Freedom Falcon Race to Space Project

Lesson Goal

- Culmination project on using the scientific method.
- The challenge is to get your rocket to go the highest in the air.

Overview of the Project

- Student groups (up to 4 students) will research, design and build two identical paper rockets. The group will launch their rocket and using their observation of the flight of the rocket, they will be able to make one change to it and launch it for a second time.

Materials: **You will be given materials in a crate before rocket building day. **

- 4 rocket launchers – Stephenson, Sierra, Harte and PAA (Harper will build all 4 if needed)
- Paper – printer (Biology classes), binder (Earth Science classes), cardstock (upper level science and all math classes)
- Scotch Tape
- Altitude tracker – 8 (Harte)
- Lab report forms

Day 1 – 20 minutes – Learn about the project

- PAA will provide a video link (about 10 min) to introduce the project. (I will put into share drive called Rocket Project)
- Teachers will put students into groups of 4.
- Teachers will hand out the homework research worksheet and go over what the students need to do at home that night. The students need to come back with a plan on how to build their rocket.

Day 2 – Full period – Build the rocket **All times are based on advisory schedule**

- **10 min -** Students get into their groups and go over what everyone researched. They decide on the dimensions they want to use for each section of their rocket: fins, body and nose cone.
- **30 min -** Teacher hands out lab report form and students fill in the following: purpose, hypothesis, control, materials, and procedures.
    - The procedures will only be partially written at this time. They need to explain how they will make their rocket. They will add the testing steps later along with the variable.
- **30 min -** Once the group shows their completed portions of the lab report to the teacher, the group can begin to build their rocket. They should build two identical rockets in case one breaks on the first launch. Make sure their dimensions are as exact as possible.

Day 3 – Full Period – Launch Day

** Make sure you bring materials out in the crate we gave you for students to make modifications after the first launch**

- Teacher's classes will be partnered up to use the same rocket launcher. Launches will take place out on the assigned fields. See the attached list to see who you are partnered with. We only have 4 launchers.
- Students will launch the first rocket and record their data and observations on their lab report sheet.
- The group will decide on one aspect of the rocket to change and make the modification.
- Groups will launch for a second time, record their data/observations and make one final adjustment to their rocket.
- Groups launch for the third time and record their data/observations.
- Once all classes have launched (after 8th period), a winner will be chosen from each content area.