

## Written Scientific Observations The Three Key Elements

Just as with scientific illustrations and data tables, an accurate written observation indicates that the student has developed the *scientific skill* of accurately making and recording observations. An observation also can indicate a student's ability to make inferences based on scientific observations, which requires *scientific thinking*. For example, if a student makes a connection between the color of each plant part and the health of the plant, she is demonstrating the ability to report her observations about the color of each part and what those observations indicate about the condition of the plant. Finally, an observation's accuracy can show the extent to which the student is developing an understanding of the *science concepts* in a unit. When a student calculates the growth of a plant, for example, and then notes that the plant is growing fast, that indicates that she has developed an understanding of the rate of plant growth.

When planning instruction and assessing scientific observations, consider the following questions. What does the written observation reveal about the student's:

1. Ability to use *scientific skills* (for example, makes and records accurate, detailed, complete, and objective scientific observations)?
2. Ability to *think scientifically* (for example, distinguishes between an observation and an inference; provides appropriate data or reasoning to support a statement or claim)?
3. Understanding of one or more *science concepts* (for example, includes accurate, relevant properties or characteristics of an object or organism)?

## Characteristics of an Exemplary Written Scientific Observation

- Accurate*
- Detailed/complete*
- Organized*
- Made with all applicable senses (except taste) to note important characteristics/properties, which may include size, shape, color, lines, patterns, texture, weight, odor, sound, behavior*
- Describes what is observable—e.g., “I observed that the plant’s leaves and stem are brown and dry.” If an inference is included, uses a phrase such as “I think this means” to introduce the inference—e.g., “I think this means the plant is unhealthy and dying.”*
- Scientific—no personal feelings or opinions; no fanciful thinking or creative-writing analogies*

### **Also may include the following:**

- Explains what the object, organism, or event reminds student of in prior knowledge or earlier investigations*
- Describes how object/organism acts or behaves in different situations when something happens to it (cause and effect—e.g., “When . . . , then . . . [happened]”)*
- Describes how object/organism changes in one situation (e.g., oil dropped into water) or over time (e.g., plant growing over time)*
- Explains how observation or investigation has helped build his understanding of what he is investigating*
- Poses question(s) to investigate*