

Focus on Microscopes

A Closer Look at Safety, Care, and Repair



Introduction

Safe handling procedures with microscopes are important for students' well being as well as the microscopes'! Microscopes represent a major investment for a school district and care and maintenance are required to protect the investment.

Handling and Transport

All students should be trained in the proper care, transport, and storage of their assigned microscope. Serious injury can occur if a microscope is dropped. Proper carrying of a microscope requires some training.

Microscopes should always be carried with two hands—one hand on the arm and one hand underneath the base of the microscope. Hold it comfortably (probably at chest height) and so that it cannot hit tables, chairs, or people. Never swing the microscope. Microscopes should be covered and stored in a dedicated space. After use, they should be returned to their storage spot.

Microscopes should be used on uncluttered laboratory tables or lab benches. The scopes should be placed squarely on the flat surface, away from the edge of the table and not too near other microscopes. Leave room for individuals to sit or stand comfortably around the microscope for viewing.

Microscope Use

Most laboratory manuals contain a laboratory exercise on the proper use of a microscope. All microscopes are slightly different in terms of objectives, mechanical stages, light regulators, and parfocal capabilities. It is important to be totally familiar with your scopes and to carefully train all students in the proper use of the microscopes. A practical exam where students demonstrate the proper use of their microscope can be used to assess student training and performance.

Careful training in the proper use of a microscope should include the making of wet mount slides and the care of prepared slides.

Microscope Maintenance

Microscopes should be maintained on a regular basis. See the instructions for the Flinn Microscope Maintenance Kit (FB1222) for information on routine maintenance procedures and also special maintenance issues that may arise. Microscopes should periodically be taken apart, checked for wear, lubricated, and tuned for a variety of functions by a professional microscope-repair person. Most schools contract to have this service done on a regularly-scheduled basis (usually recommended after every 200 hours of use). Careful checking of gears, lenses, and electrical components can assure longevity of the microscopes as well as their safe use. Safety checks are especially important for electrical components.

Special Considerations

- Never let students with eye infections use a microscope.
- To sterilize a microscope eyepiece, use a cotton swab with isopropyl alcohol. Do not oversaturate the lens or allow alcohol to drip on other areas of the microscope. Wipe excess with clean lens paper.
- Provide "broken glass" containers for broken or damaged slides and coverslips.
- Do not use direct sunlight as a light source for microscopes with mirrors. Eye damage can result.
- If using a microscope with a light, turn off the light when not in use and let the bulb cool before moving the microscope to put it away.
- Never touch microscope lenses with any objects except lens paper.
- Be sure microscope work areas are free of clutter.
- Keep microscopes covered when they are not in use even if they are in a cabinet. Plastic bags should be used if covers are not available.

- Never store microscopes in a chemical storage area where corrosive fumes might etch lenses or destroy metal parts.
- When preparing slides, be especially careful when using microtomes, razors or other sharp tissue-preparing equipment.

Connecting to the National Standards

This laboratory activity relates to the following National Science Education Standards (1996):

Unifying Concepts and Processes: Grades K–12

Form and function

Content Standards: Grades 5–8

Content Standard E: Science and Technology

Content Standard F: Science in Personal and Social Perspectives; personal health

Content Standards: Grades 9–12

Content Standard E: Science and Technology

Content Standard F: Science in Personal and Social Perspectives; personal and community health