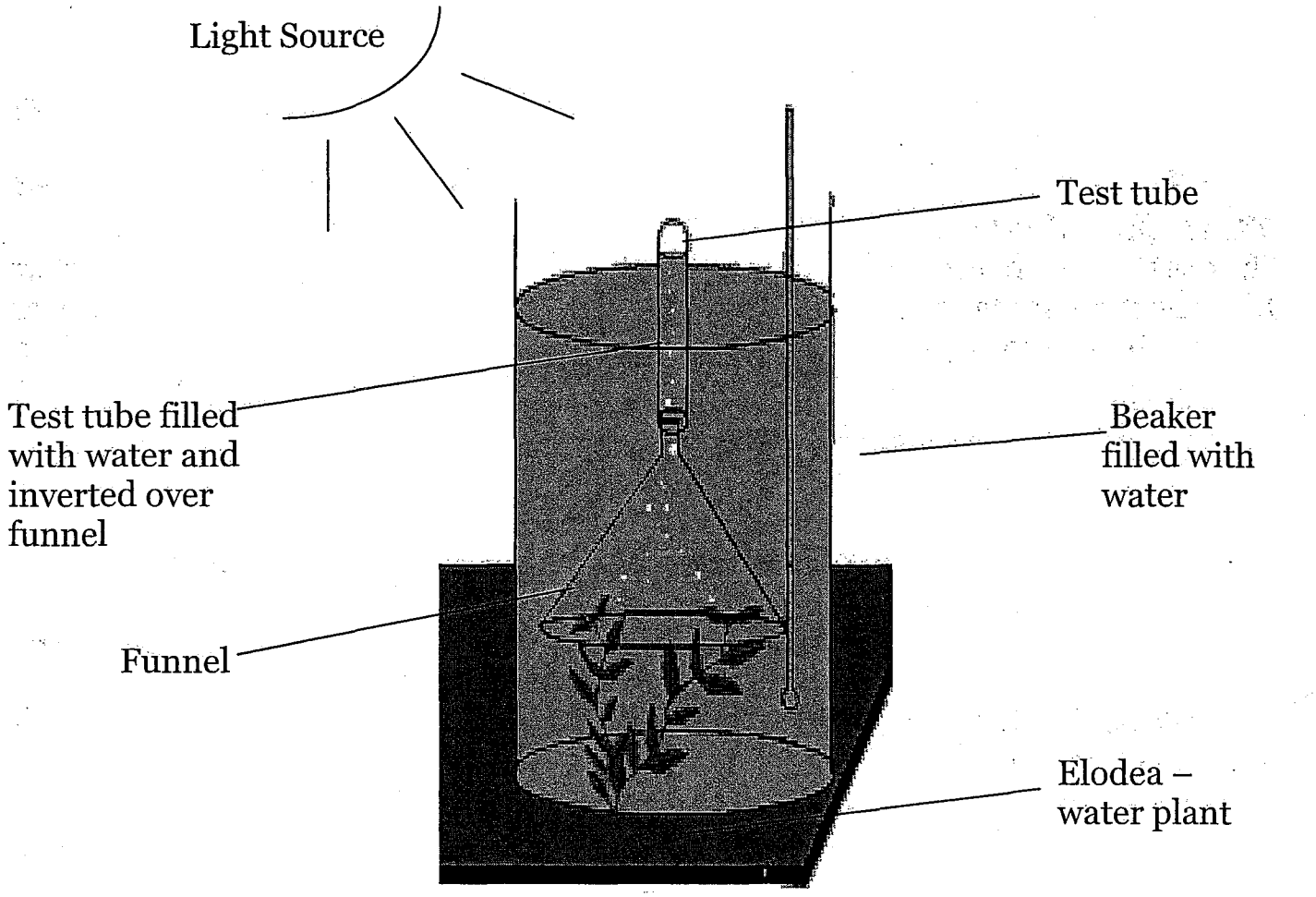
LAB: Photosynthesis

Objective: to determine the rate of photosynthesis in Elodea

Experiment:

An elodea plant is placed on the bottom of a 1,000 mL beaker half filled with water. A funnel is placed over the Elodea plant. A test tube is filled with water and inverted over the funnel (see diagram below). The beaker was set under direct light and the number of gas bubbles observed in the test tube were counted in thirty second intervals.

Diagram of Experimental Apparatus



In addition to observing the gas bubbles in the test tube, the apparatus was allowed to sit in direct light until the water level in the test tube was halfway between the top and bottom. The gas-filled test tube was carefully removed by keeping a finder over the mouth of the tube. The tube was then tested for the presence of a gas by inserting a glowing splint into the test tube.

Results:

1. **Number of Bubbles Counted per 30 Second Intervals**

Time (seconds)	Number of Bubbles Observed
30	2
60	8
90	16
120	26
150	40
180	43
210	43

2. When the glowing splint was inserted into the test tube, the split quickly lit and briefly flamed.

Analysis and Conclusions:

1. Independent and dependent variables in this experiment
2. Make a graph of time vs. the number of bubbles counted. (remember independent variable is on the X-axis and dependent variable is on the y-axis.) **Make sure you label your axes and title the graph!**
3. How do the results of this experiment relate to the rate of photosynthesis? (In other words interpret the meaning of the graph).
4. What inferences can you make based on these results?
5. Based on the results of the glowing splint test and your knowledge of photosynthesis, **identify** the gas in the test tube.
6. Where did this gas come from? **Explain** your answer.
7. Sodium bicarbonate added to the water will increase the carbon dioxide gas in the water. Why would the addition of sodium bicarbonate increase the rate of photosynthesis?
8. **List one variable** that could have slowed the rate of photosynthesis in this experiment. **How could you control for this variable if you were to replicate this experiment?**