Aerodynamics and the Properties of Flight – Designing a Glider Using 3-D Printing Technology to Achieve the Longest Flight Path

Part a)   Factors Affecting Lift – Smithsonian National Air and Space Museum https://howthingsfly.si.edu/aerodynamics/factors-affecting-lift

Weather Data for Flight Testing – Weather Underground Hourly Forecast https://www.wunderground.com/hourly/us/nv/carson%20city/89701?cm_ven=localwx_hour

Part b)   I feel that the data we will be using in this unit is going to enhance my students' learning immensely. We can discuss and read about aerodynamics and what must be considered when constructing an aircraft. One of the data sources we will be using, the Smithsonian National Air and Space Museum, discusses all aspects of aircraft construction and aerodynamics to help students with this consideration. Without using the data provided, I believe students would be most likely to choose aircraft based on looks, rather than which might be able to fly furthest given its construction. We will also be using weather forecasting data from Weather Underground to help the students predict what type of conditions their models must be constructed to endure. Our location is prone to extreme weather conditions that change drastically and quickly depending on the time of day during the summer, which they will need to attempt to compensate for. They will be graphing their flight test data daily to show how the environmental factors experienced (temperature, wind speed, precipitation, and pressure) affect their model's performance.

When learning about science, data is an incredibly important part of our investigations. We can't just make statements to our peers about the things we believe as facts without supporting evidence to base them on. That's where data's importance comes into play. We all want to know things. We want to learn about what is happening around us and why. Data gives us that reasoning behind the things we see and experience. It helps us to deliver more factual information to those we are presenting to. Data is tangible and helps us to know when we're heading on a correct path when we're researching an exciting idea. Without the use of data in the unit I will be working on with my students, they would simply all just be playing with model airplanes and guessing about what is happening to them.

Part c)   The way my teaching team plans to use our data to create interdisciplinary lessons and discussions is very exciting. We will be incorporating math by graphing and developing additional math exercises for our students using the data collected on those graphs using "flight logs" the

students will create. Students will be calculating changes in recorded daily weather and other flight test data and creating additional graphs with their new data. We will be incorporating language arts and social studies by including socioscientific narrative writing using specific data students found when researching and then testing their aircraft, as well as during the interviews they will be conducting with the aviators and famous historical figures they will meet while we are on our field trip to the Reno Air Races as a part of this unit. The students will be creating a fictional story which must include an aircraft and an historical figure with some sort of weather component. Finally, they will be illustrating their stories as an art component using some part of the data they discovered as a featured aspect of their cover illustration.