

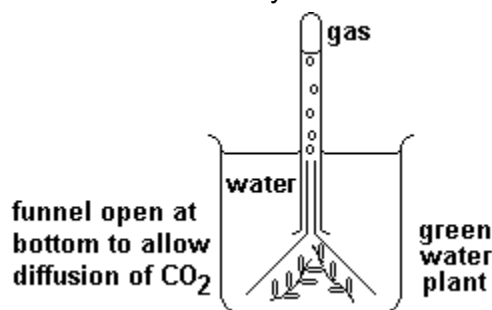
Strand: 8.3	Standard: 8.3.1	Episode 4	Big Idea: When given the right resources, plants grow.
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Title: It's a gas	Time: 10 minutes	CCCs: <u>Energy and matter</u>	Practices: Constructing explanations
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Narrative of episode:

Students will observe evidence presented by a demonstration of the gas produced by the bubbles igniting a match to prove the claim that oxygen is the gas that is being produced.

A few days before you are going to be doing this in class you will need to prep and have the gas already trapped in the test tube. At least 8 but up to 24 hours before if possible keep in light the entire time so that it doesn't do respiration, complete the preparation. Set up your elodea in a beaker with an inverted funnel over the elodea. Place an inverted test tube full of water over the top of the funnel. Prep as many beakers as you have classes so that you can demonstrate it in each class.



Gather:

After collecting the gas, discuss with the students what gas might have been in the bubbles they observed in the previous episode with the elodea or cabomba.

Reason:

Have them try to identify through student to student discussion how they can test what gas it is. Students should come up with the idea that oxygen is flammable. When this idea is proposed then complete the following procedures. Carefully take the test tube from the water while putting your finger over the test tube while still under water. You do not want the oxygen gas to escape. Turn the test tube upright while still covering the end of the test tube. Light a match (or have a second person light a match) let it burn for a moment then blow it out. While the match is still glowing, remove the finger from the test tube and put the match in the oxygen coming from the tube. The oxygen will cause the match to relight.

Ask the students to discuss where the plant would get oxygen from to make oxygen gas since it doesn't take in oxygen gas.

Discuss as a class their ideas to help them come to an understanding that the oxygen comes from the water and CO_2

Communicate:

Using the [student sheet](#) have students **construct an explanation** of 3 things

1. how do they know what the gas. Students must have evidence to support this. (the gas was flammable)
2. Where do they think the oxygen atoms coming from to make the oxygen gas. What evidence do they have to support this? (plants take in water or carbon dioxide which both have oxygen atoms)

3. How is light energy involved in photosynthesis? What evidence do they have to support this? (light allows plants to do photosynthesis, the more light you have the more gas is made)

Assessment: Students construct explanations about the gas formed using the evidence. Teachers should look for students being able to use evidence to support the argument that oxygen was created, The oxygen atoms came from the water and or CO ₂ the plant took in. (they don't know for sure which or both yet but they should be starting to understand that it comes from at least one of them) They should be able to claim with supporting evidence that light allows photosynthesis to occur and the more light you have the more photosynthesis happens.	Materials, resources, handouts, etc: You will need enough of each of the following for every class that will be observing the experiment: Beaker Funnel Test tube Elodea or cabomba plants Water Matches Student sheet
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