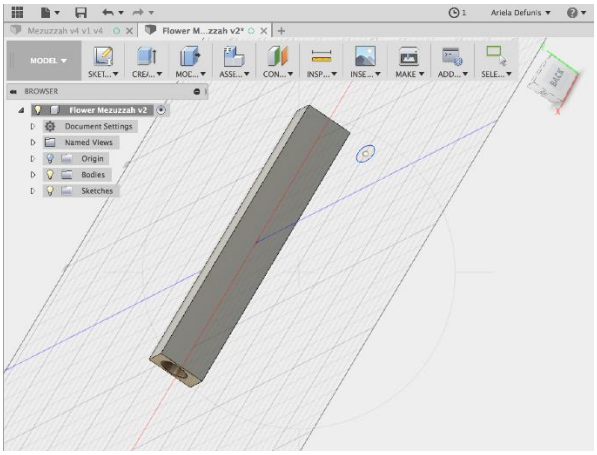
Dor L'Dor: The 3-d Design Process

Last week, our Chessed project, "Dor L'Dor" came to a close with our last batch of 3-d printed Mezuzot. Our Mezuzot have been sent to Houston, Florida and Puerto Rico and we hope they convey our love and support to our fellow Jews.

The Mezuzah project not only has helped other Jewish communities, it has also provided our students the opportunity to see how the knowledge and skills they are learning can directly be translated into affecting change. For the past couple of months, the NYHS STEM club has been exploring the 3-d design process from start to finish. It has allowed us to see the great amount of planning, accuracy of measurement, and most importantly, tenacity, that goes into creating a 3-d modeled item.

After defining the need to create mezuzot and doing some research into how 3-d printers works and what limitations it would impose on their design process, students began 3-d modeling using the program Autodesk Fusion 360, an engineering based modeling program.
Students designed simple rectangular Mezuzot with holes on the bottom so they could insert the Mezuzah scroll.

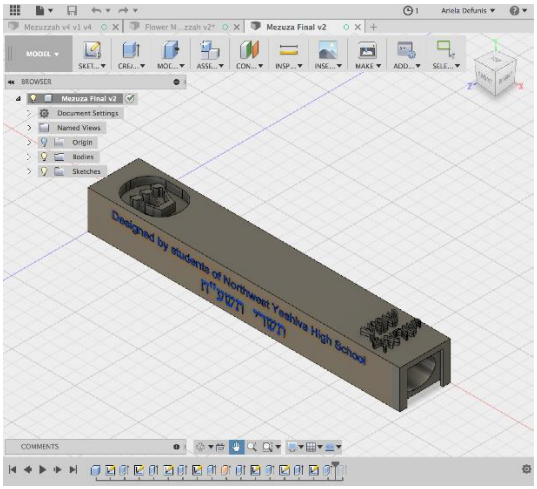


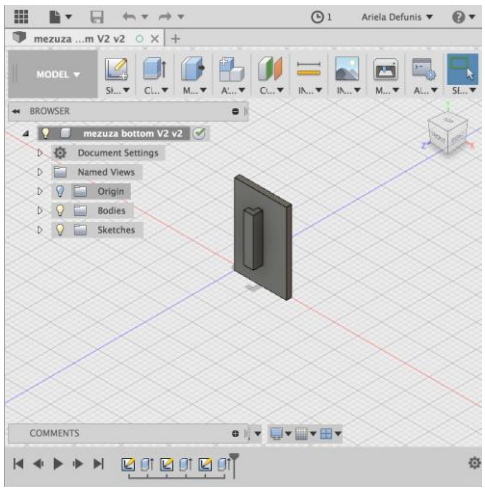
After printing their first model, students assessed some of the challenges with the model, and discovered it was too short to fit in a Mezuzah scroll, had no way of sticking on to a doorpost, and had an exposed hole on the bottom where the scroll went in, suggesting the scroll could also fall out!

So our designers went back to work and brainstormed solutions. They decided on using heavy duty stick on backing as the way of sticking on the mezuzot on the doorpost. Additionally, students altered their designs to account for the length of the scroll. Finally, they decided to design a slide on bottom that would close up the hole.

After a great deal of analysis, and using the 3-d modeling software to make small cuts and alterations to their design, the first Mezuzah with a slide on bottom was printed! And modified!

And printed again! And modified again! And printed again! Needless to say, it took several tries to find the exact thickness and design of the slide on tab so it could easily slide in the grooves!





Finally…..Success!!!!

Thank you to my wonderful STEM Club students, Avi Schiffman and Harry Jacoby, for exploring the 3-d modeling process with me, and to Dr. Benjamin Diament for helping with the design process.