# A Novel Approach to 3D Prototype Production

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During a presentation for a science competition, a group called the Not Impossible Foundation presented their work in the war torn areas of Africa. They went to this area to fit a child with a prosthetic lower arm he had lost during the conflict. A 3D printer was used to create the prosthesis locally and cost-effectively. The limiting factor on why they could not help more children was the speed of the 3D printer. This experiment set out to develop a way to print a prototype faster. A 3D printer was built utilizing a single axis and a high definition computer projector. Instead of ABS plastics, a UV-cured polyester resin was chosen as the material to create the prototype. One limitation of this modified 3D printer is that it will print prototypes slower when greater height is introduced than that of the commercially sold 3D printers. With a 20 second gel time, the printer is about the same speed as the conventional 3D printer. If the cure time is set at 5 seconds, the modified printer would increase the speed of the print by 80 percent. There are certain applications where the modified 3D printer will be at a disadvantage, those which the height of the print exceed the width and length. The printer has multiple applications because of the versatility of the polyester resin system. Reinforcements can be incorporated into the matrix, which will improve the physical properties of the final prototype. This increase in physical strength would be very helpful in the creation of prosthetics.

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