

HOW WE ARE ADDRESSING THE CHALLENGE

INSPIRATION FOR DEVELOPING

. The challenge is to make a high altitude balloon that goes near space. There are many students and other people who want to reach near space. They want to see the space or atleast launch a rocket that reaches near space. But the factor that stops them from making this dream a reality, is the cost. It costs a lot and it is not affordable for common people or students. Thus these dreams just remain only as dreams. So we decided to work on this project to make this dream come true by making a lesson plan to make a high altitude balloon at a low cost that will definitely help underprivileged children to make their dream come true. They will feel as if they are space engineers. Or at least they will be able to send something here a h a b to the space they will be proud of themselves and more and more people will come to this sector. This made us inspired and motivated enough to proceed with this project.

. We also had enough motivation and enthusiasm to proceed with this project. And we want to address many other problems such as changing weather or network coverage in rural areas. We tried to unite this problem and this idea of a high altitude balloon. So as we tackle this challenge we will be able to make the "space dreamer's" dream come true and also we might be able to solve many other daily life problems so we definitely wanted to solve it.

IMPORTANCE

The primary purpose of this project is to make a lesson plan for making a low cost high altitude balloon and the bill of materials for making it. This indeed makes the 'space dreams' of many underprivileged students. And also there are many problems we can address along with this project. Our purpose with this HAB is to take high resolution pictures of the earth and combine it to make a geographical map of a particular area. This will be very beneficial for the people living there as they can know about the unseen terrains in their locality and it has many other benefits.

We have also included a weather predicting system which monitors the pressure and temperature variation in each altitude. As this is based on a specific location (where the balloon has flown), agriculture and other things will have it's benefits. It is more important in this time of climate change. Again, the lost cost will make it highly affordable and more people will be in this sector and a much more enthusiastic society will be developed. The easier you make it, the more people will follow.

METHODOLOGY

As we started developing, the first thing we had to do was to be certain about the purpose. We had some basic ideas about the purpose of HABs. But it wasn't enough. We had to bring it to the next level, so we did discussion and research. And at last reached a conclusion to equip the balloon for geographical mapping. This helps us to make a high resolution, detailed map of a specific location. But we found out that along with this main purpose we can add certain tools to get the pressure, temperature and thus climate data.

And an ingenious idea was put forward that to add a drone with payload. As the balloon bursts, the speed of descent can be reduced by using a drone with high rpm and large blade area. So as the payload reaches near the surface, we can steer the drone to make it reach a destined location, manually or by pre-programmed system. So as soon as the payload reaches the location, if we have prepared the next balloon for flight, we can just relaunch it pretty quickly. This can save a lot of time, effort and will be much beneficial for a long term program. In case the drone failed to do so, we have added a parachute as safety precaution. We have a programmed system that automatically releases the parachute if the drone could not reduce the speed of descent. However the payload reaches the earth surface very gently and safely.

The other main thing we had to consider was about the gas used. Helium and Hydrogen were two options we had. Both had advantages and disadvantages. So it took a little discussion to confirm it. On considering every side, Helium was found to be better. And the size of the balloon and parachute, length of the paracord, amount of Helium to be filled and how to arrange the payload properly was next on the list. Some research and brainstorming sessions resolved these issues and we can come up with proper ideas.

And we wanted it to rectify every issue that could possibly occur. So we started to discuss it. For effective solutions we had to travel along with balloons. Our imagination ascends with the balloon considering every aspect that could create adversity in our flight. We travelled all the way up, saw the balloon working and it burst and followed till it landed. We changed minute factors, worked out the math and physics and finally our balloon was ready for its real flight.

BENEFITS

Geographical mapping was equipped with needed technology and a good quality map of terrain is possible with it. The thing that makes this more important is the fact that it is just focusing on a very small area. So the details will be greater. As it is affordable by everyone, we can simply have an open source complete earth map. You can update it whenever you want; even is each week!

And a great advantage is we are using latex balloons which are completely safe for the environment and cause no adverse effects like as due to polyethylene or foil balloons. And the gas Helium which we are using is a noble gas which hardly reacts with some

element. It simply rises up and escapes to space. And again this too doesn't harm the environment. That means it is completely environment friendly.

Using a drone saves a lot of energy, man power and time. As it comes back where you launched (or programmed to land) you can quickly re-send it only by attaching it to the balloon you have prepared. Providing weather information and also network connection to areas with poor network coverage will be a tremendous leap to the future. Many children in rural areas are suffering with network issues as they have to attend classes online. Next generation is our priority and this makes education a must. If it is possible, the it can go no further with this much low cost.