At the beginning of the year, I like to start with lab safety and equipment use. For some students this may be the first time they have a detailed look at various pieces of lab equipment.

To help the students master the use of a compound microscope and a stereo dissecting microscope, I put on a CSI (Crime Scene Investigation) activity. The students are told that they are to become “Experts” on various substances. They have time to examine five to seven samples of each of the following: paper, cloth material, hair/fur, dirt, and white power. They use the time to draw their observations in their laboratory notebook and include anything that will help them to recognize the “evidence” when they receive it. During this observational time they are learning the skills of how to document their observations, use each type of microscope, which microscope is best used for the sample, how water alters the look of a sample under the microscope and more. The various samples are labeled during this phase of the activity.

After an established amount of time, the samples (with labels) are taken away. The students are now the “CSI Experts” and must examine the evidence to determine who committed the crime. Each student (or group of two if time is short) is given an envelope with little clear packets of evidence. The evidence includes at least one of each of the samples listed above. They are to identify the contents of each little packet (which contains a very small amount) by using their lab notebook and their observational skills. The students are provided with a statement sheet from the police at the scene and suspect interviews. With all the information they have gathered, they are to determine who committed the crime. To ensure that each student has developed their skills, I make five or more different people “guilty” by grouping different kinds of evidence. With only 2 or 3 packs of evidence being the same, they can not cheat. By the time this is over, every student is an expert on the use of a microscope! When I do other labs that use microscopes, I don’t need to take any time to explain how to use the equipment. They Know!

Have fun with this.  
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