**Presentation: Analysis of Two Experiments**

**Purpose:**

Photosynthesis and Respiration are difficult concepts to grasp as neither are visible to the students. Using the “Processing Tool” to break-down the chemical equation, understanding the raw materials and products, requires several approaches. This activity allows students to work out the flow of energy and matter. The students then present their findings to their classmates.

**Procedure:**

Day 1:

1. Students work with one other person (partners) and receive a copy of the “Processing Tool” plus a copy of “von Helmont’s experiment” or a copy of the “Mice in a Box” experiment.
2. Partners then analyze their experiment keeping in mind the conservation of matter, conservation of energy and the degradation of energy. This takes 45 min. to 1 hour.
3. Students receive a copy of the grading rubric.

Day 2:

1. All students working on von Helmont’s experiment for one large group. The “mice in a box” students also form a large group.
2. Each group compares their interpretation of their experiments. A consensus needs to be reached so that the entire group understands their explanation.
3. Students then work together to present their findings to the other half of the class.
4. Posters demonstrating the energy and matter input should be made.
5. Posters demonstrating the energy and matter output should be made.
6. Posters indicating how the experiment was performed.
7. Posters indicating the results quantitative results should be made (including graphs if appropriate).
8. Students determine who will be explaining each part of the experiment to their classmates.
9. Students need to make notecards or prompts to assist them with the presentation.

Day 3:

1. Students need some time to organize themselves.
2. Presentations are performed.
3. Question and answer section. They may need prompts to re-instate all the concepts.
4. Students are graded on a rubric.
5. Grading includes presentation techniques (eye contact, projecting one’s voice, use of illustrations to support conclusion).
6. Grading includes understanding of the material.
7. Rubric also contains how each individual responds to questions from classmates and instructor.
8. Rubric includes knowledge of both photosynthesis and respiration. This is defined by the notes taken on their classmates’ presentation.

**Photosynthesis and Respiration Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Category | Demonstrating clear understanding of concept | Demonstrating understanding of concept with one area not clear | Demonstrating idea of concept, not clear on details  | Concept is not understood |
| Photosynthesis |  |  |  |  |
| Respiration |  |  |  |  |
| Presentation |  |  |  |  |
| Poster/teaching aids |  |  |  |  |