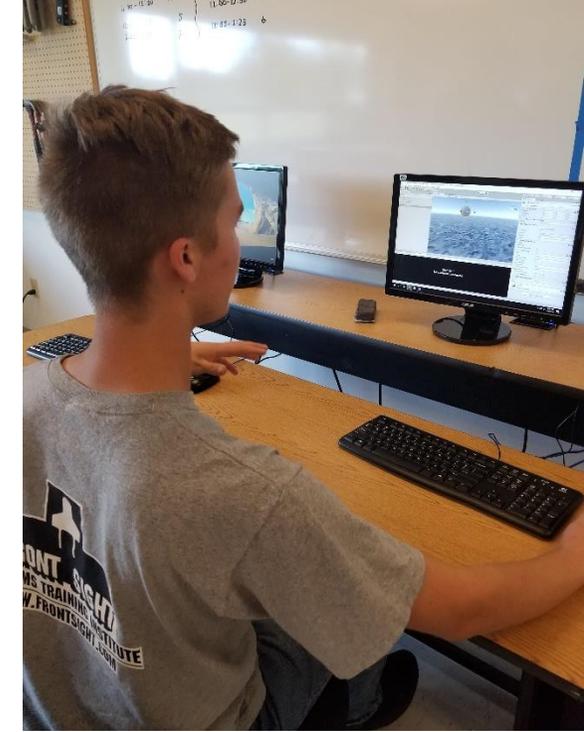


YEARLY PLAN FOR DESIGN AND PROTOTYPING

This is a short description of how a normal school year is expected to progress from the HUNCH perspective. The 2020-2021 school year is obviously different from how we would normally work with students. This year we will work with each school as best we can to support your students by teleconferences. There may be a few times and places that we can meet but I expect that will not happen often. Our goal is a learning experience for the students and that we are not wanting to bring added stress to the teachers. So, the HUNCH program should be done as much or as little as needed to meet the learning goal that the teacher/students have time for.

Kick off for the year (August to September)

- Teachers talk with the students about HUNCH and watch some of the videos to give the students background for what HUNCH is. Students read through the projects and decide on which project fits their interest and their capabilities. HUNCH Mentors meet with students to answer questions about the projects and help them understand how students fit into the space program. After reading through the Project List and any Project Information and Supporting Documents to understand the environment, students should be looking for existing equipment that is similar to their project and making appropriate changes so it fits NASA's needs.



September to early November

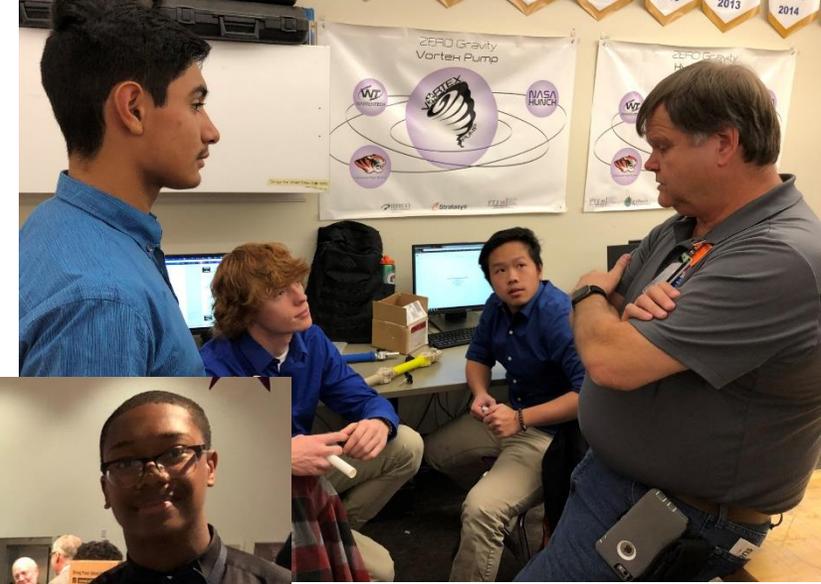
- Mentors begin visiting schools or meeting with students by Zoom to help students understand the projects and constraints. Students may go through several changes and iterations as they develop their idea.



Preliminary Design Review (November to December)

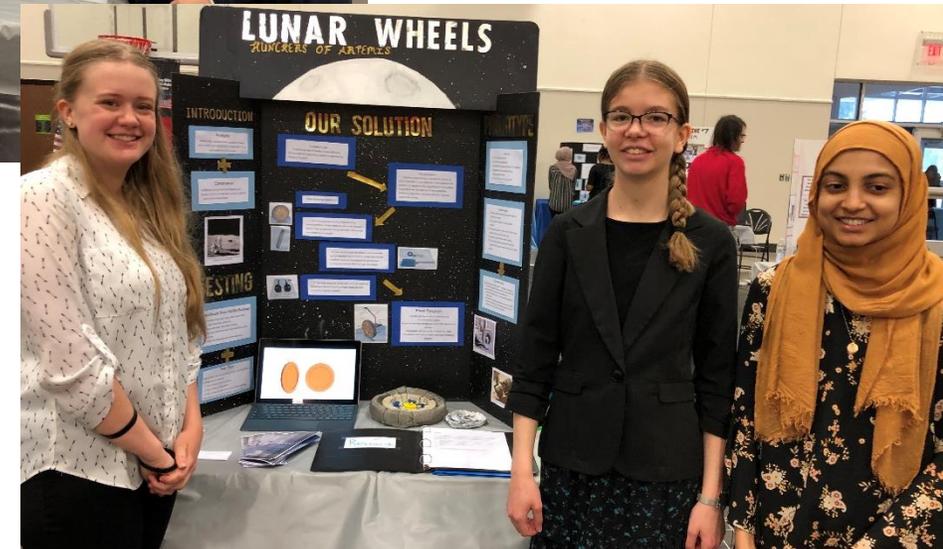
Students present their idea and show their prototypes to mentors and engineers.

Having an early version of their prototype is critical for mentors and engineers to understand what the students are thinking. Students should be listening for what is good about their design and what can be improved. These prototypes may look a little rough or made on the cheap but they should be mostly functional so students can express their ideas. There will be some cardboard, wood, metal, 3D printed items and items bought from the store but students will be able to express what materials they are expecting the final product to be made of.



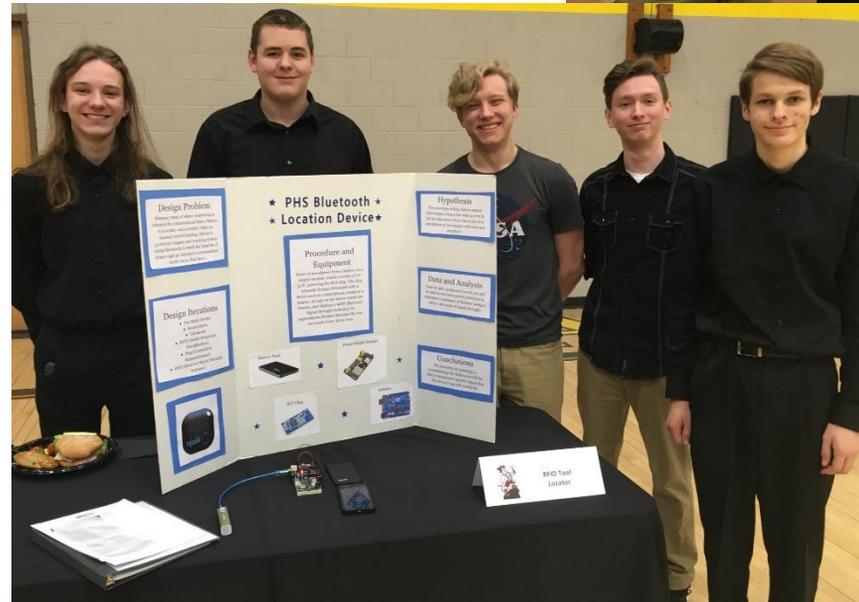
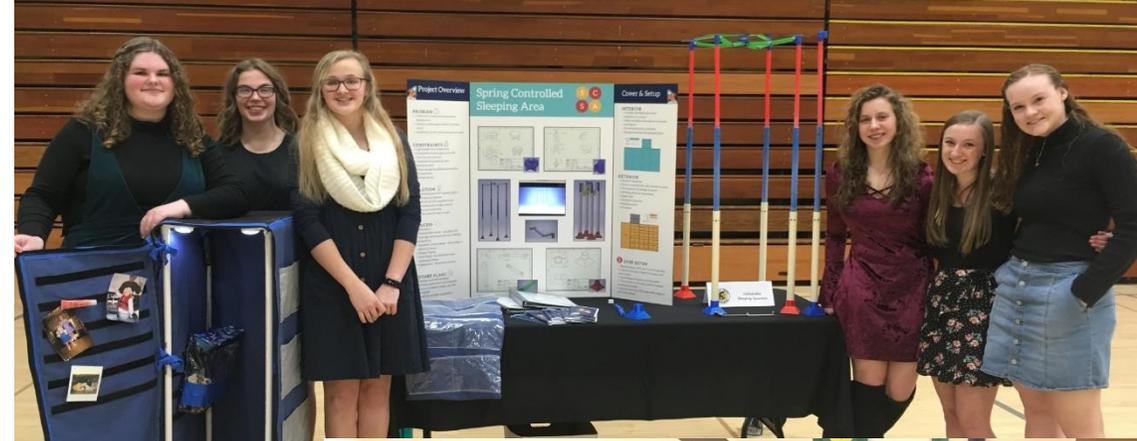
PDR continued

- The desired, long time goal for the PDR and Critical Design Review (CDR) is that all students attend a regional review where students can see and discuss each others work and be reviewed by engineers and NASA mentors so they can develop their presentation skills and potentially coordinate with other students. This is not possible for all schools since there may be only one school in a very large area. These schools will present by way of a zoom conference.



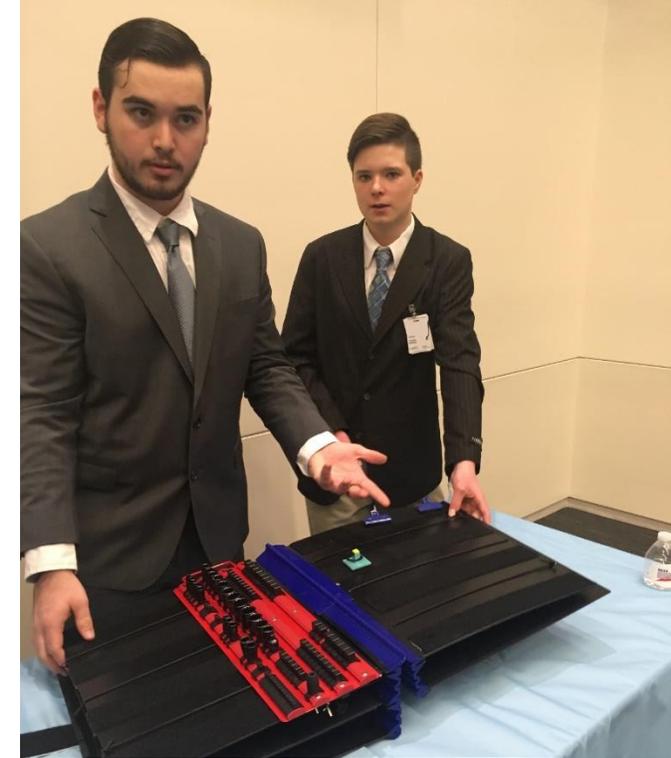
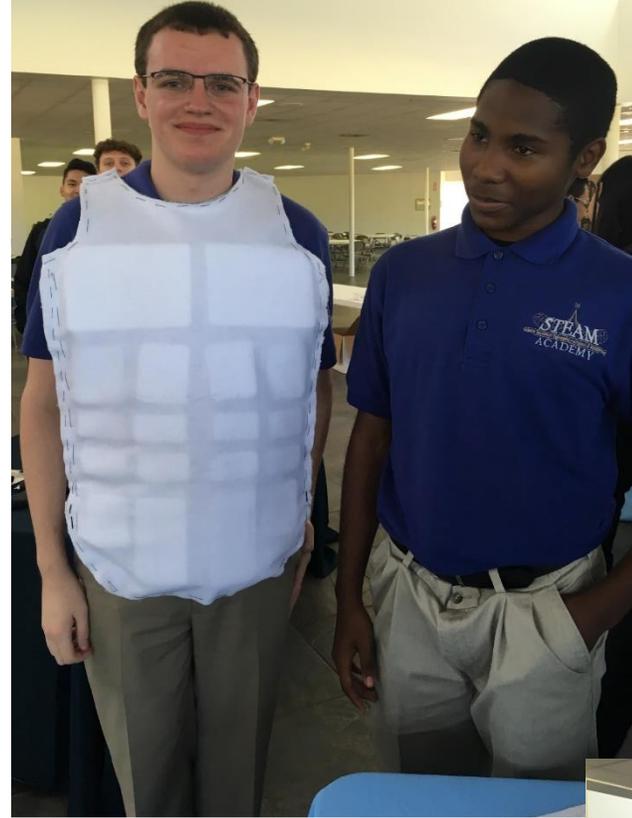
Critical Design Review (February to early March)

- Students present their improved prototypes to mentors and engineers. Students should be listening for what is good about their design and what can be improved. After seeing all of the projects at the CDRs across the country, HUNCH will send out a Semi-Finalist List that shows the top, interesting designs, then HUNCH will send out the Invite List. The Semi-Finalist List is a large list of the projects that are viewed to have good ideas we should be watching—it is an honor to be on the Semi-Finalist list. I would be very happy if we could invite everyone to Johnson Space Center in April but we don't have enough room, we only have 82 spots and that is a lot of projects to see in a day. So we then take the Semi-Finalist List and pull out the very best projects to make the Finalist List which is who will be invited to Houston for the Final Design Review.



Critical Design Review Continued

- Students who make the **Finalist List** are encouraged to make improvements to their project and presentation to incorporate ideas they received from the Critical Design Review. This is their opportunity to show off the best product possible.



Final Design Review

Middle of April

- We are hoping to have an in person review in the spring, but we are not sure at this time. If it occurs, the Final Design Review will be held at the Saturn V Rocket Building at Johnson Space Center where students will present their prototypes to NASA engineers and astronauts. All of the projects at the Final Design Review are considered 'winners' as there are aspects of each design which may be implemented into whatever the final design ends up being. Students teams will be asked to share their final designs and presentations so that information and credit for ideas is preserved and available as the projects progress. Unfortunately, this is real engineering where nothing is certain.



Where the projects go

- All of the Final projects, presentations and ideas will be handed over to the HUNCH Design to Flight team who will be working with other engineers at NASA to come up with the final design which may be a compilation of several of the project ideas. It may also include concepts from other NASA engineers who have a stake in the final product. Students may be contacted during this process. I'm sorry to say it is not a quick process and may take a year or more for some projects to move forward if it has been chosen. Please be patient but know that your ideas have been seen and evaluated. Students will always be able to reference their work for HUNCH. Although the design projects are all desired by NASA, requirements and needs change. Some projects may be pushed forward and others may be dropped because of changing needs. No ideas are thrown away but are held onto and displayed so that it can be reviewed when similar topics come up.

