Teacher/Student Practice Guide

This activity can be used as a practice activity leading to the Assessment activity of the *Interaction of Energy and Matter: Dawn Instrumentation* module. The terms listed are relevant to current processes and instrumentation involved in Crime Scene Investigations and may be common to many students’ vocabularies if they watch any of the CSI television shows or read detective stories. Because they involve scientific processes and instrumentation, the decision process that students will experience in this practice activity will be similar to what they will use as they classify the terminology included in the Assessment activity.

1. Distribute copies of this terminology list to students for use as they construct a CSI concept map. This may be done either as a whole class, in assigned small groups, or as an individual assignment.
   - Camera
   - Collection of evidence
   - Crime Scene Investigative Process
   - Crime Scene Documentation
   - Crime Scene Analysis Processes
   - Criminal Identification
   - DNA analysis
   - Fingerprints/other impressions (tool marks, shoe and tire impressions)
   - Fingerprint analysis
   - Fluid collection
   - Observation of crime scene
   - Rulers, tape measures
   - Sketchpad
   - Spectral analysis of trace evidence and fluids
   - Trace evidence collection

2. Decide which of the terms or processes is the most fundamental or plays the central role in the concept you are mapping.

   As an example, in the CSI concept map below, we selected “Crime Scene Investigation Process” as the most general term.

3. Classify the remaining terms into at least two groups based on either their properties or their function.

   There are many classification options. This is the way we grouped the terminology in the above list for the EXAMPLE CSI concept map below.
   - Group 1—“Camera,” “rulers,” “tape measure,” “sketchpad”
   - Group 2—“Collection of Evidence” and “Observation of crime scene”
   - Group 3—“Fingerprints/other impressions,” “Fluid collection,” “Trace evidence collection”
   - Group 4—“Fingerprint analysis,” “Spectral analysis,” “DNA analysis”
   - Group 5—“Crime Scene Documentation” and “Crime Scene Analysis Processes”
   - Group 6—“Criminal Identification”
4. Which of the remaining groups relates the most closely to the central group?

In our EXAMPLE CSI concept map below, Group 2—“Observation of crime scene” and “Collection of Evidence” were determined to be the processes most closely related to the general term.

Continue this step until you have included all the groups.

This is the order in which we classified the remaining groups in the EXAMPLE CSI concept map below.
Group 1 (under Observation) and Group 3 (under Collection)
Group 5
Group 4
Group 6

5. Decide on shapes and colors of symbols that will represent each of the groups you have classified.

These are the symbols used in the EXAMPLE CSI concept map below.
Crime Investigation Process— black solid line rounded rectangle
Group 2—solid line rectangles,
  blue for “Observation”
  red for “Collection”
Group 3—red solid line ovals
Group 1—blue solid line circles
Group 5—solid line rounded rectangles
  Blue for “Crime Scene Documentation”
  Red for “Crime Scene Analysis Processes”
Group 4—red dashed line ovals
Group 6—green solid line rounded rectangle

6. Start your map by placing the symbols that represent the central group near the center or at the top of the map. You may have to try a couple of locations before you decide which is best.

For the EXAMPLE CSI concept map below, it appeared that the groups represented two concurrent processes, so we chose to start with the most general of these processes at the top and show how the two processes compliments each other.

7. Use arrows (which may be color coded to match the symbols) to represent relationships between these items or objects.

8. Add symbols representing other terms or objects and adding as many arrows as you can that represent the relationship between that symbol and those representing other terms and objects.

9. Write the narrative that explains your concept map.
Narrative to accompany CSI Concept Map

CSI Investigators have two responsibilities at a crime scene—to make observations and to collect evidence.

They make and record their observations using a camera, a sketch pad, rulers and other measurement instruments. These observations then document the crime scene in a way that permits the crime scene to be reconstructed.

Three types of evidence are collected—fingerprints and other impressions, like tool marks or footprints; trace evidence like hair, threads, and other objects found at the scene; and fluids, including blood, saliva, tissue, and other liquids found at the scene. As they collect this evidence, the location of the sample at the crime scene is documented. The samples are taken to the laboratory for fingerprint, spectral, and DNA analysis.

Combining the crime scene documentation with the laboratory analysis of the collected evidence sometimes provides enough evidence to identify the criminal.