###### **Arteriosclerosis lab**

##### Rationale – This lesson gives the students a hands-on approach to learning and is appropriate for students because it will help them connect to information learned about the circulatory system by building on schema. Also, by constructing an artery clogged with plaque, the students may develop a strong feeling of the severity of this condition, consequently giving them incentive to live a more healthy life.

# Objectives

* Students will construct an artery that is blocked with plaque.
* Students will qualitatively describe the difference in flow rates between clogged and unclogged arteries.
* Students will be able to explain why pressure on artery walls would be higher in clogged arteries than in unclogged arteries.
* Students will calculate flow rate in clogged and unclogged arteries.
* Students will explain how the circulatory system would be affected by clogged arteries

# Materials

* 5 minute epoxy
* ¾” rubber tubing
* straws
* faucet
* stop watch

# Procedures

5 min. 1) Review the previous lesson by asking the students, “Can anyone tell me why some people need open heart surgery?” Lead the class toward an answer that discusses cardiac vessel blockage and by-pass surgery to connect to this lesson.

5 min. 2) Preview the lab by going through the lab procedures and demonstrating how to calculate flow rates.

30 min. 3) Students will work on arteriosclerosis lab

##### Assessment/Evaluation

* Students will calculate flow rates for clogged and unclogged arteries
* Students will explain why pressure on the walls of clogged arteries would be higher than on clear arteries
* Students will explain how the circulatory system would be affected by clogged arteries

# Connection

* In previous lessons the students learned about medical conditions affecting the circulatory system. In this lesson the students explored how clogged arteries affect the flow of blood through the body and how blood pressure is affected. Also, clogged cardiac arteries result in a decrease of blood supplied to heart cells (i.e., decrease in flow rate identified in the lab) and potentially may lead to the death of heart cells and a heart attack or open heart surgery, which was studied the previous lesson.
* The next lesson will be a review of the circulatory system, where I will hand out a list of the objectives for the unit test. To initiate a discussion, I will ask a few questions related to the objectives of the test. Then, I will turn it over to the class, and entertain any questions.

# Closure

5 min. 1) Review how the reduced flow of blood in cardiac vessels caused by plaque buildup deprives the heart cells of oxygen, and may lead to open heart surgery or worse a heart attack.

 2) Ask the question, “How do you think the condition of arteriosclerosis affects the circulatory system?” “What do you think happens to the heart cells when cardiac vessels get clogged?”