DNA Replication

Period: 53 minutes

Subject: Biology I

Objectives:

* TSW identify the steps of DNA replication and explain how this process relates to the process of mitosis (5a DOK 2).

Materials:

* PowerPoint, Promethean Board, Dry Erase Markers

Bell Work (16 minutes):

* Take out a sheet of paper and put the correct heading on top. The assignment title is, “DNA Quiz.”
* Students will take a short written quiz on the structure and function of DNA.
* 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 is the monomer of deoxyribonucleic acid?
    - a. amino acids
    - b. monosaccharides
    - c. nucleotides
    - d. glycerol and fatty acids

Procedures (34 minutes):

1. 3 minutes. Ask the students what it means to replicate something, and then ask them what they think DNA replication is. Explain to the students that DNA replication is the process by which DNA copies itself.
2. 15 minutes. Have the students derive the four steps of DNA replication through a series of leading questions and an illustration of the process, and as they derive each step, have them write down what occurs in their notes.
3. 3 minutes. Have the students watch a short video that depicts the process of DNA replication.
4. 9 minutes. Review the process of the cell cycle, and relate it to DNA replication. During interphase DNA doubles, and then during mitosis, the two new strands are separated and end up in two new daughter cells. Explain that the purpose of DNA replication is to ensure that each new daughter cell ends up with the correct amount of genetic information.
5. 10 minutes. With the remaining time, have students work on a series of review questions. If there is time, the answers to the questions will be gone over as a class.

Closure (3 minutes):

* Orally question the students on the process of DNA replication.
* “Monday we are going to be going over another DNA process, the process of DNA transcription. This is the process where we go from DNA to RNA, so that the RNA can be used to send a message out of the nucleus in to the cell.”

Assessment/Evaluation:

Objective: TSW identify the steps of DNA replication and explain how this process relates to the process of mitosis (5a DOK 2).

* Informal: 1. Students will be orally questioned (M) throughout the lesson, as well as at the end of the lesson, to assess their understanding of the process of DNA replication (C). 2. While students are working on their paper models of the process of replication, the teacher will be discussing the steps of the process with students (M) to assess their understanding of the DNA replication(C).
* Formal: Students will take a written exam (M) at a later date to assess their understanding of the process of DNA replication (C), and the grade will be recorded in a grade book (D).