Figure 3 shows some student comments about this activity.

“RESULTS:
• We are still in the process of implementing this activity.
• Judging from the prototype experiment, student understanding of arduino based heart rate monitors has been enhanced and there seems to be a general atmosphere of increased interest and passion for measuring heart rate using the “cool” monitors that they built.

1. This is GREAT! I never thought that biology could have any connections to computer science but it does...”
2. “A lot of work to build the monitor, but I understand the physiology of heart rate measurement so much better because I had to design the monitor to measure it!”
3. “I liked the fact that the teacher brought new things into the classroom. I am good at computer science but not biology so this was a great opportunity for me to do a good job at something I was familiar with.”
4. “I am not very good at computer program code but I learned a lot through this activity. I am glad the teacher took the trouble to introduce us to something like this.”

Figure 3: Student comments for this activity

DISCUSSION:
Having students modify code to make the arduino heart rate LED monitors prototypes turned out to be more time consuming than originally intended.

Plans are under way to implement the arduino heart rate monitor building into the Fall 2018 PAD classes.

Next steps involve getting students to write code to integrate Blood Pressure measurements into the arduino monitor.

This class is a perfect opportunity to allow students to express their creativity in making the LED heart rate monitors.

PAD has been a great foundation to integrate interdisciplinary learning, and especially to integrate programming, which seems to have become a worldwide necessity, into my classroom.

Students will learn that physiology has many connections to physical sciences such as physics and STEM skills such as computer programming.