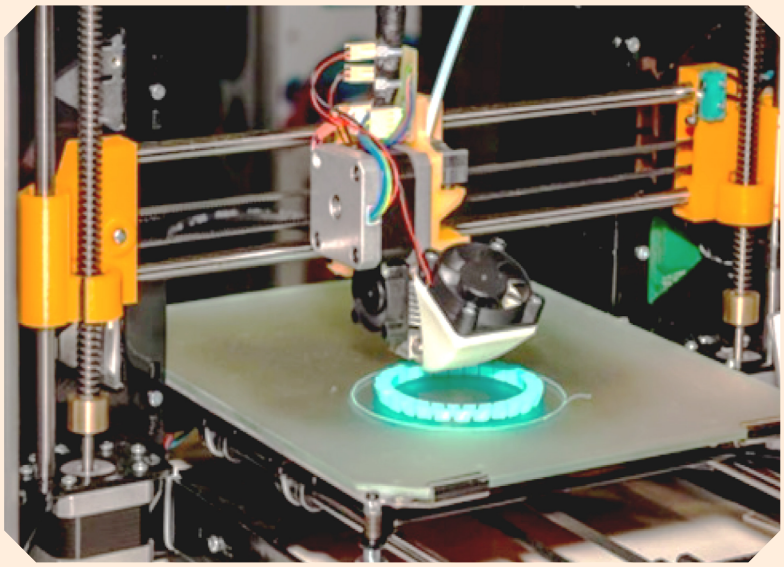
Код УГПС – 09.00.00
Тема 5. Технический прогресс: перспективы и последствия

Use of advanced technologies in Russia

1. READING Revolutionizing Manufacturing

a) Did you see any objects created by 3D printers? What type of items can be created by a 3D printer?
b) Read the text about 3D printers

3D printers are machines that have **revolutionized** the world of manufacturing.



They use a process called **additive manufacturing** to create 3D objects from a **digital design**. They add materials, such as plastic or metal, on top of each other until the final object is formed.

One advantage of 3D printers is their ability to print different items. They can make a wide range of objects, from simple toys to medical devices. This makes them useful in various industries, including medicine, automotive, and aerospace. Another benefit of 3D printers is their low cost.

Traditional manufacturing methods often require expensive **molds**, which take time and money. With 3D printers, these costs are reduced, as objects can be printed directly from a digital file. This helps small businesses and individuals bring their ideas to life. 3D printers also offer more **design freedom**. Traditional methods have **limits** on shapes and types of objects, while with 3D printers, complex geometries can be easily achieved. This opens up new possibilities for **creativity** and **innovation**.

In addition, there are some disadvantages of using 3D printers. They can be slow or the quality of the printed objects may not always match that of traditionally manufactured items. However, as technology continues to advance, 3D printers may be improved.

It's also important to think about the risks of using 3D printers. One such risk is connected with copyrights. People might use 3D printers to copy things without permission. This raises legal issues about **intellectual property rights**. This requires the careful use and regulation of 3D printing technology.

KEY WORDS

revolutionize – изменять коренным образом

additive manufacturing – аддитивное производство (производство слоями)

traditional manufacturing – традиционное производство

digital design – цифровой дизайн

molds – формы (для производства)

design freedom – свобода дизайна

creativity - креативность

innovation - инновации

limit - ограничение

intellectual property – интеллектуальная собственность

2. **SKILLS profile case**

Project Task: Conduct a comparative analysis of 3D printing technologies and traditional manufacturing methods:

1) Think of the products which are produced in your region using traditional manufacturing method and can be produced using 3D printers.
2) Find information about one or two of such products.
3) Compare in brief traditional manufacturing of these products and 3D printing technology (for example, compare who can use the products, how modern are the products, how complex are the products, volume of manufacturing).
4) Find one or two advantages and disadvantages of both methods.
5) Present your findings to the class.

DISCUSSION

c) Discuss in pairs:

- What are the main advantages of using 3D printers?
- Do you think that 3D printers help to develop creativity?
- What item would you like to produce if you have a chance to use 3D printer?