Symbiotic Musical Chairs

Overview: Flowers need bees for pollination and bees need flowers for food. Demonstrating the concept of symbiosis using flowers and bees by playing musical chairs is a fun and engaging way to help students understand this concept.

Procedure:
1) In their writing journals, ask student to write their thoughts on the following prompt: "Do bees need flowers or do flowers need bees?"
2) Set up an equal number of chairs as there are students in the room. The chairs are the flowers that are cross pollinated by the students who are the bees.
3) Explain why the bees need the flowers and the flowers need the bees. Click here for a useful explanation o honey bee and flower symbiosis.
4) Play several rounds of musical chairs. On the first few rounds keep all the flowers in play. After removing flowers – and therefore bees - in several rounds, start adding flowers back. More flowers = more bees. Play with the numbers demonstrating that when one population shrinks, so does the other. Likewise, when one population thrives, they both thrive.
5) Explaining that this mutual survival is the crux of symbiosis, ask the students to reflect and reevaluate their journal entries. Give them time to rewrite as needed.

ASOLs Covered in this Activity:

SCIENCE

3S-LPS 2: The student will investigate and understand that living things are part of a system. Key concepts include
a) living organisms are interdependent with their living and nonliving surroundings.

3S- LPS 8: The student will investigate and understand that natural events and human influences can affect the survival of species. Key concepts include
a) the interdependency of plants and animals.

5S-LPS 2: The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components in the ecosystem. Key concepts include
f) influences of human activity on ecosystems.

8S-SI 1: The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which
i) models and simulations are designed and used to illustrate and explain phenomena and systems

8S-ECO 4: The student will investigate and understand interactions among population in a biological community. Key concepts include
d) symbiotic relationships.

8S-ECO 6: The student will investigate and understand that ecosystem, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long term changes in their environment. Key concepts include
a) factors that increase or decrease population size.

8S-ECO 7: The student will investigate and understand the relationships between ecosystem dynamics and human activity. Key concepts include
d) population disturbances and factors that threaten or enhance species survival.

HSS-SI 2: The student will demonstrate an understanding of the nature of science and scientific reasoning and logic. Key concepts include
b) Science explains and predicts the interactions and dynamics of complex Earth systems;

Extension Ideas:

Once students have completed their Symbiosis Book, ask each student to come up with a musical chairs game on their own using the pairs of organisms they researched.

After playing Symbiotic Musical Chairs, ask students to brainstorm what natural events and human influences would affect the populations of either bees or flowers. List the answers on the board and play the game again. This time, instead of taking chairs away or adding chairs, call out one of the reasons from the brainstorm and let the students decide if the population of flowers/bees should increase or decrease.

3S-FME 3: The student will investigate and understand simple machines and their uses. Key concepts include
a) purpose and function of simple machines.
b) types of simple machines

Extension Idea:

Give students the parts to a simple machine such as a pulley or a wheel and axle. Ask the student to describe how the two non-living parts of the machine depend on each other to do their jobs. Have the student journal comparing and contrasting the parts of a machine with organic symbiosis. Ask the student to make a judgment on where they feel this is symbiosis or not.

READING & WRITING

3E-RW 2a: The student will use newly acquired vocabulary drawn from reading and other content areas.

3E-RW 4e: The student will demonstrate comprehension of information in reference material by using online resources.

3E-RW 7a: The student will identify text features and search tools.

3E-CN 2c: The student will demonstrate an understanding of nonfiction text by connecting a visual element.

4E-RW 1c: The student will use newly acquired vocabulary drawn from reading and other content areas.

4E-CN 1d: The student will interpret information present visually and orally.
5E-RW 1f: The student will demonstrate understanding of content-specific words.
5E-CN 1b: The student will make connections between two individual or event/actions in a non-fiction text.
5E-WP2a: The student will use technology to produce and publish writing.
5E-WP 5a: The student will gather information about a topic for a written research report.
5E-WP 7e: The student will use technology, including the internet to produce writing.
6E-CN 1c: The student will use words and phrases from a nonfiction text.
7E-CN 1a: The student will cite text to draw inference from informational text/
e: The Student will use content words and phrases from a nonfiction text.
8E-RW 1e: The student will acquire and use content words and phrases.
8E-WP 1a: The student will write to convey ideas and information including facts, details, and other information.
d: The student will use content specific vocabulary when writing about a topic.
8E-WP 3b: The student will write to convey ideas and information including facts, details, and other information as well as graphics and multimedia as needed.
8E-WP 6a: The student will write a short research report to pose and answer questions based on one source of information.
HSE-WP 1b: The student will write to convey ideas and information using clear organization and including facts, details, and other information as well as graphics and multimedia as needed.
HSE-RW 2c: The student will acquire and use content words and phrases.
HSE-WP 6a: the student will use technology, including the internet, to produce, publish, and update an individual writing project.

Extension Ideas:

With the students, brainstorm other symbiotes or have pre-made choices for the students. Have each student pick a symbiote and research how what it depends on to survive. Students each create a PowerPoint slide that the class puts together to make a Symbiosis book.

Extend the idea of symbiosis into fictional reading. Create a "Symbiosis Storybook" box for self-selected reading. Possible books/stories to include: A Spiderman/Venom comic, Star Wars books (midicholrians and Jedi have a symbiotic relationship), Fraggle Rock (the Fraggles and the Doozers), Big Friend, Little Friend. Ask students to journal about how the characters in the books are examples of Symbiosis.

MATH

4M-PSPFA 1a: The student will use repeating patterns to make predictions.
5M-PSPFA 2a: The student will identify and extend numerical patterns.
4M-NSCE 1b: The student will compare whole numbers.

Extension Idea:

Pause ever so often in the Symbiotic Musical Chairs to count and compare flowers to bees using the <,> or = symbols.

Materials Needed:
-chairs
- music

Instructional Setting:
This activity requires space. A large area with no obstacles will be required.

Community Connections and/or Peer Interaction:
Students can work on sportsmanship with peers.

Functional Activity/Routine:
This activity encourages functional skills such as turn-taking, following instructions, and cleaning up afterward.

Strategies to Collect Evidence:
For collection of evidence, be sure that each student creates their own Symbiosis page. Questions and answers given orally should be in anecdotal records.

Specific Options for Differentiating this Activity:
-Assist students with limited mobility in playing the game. Instead of Musical Chairs, gym dots could be used as place markers.
- Have students use augmentative communication such as a tablet or switch to determine when the music should start and or stop.
-Allow students to use their preferred "pencil" when writing. This may include a writing utensil, keyboard, alternative pencil, or dictating to a scribe.
-Prepare, as necessary, for each student to make choices and communicate with their preferred method. This may include using augmentative communication.