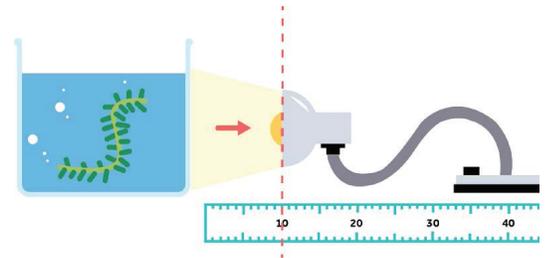


Photosynthesis

Activities

- > Set up an experiment that will measure the effect light has on photosynthesis.
- > Storyboard and take a photo of each stage of the process.
- > Peer review and teacher feedback on the final product/results.
- > Student reflection: strengths, weakness, difficulties, suggested modifications.
- > Consider other ways this system can be used.



Photosynthesis is the process whereby plants use sunlight to generate oxygen as a by-product. In this lesson, the students will experiment with the intensity of light to determine the amount of oxygen generated.

Stage 1

Gather the required materials.

Stage 2

Open SAM Space Education app.
Turn on and drag the SAM Button and SAM Buzzer onto the canvas.

Stage 3

Attach the SAM Button to a SAM counter software block.



Stage 4

Attach the SAM Buzzer to a SAM Timer software block.



Subjects: Computer Science, Biology

Grades: 6-12

Learning Objectives:

- Investigate the rate of photosynthesis
- Practice teamwork and collaborate together to navigate through problems
- Reflect on and review the process, their product and that of their peers

Learning Outcomes: To use pondweed to see how light intensity affects the rate of photosynthesis using SAM.

Recommended Prior Knowledge:

- Basic Understanding of SAM

Group Size: 2-3 students

Time Required:

- 20 minutes to create
- 30 minutes to observe and record
- 10 minutes to reflect and peer review

Materials Required:

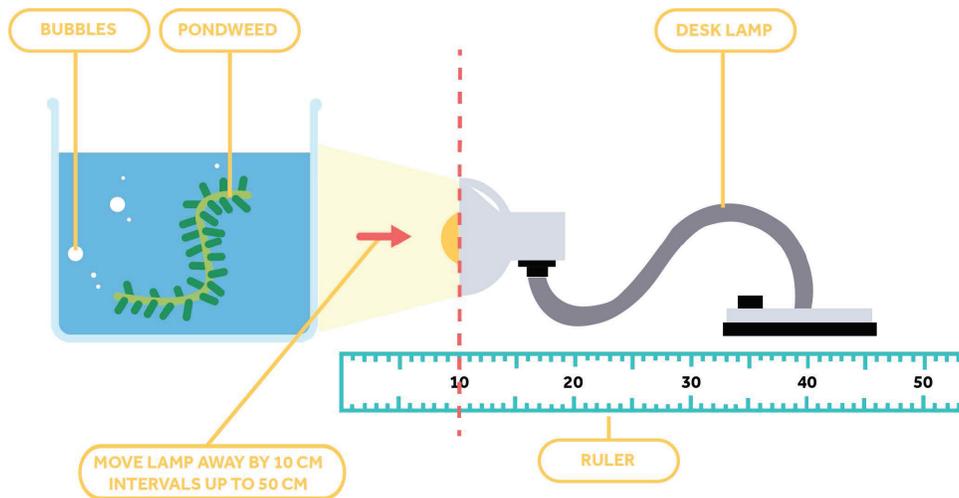
- SAM Button
- SAM Buzzer
- Computer
- Glass container with pond water
- Pondweed
- Lamp
- Ruler
- Camera to record stages and progress

SAMPLE

Stage 5

Experiment Method

1. Set up the apparatus as in the diagram.
2. Leave for five minutes for the pondweed to acclimatize to the new light intensity.
3. Count the number of bubbles given off in one minute with the SAM Button and SAM counter software block.
4. Move the light 10 cm further back.
5. Leave for five minutes for the pondweed to acclimatize again.
6. Count the number of bubbles given off in one minute, again using the SAM Button and SAM counter software block.
7. Repeat by moving the lamp away by 10 cm intervals until 50 cm is reached.



Stage 6

- > Students report back to the class on their task.
 - > What do the results mean?
 - > Peer review (students comment on each other's work)
- eg. Were there any difficulties encountered during the experiment?
Did each group get the same results? If not, why not?

Differentiate:

Extension task: Alter some of the variables.

Variables:

Independent variable- the light intensity (how close the light is).

Dependant variable- the number of oxygen bubbles given off (the rate of photosynthesis).

Controlled variables- the size of the pondweed, the volume of water used and its temperature.