

3D Printing

What is it? Pros and
Cons?



3D Printing or additive manufacturing is the process through which is possible to create/build three-dimensional solid objects from a digital file. The process consists in using additive processes; the object is created by laying down successive layers of materials until the object is created, so each later could be seen as a thinly sliced cross-section of the object.

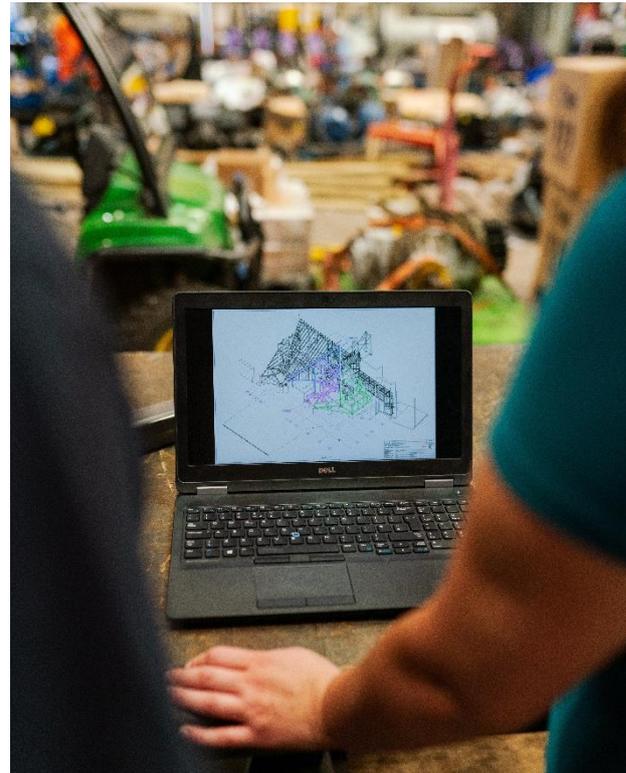
The starting point might be the choice of the 3D model, which can be created or downloaded from a 3D library. Regarding the software, there are different available tools that can be used from industrial grade to open source. However, usually for beginners is recommended to start with Tinkercad, that works on the browser and for free, as well as offers beginners lessons and a build-in feature to export the model as a printable file. Therefore, the next step is the so-called slicing, which means slicing up a 3D model into hundreds or thousands of layers with a slicing software. The file must be sliced to be able to 3D print layer by layer.

3D printing encompasses many forms of technologies and materials, being used in many different industries. Furthermore, is rapidly transforming from being for prototyping and one-off manufacturing in the early stages, into a production technology.

The 3D Printing implies many different advantages but as well, as disadvantages. The main advantages are the possibility to create flexible designs and rapid prototyping process, being an inexpensive and quicker at creating parts and printed on demand avoiding the stock inventory.

Furthermore, the 3D Printing, depending on the design and its complexity, could be a very fast design and production process, being faster than moulded or machined parts. The process and 3D Printing is a process of production that required the materials needed for the creation of each part itself, with the minimized or no wastage created as compared to alternative methods.

However, the 3D Printing presents some limitations and drawbacks. The 3D Printing being a process that requires specific materials, not all metals or plastics can be temperature controlled, and some of the materials cannot be recycled. Moreover, the size of the printers is restricted, and any object that is bigger, all the parts and components will have to be printed separately and joined together after production.



The 3D Printing is applied to different sector and industries, and 3D printing is introduced in education, where student from primary and middle school schools use this technology to understand the new technological and create different designs that might help the educational methodology. The following points represent the different benefits 3D Printing suppose tor youth and their education:

1. Creation of inventors
2. Bringing art back
3. Engaging reluctant learners
4. Creating responsible digital citizens
5. Making everything hands-on
6. Building school camaraderie
7. Solving real-world problems

3D Printing is a technology that is present and will be constantly used in the solving of problem and creation of different products. It is possible to find more information about 3D printing, including applications, trends and its benefits for Education in the “3DP TEACHERS’ GUIDEBOOK”. Make sure you are following the “3DP TEACHER - implementation of 3D Printing in future education” project’s [Facebook page](#) to be the first to know when the guidebook is published on [project’s website](#).