Light Energy and Plant Photosynthesis

Grade Five
Life Science Standard

**Benchmark B:**
Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.

**Grade Level Indicator**
Describe the role of producers in the transfer of energy entering ecosystems as sunlight to chemical energy through photosynthesis.

**Teacher Information:**
Photosynthesis is a process where light energy is converted into chemical energy within a producer. This chemical energy is then converted into sugar (glucose) for the producer to use as food. There are three important components in the process of photosynthesis. Photosynthesis cannot occur without energy from sunlight, chlorophyll and carbon dioxide from the atmosphere. Photosynthesis is a process that helps the producer turn sunlight into sugar. Sugar is a building block for the leaf, stem and trunk of a tree or any other green producer. Therefore, photosynthesis is a building block of life. Only green producers can make their own food. Consumers obtain their food from eating producers or organisms that have eaten producers. Without producers, life on Earth would not exist as we know it.
Photosynthesis is a difficult process for fifth graders to understand and as a teacher you need to be aware of the misconceptions possibly present in your classroom. Here are a few misconceptions that your learners may hold:

- The food for plants comes from the ground or soil.
- Plants grow food for people. Plants don’t grow food for their own growth.
- Photosynthesis is a substance and not a process.
- Learners have difficulty believing that all animals depend on green plants for survival.

**Materials needed for each group or student:**

Task Card 1
Task Card 2
Task Card 1: What is Photosynthesis?

Entrance Slip: Before viewing the Bio Bit, write down the 3 most important things you think will be needed in order for photosynthesis to occur.

1.

2.

3.

As you are watching the video, revise any of your answers from above to reflect new information that was learned from watching the Bio Bit.

1.

2.

3.

What questions do you still have about the process of plant photosynthesis?

1.

2.

3.
Task Card Two

A group of students were working together on a project to explain photosynthesis. Below are the statements made by each student in the group to explain their understanding.

**Student A:** Photosynthesis is only a gas exchange.
**Student B:** Plants use energy in sunlight to create glucose, which is used as food.
**Student C:** It is the plants’ conversion of water and carbon dioxide into oxygen
**Student D:** It is when plants get their food from soil.

Which student has the better understanding of photosynthesis? Please justify your thinking and reasoning in the space below. (4 points)
## Task Card 2 Teacher Rubric

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 points</td>
<td>Student generates a complete understanding of photosynthesis by mentioning that sunlight, water and carbon dioxide are necessary for a plant to make its own food. Chlorophyll, the green pigment in plants, is where the food (glucose) is stored. Student B is selected as being the student with the correct view of the process of photosynthesis.</td>
</tr>
<tr>
<td>3 points</td>
<td>Student demonstrates some understanding of photosynthesis. Student may not fully explain the three components of photosynthesis. Student B is selected as being the student with the correct view of the process of photosynthesis.</td>
</tr>
<tr>
<td>2 points</td>
<td>Student understanding lacks organization, use of vocabulary, identifies only 2 of the 3 components of photosynthesis and may or may not have designated Student B as the correct answer.</td>
</tr>
<tr>
<td>1 point</td>
<td>Student understanding lacks organization, use of vocabulary, identifies only 1 of the 3 components of photosynthesis and does not determine Student B as the correct answer.</td>
</tr>
<tr>
<td>0 points</td>
<td>Student does not demonstrate understanding.</td>
</tr>
</tbody>
</table>