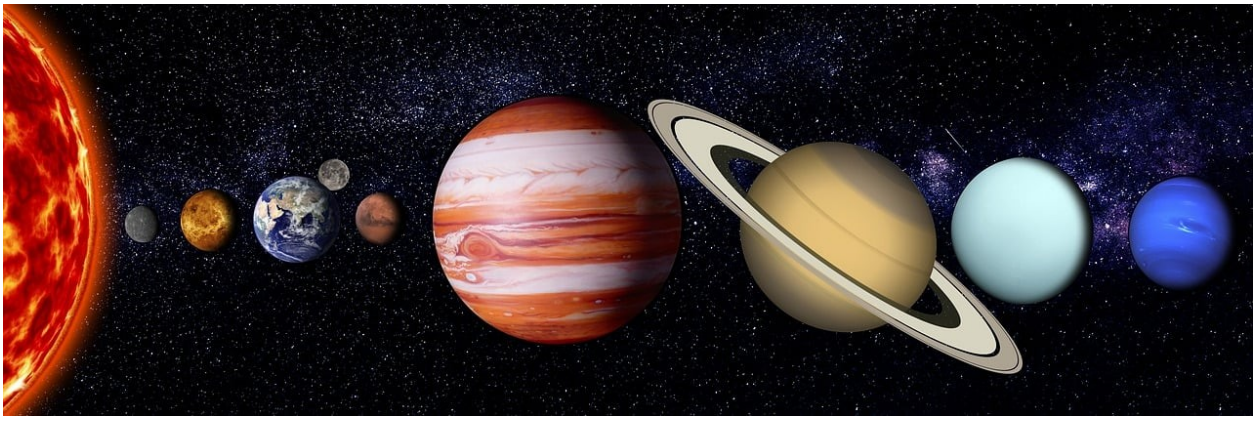
Grade: 4th
Strategy: Questioning
Technique: Teacher Generated Questions
Text Type: Science

The Solar System

Aims of the lesson:

- Encourage deeper critical thinking about the text.
- Foster connections between specific details and overarching themes or ideas.
- Provide a structured, teacher-guided framework to direct understanding and manage the complexity of analysis.
- Develop students' ability to differentiate between:
  - Thin questions: Focused on the text's content, prompting straightforward, close-ended answers.
  - Thick questions: Designed to stimulate deeper thinking, discussions, and complex open-ended responses.



A long time ago, before there were planets or even the Sun as we know it, there was just a big cloud of gas and dust floating in space. But something amazing was about to happen!
This cloud started to come together thanks to gravity, a special force that pulls things toward each other. As the gas and dust squeezed tighter and tighter, they became hotter and hotter until—boom!—a giant ball of fire was born. This was our Sun, a big, bright star that gives us light and heat.

But the Sun didn't want to be alone in space, so when it formed, lots of tiny pieces of rock and dust started to spin around it. Over time, these little pieces stuck together and became bigger and bigger. After many, many years, they turned into planets—the big round worlds that travel around the Sun!

Now, the Sun had eight planets as its space friends, and each one was different:

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- Mercury – The closest planet to the Sun and the fastest one! It zooms around the Sun quicker than any other planet.
- Venus – The hottest planet, even hotter than Mercury! It has thick clouds that trap heat inside.
- Earth – Our home! It has land, water, air, and everything we need to live.
- Mars – The red planet, covered in dust and giant volcanoes. Scientists think it once had water!
- Jupiter – The biggest planet of them all, with swirling clouds and a giant storm called the Great Red Spot. Saturn – The planet with the most beautiful rings, made of ice and rocks!
- Uranus – A blue-green planet that spins on its side, as if it were rolling through space!
- Neptune – The farthest planet from the Sun, deep blue and super windy!

Each planet keeps spinning around the Sun in a special path called an orbit, and they never crash into each other because gravity keeps them in place. The Sun, planets, and other space objects like moons, asteroids, and comets make up our solar system—a giant space family!

And guess what? Even though the Sun and its planets have been together for billions of years, they are still moving through space, traveling around the galaxy. So every time you look up at the sky, remember that we are part of this amazing adventure in the universe!

Process phase 1: Planning (Teachers' perspective)
During this stage, the teacher has planned and prepared **questions** aligned with the "Teacher Generated Questions" technique:

Thin questions (e.g.):
- What is the solar system?
- How many planets are in the solar system?
- What is the Sun?
- Which planet is closest to the Sun?
- What is the largest planet in the solar system?
- What makes Earth special?
- ...

Thick questions (e.g.):
- Why do planets orbit the Sun?
- How does the Sun help life on Earth?
- Why do some planets have rings while others don't?

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- What would happen if the Sun disappeared?
- How is Earth different from the other planets?
- ...

Materials such as **visual aids** (e.g., pictures of the planets, a solar system model, videos of planets orbiting the Sun) are used to engage students with the topic.

Cognitive stage 1: Pre-reading (Students' perspective)
Students are introduced to the topic by discussing questions like:

- What do you know about the solar system?
- Have you ever seen the Sun or Moon in the sky? What do they look like?
- What do you think planets are made of?
- How do you think the planets move in space?
- What do you think makes Earth different from other planets?

Students make predictions about what the solar system is and how planets move around the Sun. Visual aids are used to spark interest and activate prior knowledge.

Process phase 2: Teaching (Teachers' perspective)
The teacher introduces the topic of the solar system by explaining its key elements, such as the Sun, planets, and gravity. The teacher reads the text aloud, pausing to ask **thin questions** to ensure comprehension (e.g., "Which planet is closest to the Sun?" or "What is the Sun made of?").

The teacher also encourages students to connect the concept of the solar system to their own experiences by asking open-ended questions:

- "Why do you think planets don't float away into space?"
- "If you could visit any planet, which one would you choose and why?"

Cognitive Stage 2: During the Reading (Students' Perspective)
Students engage with the text by answering thin questions and noting key details. As they read, they focus on understanding the basic facts about ants, such as their size, habitat, diet, and social behavior. They also think about the deeper meaning, such as why cooperation is essential for ants' survival.

Process phase 3: Feedback (Teachers' perspective)
The teacher supports students' work by acknowledging their answers and clarifying any misconceptions. A guided discussion is facilitated around **thick questions** to inspire critical thinking:

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- Why do planets stay in their orbits around the Sun?
- How does the Sun help Earth have life?
- Why do some planets have moons while others don't?

Cognitive stage 3: Post reading (Students' perspective)
Students reflect on the story's message by answering questions like:

- Why do planets move around the Sun instead of floating away?
- How does the Sun help Earth and other planets?
- What makes Earth different from the other planets?
- What do you think would happen if there was no Sun?

Creativity. Students create a **solar system model or drawing**, labeling the planets and explaining their main features.

Ways of Communication:

- Interpretive (receptive) - students read the text and determine the relevant qualities of the characters.
- Interpersonal (mixed) - students work in groups and advise each other on the correct connection of the table.
- Presentational (productive) – the groups present to the class the answers they have indicated.

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