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Physics Science in Motion

Mandatory 3: Lab Practicum

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### Forces and Motion

I chose to do the Phet Forces and Motion -Scripted Version lab. This lab introduced the students to a brief history of the founding fathers of physics concepts Galileo Galilei and Sir Isaac Newton. The lesson started with the students watching three short video clips that demonstrate Newton's first law of motion. While watching the videos I asked students a series of questions to gain a better understanding of their understanding of physics concepts. After a brief review of Newton's Laws of motions the students performed a lab to gather more hands on information about forces and motion. After the lab we discussed what the forces they observed at play during the lab. After the hands-on lab the students work on the PhET computer force and motion simulation to observe the relationship between an applied force and the acceleration of an object. After working on the simulation for a while the students completed the lab worksheet then answered a few questions. We finished the lab with a discussion about what they learned about the how force interaction effects objects.

This force and motion lab is connected to physics learning outcomes, by how it applies the scientific principles of motions and momentum to design, and evaluate the forces at work.

Since I am not teaching a physics class this year, I asked my chemistry class if they would like to do this activity. At first they were not too excited, but once we started on the lab part of the lesson they loved it. The cons of this lesson was that the students were not that interested in the history part of the lesson. If I would use this lesson next year I would shorten that part of the lesson, mainly because my students had a good understanding of who Galileo and Newton were. I think a short video of each would be better for high school students. The pros of this lesson was that the penny and card lab

was engaging to the students and they did not want to stop doing it. I was also impressed with how much knowledge the students have about the forces at work in the activity. The students were also engaged with the PhET force and motion lab. After looking over their lab reports I thought they demonstrated a fair understanding of the concepts that the lesson taught, especially since I only did a brief review of the physics concepts they needed for this lesson. I did not do the last part of this lesson, because I felt like the online lab covered the topics that I was at this point wanting the students to learn.

<https://phet.colorado.edu/en/contributions/view/3541>