**ABSTRACT:**

Students in my Physiology and Disease (PAD) class at the Illinois Mathematics and Science Academy (IMSA), Aurora, Illinois, measure heart rates and blood pressure to study the correlation between these parameters. IMSA is a resident magnet school for students gifted in math and science. I have evolved my PAD class to be based upon student-centered learning, which has proven to be the best way to challenge students to take responsibility for their own learning. Several opportunities are provided to students to use their creativity of student monitors. The goal of this activity is to enable students to make interdisciplinary connections and have fun while taking blood pressure measurements. This activity will also encourage integration of computer science and physics into the biology classroom, and will impact about 40-60 students this Fall semester.

**INTRODUCTION:**

Students integrate computer programming into their learning by building blood pressure monitors using arduinos to record their blood pressure measurements during the cardiac unit. Students are required to work in groups of two or three for collaboration and peer review.

- The goal of this activity is to enable students to make interdisciplinary connections and have fun while taking blood pressure measurements. This activity will also encourage integration of computer science and physics into the biology classroom, and will impact about 40-60 students this Fall semester.

- Students will learn how to collect and analyze data from a pressure transducer and air pump using a blood pressure cuff and an Arduino UNO. Similar to the Arduino heart rate monitor, students will learn (1) The basic input and output data flow with the UNO and (2) how to connect wires between devices for reading, processing, and writing from the UNO.

- Students will analyze code to accomplish different tasks: (1) Read in input data from the blood pressure cuff transducer, and (2) Calculate and report average blood Pressure on LCD display.

- Students are provided with Arduino UNO or compatible boards, Pressure Transducer, Voltage controlled valve, air pumps, 4-pin cables and 100 and 1 KOhm resistors.

**RESULTS:**

- We are still in the process of implementing this activity.

- Students are working on making prototypes and are excited about learning about how computer science integrates with biological measurements.

**DISCUSSION:**

- Similar to the Arduino heart rate monitor project, having students modify code to make the arduino blood pressure monitor prototypes has turned out to be more time consuming than originally intended.

- Plans are under way to implement the arduino blood pressure monitor building into the Fall 2019 PAD classes.

- Next steps involve getting students to work on building additional applications of Arduino based measurements.