



Elaborate: Take a Note

“Patterns in Motion”

Earth in Space Module

This inquiry-based activity provides students with the opportunity to further expand process skills while emphasizing the importance of collaboration and communication.

This offline skills activity can be completed after participation in the online Take a Note Elaborate.

Teacher objective: Students will demonstrate understanding of the repetition of patterns and cycles by creating different patterns using a variety of characteristics.

Student objective: Upon completion of this activity, students will be able to demonstrate their understanding of patterns and cycles.

Estimated time for activity: 25 minutes

Materials:

- Optional: supplies such as glue bottles, pencils, crayons, sticky notes, lunch boxes, backpacks
- Chart paper or blank paper and document camera/projector

Procedure:

1. **Do: Provide students with the opportunity to work with their peers.**
 - a. Review the online activity for Take a Note which required students to create a Frayer Model defining the season of winter using 1) definition, 2) characteristics, 3) examples, 4) non-examples.
 - b. Tell students you are going to use them and characteristics about them to create a pattern.
 - c. Have 6 students (3 girls, 3 boys) come up to the front of the room, and ask the class what characteristic(s) they could use to place them in a pattern. (boy/girl)
 - d. Ask how else they could arrange these 6 students in a pattern, e.g.: facing front/facing back, looking up/looking down, bending knees/standing straight, etc.
 - e. Tell students they will be creating a pattern in their teams. The pattern should be different from the patterns you used as an example. Encourage them to look at colors of clothing, types of shoes, short hair/long hair and so forth.
 - f. Give teams 5 minutes to create a pattern with their team members.
 - g. The teacher should circulate throughout the classroom while students are discussing what characteristic to use for creating their pattern.
 - h. Once they have finished their first team pattern, have teams share their results with the others.
 - i. Repeat this activity, but ask students to have team members holding different school supplies in a pattern which they choose. (backpack/glue bottle, lunch box/pencil, pink sticky note/blue sticky note/yellow sticky note, etc.) Again, share this new pattern.
 - j. Now ask students how they could have this pattern continue without adding any more people. If they don't discover they can have the first people place themselves at the end and keep rotating position, the teacher can have them switch places as the pattern order is being recited.



- k. After all teams have shared this second pattern and demonstrated how to have it continuously repeat, ask students how they could have this pattern look like a cycle. Could they line up another way?... hold their materials differently?... stand in a circle!
 - l. If students do not come up with the circle configuration, ask them to stay in order, but form a circle and count off naming the pattern. They will see this repeating pattern become cyclical.
 - m. The teacher can record some of the patterns onto a class chart or data sheet for later reference and discussion.
2. **Discuss:** Encourage students to exchange ideas while within their groups.
- a. Why are we using characteristics to create our patterns?
 - b. Can you think of other characteristics we did not use?
 - c. How many different characteristics in a row can you use to make a pattern?
 - d. What patterns do we see in our night sky?
 - e. What pattern affects whether we are awake or asleep?
3. **Communicate:** Help students to record their observations and findings through illustration(s).
- a. How would you record this activity in your Science Notebook?
 - b. Can you repeat the order of a pattern another team made? and another?
 - c. Were any patterns the same?
 - d. How were the patterns different?
 - e. Did any of the patterns follow the same order as cycles we see with the Earth and the Moon or the Earth and the sun?
 - f. How did your understanding of patterns and cycles change by the end of this activity?
4. **Collaborate:** Provide students with the opportunity to summarize their experiences and to draw conclusions through a closing activity or discussion. Discussion can be guided and recorded by the teacher by asking the following:
- a. What claim(s) can we make about patterns and cycles?
 - b. What is your evidence to support this claim?
 - c. Summarize in your own words how a pattern works or occurs. (This could be done as a class statement with students dictating to the teacher.)
 - d. Summarize in your own words how living and nonliving things interact and are affected by patterns. (This could be done as a class statement with students dictating to the teacher.)

Review:

At the conclusion of the lesson, remember to review the following key points:
Read the process skill to your students, and have them compare what they did to what professional scientists do.

- Scientists learn through observation.
Direct observation and comparison of different types of patterns and cycles will support understanding of the concept.
- Scientists compare and contrast what they observe.
Conducting follow-up with all students provides a valuable extension of the observation activity, as students will learn from peer findings and reflections as well as their own.
Ask, "What did you learn from our class pattern(s)?"



- Illustrating observations and collecting and recording data helps illustrate concept understanding.

Accommodations:

If students have difficulty completing the activity, a variety of accommodations can be employed.

- Teacher can model and facilitate the discussion of how to make the appropriate patterns/cycles.
- The activity can be completed with a science buddy from an older grade.

Math Extension:

Use this extension option to incorporate first grade math skills into this activity.

- *Make equal shares.* Have students draw a line of circles or a line of rectangles on a paper and partition each shape into two and four equal shares. Students can color the shapes to show halves or fourths. Encourage students to share their patterns with the class and talk about them using the terms “halves”, “fourths”, “quarters”, “half of”, “fourth of”, and “quarter of”.