Printing Our Future

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I will display how easy 3D printing can be and overall how the use of one 3D printer in just a single household can reduce waste and potentially contribute to the halt of global warming. In addition to this, I will be researching more the benefits of 3D printing and why it is important that people become educated on this topic. My hypothesis is that I will find numbers as well as data from my house that shows a decrease of waste and apply that knowledge to prove the link to a decrease of global warming and show how this will benefit humankind for the future. For this procedure I will be assembling a 3D printer under the supervision of my sponsor. The assembly of a 3D printer is necessary in order to meet the specifications of the waste material. Waste material that I will be using from my household will need to be broken down by a filament maker I am creating. Because of the width of the waste filament, it is necessary to have a custom 3D printer able to handle the diameter of this waste filament; therefore, I am building the 3D printer to handle the specs of the waste filament. Next, I will be building my own filament maker also under the supervision of my sponsor. First, I will cut the bottle into 10mm pieces and feed the pieces into a heating block with a nozzle; the nozzle will be drilled out to produce .4mm as the plastic melts it will be pulled through the nozzle which now becomes an extruder. With the right temperature and speed, you will get the right diameter for the filament. Lastly, I will be looking at how much waste was eliminated by my project. The numbers I will include in my data are how many soda bottles will be used to make how much output of filament and how much filament it takes to make common objects.

Awards Won:

Air Force Research Laboratory on behalf of the United States Air Force: Glass trophy and USAF medal for each recipient

Air Force Research Laboratory on behalf of the United States Air Force: First Award of $750 in each Regeneron ISEF Category