



# Principles of Biomedical Science

Virtual Learning

**9-12 / PLTW<sup>®</sup> PBS**

**April 14, 2020**



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9-12/PLTW<sup>®</sup> PBS

Lesson: April 14, 2020

## Objective/Learning Target:

Students will be able to: Students will design an experiment to change their heart rate. (*Reference: PLTW<sup>®</sup> 4.2.1 Heart Rate*)



# Let's Get Started (Bell Ringer):

Read Article: [WebMD 5 Heart Rate Myths Debunked](#)

Review Think Question: What are the steps in the Experimental Design? Can you name them in order? Write them down in your notebook, or on your separate piece of paper.



## Lesson/Activity:

#1 Start by...

Click the link to read over the steps in the [Experimental Design](#), if you need to fix your list you made from the bell ringer. You will need this to complete the rest of this activity.



## Lesson/Activity continued:

Using the steps of experimental design, develop a procedure to address the following question: How can I get my heart rate to go down? Write out your process for your experiment in your laboratory journal. Remember to include all the details, design this so someone else can do it without you. Let's say there was a pandemic and you were trapped at home and could not see or help the person doing it. Be specific and be detail oriented. Perform your experiment as you designed it.



# Answers:

Experiments will vary, however they should all include the following steps. Taken from the [Experimental Design](#).

1. Identify the Problem or Question
2. Predict a Solution to the Problem or an Answer to the Question
3. Design the Experiment to Test Your Hypothesis
4. Carry Out the Experiment (data collection)
5. Analyze the Data and Observations
6. State the Conclusion
7. Write a Summary



# Practice:

Data can make or break a well planned out experimental design. How you organize, and show that data can make all the difference between a good grade and a great grade. Winning the contest or coming in second.

Check out the links below and learn about all the different types of graphs and charts that can help in your future presentations.

[VISME 44 Types of Graphs Perfect for Every Top Industry](#)

[Indeed Career Guide Types of Graphs and Charts](#)

[Intellspot Types of Graphs and Charts And Their Uses](#)

[CFI Top 10 Types of Graphs](#)



## Additional Practice:

Once you have completed your experiment and are now more familiar with the [experimental design](#), try a new experiment. This time develop one over anything you want to. I am a huge fan of experiments that involve eating ice cream, just saying.

When you are making your experiment think of the big idea. Can my experiment be reproducible and will others come up with the same results. If you can't I am sure someone else can not either. Be specific!





# Answers:

Experiments will vary but will follow the same rules:

1. Identify the Problem or Question
2. Predict a Solution to the Problem or an Answer to the Question
3. Design the Experiment to Test Your Hypothesis
4. Carry Out the Experiment (data collection)
5. Analyze the Data and Observations
6. State the Conclusion
7. Write a Summary

Click the link to see details on [Experimental Design](#)