Honey Bee and Painted Lady Butterfly pollination game.

Objective: Students use a simple model that depicts the difference between butterfly and bee anatomy and how that affects their pollination effectiveness.

Materials: pipe cleaners, paper clips, 8 small paper plates or bowls, different colored chalk (scrape with a paperclip to make powder), picture page of a honey bee and painted lady butterfly

Background: While butterflies and bees both pollinate flowers, one is more effective than the other. Butterflies are less efficient than bees at moving pollen between plants. Highly perched on their long thin legs, they do not pick up much pollen on their bodies and lack specialized structures for collecting it. They also don't have as much hair on their legs as bees do.

Butterflies probe for nectar, their flight fuel, and typically favor the flat, clustered flowers that provide a landing pad and abundant rewards. Butterflies have good vision but a weak sense of smell. Unlike bees, butterflies can see red. Butterflies will travel greater distances than a bee, which means they may pollinate a flower that is miles away.

Action:
Students will try to "win" by collecting the most pollen. You can discuss certain adaptive techniques to collecting lots of pollen. You can also show the crosspollination takes place (the mixing of the red and white pollen).

1. Have students get right into the game. Split the group into 2 teams. Each team has 3 plates – 1 with no powder and 2 with a different colored powder in each. Place these powder bowls a few feet away. Give each team the same model insect - either the butterfly legs (paper clip), or the bee legs (pipe cleaner) and have them travel to one powder plate collecting and depositing powder to the empty plate and repeats that for the second powder plate before handing it off to the next student in line. When you switch to the different insect, also switch to a clean plate. Run the race again.
2. Once both teams have raced using both model insects, have them compare two things. See if the butterfly or the bee carried more pollen to the empty flower plate and notice that crosspollination takes place, the mixing of two colors of powder pollen.
3. Show students the picture page to compare butterfly legs to bee legs. Did the game show a difference between the pollen carrying ability of the model bee and the model butterfly? Was this a good model? Can students think of other ways to test the effectiveness of butterfly and bee pollination? Which insect travels farthest? Butterflies travel farther.