Module 2: Teaching Scenarios

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Curriculum, Assessment, and Methods: Science and Mathematics

May 29, 2012

Direct Instruction Lesson Plan—Microscope Usage

Students use microscopes throughout their science education. In this lesson, students will learn to identify the parts of a microscope, correctly use the microscope, and understand magnification and resolution. Materials required are microscopes, a diagram of the microscope’s parts, prepared microscope slides, microscope slides with cover slips, and an elodea leaf or onion.

The lesson begins with notes on the different types of microscopes and their use in science. Before moving to the lab area, students are taught the proper handling of microscopes and behavior expectations when in the lab area.

Students will be paired up and move to the lab area where they are assigned a microscope to work with. The teacher will use a Power Point or Smart Board application to project the lab steps to the class; showing each part, as well as, demonstrating the use. Using the microscope diagram, each student will fill out the names of the different parts and locate them on their microscope.

The teacher will describe the proper technique of using a prepared slide as the students place the slide on the microscope stage. Students will then learn the use of the coarse and fine focus knobs, by observing what the teacher does while using a prepared slide. Students will use the different high power objectives and calculate total magnification using the following formula: the eyepiece times the objective equals total.

The second part of the lesson involves making a wet mount slide. Teacher will have students create a wet mount slide using an elodea leaf or a piece of an onion. Students will carefully observe and record what they see under low, medium, and high powers. They will share with the class their experience and what they observed. The lesson will conclude with the proper cleanup and storage of the prepared slides and the care and storage of the microscopes.

Guided Inquiry Lesson Plan—Paper Airplanes

The paper airplanes lesson will have students designing and creating paper airplanes with the goal of having it fly the longest. The first part of the lesson will have the students working in groups to discuss the assignment, with time spent researching paper airplane designs. Student groups will agree on what type of paper airplane they will design, as well as, what type of paper(s) they want to test to best meet their needs. They will spend this part of the lesson on constructing two airplanes of the same design, but of different paper types. Building and testing their planes will complete this part of the lesson.

Students will construct their final planes and prepare them for the flight competition. Each group will have three flights and record the time aloft. They will then average the total time that their plane flew. The final part of the lesson will have the students presenting the data they recorded to the class. They will also discuss their design, their paper type, what they learned, and what they might do differently to improve their results.

Free Discovery Lesson Plan—“The Salt Mine”

Students will find a method of separating two solid substances that make up a mixture. Students will need magnets, iron filings, salt, beaker, tweezers, water, filter paper, magnifying glass, and a scale (or balance). In a group discussion, students will talk about what a mixture is—two substances that are in the same place, maintain their own characteristic and can be separated by physical means.

The teacher will discuss with the students that the iron is an element, which is the simplest form of matter; and salt is a compound made of sodium and chlorine. The first part