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8-10-2006

Genetic Code and Electrophoresis

Neill Paul II

The College at Brockport

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Lesson #1 - Web Based Lesson Plan

Name: Neil Paul II

Grade level(s)/Subject taught: Living Environment (10th grade)

Objectives:

- Students will understand that all organisms have a genetic code which can be used to identify them.
- Students will understand the procedure known as gel electrophoresis and become aware of its potential and limitations.
- Students will learn that the genetic code between relatives is closest because it is the material which is passed on during reproduction.

Key Idea:

- The continuity of life is sustained through reproduction and development.

Materials: -Computers, Paper, Writing Utensils, and Erasers.

Lesson #1 – Web Based- Lesson

The lesson will begin with an anticipatory set that shows a clip from a popular TV show, “CSI”. After spurring on the class’s attention, by having them view a short five minute clip, the instructor will present the students with various questions. The questions would be presented on a sheet of paper and time would be allotted so that students would have time to collect their thoughts. Once that time expired the questions would be talked about in a teacher lead discussion. Questions would start off asking about the show and the crime scene detective importance and then ask them about what tests the scientists used and why. The goal here was to create a very informal/casual environment in which students would feel free to share their thoughts, so that the instructor could get a more accurate understanding of their prior knowledge surrounding DNA. The instructor would use this knowledge then to modify their lesson accordingly. In addition, the discussion and video were designed to create interest, so that the educators can effectively teach them a scientific procedure used in real life.

After the discussion, the instructor would inform his/her students to read a scenario, involving a murder. They are given three questions that are to be thought about as they read. What is the evidence? etc... This action was included so that the students would remain focused on the key aspects during the reading. It also showed them that they would be held accountable for their readings, thus keeping them motivated.

After going they have completed the scenario and questions were discussed, a new lab procedure, named gel electrophoresis would be introduced to them. Once this short lecture expired, the students would be arranged groups in pairs. These pairs would be given a packet that outlined the computer simulation provided by the PBS website (<http://www.pbs.org/wgbh/nova/sheppard/analyze.html>). Together the students would have to become accustomed to the actual procedures associated with crime scene work. Specifically they will learn how DNA samples are not only collected but separated to analyze and organisms DNA. The website accomplishes this task, by providing a mystery in which evidence was left behind. As this is occurring the instructor will be circulating around the room to assist with any dilemmas, through modeling and discussion. In order to show that they have an accurate understanding of the lesson, they will take individualized quizzes on the computer. Then once each has finished they will work together to review what they did not understand. As this is occurring the instructor(s) are circulating to assist any students who as a group are unable to move forward.

Lastly the students will be given a individual homework assignment at the end of the period which would be used during the start of tomorrow’s class. The homework would provide various lower level question followed by problem based scenarios designed to show the instructor who actually is grasping the material. After this homework was reviewed a small quiz would be given to see their current level of understanding.