CARBON FILTERED MASK

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CAN WE MAKE A MORE COST-EFFECTIVE AND COMFORTABLE MASK TO ASSIST IN FILTERING OUT SMOKE THAT IS EASILY ACCESSIBLE TO THE COMMUNITY?

Challenge

Air quality-
Can we make a more cost-effective and comfortable mask to assist in filtering out smoke that is easily accessible to the community?

Our problem with the current solutions is the overly large and chunky shape and unnecessary expense for a good carbon filtered mask. This issue is often a deterrent to our community and can be seen as an inaccessible necessity.

Solution Process

We came up with our solutions after extensive research online. We also interviewed a volunteer firefighter about the different masks they use and we went to different shops to ask employees about what a customer would want in their mask. We combined all of our discoveries and formulated a solution to our problem.

Solution

We came up with a solution that would help communities effected by bush fire smoke. We have come up with a comfortable and cost-effective mask that should be accessible to communities. The mask incorporates multiple aspects that make it more comfortable to wear for longer periods of time and it is also reusable. We have thought of a carbon filter that can be replaced and although it is replaceable, it is still very effective because of the multiple layers of activated carbon that are put into the filter.

Benifits of our Work

There are many benefits to our mask including cost and reusability. Our mask is a cheaper smoke mask that still works as well as other, more expensive masks. This means that anyone can comfortably buy our mask and still protect themselves from smoke and the chemicals in it. Our mask is also reusable so therefore, it is better for the environment and will help reduce the number of disposable masks. The cooling valve can be made from recycled plastic and this reduces the amount of plastic wasted every year. People who live in bush fire effected areas can use our mask to protect themselves while also being comfortable and not spending a fortune of a mask.

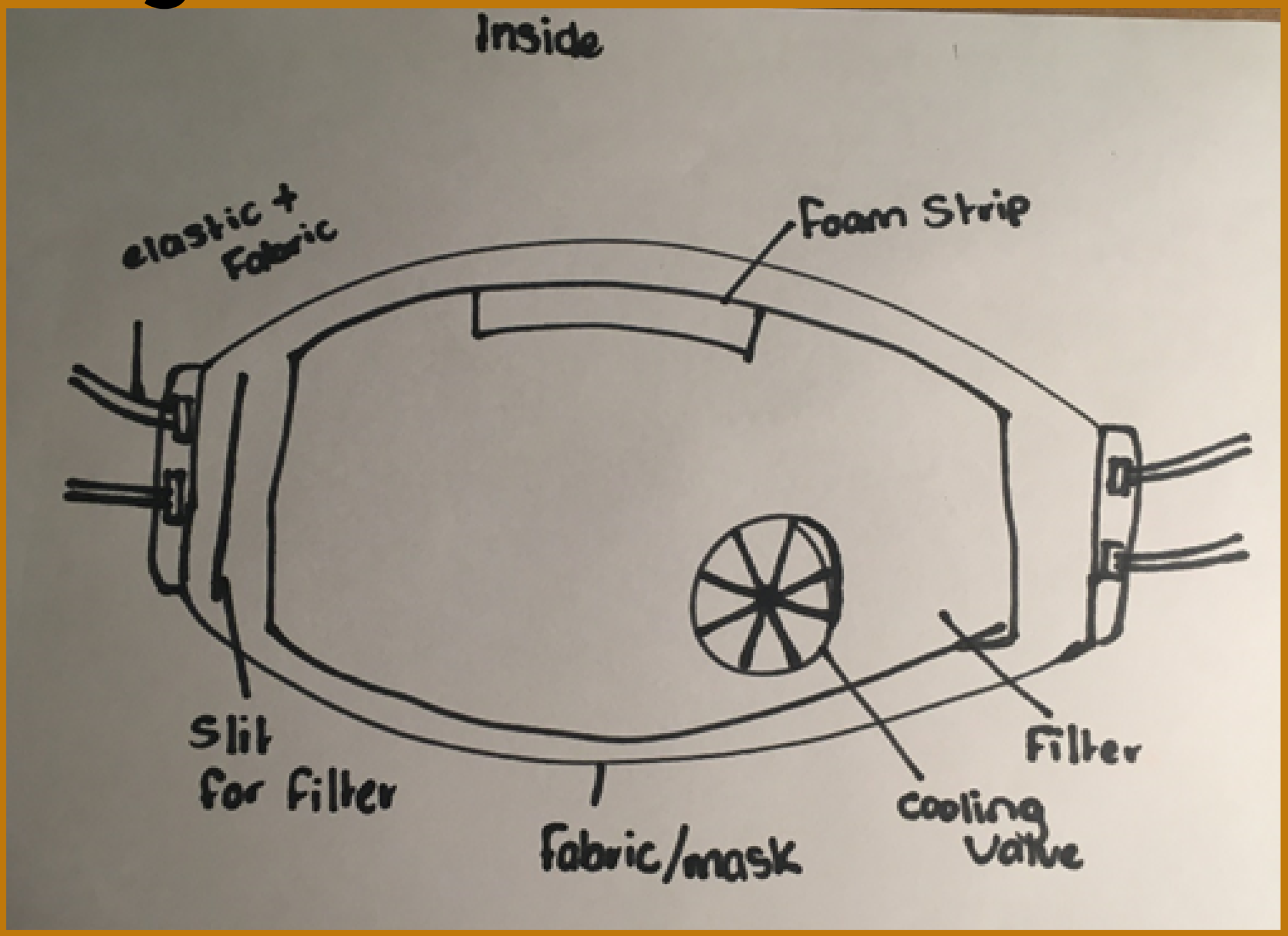
What we learnt

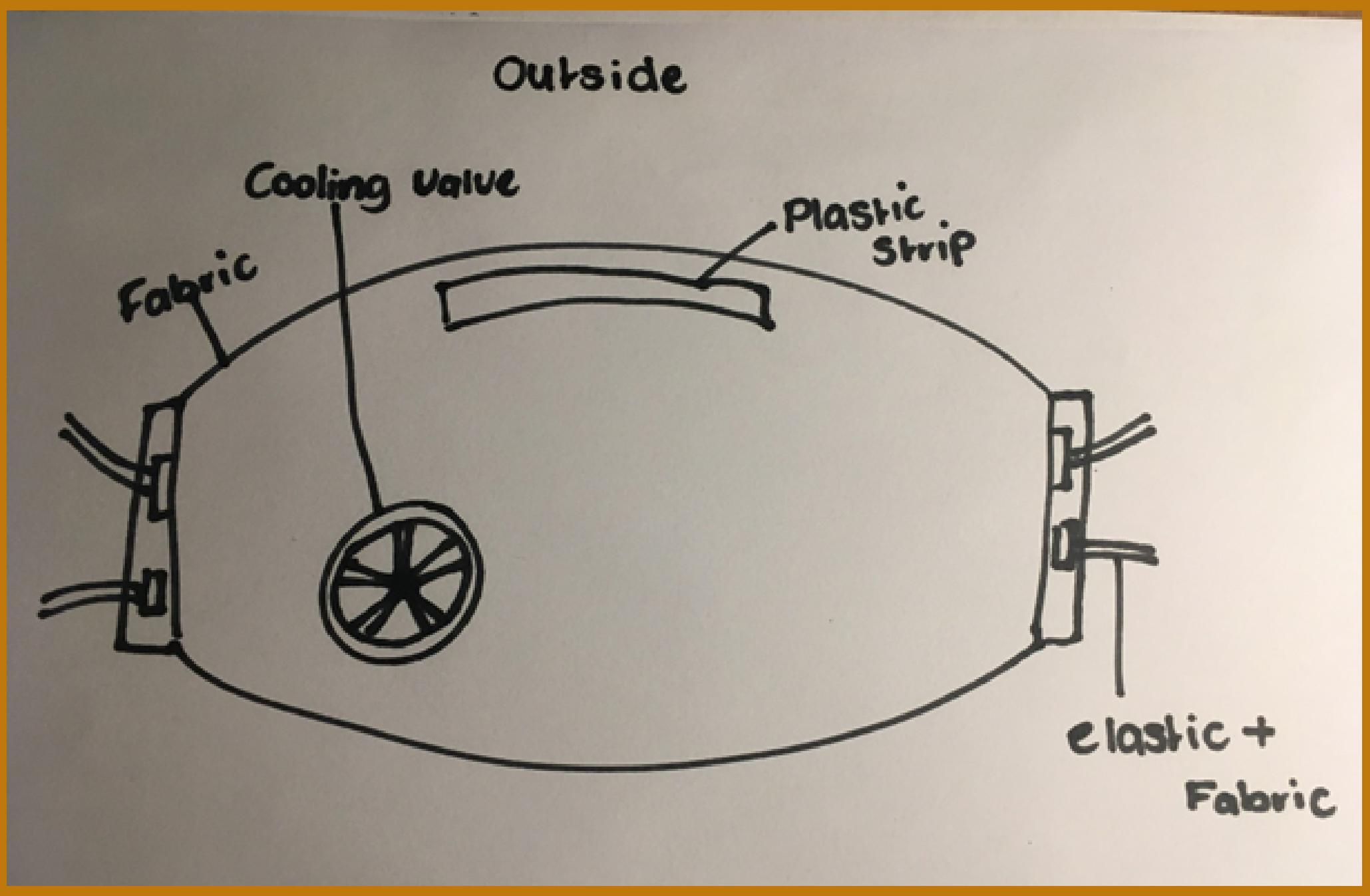
We completed lots of research and made lots of mistakes and models before we finally created our final product. We learnt a lot about smoke and the different kinds of masks as well as what the average customer likes and dislikes about the masks that already exist. We also learnt how to manage our time better and work together so we can create the best solution that we can. We learnt a lot from this project including how to create new solutions to problems. Although our problem already had plenty of solutions, we wanted to create a new one that is more effective. We learnt how to research and create multiple solutions before we create our final solution.

Testing

Although we haven't tested our mask, it can be tested using a vacuum chamber with two sections. In the first section, the airhas smoke in it and the air is weighed. The mask is put between the two sections and in the second section, all the air is sucked out. with the vacuum. The smoke is then pushed through the mask into the empty section and then weighed to see how much the mask filtered out the smoke.

Diagrams


Inside
elastic + Fabric
Foam Strip
Slit for Filter
Fabric/mask
Cooling valve
Filter


Outside
Cooling valve
Fabric
Plastic Strip
elastic + Fabric