Circulatory System
[needs formatting and background info]

Module and puzzle made by Karl Muster
Presented 3/17/14 to 3rd grade class
Members: Karl, Liz, Kenneth, Cole, Donna, Morgan

Topics: biology, circulatory system
Grades: 3rd-8th

Materials
• Heart puzzle cutouts (pre-cut if limited on time)
  [you may need to indicate which direction is up]
• Colored paper
• Glue sticks
• Stop watch

Part 1: Introduction
- establish purpose: move blood around
- Why? distribute oxygen from lungs to all the stuff that uses it (probably shouldn’t go any more in-depth than that about oxygen, CO2, and nutrients)
- blood gets pumped by the heart
- heart is a muscle
- Right Ventricle->Pulmonary arteries->lungs->Pulmonary Veins->Left Atrium->veins->heart (pass around heart and system diagram printouts)

Part 2: Heart Puzzle
- Puzzle with chambers of the heart and other parts. Note that some pieces go over others
  [For 3rd-5th grade, you may need to instruct them for each piece. Otherwise, you should have a reference picture of the heart showing the sections]
- You could have the students draw arrows for blood flow and write the names on their puzzles, as directed by the instructor(s)
- should cover difference between arteries and veins, and the 4 chambers of the heart
- explain the flow of blood with respect to the body and the lungs.

Part 3: Heart Rate Activity
- explain that the heart needs to pump blood faster when body is doing more things
- have students record pulse by counting out 15 seconds to yourself and have them count, then multiply by 4, or do 6 seconds and add a zero.
- have them feel the pulse in the front of their necks or behind their ears.
- then go outside (maybe?) and have them do some cardio like jumping-jacks and then take pulses, also try laying down. You may need to choose volunteers if they are too difficult to control.
- compare before and after pulses, ask if they know why they differed

Optional:
Electrocardiograms (ECG or EKG) measure your pulse using electronics. It shows the electrical pulses for each stage of your heart pumping (look up stages). They can be used to diagnose heart problems. Below are readouts from an EECS class I took done on a student before and after exercise. Notice what step is shortened when the heart beats faster (the resting phase).
[Drift in voltage is apparently from the subject breathing heavily]