



Pollination: Pollinators Among us

YEAR ROUND GRADES 3-5

DESCRIPTION:

STUDENTS WILL ADOPT A POLLINATOR TO ROLE PLAY AS IN ORDER TO BETTER UNDERSTAND THE PHENOLOGY ON THEIR SCHOOL GROUNDS AND HOW THE PHENOLOGY AFFECTS DIFFERENT ANIMALS. THROUGH THIS ACTIVITY, STUDENTS WILL LEARN THE DIFFERENT CRITERIA THAT ATTRACT DIFFERENT POLLINATORS AND AT WHAT TIMES.

DURATION & TYPE OF PROGRAM:

APPROXIMATELY 60 MINUTES FOR INITIAL ACTIVITY WITH SCAFFOLDING AND MODELING. CAN BE REPEATED AT ANY TIME DURING THE YEAR WHEN PLANTS ARE FLOWERING, AND TAKE ABOUT 30 MINUTES EACH TIME.

MATERIALS

- POLLINATION SYNDROME GUIDE

Pre-lesson

DETERMINE THE POLLINATION SYNDROMES IN YOUR ACTIVITY AREA. A POLLINATION SYNDROME IS A SUITE OF FLOWER TRAITS SUCH AS SIZE, SHAPE, COLOR, AND SCENT WHICH, TOGETHER, TEND TO ATTRACT A PARTICULAR POLLINATOR OR SUITE OF POLLINATORS. THE GUIDE ATTACHED AT THE END OF THIS LESSON IS A GREAT STARTING POINT.

TEACHER SHOULD CHOOSE ONE TYPE OF POLLINATOR TO DEMONSTRATE IN ORDER TO MODEL READING THE REFERENCE SHEET AND FILLING OUT THE DATA COLLECTION SHEET. I RECOMMEND CHOOSING A POLLINATOR THAT IS MORE DIFFICULT TO FIND MATCHING PLANTS ON YOUR SCHOOL'S PROPERTY. THIS WOULD REQUIRE SOME TIME OUTSIDE SCOPING THE AREA.

DISCUSSION QUESTIONS:

- WHAT FOODS ARE CURRENTLY IN SEASON?
- WHAT FOODS ARE YOU LOOKING FORWARD TO IN THE COMING SEASON?
- ARE THE PLANT FOODS THAT YOU LIKE TO EAT MOST REPRODUCTIVE STRUCTURES (FLOWER BUDS, FLOWERS, FRUITS, SEEDS) OR VEGETATIVE STRUCTURES (LEAVES, STEMS, ROOTS)?
- WHAT IS POLLINATION? (TRANSFER OF POLLEN FROM MALE TO FEMALE BOTANICAL STRUCTURES).

- DATA SHEETS FOR EACH TYPE OF POLLINATOR FOR EACH STUDENT

GOALS:

- STUDENTS WILL BE ABLE TO IDENTIFY DIFFERENT POLLINATORS THAT FREQUENT THEIR SCHOOL GROUNDS IN ORDER TO ANALYZE POLLINATOR SYNDROMES.
- STUDENTS WILL BE ABLE TO IDENTIFY WHEN A PLANT IS FLOWERING OR DROPPING FRUIT IN ORDER TO NAME AND EXPLAIN ITS PHENOPHASE.

STANDARDS:

NGSS LEARNING STANDARDS:

3.LS4.4: MAKE A CLAIM ABOUT THE MERIT OF A SOLUTION TO A PROBLEM CAUSED WHEN THE ENVIRONMENT CHANGES AND THE TYPES OF PLANTS AND ANIMALS THAT LIVE THERE MAY CHANGE.

3.LS1.1: DEVELOP MODELS TO DESCRIBE THAT ORGANISMS HAVE UNIQUE AND DIVERSE LIFE CYCLES BUT ALL HAVE IN COMMON BIRTH, GROWTH, REPRODUCTION, AND DEATH

- HOW IS POLLINATION DIFFERENT FROM FERTILIZATION?
- WHAT/WHO IS A POLLINATOR? (NAME AS MANY AS POSSIBLE); WHAT TYPES OF FLOWERS ARE THEY EACH ATTRACTED TO?
- WHY DO POLLINATORS VISIT FLOWERS? (NECTAR, POLLEN)

Procedure

1. SORT STUDENTS INTO EQUAL GROUPS WITHIN EACH OF THE CATEGORIES OF BATS, BEES, BEETLES, BIRDS, BUTTERFLIES, FLIES, HUMMINGBIRDS, MOTHS, WIND. GIVE EACH OF THESE GROUPS A DESCRIPTION OF THEIR POLLINATOR SYNDROME, ATTACHED AT THE END OF THIS LESSON. MODEL FOR STUDENTS HOW TO FIND THEIR POLLINATOR AND LOOK FOR THE DIFFERENT CHARACTERISTICS THAT THEIR POLLINATOR WOULD SEARCH FOR.
2. TELL STUDENTS THAT THEY WILL BE RESPONSIBLE FOR FINDING DIFFERENT PLANTS THAT MATCH THEIR ASSIGNED POLLINATOR USING THE REFERENCE SHEET PROVIDED.
3. IF STUDENTS HAVE SPENT A GREAT AMOUNT OF TIME OUTSIDE IN THE SCHOOL'S NATURAL AREA ALREADY, THEY ALREADY MAY HAVE SOME IDEA OF WHERE TO LOOK FOR THE TYPES OF PLANTS THEY NEED.
4. RELEASE STUDENTS TO FIND DIFFERENT PLANTS THAT MATCH THEIR POLLINATOR. ALLOW ABOUT TEN MINUTES FOR EXPLORING.
5. AFTER 10 MINUTES, GATHER STUDENTS BACK TOGETHER. ASK THEM ABOUT WHAT THEY FOUND. GUIDE STUDENTS TO DISCUSSION AROUND WHICH POLLINATORS HAD THE MOST AVAILABLE PLANTS OR FRUITS, AND WHICH HAD THE LEAST. THERE MAY BE SOME POLLINATORS THAT DON'T FIND ANY PLANTS THAT MEET THEIR CRITERIA, AND THAT'S OKAY. ASK THEM WHY THEY THINK THEY DIDN'T FIND ANY.

- 6. NEXT STEP IS TO GET STUDENTS TO COLLECT DATA ABOUT THE TYPES AND FREQUENCY OF POLLINATING PLANTS IN THE AREA. IF THERE ARE STUDENTS WITH NO MATCHING PLANTS, THEY CAN BE REASSIGNED TO ANOTHER POLLINATOR TYPE WITH MANY MATCHING PLANTS.**
- 7. SHOW STUDENTS THE ATTACHED DATA RECORD SHEET, AND MODEL FILLING IT OUT WITH YOUR CHOSEN POLLINATOR SPECIES FROM THE BEGINNING OF THE LESSON. SHOW STUDENTS WHERE TO RECORD THE NAME OF THE PLANT, THE NUMBER OF FLOWERS, IF FLOWERING, AND TO WRITE ANY DEFINING FEATURES OF THE PLANT SO THEY DON'T ACCIDENTLY RECORD THE SAME PLANT MORE THAN ONCE. IF STUDENTS ARE NOT FAMILIAR WITH THE PLANT NAMES, THEY CAN USE INATURALIST TO IDENTIFY THE PLANTS.**
- 8. ONCE ALL DATA IS COLLECTED, ASK STUDENTS OR STUDENT GROUPS TO PRESENT THE TYPES OF PLANTS THEY FOUND AND THE NUMBER OF FLOWERING PARTS.**

Post-Lesson/ Conclusion

FACILITATE DISCUSSION ABOUT WHAT THE DATA MEANS:

- IF WE HAVE THE MOST AMOUNT OF X PLANT FLOWERING NOW, WHICH POLLINATOR CAN WE EXPECT TO SEE THE MOST OF?**
 - HOW DO WEATHER AND CLIMATE AFFECT THE FLOWERING AND FRUITING OF PLANTS?**
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