Tuesday - **Mendelian Genetics**

Period: 55 minutes

Subject: Biology I Date: January 2014

Objectives:

* TSW identify the experimental procedures performed by Gregor Mendel, and describe the conclusions he arrived at based on his work (5b DOK 1).

Materials:

* PowerPoint, Dry Erase Markers

Bell Work (7 minutes):

* The following directions will be written on the white board:
  + “Using the question on the Promethean board, explain why all **three** of the incorrect choices are wrong, and explain why the correct answer is right.”
* The following state test style question will be displayed on the Promethean board:
  + What nitrogenous base does adenine pair with during DNA transcription?
    - a. cytosine
    - b. thymine
    - c. guanine
    - d. uracil

Set (4 minutes):

* Ask the students why children look like their parents. Discuss the answers as a class.
* TTW show a short Brain Pop! video on heredity.
* “Today we’re going to be examining the work of Gregor Mendel. Mendel is known as the father of modern genetics because he was the first to observe that parents could pass on their traits to offspring, and that the passing of these traits followed specific laws.”

**Key Question/Big Picture Question: How are traits passed down from one generation to another? How can we predict what children/offspring will look like? Why don’t I look exactly like my mom/dad?**

Procedures (38 minutes):

1. 7 minutes. Give a brief history of Gregor Mendel, explaining that he was an Austrian monk that worked with pea plants. He first observed what happened in nature when pea plants reproduced, and then later experimented with crossbreeding specific traits.
2. 7 minutes. Explain that pea plants possessed seven different traits that Mendel studied. Show pictures of each, and have students figure out what the seven traits were. (height, flower color, flower position, seed color, seed shape, pod color, and pod shape)
3. 8 minutes. Go through the steps of how Mendel conducted his experiments. He began by first choosing a trait to examine. Two pea plants were then crossbred, and the resulting offspring were counted. The offspring could then be crossbred, and the results of this cross could be counted as well. The original pea plants were known as the parent generation, while the subsequent generations were known as the first filial generation and the second filial generation.
4. 3 minutes. Show a video that depicts how Mendel went about his work, reinforcing the notes previously taken.
5. **Including English -** 16 minutes. With the remaining time, students will write a newspaper article on Mendel’s findings. Their article will need to include a biography of Mendel, how he performed his experiments, and what he concluded from those experiments. Students will present their articles in front of the class if time permits.
   1. students may include drawings and diagrams in their news articles

Closure (3 minutes):

* “Today was took a brief look at Gregor Mendel. We saw who he was, what he did, and what he concluded as a result of his crossbreeding experiments.”
* Orally quiz students on the material covered in today’s lesson.
* “Tomorrow we’re going to be taking a more in depth look at the work of Gregor Mendel, and we’ll do this by learning the terminology used in the study of genetics as well as examining the laws of heredity Mendel came up with.”

Assessment/Evaluation:

Objective: TSW identify the experimental procedures performed by Gregor Mendel, and describe the conclusions he arrived at based on his work (5b DOK 1).

* Informal: Oral questioning will be done throughout the lesson and a final series of oral questioning will be performed at the end of the lesson (M) to assess the students’ understanding of Mendel’s work and the conclusions he arrived at (C).
* Formal: 1. Students will write a newspaper article (M) that will demonstrate the students’ ability to summarize the life, work, and conclusions of Mendel (C), and the grade will be recorded in a grade book (D). 2. A test will be given at a later date (M) that covers the experimental procedures performed by Mendel as well as the conclusions he arrived at based on his work (C), and the grade will be recorded in a grade book (D).