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| M. Angileri ♣ 4 -16-18 | **6th grade science** | | **Lesson Plans: Into to Photosynthesis #3** | | | | |
| NGSS Standard | **MS-LS1-6**  DCI (A)  MS-LS1.C.1  DCI  MS-PS3.D  S & E practices  CCC | | Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and the flow of energy into and out of organisms.  **Organization for Matter and Energy Flow in Organisms:** Plants, algae, and many microorganisms use energy from light to make sugars from carbon dioxide from the atmosphere and water through the process of photosynthesis, which releases oxygen. These sugars can be used immediately or stored for growth or later use.  **Energy in Chemical Processes in Everyday life:** The chemical reaction by which plants produce complex food molecules (sugars) requires and energy input (i.e. from sunlight to occur, in this reaction, carbon dioxide and water combine to form carbon-based organic molecules and release oxygen.  **Constructing Explanations and Designing Solutions** Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the student’s own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.  **Energy and Matter:** Within a natural or designed system the transfer of energy drives the motion and / or cycling of matter | | | | |
| Vocabulary: | | **Multicellular:** An organism made up of more than one, often different cells.  **Cell:** Basic structural and functional unit in living organisms.  **Cell Theory:** Theory that states the cell is the basic unit of all living things.  **Unicellular:** An organism made up of one cell.  **Organelle:** Membrane-bound structure inside a cell that has a particular function,  **Prokaryote:** Organism whose cells lack a nucleus and membrane-bound organelles.  **Eukaryote:** Organism whose cells have a true nucleus and membrane-bound organelles.  **Nucleus:** The dense area in a eukaryote cell that contains nucleic acids, the chemical instructions that direct the cell’s activities. (A membrane bound structure in eukaryotic cells that contains DNA)  **Chloroplast:** The structure of the plant cells in which food is made. (Membrane bound organelle in plants that is the site of photosynthesis)  **Cell Membrane:** A lipid barrier that encloses the cytoplasm and controls what enters and exits the cell.  **Cell Wall:** The tough protective barrier that surround the outer membrane of some cell types.  **Mitochondria:** Organelle in cytoplasm of eukaryote cells that functions in energy production, the power factory of the cell.  **Photosynthesis:** A chemical reaction during which plants convert radiant energy from the Sun to chemical energy the reaction converts carbon dioxide and water into sugar (glucose).  **Phytoplankton:** Microscopic organisms that live in aquatic environments and perform photosynthesis.  **Autotroph:** An organism that makes its own food.  **Chlorophyll:** A green pigment found in the chloroplasts of plants, algae, and some bacteria.  **Glucose:** One of the products formed during photosynthesis when carbon dioxide and water combine in chloroplast in the presence of light.  **Sun:** The energy, visible light, needed to carry out the processes in photosynthesis.  **Radiation:** The energy from the sun that travels in waves and is needed for photosynthesis. | | | | | |
|  | | **MONDAY** | | **TUESDAY** | **WEDNESDAY** | **THURSDAY** | **FRIDAY** |
| Content Objective: | | SW demonstrate comprehension of the role of photosynthesis in the cycling of matter by summarizing information in the guided reading | | SW demonstrate application of the flow of energy into and out of organisms in photosynthesis by carrying out the procedure in the experiment. | SW demonstrate application of the role of photosynthesis in the cycling of matter by modeling the process. | SW demonstrate comprehension of the role of photosynthesis in the cycling of matter by predicting what would happen without the process. | SW demonstrate evaluation of cell theory, anatomy of a cell and cycling of matter through photosynthesis by testing. |
| Language objective | | SW write to summarize the role of photosynthesis in the cycling of matter using content specific vocabulary. | | SW write to describe flow of energy into and out of organisms in photosynthesis using sentence starters. | SW orally make connections among the role of photosynthesis in the cycling of matter and the model using materials provided. | SW write to describe role of photosynthesis in the cycling of matter using complete sentences and content specific vocabulary. | SW write to synthesize information on cell theory, anatomy of a cell and cycling of matter through photosynthesis by testing. |
| **Essential Question:** | | **How do plants receive the energy they need to grow and live without eating food?** | | **How do plants receive the energy they need to grow and live without eating food?** | **How do plants receive the energy they need to grow and live without eating food?** | **How do plants receive the energy they need to grow and live without eating food?** | **How do plants receive the energy they need to grow and live without eating food?** |
|  | | Grade Check  Read and discuss Photosynthesis p. 50-54  Guided Reading  Homework: Stemscopepedia Article and activities | | Do 2 investigation: The importance of light | Discuss Monday’s homework  Do 1 Activity: Building the photosynthesis equation  CCV: Photosynthesis and question  HW: Study Guide | Correct Study Guide  T-2 writing: What would happen if photosynthesis did not take place in plants?  Review using Stemscope resources | Common Assessment and  CER: Photosynthesis |
| Learning Target | |  | |  |  |  |  |

**The Verbs:** What should students be doing? **Construct an argument:** Say what you think and why. **Use an argument:** Make use of what you think. **Present an argument:** Show and tell people about what you think. **The Nouns**: What key terms are found in the standard? Motion energy: Kinetic energy Kinetic energy: Energy of motion Energy: Controls the amount of change that can occur within a system; without enough energy, change cannot occur

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| Enrichment | Read chapter 19 and questions | Vocabulary posters  If time begin chapter 20 | Science today: Watch it  Prepare for Student debate | Complete Ch 20-21 | Recycling  Debate |