

UNT Lesson Plan

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| Teacher: | | Date(s): | | District: | | School: | |
| Subject area: | Biology | Grade Level: | 9th | Unit Title | Special Cells | Lesson Title: | Photosynthesis |
| Purpose and Lesson | | | | | | | |
| Standard(s): | | Understanding goals(s): | | | Driving Question: | | |
| TEKS: 112.34 (4) Science concepts. The student knows that cells are the basic structures of all living things with <u>specialized parts that perform specific functions</u> and that viruses are different from cells. The student is expected to: (B) investigate and explain <u>cellular processes</u> , including homeostasis, <u>energy conversions</u> , transport of molecules, and <u>synthesis of new molecules</u> . | | <i>Students will understand...</i> -Cells have specialized and necessary functions for the survival of the organism. -The conversion of solar energy to chemical energy through the process of photosynthesis. | | | "How does sunlight affect the oxygen concentration in water around aquatic plants?" | | |
| Student Objectives: | Assessment of Objectives: | Lesson Steps/Activities including Timeline & Grouping | | | | | |
| <i>Students will be able to...</i> 1. Describe parts of a cell and its individual organelles. 2. Describe and identify parts of a chloroplast 3. Explain the process/pathway of photosynthesis. 4. Describe the environmental significance of photosynthesis. 5. Collect and analyze | <i>Students will be able to...</i> 1. Correctly build and describe a model of a chloroplast using modeling clay. 2. Present the data they collect in a clear, concise manner using graphs, tables and diagrams. 3. Present their data using correct scientific terms and vocabulary to describe their data and the process of photosynthesis. 4. Describe the importance | Monday- Engage (40 min, whole class grouping/20 min student groups) Students will watch a YouTube video to introduce them to the process of photosynthesis. Teachers will present the problem to the students: The owner of a fish hatchery has a large pond. He is trying to decide where to locate the hatchery for this coming season. Part of the pond receives full sun all day, another part sees partial sun and another portion is shaded all day. Students will be broken into groups to discuss "Knows and Needs to Knows", and then we will discuss them as a class. Students will separate back into groups to complete "Next Steps" and write their problem statements. Tuesday- Explore (30 min, 2-3 grouping) Benchmark lesson 1: Teachers will give a short lecture on the important aspects of chloroplast and photosynthesis they feel the students are weak on based on their Knows and Needs to Knows. Students will build | | | | | |

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| <p>data using scientific instruments such as a thermometer and an oxygen sensor.</p> | <p>of plants in an aquatic and terrestrial environment.</p> | <p>models of a chloroplast using modeling clay. They will need to label each part of their model. Creativity is encouraged.</p> <p>Wednesday- Benchmark Lesson 2: Explore will continue with a field trip to LLELA. Students will need to use GPS to find preselected areas to test water oxygen content. They will need to document the areas they collect data, analyze oxygen content and temperature around aquatic plants located in sunny and shaded areas. They will be given a worksheet detailing the information they are required to gather and analyze as a portion of their final product.</p> <p>Safety: Students will be informed of safety issues on Monday and a parent letter/permission slip will be sent home informing parents of the trip and possible hazards.</p> <p>Thursday- Explain (20 min, whole class, then research team grouping) re-evaluate knows and needs to knows. Discuss processes of photosynthesis and cell parts that need clarifying. Students will use the rest of class time to research and evaluate data collected and LLELA.</p> <p>Elaborate (40 min, team grouping) Teams will evaluate data from LLELA trip, conduct additional research using the internet or other media sources, and begin to finalize their presentations. The teachers will be available to answer questions and keep students on task.</p> <p>Friday- Evaluate (60 min, team grouping) Students will present the data they collected at LLELA along with information they learned over the week regarding photosynthesis, chloroplasts and the environmental significance of photosynthesis. They will propose their solution to the fish hatchery owner as to the best location to locate his hatchery. (Please refer to “Final Product Rubric” for specific details regarding objectives and expectations. Teachers will also evaluate groups based on individual participation during week and appropriate use of time at LLELA. Students will also turn in a short lab report as part of their final product (see Lab Report Rubric for details).</p> |
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| Language Modifications | Special Needs Modifications | Materials & Resources: | Technology: |
| A word wall will be displayed | None needed | O2 sensors, modeling clay, toothpicks, and thermometers | O2 sensors, computers, thermometers, and GPS |
| Reflection | | | |
| What worked: | Improvements: | Overall Implications for your teaching: | |
| What parts of the lesson led to engagement and student learning? | How can you increase student learning, engagement, etc., next time you teach this lesson? | What did you learn from teaching this lesson that can apply to other lessons? | |