COLLEGE OF SCIENCE
Laboratory of Tree-Ring Research

Tiny Sparks: Science and Storytelling in Early Learning

Lesson Title: Chasing Shadows: Exploring Eclipses Through Stories and Art

Grade Level: Preschool
Lesson Length: 50 minutes

AZ Science Standard:	***K.E2U1.5*** *Observe and ask questions about patterns of the motion of the sun, moon, and stars in the sky.*
Learning Objective:	● *Students will be able to demonstrate basic understanding of what an eclipse is by explaining or showing how the moon can block the sun's light.* ● *Students will be able to create a simple representation of an eclipse through art, demonstrating their grasp of the concept visually.*

Vocabulary	Materials
● *Astronomy* ● *Moon* ● *Sun* ● *Eclipse*	● *The book "Eclipse" by Andy Rash* ● *Prepare small cardstock "moon" or have students cut out moon shape (need scissors)* ● *Chalk pastels* ● *Flashlight* ● *Small and large ball*

Costume Element:
Costumes play a vital role in storytelling by engaging children in immersive experiences, visually representing characters and concepts, and boosting cognitive skills through interactive play. They encourage creativity and support multi-sensory learning, making scientific concepts more accessible and memorable for young learners.

- *Astronaut Costume: Use official NASA patches to create a realistic astronaut look, fostering immersive experiences for children learning about space exploration.*
- *Planetary Costumes: Dress up as planets like Earth, Mars, or the Sun to visually represent different celestial bodies in the solar system.*
- *Alien Costumes: Engage children with creative alien designs, encouraging imaginative play and exploration of extraterrestrial life concepts.*
- *Galileo Galilei Costume: Embody the famous astronomer to introduce historical figures in astronomy and their contributions to scientific understanding.*

Guiding Questions:
- *What do you think is happening when we can't see the sun during an eclipse?*
- *How does the moon's shadow make you feel? Why do you think the animals in the story felt confused?*

- *What other things can block light and make shadows? How are they similar to or different from the moon blocking the sun?*
- *If you could watch an eclipse, what would you want to observe or learn about it?*

Engagement/Introductory Activity:

- *Gather children in a circle*
- *Introduce the book " Eclipse" by Andy Rash*
- *Show the cover and ask children what they think the story might be about*

Exploratory Activity:

Story Time (10 minutes)

- *Read "Eclipse" by Andy Rash aloud*
- *Engage children by asking questions about the characters' reactions to the eclipse*

Discussion (5 minutes)

- *Ask children what they learned about eclipses from the story*
- *Discuss why the animals in the story were confused by the eclipse*

Science Activity: Eclipse Demonstration (15 minutes)

- *Use a flashlight (sun), a large ball (Earth), and a smaller ball (moon) to demonstrate an eclipse*
- *Dim the room and have children observe how the "moon" blocks the "sun's" light*
- *Allow children to take turns creating their own mini eclipses*

Art Activity: Eclipse Chalk Art (15 minutes)
Demonstrate how to create an eclipse drawing:

- *If not using prepared cardstock moons, have the students trace and cut out a cardstock or thin cardboard circle, about 4 inches (10 cm) in diameter.*
- *Color the circle heavily with chalk. Make thick lines with lots of chalk. If available, use multiple colors such as white, yellow, and orange.*
- *Place the circle in the center of the black paper, chalk side up.*
- *With your fingers or a tissue, smudge the chalk from the circle outward on the black paper to create rays all around the Sun. And more chalk if needed. Hint: Help the child by holding the circle in place so it doesn't move around.*
- *Remove the circle to reveal the solar eclipse!*

Conclusion (5 minutes)

- *Display children's artwork*

Recap what they learned about eclipses

- *Ask children to share their favorite part of the lesson*

Explain:

- *"Can you tell me what happened when we used the balls and flashlight to make an eclipse? What*

did you see?"

- *"How did your chalk drawing show an eclipse? What parts of your picture represent the sun and the moon?"*
- *"What was the most interesting thing you learned about eclipses today? Was there anything that surprised you?"*
- *"If you had to explain what an eclipse is to a friend who wasn't here today, what would you tell them?"*

Extension Activity/Questions:

Shadow Play Exploration:
Set up a "shadow play" area with a bright light source and various objects. Encourage students to:

- *Create different shadows by placing objects between the light and a wall or screen*
- *Observe how changing the distance between the object and light affects shadow size*
- *Experiment with overlapping shadows from multiple objects*

This activity allows students to:

- *Apply their understanding of how objects can block light (like in an eclipse)*
- *Explore concepts of size, distance, and perspective*
- *Develop vocabulary related to light and shadows*
- *Make connections between the eclipse phenomenon and everyday experiences*

Day and Night Cycle Model:

- *Create a simple model of the Earth's rotation using a globe or ball and a flashlight. Have students:*
- *Observe how rotating the "Earth" creates day and night*
- *Discuss how this relates to the sun's apparent movement in the sky*
- *Consider how an eclipse might fit into this cycle*

This activity helps students:

- *Understand the broader context of celestial movements*
- *Relate the eclipse phenomenon to daily experiences of day and night*
- *Develop spatial reasoning skills*
- *Practice using scientific models to explain natural phenomena*

Evaluation Activity:
Enlist the teacher's help to record the following data as needed.

Observational Assessment:

- *Observe students during the eclipse demonstration and art activity, noting their engagement and comments*
- *Document students' behaviors and conversations in anecdotal notes*

Performance-Based Assessment:

- *Ask students to demonstrate an eclipse using the flashlight and balls, assessing their*

understanding of the concept

- *Evaluate students' chalk art drawings for representation of eclipse elements*

Verbal Assessment:

- *Use open-ended questions during and after activities to gauge understanding*
- *Engage in purposeful interactions to elicit children's thinking about eclipses*

Work Samples:

- *Collect and analyze students' eclipse chalk drawings as evidence of learning*
- *Use a portfolio approach to document progress over time*