

Applying REACT to Promote Student Engagement (Sample Lesson)

Unit Title: Living Organisms—Metabolic Processes

Lesson Focus: Introduction to Photosynthesis—Converting Sunlight to Food

Anticipated Learning Outcomes:

Students will be able to describe the process and outcomes of photosynthesis and variables affecting it and relate the concepts of photosynthesis to other biological systems.

Learning Activities – Applying REACT

RELATE—Provide an example of real world connection or a discuss prompt designed to elicit preconceptions:

It's Fall and the leaves are changing color on the trees; pigmentation; chlorophyll production slows/stops. [This topic promotes an introductory discussion using new vocabulary (e.g., chlorophyll, carotenes, xanthophylls, anthocyanins) and concepts.]

EXPERIENCE—Activity or procedure for discovering, trying, experimenting with the new skill or concept:

Lab activity: Cover one leaf on a green plant with gauze, foil, or clear plastic wrap; Note the effects (The lab results should be discussed as a class and be followed by an explanation of the chemical processes involved; thriving vs. non-thriving plant characteristics and variables, etc.)

APPLY—Describe an activity or procedure for using the learned skill or concept in a useful, authentic way:

*Scenario: Assume you are a greenhouse technician. You are having trouble with plant vitality. Applying what you know about photosynthesis, troubleshoot the problem. Research and propose adjustments of shade (light intensity variable), light duration, watering, fertilizer application, temperature, humidity and ventilation to remedy the problem. Is the problem really due to a disturbance in photosynthesis or is there some other probable cause?
(Instructor will assign specific problems—leaf yellowing, leaf dropping, wilt, brown spots, etc. to each student pair.)*

COOPERATE—Describe how lesson is structured to promote students interaction:

Students will work in pairs to complete lab research activity and internet research activity. The pair will create and submit a lab journal together but each student will be responsible for writing his/her own research report.

TRANSFER—Identify transfer of learning strategy (wrap-up and transfer to a new situation; taking learning to the next step):

Because this is a biology survey course rather than a botany or soil science course requiring deeper exploration of chemical and environmental processes, the transfer will be a comparison to animal nutrition and associated organelles.