3D Printer

Anh Ha

General Instructions

1. For each page, synthesize the reading and research by writing in complete sentences in essay format.
   a. Use the green instructions in the notes below each page to focus your research and writing.
   b. Write about each question, prompt, or process provided in those notes.
   c. Write a full page of text with lots of detail (about 250 words).
      i. Don’t generalize so much that your writing is devoid of detail.
      ii. Don’t repeat yourself.
   d. Cite each source by adding a hyperlink in the Title of the Article or law.
   e. Do not change the template:
      i. Text must be 14 point Lato left-justified type.
      ii. Refrain from adding extra margins or double spacing.
      iii. Do not bullet the paragraphs. Write in essay format only.
   f. Add additional pages if you need more room.

2. Add all sources to the Bibliography page.
   a. Include author, year, title, publisher, and URL.
   b. Number or bullet them using the list button.

When in doubt, write to the instructor for clarification using the Canvas Inbox.
The creation of the 3D printing is attributed to Charles Hull, who is a physics engineer. However, it was not until 1986 that the first 3D printer was officially on the market. The printer operates on the principle of stereolithography, which makes it possible to manufacture solid objects from a digital model. The object is obtained by superposition of thin slices of material. This printer is used by manufacturers to create objects to test their design before continuing to production. Today, 3D printing technologies can be used by individuals for personal needs and by administrations for research and training. But 3D printing is still largely used by professional industries. In the automotive, aerospace, engineering, architecture, medical or even jewelry industries, there are many applications of 3D printing. According to the article *The Advantages of 3D Printing* by Bed Redwood, the advantage of 3D design lies in the low cost of parts. This cost, associated with the speed of production, makes it possible to perform a large number of prototypes in order to test the product. Decisions concerning prototyping validation are taken by several people within companies such as engineers, designers. With the ability to review different versions of a product in physical form allows them to accelerate the manufacturing process. In order to support the production teams and facilitate their work, it is possible to print tools for specific tasks easier. 3D printer can be used for machine calibration, facilitate assembly of parts or simply to store tools and accessories in an optimized way, which makes it ideal for increasing efficiency and precision.
The creation of 3D printing has some impacts on the environment. Contrary to what people might think, 3D printing generates a lot of waste. Depending on the type of machine and the technology used, the percentage of wasted material may be higher or lower. According to the article 3D printing isn't as green as you think by Reid Lifset and Martin Baumers and Timothy Gutowski, printers that work by material deposition, are the most economical, especially if the object to be produced does not require any temporary structure to support it during printing. Plastic is far from being the best substance for the environment, because besides waste, 3D printers can also be a source of toxic fumes emission due to the melting of plastic. This can have effects on several functions of the body, such as respiratory functions, or the functions of the endothelial system. On the other hand, the emission levels of 3D printers are associated with human health, especially in the case of production on an industrial scale. If, for example, 3D printers can use plastic waste, this could be an undeniable advantage. On the other hand, with the production that has become available to all, the opposite could happen that is, the massive production of plastic waste. However, when it comes to mass production, but some processes are more environmentally friendly than others, and it all depends on how the machine is used. The ecological and economic advantages of 3D printing are very real, but it will take more time for this technology to be optimized and replace the current production techniques.
Today, the 3D printer is quite popular to the public as it has made tremendous progress and pushes new limits every day. However, it also leaves some impacts on the society and different industries. In the past, the 3D printer was only used to make small models, but in the future 3D printing is likely to change the business landscape. According to the article **Wohlers Report 2016: 3D printing industry surpassed $5.1 billion** by TJ McCue, if the global 3D printing industry has generated $5.2 billion, this figure will increase by five times by 2021. By using 3D printers and 3D scanners, it will no longer be necessary to use specialized software or skills to make print-ready files, thereby accelerating the initial growth of 3D printing. For example, using their own 3D printer, a company can provide authentic and approved design files as well as digital maps available on a web platform. This 3D printing strategy has already been adopted by major global brands. If this tactic pays off, companies will push other brands to the market by launching their own innovative marketing and distribution models. Marketers, as well as users, must be aware of the profound impact of the 3D revolution on brands, creating on one side great opportunities but also some threats. Indeed, some products protected by intellectual property rights or others may be reproduced and distributed without authorization. The economy is likely to become a self-service world where consumers will be able to easily create their own products and only companies that take advantage of 3D printing will succeed.
This is the first commercial 3D printer introduced by Chuck Hull in 1987. The machine is called SLA-1 and it operates based on the principles of stereolithography developed by Chuck Hull.

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In 1983, Charles Hull, an American designer engineer invented the idea of 3D printing. His idea was to use a synthetic resin and ultraviolet light to solidify this resin, thin layer after thin layer, to give shape to objects with remarkable precision. He referred to this technique of printing as "Stereolithography". 3D printers heat the plastic to perform the printing and the emission produced by this process can be potentially harmful to human. However, 3D printing greatly improves the manufacturing process by increasing the pace of production. For example, custom manufacturing of your own tools to meet the specific needs of operators could quickly improve the production rate.
There is no doubt that the invention of battery is significant to the development of the modern world. The battery is an energy storage device in the form of chemical energy. When it is used, this energy is gradually converted into electricity. Lithium acid battery is the active power supply for almost all current handhelds because it has advantages such as small, light, stable voltage supply. However, the impact of waste batteries on the environment is still controversial. Regarding the recovery of scrap batteries, waste batteries cause great harm to the environment so we need to focus on recovering them. According to the article The spiralling environmental cost of our lithium battery addiction by Amit Katwala, the battery mainly contains heavy metal elements such as iron, zinc, manganese, in addition to containing a small amount of mercury, mercury is a toxic substance. The amount of mercury in the battery gradually melted, soaked into the soil or dissolved in water, then through agricultural cultivation, it was eaten into food crops and then entered into the human body, affecting the internal organs of human. The main advantages of batteries are that they allow powering virtually any device and at the same time store the energy when the electricity grid is not available. The use of batteries allows the use of electric power in practically all the devices in society and it would be very difficult to imagine the current world without batteries. However, they are expensive, a source of pollution and it is important to minimize the effects they have on the environment such as climate change or global warming.
Bibliography


