

Practical Activity In Science

Lesson Title: **Science Process Skills**

Practical activities in science are conducted to encourage students to acquire science process skills using the inquiry-discovery in a laboratory.

Inquiry is a process of finding and investigating problems through questions that involve observation, measurement and making hypothesis.

Discovery, on the other hand, is a mental process that assimilates concepts and principles, such as classification, prediction, explanation and making inference.

There are twelve (12) science process skills. We will discuss the first three science process skills in this segment.

1. Observation

The most basic science process skill is observation. Observation can be done by using our senses—seeing, hearing, touching, tasting or smelling—to gather information about any object or phenomenon.

Common questions one might ask oneself in observing an object are:

- What is its colour?
- How does it smell?
- What is its shape?
- Is its surface smooth?
- How does it taste?

In a biology class, lesson in plants always start with observation. Take a look at the hibiscus flower shown below.

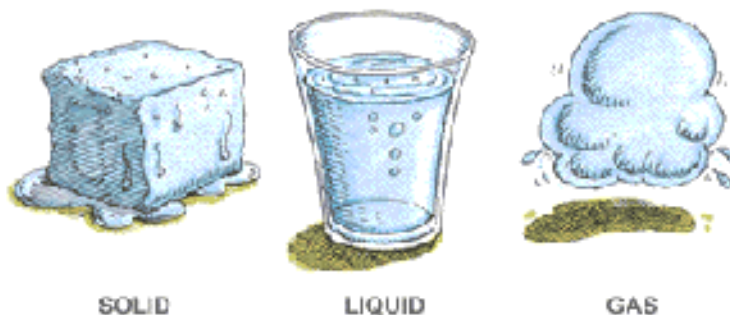


Write down the various characteristics of the flower that you can observe. For example, you can write down the colour of the hibiscus flower. Once you have completed, share your notes with other course mates.

2. Classification

Classification is another science process skill that you learn in school. Classification is the separation and grouping of objects or phenomena into groups according to criteria or characteristics. This grouping is done by considering one or more characteristics.

In physics for example, substance can be classified based on its atomic or molecular arrangement. A substance can be classified as solid, liquid or gas.



Water for example is classified as solid if the water molecules are arranged close to one another. In such form, it is referred as ice.

If the separation between the molecules is increased, ice will turn to water.

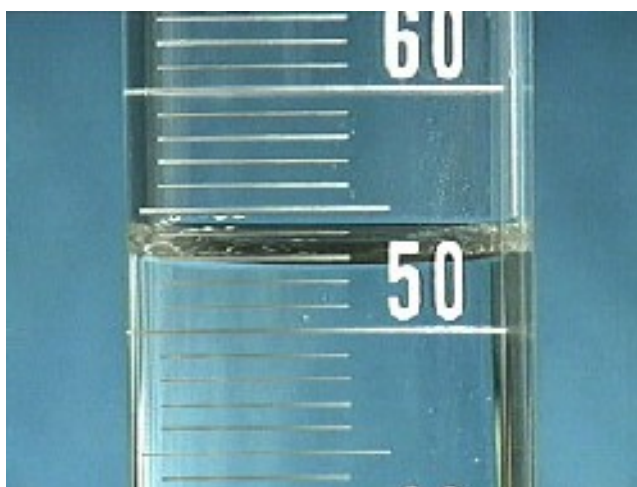
If the separation between the molecules is increased further, water will turn to steam.

Such transition would need supply of energy.

3. Measurement and Usage of Numbers

Measuring and using numbers is a skill of conducting observation through a quantitative approach by using standard unit equipment such as a ruler, weighing machine, Vernier calliper or volume flask. Measuring enables observation to be conducted accurately. The ability to use numbers is important to master the measuring skills.

In a chemistry lab, liquid such as water is often measured using a measuring cylinder. A 100 ml measuring cylinder containing a liquid is shown below.



Notice how the level of water is not straight, but u-shaped or meniscus.

You must place your eyes directly above the scale which marks the level of the liquid to avoid parallax error. The scale shows a readability of 1 ml.

The reading should be taken at the bottom of the u-shape.

Therefore, for reading shown in the figure can be written as 53 ml. Always remember to state the unit.

We will continue with the remaining nine other science process skills in the following segments.

Can you name three next three science process skills that will be discussed?

Remaining nine (9) basic science processes are:

- Making Inferences;
- Predict; Communication;
- Using Time and Space Relationships;
- Interpretation of Information;
- Defined as Operational;

- Identify Variables;
- Making Hypothesis ; and
- Experimentation.