**Middle School STEM Science Lab/Activity Planner**

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| Name of Lab/Activity: Photosynthesis in Action | Grade: 7 |
| California Science Standard(s): (please copy and paste standards taught during this lesson)7.1.d Students know that mitochondria liberate energy for the work that cells do and that chloroplasts capture sunlight energy for photosynthesis. |
| Learning Objective/Goal:Students will understand that the process of photosynthesis involves light energy and releases oxygen. |
| Language Objective/Goal: (based on California Common Core Standards)[LA.7.RI.7.3 Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).](http://www.curriki.org/ab/en/alignments/add/Coll_AAmburgey.PhotosynthesisinAction/cc/cc-common-core-state-standards/486/4178) |
| Materials & Resources:Computer, Science Logs |
| Procedure:Part 1:1. Go to <http://www.syngenta.com/country/uk/en/learning-zone/science-lab/experiments/Pages/Photosynthesis_in_Action.aspx>
2. Instruct students to set the light meter on the simulation to 100mm and start the program for 1 minute.
3. Record the data in science log.
4. Repeat steps 2-3 adjusting the distance to 120mm, 140mm, 160mm, 180mm, 200mm

Part 2: 1. Go to Leaf Photosynthesis

<http://itsisu.portal.concord.org/diy/models?search=photosynthesis>Part 3: 1. In a test tube add a pinch sodium bicarbonate (baking soda) water and elodea leaf stem up
2. Wait one minute
3. Observe

(Another option to try is to put a head of lettuce submerged in water to observe bubbles as a byproduct of cellular respiration) | Teaching Notes: (include timing)Start by asking students what is needed for photosynthesis to occur? (light) What is given off (gas) How do we know it is being released? If the plant is a water plant what would you see as the gas is released? (bubbles)How do you know the gas released is oxygen? (because it’s a plant) |
| Math Connection:Graphing the data | Teaching Notes: |
| Technology Extension of Learning: The computer simulation used for the lab. | Teaching Notes: |
| Formative Assessment: (please attach a copy)Page Keeley Formative Probe, Lab review questions to analyze the data, Snapshots of ITSI-SU and answer the questions | Teaching Notes: |
| Strategies for EL and Special Needs Students:Real life visual simulation, sample of graph | Vocabulary:Photosynthesis |
| Alignment in science unit: (Brief description of lessons taught **prior to & after** this lab/activity)This activity will take place after an introduction lesson of photosynthesis.  |
| Brief description of lessons taught **after** this lab/activity:After this activity we will study cellular respiration.  |
| Lab/Activity adapted from: (website, textbook, etc.)Syngenta 2011 | Formative Assessment adapted from:Page Keeley, *Uncovering Student Ideas in Life Science**ITSI-SU* |
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