negative in nature. If negative, speak to students about how they could work to improve these aspects.) Students will pair-share and then share out as a whole group their reflections. Teacher will facilitate student work and progress by: - Walking around and asking open ended questions - Support students in research skills - Relate topics and content across different subjects - Teach research skills by modeling - Provide verbal feedback during entire week - Provide written feedback in interactive notebook

- Organize the other students/classes to come to exhibit
- Review rubric with students
- Introduce topic and rubric to students
- Score students with rubric throughout PBL to transfer the learning
- Monitor and manage student behavior
- Redirect when needed in behavior, group work, learning and content being learned

		4- I got it down	**3- I understand**	**2- I still have questions**	**1- I need help**
21st Century Skills					
Collaboration /Participation	We will effectively participate class discussions by speaking and listening				
	We will listen to, encourage and show respect for ideas that are different from their own				
	We will consistently work toward group goals				
Communication	We will present ideas orally, speaking clearly and at an understandable pace				
	We will ask and answer questions in a discussion and make comments that link to those of others				
Engagement /Application	We will stay focused on the topic or work				
	We will work toward goals with motivation and resilience				
Critical Thinking	We will analyze the problem				

	/Problem Solving	and focus inquiry				
		We will approach problems confidently and consider various solutions				
	Creativity	We will show creativity in their ideas, work or final product				
	Self-Management	We will manage their time effectively with clear strategies and focus				
		We will manage the steps of the project in an organized manner				
	Attention to Detail/ Accountability for High Standards	We will take care to avoid inaccuracies				
		We will present work in a neat and careful manner				
	Reflection	We will provide thoughtful and complete responses to the reflection questions				
		We will reflect on work and learning, acknowledging areas for improvement				
Performance Task/Project: (attach rubric) UNIT BREAKDOWN	**Weekly hands-on activities:** **Week 1:** - Earth layers: https://spaceplace.nasa.gov/earth-fan/en/ - Sun Paper: https://spaceplace.nasa.gov/sun-paper/en/ - Universe in a box: file:///C:/Users/clee/Downloads/mystery-science%20(1).pdf **Week 2:** - Moon Mania: Students will be given a chart on which they are to draw the way the moon appears each night for the next 3 weeks. As students come in each day and share their observations, tell them the name of the phase of the moon they saw. When the full/new moon is approaching, they will predict what the next phase will					

look like.
- Moon activity: https://spaceplace.nasa.gov/oreo-moon/en/

Week 3:
- Distance of Moon to Earth: Students will use a basketball and tennis ball to represent the earth and moon. The basketball will be on the ground and using measuring tape, the tennis ball will be placed 23 feet 9 inches away from the middle of the basketball. Students will reflect on: Are the basketball Earth and tennis ball moon farther apart than you expected?
- Star Finder: https://spaceplace.nasa.gov/starfinder/en/

Week 4:
- Space mail: Students design postcards from the planets and the moon, complete with a commemorative stamp. They will write a short message to a friend at home on Earth explaining how their space vacation is going—the sights they have seen, what the terrain looks like, and how long it will take them to return.
- Virtual field trip: "Objects in the Solar System": The students will go to the website jpl.nasa.gov (https://www.jpl.nasa.gov/virtual-tour/) and complete a "virtual tour" of the NASA laboratory by exploring the "visitor center/museum" about the planets, sun, moon and solar system. Students will complete a think log as they complete the virtual tour, the students need to use all 5 senses in answering self directing questions/thoughts and/or reflective ideas and read their think log to their parent on their "virtual tour" experience as if they had just come home from a field trip to the NASA lab. Students will read the riddle about planets and complete worksheet using what they learned from the tour.

Week 5:
- Outer Orbits: Students work in groups to design a board game that takes players through the solar system as they move around the board.
    - The path from START to STOP will spiral out with stops on each planet.
    - On each planet they will be asked a space science question.
    - Each group will decide on specific rules of play.
- Build your own spacecraft: https://spaceplace.nasa.gov/build-a-spacecraft/en/
- Running to Neptune: Distance between planets (PDF)

Week 6: Summative Assessment (FINAL PROJECT)

- **Part 1: Visual/Lab**

Classroom Planetarium:

Materials:

- round balloons, different sizes
- tempera paint and paint brushes
- fishing line (or strong string)
- construction paper
- newspaper torn into strips about one inch wide
- space paste (see instructions below)
- S-clips to suspend models from ceiling tile frames (large paper clips bent into L shapes or strong loops of tape will work as substitutes)

Procedure:

1. Students create a batch of "space paste", by mixing flour and water to make a thick paste.

2. When the paste is ready, students are divided into nine groups, and each group a planet.

3. Each group is given a balloon *(students will be told that all of the balloons should not be*

	blown up to the same size-- approximate size is all that is necessary, but that the big planets should be noticeably larger than the smaller ones) 5. Each group will be given a long piece of fishing line to tie the line around the end of their balloon. 6. Each group will be provided with a supply of space paste and newspaper strips. They will dip each strip into the paste, gently pull it through their fingers to wipe off extra clumps, and then paste it onto balloon. 7. Allow the balloons to dry. While they are drying, students should decide how they are going to paint the surface of their balloons. Which colors will really bring out the physical landscape? When the balloons are ready—which might not be for a while—have students paint them. 8. Students will paint their planet according to the features of each planet - **Part 2: Presentation** Students will present their planetary system tour by having the other 4th grade classes come in and take a "tour". The tour: - The suns are displayed in the middle of the classroom on desks from week 1 lab activity - The moons are displayed on the wall on one side of the classroom from week 2 lab activity - The stars are hanging from the ceiling from week 3 lab activity - The comets are displayed on the wall on another side of the classroom Student presentations: - students will be encouraged to dress up like astronauts - students will have recordings about their models OR stand next to their models and share information as people pass with note cards (like a tour guide) o within their groups, students will break apart into 5 different areas of the classroom: sun, moon, planet or stars *(all students will have to share outloud with note cards or prerecord the information they learned for the tour)*
EXAMPLE LESSON PLANS	**LESSON 1:** Learning Goals: • Students will build background knowledge of the content because they listened to peers perspectives and built upon their own perspective • Students will be able to state their own perspective, explain where or how they came up with this and then compare it to the other students perspectives • Students will be able to summarize their own perspective and be obvious that their perspective had either changed, broadened or is more in depth than at the start of the lesson Marzano Strategies: • Perspective Analysis • Collaborative Process • Think-pair share • Concept attainment Introduction: The students walk in and see stars on the ceiling (from the projector) with the lights off, and as they sit down, they have to observe their feelings in their interactive journal with their 5 senses.

	Warm up: On the front white board will be the word “solar system”, and around the room on anchor charts, there will be the words: “star”, “sun”, “planet”, and “moon”. (5 minutes) Independent assignment: The students are instructed: “walk around, without talking to each other, and think, and write down what comes to mind. It can be anything. What you know, want to know, feel, etc.” (10 minutes) Pre-assessment : Students will go to the website https://www.kidzworld.com/quiz/3072-quiz-test-your-space-smarts/ and take the 8 question quiz. (30 minutes) Perspective Analysis/We do: The teacher and students in class discussion will verbally discuss outloud their current perspective on new material (i.e. the solar system) (10 minutes) Students will share their perspective/belief of the solar system with small group verbally and explain why they believe this (what have they heard, seen, read, or been told about the new content prior) and write down in their interactive journal (10 minutes) Students will listen and ask other students their perspective/belief on topic and reflect in their journal and compare and contrast their belief/perspective with each other to see how or why they have differing knowledge of the solar system (10 minutes) Individual assignment: Students will go to the website https://www.planetsforkids.org/ and explore, trying to find proof or disproof of their perspectives and beliefs and complete a KWL chart, summarizing what they learned in the small group and website (5 minutes) Summative: The class will go to the kidzworld and answer the questions together as a class from the pre-assessment verbally (10 minutes) Warm down: (https://embed.kahoot.it/100a1837-f000-45e3-bd4b-f983186125ff) The class will play kahoot! to continue building their background and newly learned knowledge * For homework: though the students had time to navigate the website for homework in their lesson, the teacher will share with the students that their homework assignment will be to do a virtual tour. The teacher will preview the website at the end of class to show students how to navigate website, and ask preview questions to peak students curiosity and activate prior knowledge. * The following day, the students will be expected to share their think log to the class/teacher. The teacher will ask students to extend their knowledge, thinking by verbally reflecting on their experience with teacher generated questions; students will also use the “student friendly rubric” to share with teacher on scale one to four how confident they were with the lesson the prior day Differentiation: • Students can complete KWL chart as the verbal discussion is being shared • Students can be given stem questions to answer and think about before small group begins (i.e. What do I already know? How does my perspective differ than my peers? How do I already know this new content? Why is my knowledge different from my peers?) • Students can be given visuals of new content (i.e. pictures of stars, planets, etc.) so they have an idea of new content rather than just verbally • Students can write their answers first and then share **LESSON 2:**

Learning Goals:

• Students will be able to identify different objects in our solar system apart from Earth.
• Students will understand the relationship of different systems and patterns in the solar system.
• Students will know about planets, including earth

Marzano Strategies:

• Visual Activities
• Writing tools
• Think logs
• Jigsaw Cooperative Learning
• Previewing Strategies

Lesson:

The students will go to the library and learn research skills by completing a scavenger hunt for the website: Spaceplace (https://spaceplace.nasa.gov/menu/earth/)

1. What is the atmosphere?
2. How much water is on Earth?
3. Why is the sky blue?
4. How far away is the Moon?

Mini lesson: Earths atmosphere: https://spaceplace.nasa.gov/atmosphere/en/

Students will check out two books each: one on their planet of choice and one on something relative to solar systems

Students within their table/group, will read the books and become an expert on.

Students will rotate, and present the information in any way they choose to share to the rest of the group (i.e. graphic organizer, paper, notes, note cards, speech, powerpoint, etc.). *These books are on reading level, informational and cross curricular with ELAR/Science*

The teacher will share with the students that their homework assignment will be to do a virtual tour. The teacher will preview the website at the end of class to show students how to navigate website, and ask preview questions

Homework: The students will go to the website jpl.nasa.gov (https://www.jpl.nasa.gov/virtual-tour/)

Students will complete a “virtual tour” of the NASA laboratory

Students will explore the “visitor center/museum” about the planets, sun, moon and solar system

Students will complete a think log as they complete the virtual tour, the students need to use all 5 senses in answering self directing questions/thoughts and/or reflective ideas to share with the class the following day

Students will be asked to read outloud their think log to their parent on their “virtual tour” experience as if they had just come home from a field trip to the NASA lab

	Students will read the riddle about planets and complete worksheet using what they learned from the tour The following day, the students will be expected to share their think log to the class/teacher. The teacher will ask students to extend their knowledge, thinking by verbally reflecting on their experience with teacher generated questions Differentiation: • Students will be given books at lower grade level • Students will be given a graphic organizer to organize ideas and thoughts • Students will be introduced to their planet beforehand students will be given specific questions to answer **LESSON 3:** Learning Goals: • Students will be able to identify different objects in our solar system apart from Earth. • Students will understand the relationship of different systems and patterns in the solar system. • Students will know about planets, including earth Marzano Strategies: • Thinking Hats • Reciprocal Teaching Lesson: Mini lesson: All about the planets: https://spaceplace.nasa.gov/planets/en/ The teacher asks students to process new information by imagining themselves wearing any one of six different-colored thinking hats. Within small groups, students will be assigned a color and using the same content, complete the given assignment (and rotate colors throughout the week with each planet): White hat (neutral and objective perspectives)— students will read facts and look at pictures about planets and the solar system and complete a graphic organizer on two of the planets Red hat (emotional perspectives)— students will fill out a feelings graphic organizer to express how they feel about the planet they read about (i.e. when reading about the planet, I am feeling this way) Black hat (cautious or careful perspectives)— students will write a list of questions they still do not understand about the planets, or solar system (i.e. how does the planet rotate, why isn't there life on this planet, etc.) Yellow hat (optimistic perspectives)— students will highlight and make a comment on sentences and words in the content given to them about the planets that they find interesting, exciting and want to learn more about to create a poem about planets (i.e. haiku, acrostic, rhyming, etc.) Green hat (creative perspectives)— students use the new knowledge of each planet they learned to create there own planet

Blue hat (organizational perspectives)— students reflect on their thinking processes and decide what perspectives they would like to take about one planet to complete a project on (i.e. poster/paper on what planet they like the best)

Students will use their activities completed from the hat strategy lesson and/or jigsaw cooperative learning strategy lesson to "teach" their new found knowledge on their planet to the small group

While the students share and lead the discussion, the other students are completing a 4 square note graphic organizer on what they learned from each student

The students will then be assigned another students planet to share to the rest of the class (as a group they will take turns)

Homework: the students will draw and explain the parts and purpose of a solar system—draw what they believe a solar system looks like and has/label (creative)

Differentiation:

- Teacher will provide graphic organizer/stem sentences for each hat
- Teacher will provide examples for each hat
- Students will complete the easiest hat activity first
- Students will be have shorter passages to read or at an easier level
- Students can have some facts and reading in their first language
- Students can have a list of facts instead of reading passage

LESSON 4:

Learning Goals:

- The students will know the distance of the moon from the earth
- The students will be able to describe the phases of the moon
- The students will explore earth and another objects in the solar system, i.e. the moon
- The students will be able to compare and contrast two different objects
- The students will be able to paraphrase what they read

Marzano Strategies:

- Concept Attainment
- Think-pair Share
- Scripted Cooperative- Dyads
- Purposeful homework
- Narrative activities
- Bell ringer

Lesson:

The teacher will read a book outloud, and the students will take the 3-2-1 notes. ("Whats in Space" story)

Mini lesson: How far is the moon? https://spaceplace.nasa.gov/moon-distance/en/

The students will break into partners and one will be a "recaller" and one will be a "listener" and then they will switch roles and add on to each others notes

	(individual work) Students are given a set of 10 questions about planets, stars, moon, solar system, sun, etc. and the students have to each choose one question to answer in depth Students will share their answer with each other in the group Students will pair up and come up with a question about any of the content that they still want answered and then answer the question together Students will come back together as a group and share their question and answers and then have the other students in the group share and see if the question can be answered differently or more in depth (individual work) Teacher will have students work in partners to fill out a compare and contrast chart of their two planets (collaboration) The students will then switch within another group, cover the name of their planet and have another partner guess what planets they compared and contrasted based on the descriptions in their organizer The students will do a group compare and contrast on big paper to put around the classroom of sun vs. moon and stars vs. planets The students will do a gallery walk around the room afterwards and verbally share what they learned about the sun, moon and stars compared to planets within their group or/and as a whole group verbal discussion (model example for final project) Homework: With parent, students will complete the activity "make oreo moon phases" - Directions at: https://spaceplace.nasa.gov/oreo-moon/en/ - PDF here: file:///C:/Users/clee/Downloads/oreo-moon.pdf - Students will read the passage "Why does the Moon look different throughout the month?" outloud to parent and reflect in their science journal With parent (if students don't have craft), students will complete the "how far apart" activity with a basketball - Directions at: https://spaceplace.nasa.gov/moon-distance/en/ - Students will read the passage "How Far Away Is the Moon?" outloud to parent and reflect in their science journal All students will share their reflection, answers to questions and activity with a partner at the start of the class the following day Accommodations: • Higher level readers will read the passage "what are the moon phases" at https://spaceplace.nasa.gov/moon-phases/en/ • PDF versions of the activities will be printed for students if no internet access at home Differentiation: • Students will have graphic organizer for all parts of activity • Students can verbally share the comparison rather than write it down • Students can work with a partner • Students can look at pictures when guessing what planet they compared • Students can use simple words to compare

	• Students can be given the question rather than choose one that is on their level • Students can be given answers to choose from that will answer the question • Students will be able to listen to questions being answered rather than making up their own question **LESSON 5:** Learning Goals: • Students will be able to identify different objects in our solar system apart from Earth. • Students will understand the relationship of different systems and patterns in the solar system. • Students will use real world experiences to identify objects and solve problems • Students will read and understand rules and patterns in relation to the content, i.e. solar system Marzano Strategies: • Concept Attainment • Visual Activities • Modeling • Visual symbols • Narrative Activities Lesson: hands on/craft day (one day PBL) (Introduction) Teacher will have board games at each table that students will rotate and be asked to read the instructions to figure out how to play each game (Model) Students will build their own spacecraft by following directions and completing activity: https://spaceplace.nasa.gov/build-a-spacecraft/en/ Teacher will introduce task for the day, by asking “What patterns are in the sun, moon and planet systems?” Students work in groups to design a board game that takes players through the solar system as they move around the board. o The path from START to STOP will spiral out with stops on each planet. o On each planet they will be asked a space science question. o Each group will decide on specific rules of play. Students will play board game for remainder of class - Students will have to learn how to play the game by reading the instructions solely - Students will have a rubric to follow on what is required from board game (ex: rules, pieces, etc.) Homework: Students will complete the writing activity “write your very own zany adventure story” - Activity: https://spaceplace.nasa.gov/loopy-legends/en/ - Once complete, students will read the story to their parent outloud and reflect in their science journal Differentiation: • Students will get to work with partners • Students will score themselves on level of difficulty

	• Students will have extended time to complete board game • Students can work with a partner on the build your own spacecraft
Terms of Service:	*students will be given a technology consent form to be signed by parents at the start of the unit for research purposes* (Nasa website) https://www.nasa.gov/about/highlights/HP_Privacy.html#coppa (Kidzworld) https://www.kidzworld.com/corporate#privacy (Planetforkids) https://www.planetsforkids.org/privacy-policy.html

Resources Used/Materials Needed: Websites, books, video, etc.

Type of Resource(s):	Name of Resource(s):
https://spaceplace.nasa.gov/story-superstar/en/ website or PDF	"Super Star Meets the Plucky Planet" story
https://spaceplace.nasa.gov/story-whats-in-space/en/ website or PDF	"Whats in Space" story
https://spaceplace.nasa.gov/	NASA: Space Place
https://www.kidzworld.com/quiz/3072-quiz-test-your-space-smarts/	Kidzworld
https://www.planetsforkids.org/	Planet for kids
https://embed.kahoot.it/100a1837-f000-45e3-bd4b-f983186125ff	Kahoot!
https://www.jpl.nasa.gov/virtual-tour/	Virtual Tour
file:///C:/Users/clee/Downloads/mystery-science%20(2).pdf	Distance between planets PDF
"Zoo in the Sky: A Book of Animal Constellations" by Jacqueline Mitton (32 pages) "The Magic School Bus: Gets Lost in Space" by Joanna Cole (40 pages)	Books
http://www.kidsastronomy.com/solar_system.htm http://www.planetsforkids.org/ http://www.scholastic.com/magicschoolbus/games/space/ http://airandspace.si.edu/exhibitions/exploring-the-planets/online/	Research websites for planet