THE WORLD OF LIFE SCIENCE

Introduction to Life Science

Science is a method of learning about the natural world and includes all previously discovered knowledge of the natural world.
The knowledge of the natural world is continuously growing with every new discovery. The way that scientists study the natural world is by using scientific inquiry.

Lesson Checkpoint: What is science?

Science Skills

Scientific inquiry is a process of designing and conducting scientific investigations including asking a question, completing an investigation, attempting to answer the question, and presenting the results to others.

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The skills t s use on a daily basis ations and inferences, taking measurements, collecting data, interpreting data, making conclusions, and communicating the results. Scientists do not use all of these skills for every scientific investigation.

The Scientific Method

There is a particular strategy that scientists use in order to accomplish their goals of answering a question called **scientific method**.

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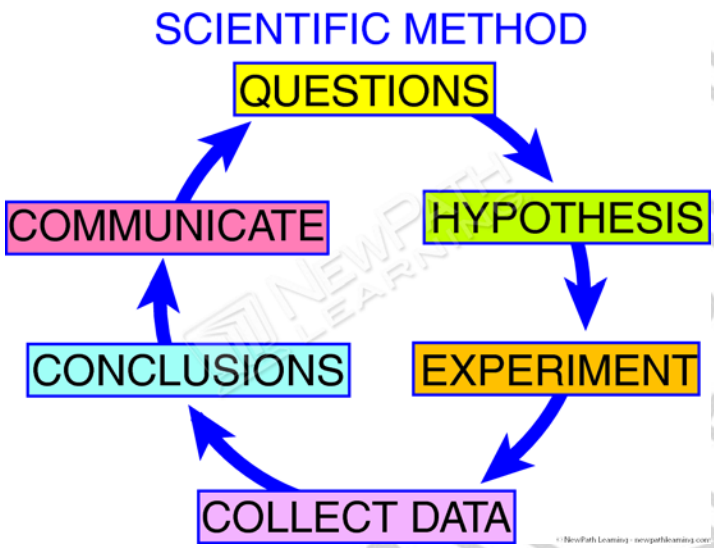

Asking a question: Scientific inquiry usually starts with a question or a problem that you would like to investigate further. For example, does sunlight help a plant to stay alive?

Making ob

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using one or more of tion.
Data is ev
An **inferen** prior knowledge

Creating a n educated guess that uses experience and knowledge to determine the investigation's results. A hypothesis can be worded as an "If….Then" statement.
For example, a botanist might create this hypothesis and then test it:
If sunlight is taken away from a plant, then the plant will die.

Designing an experiment: Setting up the experiment is very important to being successful. A scientist must know the different variables of the experiment.

Variables are factors that can have an effect on the experiment. The variables must be the same for what you are testing in the experiment. There is one variable that is changed in an experiment, called the **manipulated** or independent **variable**. The factor that changes because of the manipulated variable is called the **responding** or dependent **variable**.

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Taking measurements and collecting data:
Scientists use a standard system of measurement for all scientific investigations called the International System of Measurement (SI).

Interpreting data: When all of the data is collected from the experiment, it needs to be interpreted in an organized way. If there are patterns or trends, then they must be discovered.

Making conclusions: A **conclusion** is summing up the information from an investigation by either supporting the hypothesis or not.

Communicating the results: Communication helps to pass the information to other scientists which was gained from an investigation. The communication can be on the internet, speaking to a group of scientists, or published in a scientific journal.

Laboratory skills: The laboratory must be safe at all times. Skills that are important when completing a laboratory investigation are weighi , being aware of s t use of scientific t

There are experimen estigation to determi

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Some of the more common tools that scientists use are:

- Beakers
- Graduated cylinders
- Erlenmeyer flasks
- Bunsen burners
- Dissecting instruments
- Forceps
- Measuring scale
- Measuring tape

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Safety in Science Exploration

The most important part of a scientific investigation is safety. Some basic but important ways to be safe when completing a scientific investigation are:

- Wear the proper clothing
- Respect the materials and people that you are working with
- Keep the area you are using clean, and
- Always wear safety equipment.
- Become familiar with science safety symbols and rules that should be posted in the lab. Here are some examples:

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