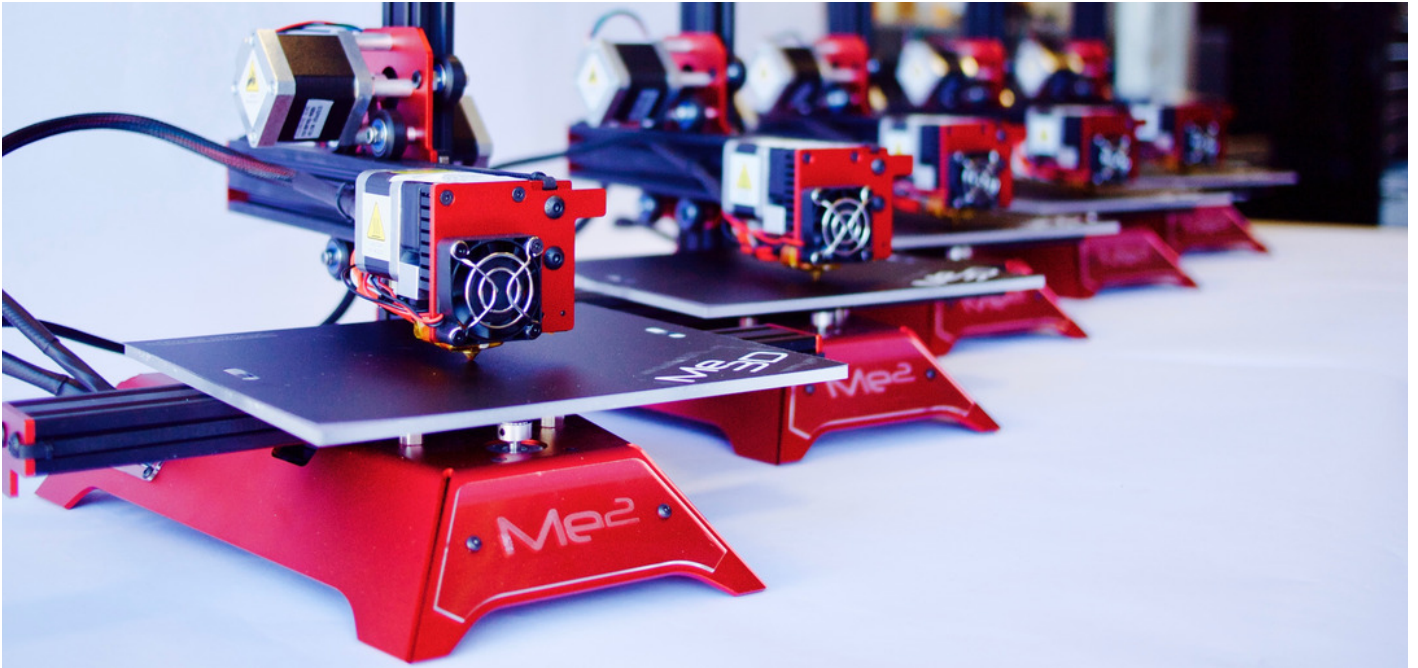


# Introduction to 3D printing



Develop the skills and experience necessary to master the new wave of manufacturing.

Me3D provides unique 3D printing solutions to Schools, Universities and for the home. Developed specifically for use by students in the classroom, Me3D is challenging existing pedagogies in order to engage and excite children in all aspects of learning.

There's little doubt that 3D printing is already changing the world in ways that the average person may not have even noticed. Let's walk through a quick introduction to what 3D printing is, the benefits and what you can create.

## WHAT IS 3D PRINTING?

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3D Printing is the process of continuous adding layers of material with a computer controlled device to create a three dimensional object. It's more broadly known as additive manufacturing, because you add material to make a part, rather than cut it away from a piece of stock.

3D Printers have been around since the late 70's and have mostly been used for rapid prototyping. Modern printers are becoming more versatile though, producing finished products, prostheses, biomaterials, even jet engines and rockets.

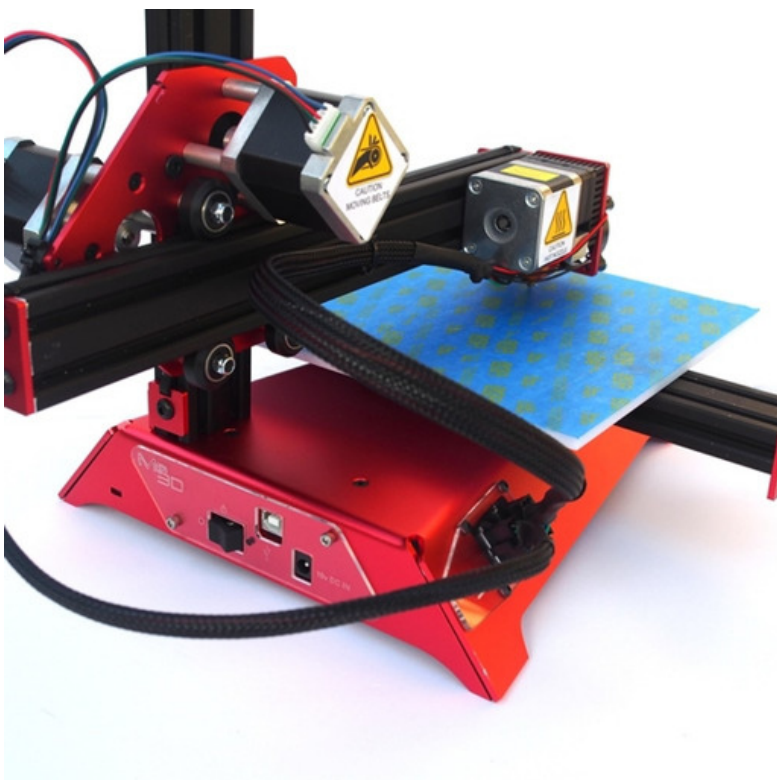
## WHAT IS FDM PRINTING?

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The most common method of 3D printing is a process known as Fused Deposition Modelling (FDM). FDM printers such as our Me2 use thermo- plastic filament, which is heated to its melting point and then extruded, layer by layer to create the 3D object.

The process is simple:

1. Pre-processing: Building software slices and positions a 3D CAD file and works out the path to extrude thermo- plastic.
2. Production: The printer heats the thermoplastic to a semi-liquid state and deposits it in ultra-fine beads along the extrusion path. If support is needed the printer deposits a removeable material that acts as scaffolding.
3. Post-processing: the user breaks away the support material and the creation is ready.



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The impact and applications of 3D printing are rapidly growing as more people are exposed to the technology.

## WHAT ARE THE BENEFITS OF ADDITIVE MANUFACTURING?

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3D Printers are great at building complicated things quickly. Complex curvy surfaces, impossible-to-machine hollows, even pre-assembled mechanisms. No problem.

It can also be really cheap! A typical print from a Me2 will cost a few cents up to a couple of dollars worth of plastic.

With all this complexity available on the cheap, there's no need for tens of thousands of dollars worth of tooling designs to make one thing. Why not print your own custom shoes? Tools with your name on them? Or a prosthetic hand fit perfectly to size for the end user?

## HOW DO I GET STARTED?

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With a 3D printer you can let your imagination run wild! Design and print replacement parts, wild and wonderful characters, puzzle parts, game tokens, Or a prosthetic hand fit perfectly to size for the end user?... Whatever you can think of!

You'll need to do some 3D modelling to get exactly what you want though. Fortunately there's loads of great (and free!) 3D modelling programs available for anyone to get started with. If you're struggling with ideas you can check out some of the cool stuff artists and engineers have shared on file libraries such as My Mini Factory for inspiration.

### 3D Modelling Programs

- Tinkercad
- Fusion
- Blender

### Other Useful Resources

- Thingiverse
- My Mini Factory
- Shapeshifter.io