Math Resource Review

For this activity I selected Aeronautics for Introductory Physics, https://www.nasa.gov/sites/default/files/atoms/files/aero-intro-physics_0.pdf, as the NASA unit of lessons to review. The school where I teach does not offer a physics course, so I enjoyed finding a resource that I can use parts of in the math classes I teach. This set of lessons was produced in conjunction with NASA and the American Association of Physics Teachers. This unit is geared toward advanced eleventh and twelfth grade physics students and introductory college physics courses. The activities in this guide are aligned with current aeronautics research and with the Next Generation Science Standards. There are objectives for each unit. The inquiry lessons, applications and labs are based on the **Self-Regulated Learning Cycle/Cycle of Action** proposed by Dr. Andre Bresges of the University of Cologne, Germany. The parts of this process are Aim, Plan, Decide, Act, Verify, and Evaluate ("Aeronautics for Introductory Physics," 2020). Also included in this lesson guide is a dictionary of needed terms for this resource. There are several units in this guide, including Scientific Thinking, Constant Velocity and Uniform Acceleration just to name a few. Within each unit is a mixture of inquiry lessons, labs and real-world applications. All of these items give students the opportunity to use the six actions of the learning cycle. An example of an activity is to make paper airplanes, compare surface area, and begin learning about variables that influence flight. Students use this data to produce a line of best fit. This is an exercise

that could be used from advanced students to struggling students. They are also given an opportunity to analyze and hypothesize why some gliders fly better than others. Each unit gives the students many opportunities to examine and analyze aspects of physics in an aeronautical setting.

I think this is a great resource that not only science teachers can use, but also math teachers. Many of the activities include data analysis, solving equations and evaluating expressions. In the Constant Velocity unit there is science, math and social studies as the real-world application uses air flight concentrations. Students also look at a day in the life of an air traffic controller.

This resource has many hands-on activities that will engage students at a high level of thinking. Another advantage of this is a teacher could use the entire guide or she could pick and choose what activities best fit into the classroom. The rigor of this guide is both a benefit and limitation for full classroom implementation. For a true advanced level class the guide as it is written has great potential. A class with a mixture of students would require a teacher to adapt many of the lessons so that all students could learn.

This was just one of many interesting and engaging resources provided by NASA for educators to use. I am amazed by all the varied resources available to me.

Source

Explore Stem Resources. (2020) Aeronautics for Introductory Physics. Retrieved from https://www.nasa.gov/sites/default/files/atoms/files/aero-intro-physics_0.pdf