

Analysis

Overall, it can be seen that my final prototype did accomplish most of my objectives. The product is customizable in its strength, color, and with its ability to hold a sticker, and it has medium levels of strength and flexibility.

Some limitations that come with this prototype are based in the fact that its strength is still lacking when compared to plastic. It is also untested against food and makeup products which was the original goal of this project.

When looking at the t-test, which was performed to look for a relationship between force and displacement, it was found that they were related with a $p > 0.0001$. This means that when force is applied to the bioplastic, it begins to stretch which is important since allowing it to stretch raises the amount of force it can take, as it allows for some give within the material. This is also important because plastic is often able to bend and stretch without breaking.

My work fits into past studies due to the fact that it is also working with bioplastic with a starch base. It differs with the actual make up of my prototype which utilizes different materials and different starches as the base. One of my competitors, NatureWorks' plastic differs from my materials which was part of the intention of this project. As mentioned earlier, NatureWorks' plastic is made from PLAs which are costly to compost (Barrett, 2020). This change shows an improvement that comes from my project as the materials don't cost as much to decompose.