Dear student, Do you imagine that in the future you can build your food whenever we want? Do you imagine that your books will be in the size of the insect? Do you imagine that a small spaceship will move inside your body to explore diseases? Nanotechnology is another name for molecular manufacturing - the science in which things are built one atom or molecule at a time. Nanotechnology proposes the construction of molecular devices that will have the ability to manipulate atoms individually and place them exactly where needed to produce the desired result. Scientists and researchers say this ability is almost here! In this project, we will explore resources, websites, and technical documents that can help us to understand what is the NANO TECHNOLOGY.

Your job in this WebQuest is to explore the world of nanotechnology. You will learn exactly how big a nanometer is, and why nanotechnology is named for a nanometer. You will find out what a nanobot is, and what materials it may be made out of. You will learn why scientists think that nanotechnology will cause a revolution in the manufacturing and medical fields. You will also discover the applications that scientists envision for nanotechnology. Finally, you will answer a set of questions to demonstrate what you have learned about nanotechnology in your exploration.

Read through the following set of questions before you begin your Internet research. As you explore each site, look for answers to the questions.

Questions about Exploring Nanotechnology

How big is a nanometer?
What is the primary goal of early nanotechnology?
What is a nanobot? What materials could a nanobot be made out of?
How would a nanobot manipulate atoms and molecules?
Make a list of ten items that nanotechnology could improve upon.
How to use nanotechnology in education?

Look at the web sites given here to find the information that will enable you to answer questions about nanotechnology.

Nanotechnology. Visit this site for a brief introduction to the core concepts of molecular nanotechnology. This site explains how atoms and molecules can be put together to create products on a tiny scale.

What is Nanotechnology? Go to this site to learn more about how novel molecular devices will be able to place atoms and molecules exactly where needed to produce the desired structure. This site also lists the technical processes that nanotechnology could improve.

Nanobots may be future of medicine. Visit this site by USA Today.com to find out about nanobots, tiny robots that may be used as microsurgical instruments, or as microrobots that could be used to build other microdevices. This site describes the materials that nanobots could be made out of and how they might work.

The Institute of Nanotechnology. At this site you can learn all about nanotechnology and its future applications. Go to features and click on what is nanotechnology to learn more about the activities at the atom level.

An Overview of Nanotechnology. Visit this site for an explanation of nanotechnology, and for descriptions of how nanotechnology could be used in the future. Scroll down to ribosomes to see how the assembly of proteins by ribosomes in a cell is similar to the way scientists think nanotechnology will work.

Nanotechnology Database. This is a site designed to present up-to-date sources of information on nanotechnology. Click on academic to find a list of universities that are conducting research in nanotechnology. Click on individual programs to see what types
of research are being done.

The Promise of Nanotechnology. Go to this site for a good article that describes what nanotechnology can, and cannot, do.

Conclusion

Using information gathered from the Internet, students should be able to answer the questions given about nanotechnology. Students should be able to draw some conclusions about the usefulness of nanotechnology as a result of their research, and be able to estimate how long it will be before the benefits of nanotechnology will be available to the general public. What do students think nanotechnology could be used for in the future?

Teacher Page

Below are additional resources where students can find extra information about nanotechnology:
What is Nanotechnology?
Nanotechnology - Wikipedia, the free encyclopedia;
Nanotechnology;&nbsp;
Nano Technology Applications;&nbsp;
Nanotechnology.com;&nbsp;

Standards

Credits

Other