The Bio/Diversity Project

Lesson Title: Plant Anatomy

Teacher: *Rachel Morris & Shelbi Gowin*

Grade Level: *7th*

Time: *45 minutes*

*Adapted from: http://www.garfieldconservatory.org/staging/wp-content/uploads/2018/02/R\_SCHOOLS18\_Pollination\_LessonPlan.pdf*

*Students*

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| **AZ State Science Standard:** | * *7.L1U1.11*

*Construct an explanation for how organisms maintain internal stability and evaluate the effect of the external factors on organisms’ internal stability.* |
| **Learning Objective:** | * Students will be able to identify where plant pollen is produced.
* Students will be able to label parts of the plant and their functions.
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| **Language Objective:** (Optional) | NA |
| **Scientist of the Week:** | * Dr.Katy Purdic
* entomologist working at the University of Arizona, Studies pollinators
* She is co-director of [**eButterfly**](https://cals.arizona.edu/ento/content/www.e-butterfly.org), an online citizen science platform that harnesses the observations of thousands of butterfly enthusiasts across the globe to understand how and when butterflies and other pollinators react to environmental changes

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| **Vocabulary** | **Materials** |
| * *Stamen: The pollen producing part of a flower*
* *Pistil: part of the flower the pollinators land on*
* *Anther: Pollen is stored in the anther after it is produced*
* *Anatomy: the study of identifying parts of something*
 | * *NearPod:*

[*https://share.nearpod.com/e/ckMNqqk6zdb*](https://share.nearpod.com/e/ckMNqqk6zdb)* *Kahoot:* [*https://create.kahoot.it/share/plant-anatomy/84e868a3-32ac-4cf0-9c00-cb053b201e40*](https://create.kahoot.it/share/plant-anatomy/84e868a3-32ac-4cf0-9c00-cb053b201e40)
* *Video:*

[*https://www.youtube.com/watch?v=IKZyADewr28*](https://www.youtube.com/watch?v=IKZyADewr28)* *E-Butterfly:*

[*http://www.e-butterfly.org/ebapp/en/observations/explore?limit=20&page=1&location=Tucson%2C%20AZ%2C%20USA&species=Danaus%20plexippus&view=species&subview=grid&sw\_lat=31.99165386637496&sw\_lng=-111.0594059504785&ne\_lat=32.32016605225039&ne\_lng=-110.7082039512441&center\_lat=32.2226066&center\_lng=-110.9747108&political=locality&hasphoto=false*](http://www.e-butterfly.org/ebapp/en/observations/explore?limit=20&page=1&location=Tucson%2C%20AZ%2C%20USA&species=Danaus%20plexippus&view=species&subview=grid&sw_lat=31.99165386637496&sw_lng=-111.0594059504785&ne_lat=32.32016605225039&ne_lng=-110.7082039512441&center_lat=32.2226066&center_lng=-110.9747108&political=locality&hasphoto=false) |
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| **Seasonality:** (If more specificity is required, please note date/time range under the season)NA |
| *Monsoons*July-Sept. | *Autumn*Oct.-Nov. | *Winter*Dec.- Feb. | *Spring*Mar.-Apr. | *Dry Summer*May-June |
| **Guiding Questions:** * *Where is pollen produced?*
* *How are parts of a plant involved in pollination?*
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| **5E Steps** | **Teacher Strategies**  | **Student Behavior**  |
| **Engagement/Introductory Activity:**This is what you will do to get the students engaged in and excited about the topic of the lesson! It should also provide an opportunity for you to get an idea of what they do (and do not) already know, and the assumptions that they have going into the lesson. | * Present Dr. Katy Prudic as the scientist of the week. Browse her ebutterfly website for Monarch Butterfly sightings.
* Begin the lesson by having students break down the word Anatomy.
	+ Ana- root word that means ‘up’
	+ tomy- root word that means “cutting”
	+ Anatomy=cutting up
* Have students guess how the root words can contribute to the real definition of anatomy.
* Explain that we are not physically cutting something up, but rather breaking down parts and functions of a flower.
* Prompt a drawing activity with the instructions “Draw or explain a flower and include as many parts that you know”
	+ This will help us see where students are at in the process of learning about plants and pollination.
 | * Students will use given root words to infer what the word anatomy means to discover what the lesson will be about
* Students will use the NearPod function to either draw or explain parts of a flower that they already know.
* Students will have the option to explain their drawings if they want.
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| **Exploratory Activity:**Provide step-by-step instructions on what the teacher and students will do in this activity to gain new skills and/or knowledge. Attach worksheets, PowerPoints, video links, or other material used to this section. | * Show a video of a time lapse of a flower blooming and being pollinated by bees.
* Explain that this video does not go into detail about pollination parts but that we will dive in deeper over the next couple slides

https://www.youtube.com/watch?v=IKZyADewr28 | * Students will watch a time lapse to see how flowers bloom and get pollinated (~2 min)
* Students will be prompted to think about questions that arise during the video for clarification on how it plays into pollination.
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| **Explain:** What questions or prompts will you use to get students to explain their observations or to explain what the outcomes of the activity that they participated in were? This should provide an opportunity for students to communicate their new understandings, as well as to articulate what they still do not understand.  | * Define the major parts of the flower that are involved in pollination.
	+ Stamen: produces pollen
	+ Anther: stores pollen after it is produced
	+ Pistil: pollinator lands here
	+ Petal: attract pollinators to the flower
	+ Stem: support and give minerals and water to the leaves of the flower
* Make connections on the exact ways that these parts of the flower can be helpful in pollination
	+ Ex. *What do you think is a butterfly's pathway to pollination? (Land on Pistil→ “Grab” pollen from anther/stamen→ take it to another flower)*
* Launch a matching game that has students match an image of a plant part to its function.
	+ Stamen: produces pollen
	+ Anther: stores pollen after it is produced
	+ Pistil: pollinator lands here
	+ Petal: attract pollinators to the flower
	+ Stem: support and give minerals and water to the leaves of the flower
 | * Students will learn vocabulary terms relating to different parts of the flower
* Students will unmute their mic or type in the chat to infer how the parts of the flower work with the pollinators to pollinate.
* Students will participate in a matching NearPod activity by matching images of different parts to the flower to its function.
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| **Extension Activity/Questions:**This section provides an opportunity for students to connect the knowledge that they have gained to other contexts – can they take what they learned and logically expand upon it, or apply it to alternate situations? Provide one or two additional ideas for activities that students can use to expand upon the new knowledge that they have gained.  | * Students will be instructed prior to class to find a flower or part of a flower to observe/bring to class.
* A flower/plant will also be utilized on zoom for those who do not have a flower and for students to follow along.
* The demonstration will be the use of a live plants/flower for labeling purposes and for students to see a real life example as a visual representation for the part of the plant we will label with the students.
* Labels include: stem, petals, leaves, anther, stamen, pistil
* After holding a discussion about labels and observations. We will take a plant that we have and show the dissection of each part so students can witness the makeup of a plant/flower.
 | * Students will come to class with their selected flower/plant (whole or a piece)
* Students will actively participate in discussion on labeling their flower/plant and the one we are presenting.
* Students will share observations of similarities and differences on each part of plant.
* Students will watch the plant dissection.
* Students will have opportunity to ask questions during the observation of the dissection.
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| **Evaluation Activity:**How will you evaluate whether or not the students have achieved the learning objective(s) of the lesson?  | * For our wrap up, we will be playing Kahoot.
* Have a slide showing our goals/objectives for the day again (shown at the beginning of class).
* Remind students to be thinking about these goals and apply what they learned during the class period while playing kahoot.
* Kahoot will consist of 5 questions that will be based on our guiding questions, goals, and material presented to accurately gauge our students' understanding.
	+ *What is the purpose of having a stem? (multi-select)*
	+ *Where is the anther located?*
	+ *Plants can be seen everywhere. (T/F)*
	+ *The stamen produces pollen. (T/F)*
	+ *What was your favorite part of the lesson? (multi-select)*
 | * Students will be prompted of the directions for the activity to follow (kahoot)
* Kahoot: <https://create.kahoot.it/share/plant-anatomy/84e868a3-32ac-4cf0-9c00-cb053b201e40>
* Student will be reviewing the goals of the day as they are entering kahoot
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