



I Can Statement - Year 8

Photosynthesis

Unit/Topic Overview	Pre-taught Vocabulary	
Photosynthesis is the chemical process that plants, algae use to manufacture their own food. Using the green pigment chlorophyll, plants trap light energy from the Sun. They use this solar energy to convert carbon dioxide from the air and water from the soil into glucose, a type of sugar that provides the plant with energy to grow. As a brilliant byproduct of this reaction, plants release oxygen back into the atmosphere. This process is the foundation of almost all life on Earth, providing the oxygen we breathe and the base of nearly every food chain. We look at inorganic and regular farming and both selective breeding and genetic modification in this topic	photosynthesis	GM
	chlorophyll	Palisade cell
	clone	Limiting factor
	glucose	vacuole
	stomata	transpiration

RAG Rating:		Start	End
1.	I can state the word equation for photosynthesis, identifying Carbon Dioxide and Water as reactants, and Glucose and Oxygen as products. Carbon Dioxide + Water (+ Light) → Glucose + Oxygen		
2.	I can explain that photosynthesis is an endothermic reaction where energy is transferred from the environment (sunlight) to the chloroplasts by chlorophyll.		
3.	I can identify and explain how the leaf is specialized for photosynthesis. Key features include being thin (short diffusion distance), wide (large surface area), and having veins (xylem to transport water).		
4.	I can describe the functions of specific layers within a leaf cross-section, including the Palisade Mesophyll (packed with chloroplasts) and the Spongy Mesophyll (air spaces for gas exchange).		
5.	I can explain the role of stomata and guard cells in allowing carbon dioxide to enter the leaf and oxygen/water vapor to exit.		
6.	I can describe the experimental procedure for testing a leaf for starch (using boiling water, ethanol, and Iodine). They must understand that the presence of starch proves photosynthesis has occurred.		
7.	I can list the ways plants use the glucose produced: For Respiration (to release energy). Stored as Starch (insoluble storage). To make Cellulose (for cell walls). To make Proteins (combined with nitrates).		
8.	I can identify the three main factors that affect the rate of photosynthesis: Light intensity, Carbon dioxide concentration, and Temperature. They should be able to interpret graphs showing these relationships.		
9.	I can demonstrate how to measure the rate of photosynthesis experimentally, typically by counting the bubbles of oxygen released by pondweed (Elodea) as a light source is moved.		
10.	I can explain the vital role of plants in maintaining the balance of the Earth's atmosphere, specifically how they "sink" carbon dioxide and provide the oxygen necessary for most life on Earth.		

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