

pollen collector

STEM

**POLLEN
COLLECTOR**



**LOW PREP
SPRING
STEM CHALLENGE**

K-5TH GRADE

CREATED BY BROOKE BROWN

- ✓ SIMPLE SUPPLIES
- ✓ INTERACTIVE ANCHOR CHARTS
- ✓ VISUAL VOCABULARY
- ✓ QR CODE RESEARCH
- ✓ REFLECTION QUESTIONS

pollen collector

Your flowers in the garden need to be pollinated.

Construct a handheld pollinator that will transfer the most pollen to the flower.



MATERIALS:

- Colored drink mix such as Kool-Aid or lemonade
- FLOWER: coffee filter, markers, spray bottle with water, cotton balls
- POLLINATOR: jumbo popsicle stick, masking tape, pom pom balls, Q-tips

pollen collector

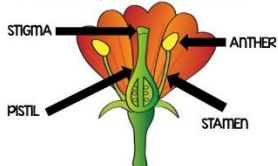
REAL WORLD EXAMPLES



What is similar? What is different?

Pollinating Insects

Pollinating Parts of a Flower



How Pollination Works

EXPLORE POLLINATION

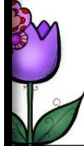
LOOK INSIDE A FLOWER



BEEES



WORDS & POLLINATION



POLLINATORS



WORDS TO KNOW

pollen



a fine powder contained in the anther of a flower that is used for pollination

pollinator



an insect or bird that transfers pollen to a flower to allow for fertilization

stigma



the part of the flower that receives the pollen

anther

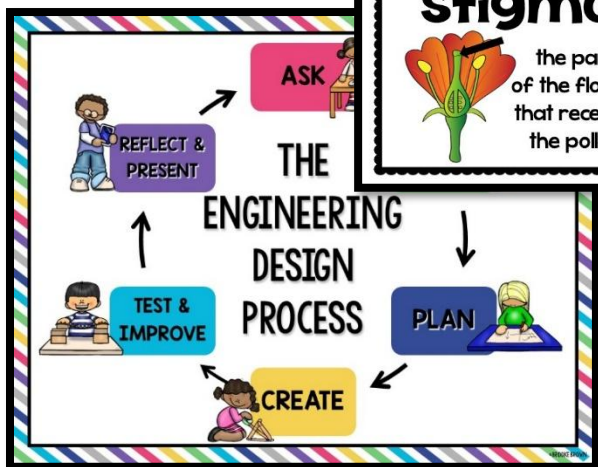


the part of the flower that holds the pollen

LET'S REFLECT!




- What was most difficult about this challenge?
- What does pollination mean and why is it important?
- What are some examples of living things that are pollinators?
- What might happen if those living things did not pollinate?
- How is your hand pollinator similar to and different from real pollinators?
- What do you think it means to cross-pollinate?
- If we completed this challenge again, what would you do differently next time?




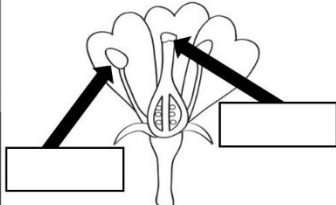
DIFFERENTIATED RECORDING SHEETS FOR K-5TH GRADE

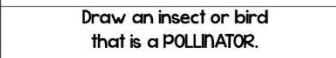
LOWER GRADES

**pollen collector**


Name: _____

MY BLUEPRINT

Draw a picture of your pollen collector.


Label the STIGMA and ANTHER.

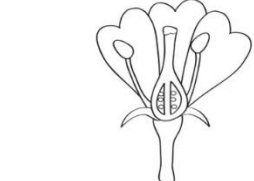

Draw an insect or bird that is a POLLINATOR.

Did you transfer pollen to your flower?
YES NO

**pollen collector**

Name: _____

BLUEPRINT


Label the STIGMA, ANTHER, PISTIL and STAMEN.

Examples of POLLINATORS:
① _____
② _____
③ _____

Which feature of your hand pollinator transferred the most pollen and WHY?

DIGITAL GOOGLE SLIDES NOTEBOOK

pollen collector
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STEM Challenge Assessment Rubric		
Challenge: _____		
Date: _____		
Student Name: _____		
3	2	1
Student followed all instructions for challenge.	Student followed some instructions for challenge.	Student did not follow instructions for challenge.
Student used best effort and perseverance on challenge.	Student used some effort and perseverance on challenge.	Student did not show effort or perseverance on challenge.
Student completed assigned blueprint and reflection sheet.	Student partially completed assigned blueprint and reflection sheet.	Student did not complete assigned blueprint and reflection sheet.
Student showed accuracy in testing, calculating, and measuring.	Student showed some accuracy in testing, calculating, and measuring.	Student did not show accuracy in testing, calculating, or measuring.
Student fully cooperated with group members and contributed fairly.	Student partially cooperated with group members and contributed fairly.	Student struggled to cooperate with group members and/or failed to contribute.
Student fully participated in class discussions.	Student somewhat participated in class discussions.	Student did not participate in class discussions.
TOTAL POINTS: _____ /18		
Comments: _____		

We Need STEM Supplies!

Dear Families:
We are learning all about Science, Technology, Engineering, and Math through STEM lessons, and we need your help! If you are able to donate any of the following supplies for our STEM Challenge, please detach and return the form below and send back to school with your child. We greatly appreciate your support and generosity!

We are in need of the following items by _____

Thank you so much for helping to make our STEM lessons possible!
Please contact me at _____ with any questions.
Sincerely, _____

If you are able to donate, please detach and return the form below:
Parent Name(s): _____
Child's Name: _____
I am able to donate: _____

SAY Hello TO STRESS-FREE STEM!

SUPPLIES CHECKLIST			
STEM CHALLENGE	ITEM	NUMBER PER GROUP	I HAVE IT
Pollen Collector	jumbo popsicle sticks	1	
	masking tape	2 feet	
	coffee filter and markers	1	
	cotton balls	5	
	spray bottle with water	1 per class	
	Kool-Aid or drink mix in a variety of colors	1 small plate	
	OPTIONS FOR POLLEN STICK CONSTRUCTION: pom pom balls, Q-tips	small tube for class to share	
STANDARDS ALIGNMENT			
CHALLENGE	ENGINEERING	SCIENCE	MATH
Pollen Collector	K-2-ETS1 Engineering Design: K-2-ETS1-A, 3-5-ETS1-A, 3-5-ETS1-B 3-5-ETS1 Engineering Design: 3-5-ETS1-A, 3-5-ETS1-B, 3-5-ETS1-C	2: Interdependent Relationships in Ecosystems 5-LS2 Ecosystems: Interactions, Energy, and Dynamics	TEP: Make sense of problems and persevere in solving them MP4: Reason abstractly and quantitatively MP5: Model with mathematics TP5: Use appropriate tools strategically

SUPPLIES CHECKLIST & STANDARDS ALIGNMENT

CHALLENGE OVERVIEW

STEM CHALLENGE: Pollen Collector



OVERVIEW: Students will choose from a variety of materials to construct a hand pollinator. They will use their pollinator to transfer the most "pollen" (juice mix) to a flower. Their flower will be created by students making a design with markers on a coffee filter. They will spray it with water, let dry, then glue cotton balls in the center.

KEY SKILLS: Engineering tools, Pollination, Pollinating Insects

SUGGESTED READ ALOUDS: [The Reason for a Flower by Ruth Heller](#), [Flower Talk by Sara C. Levine](#), [What is Pollination? by Bobbie Kalman](#)

MATERIALS PER GROUP: small plate of colored juice mix such as Kool-aid or lemonade
FOR FLOWER: coffee filter, markers, spray bottle with water, 5 cotton balls, glue
FOR POLLEN COLLECTOR: jumbo popsicle stick, 2 ft. of masking tape, pom poms, Q-tips

KEY SKILLS

MATERIALS

SUGGESTED READ ALOUDS

STEP BY STEP INSTRUCTIONS

LESSON PLAN

1. Activate students' prior knowledge by asking them to share what they already know about pollination and why it is important. Ask them to share examples of pollinating insects.
2. Share and discuss the videos on "Explore Pollination."
3. Hold a class discussion, using the teacher chart and real world examples to guide student thinking. (You can project the chart on an interactive whiteboard or document camera.) Record their ideas on the teacher chart.
4. Introduce the STEM challenge and permitted materials.
Introduce and discuss key vocabulary cards related to the challenge.
5. Have students sketch blueprints of their designs on their recording sheets.
6. Distribute materials and allow students 30-45 minutes with partners or small groups to create their flowers and hand pollinators, then use them to transfer the most pollen to the flower.
7. Hold a whole class closing discussion and reflection, allowing students to demonstrate and explain their hand pollinator designs. Use the "Let's Reflect!" poster to guide the discussion.