**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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| This lesson was developed by: | | | |
| Leslie Schafer | Chaboya, Evergreen Elementary | | |
| Amanda Amburgey | Quimby Oak, Evergreen Elementary | | |
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