Observation and Inference - Blue Hair

Scientists often make observations about experiments or events in nature. Those observations are typically common and shared amongst scientists because they are made with the five senses: hearing, sight, smell, taste, and touch. However, scientists often use caution when observing, especially with smell, taste, and touch to avoid causing health problems. These observations can be qualitative (descriptive and adjective based), or quantitative, numbers-based.

Inferences are explanations for those observations. They are often based on past experiences with similar situations. Because they are subjective explanations, they often differ from person to person. Each person may have different prior experiences and may come to different conclusions. Finally, they can change once more information is gathered. Inferences are ultimately based on observations, so if the observations change, the inferences will also change.

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Observations are gathered with the 5 senses

Scientist Observing with Hearing, Sight, Smell, Taste, and Touch

Observations are gathered by using the five senses: hearing, sight, smell, taste, and touch. Scientists must be careful when using smell, taste, and touch, especially when around hazardous materials.

Observations can be qualitative

Observations made by Qualitative-Koala Scientist

Observations can be qualitative, using descriptive words and adjectives to explain the experiment or event being observed.

Observations can be quantitative

Observations made by Quantitative-Queen Scientist

Observations can also be quantitative and made by taking measurements. Typically these are made by common measurement tools like rulers, thermometers, triple beam balances, graduated cylinders, and stop watches.

Inferences are an explanation for an observation

In-Fur-ences Explaining Blue Hair Observation

Inferences are explanations for observations. Rather than just describing an object or event, they attempt to explain.

Based on previous experiences

Old Scientists recalling their past experience with Blue Hair when young

Inferences are often based on previous experiences with similar settings. If a scientist has conducted an experiment in the past, she or he may attempt to explain the current findings based on the past ones.

Can vary from person to person

One Scientist associating Blue Hair Spray with Blue Hair, while the other Scientist associates Blueberries with Blue Hair

Inferences can vary depending on the person, because each person may have had different experiences with similar situations. Because of this, they are more likely to draw different conclusions when inferring.

Can change once more information is gathered

Scientists Learning the Blue Hair is explained by Blue Wig

Inferences can change once more information is gathered because they are ultimately based on observations. If the observation changes, the inference will also change.