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Challenge Project

Abstract

This project focuses on Newton's three laws and poses a challenge to solve for each one. I have found that student's find Newton's three laws difficult to understand so this project gives them 2 problems to solve for each law. The first problem the students will have is to complete the challenge for each of the laws on the IP page. Once finished, they will attempt to answer the critical thinking questions that go along with each law demonstration in the Microsoft Word format.

Model Justification

Interactive Physics was the perfect program to use for this project. Once explained to the students they were quick to learn it and create many models for each law. The applications in IP easily allowed u to create the types and directions of motions and forces needed to demonstrate each of Newton's laws.

Work Log

10/18- Chose the 3 students to work on task. They are in 8th grade and have learned Newton's Laws last year.

Each of the following dates was a meeting from 12-12:45 with myself and the 3 students: 10/20, 10/26, 10/27, 11/2, 11/3, 11/15, 11/17, 11/22, 12/6, 12/7, 12/8, 12/19, 12/20

Report

The problem of this project is for the students to critically analyze and manipulate Newton's three laws. This project therefore is basically 3 projects in one and took quite a bit of time to complete. We ran across several problems throughout the work period on this project. Some of them were unable to be resolved. First, working with 3 students was my idea. Originally I had thought that each one would like to choose a law to work on independently and with myself. After speaking with the students we decided that it would be more beneficial to work on each law as a group.

For each law we brainstormed ideas on how to best demonstrate it visually. We then voted on which idea to use and the students went to work creating the model on IP. This process took several days for each law. After completing the model, the students created questions on Microsoft Word for the seventh grade classes to answer after working with the IP model. The problem that we were never able to figure out was how to create a link from IP to the Word document. We found the directions on how to do so in the help section of IP but after following the directions we were still unable to get it to work. We decided to just add the Word documents separately onto the CD for this project.

Another problem that we encountered was getting the printouts of the models to put on the poster because I did not have a computer with IP hooked up to a printer. This is yet another problem that we did not successfully solve. Although the problems seem that they may be easily resolved, this year is the first time I have used technology to this extent in my classroom and I am constantly learning how to become more capable.

Considering the fact that I am not very “technologically literate”, I think that this project went very well.

The students that worked on the project believe that they have created a terrific working model that will help the seventh graders as they learn about forces and motion this year. Just to be sure the models were as easy to understand as we had thought we had a few other eighth grade students perform a trial run. This did not seem to go as smoothly as we had wished. The students were confused at first and not sure what was expected. Based on their reactions, we added some more directions to the screen on each of the models and believe that it has improved the models.

When using this with my seventh grade students this year I will be sure to thoroughly explain what is expected and how to achieve the goal of the project. The students and I agree that one of the best things about this project is that the seventh grade students learning forces and motion this year will get a thorough understanding of Newton’s Laws based on their exposure to this project. After experimenting with these models, the students will be required to create their own model of one of the laws. I expect that their models will accurately reflect the law because of their prior exposure.

This experience was very rewarding for me. Through talking to my students from last year, I realized that this year my seventh graders should create more accurate models after exposure to these IP model simulations because they will have a deeper understanding of each law. The 3 students who worked on the project really enjoyed this experience also. They actually wanted to meet more times than I was able to. They would now be able to use IP for any other work that they want to make models for. I think that I

will probably use IP with other students in the future. I am considering having my seventh graders use IP to create their Newton's Laws models later this year.

Standards

NYS standards addressed through this project: S1b, S4a, S5a, S5c, S5e, S5f, S6a, S7d