Nasco Education™

Empowered teachers, engaged students

BUYING GUIDE

How to choose the right microscope for your classroom

There's an amazing microscopic world that can't be seen with the human eye alone. With the right microscope, you can give your students a glimpse into the unseen world around them. Whether you want to examine cells, inspect specimens, or study forensic evidence, we have a microscope that perfectly meets your needs. This guide will help you find it.

Microscopes explained

Compound microscopes

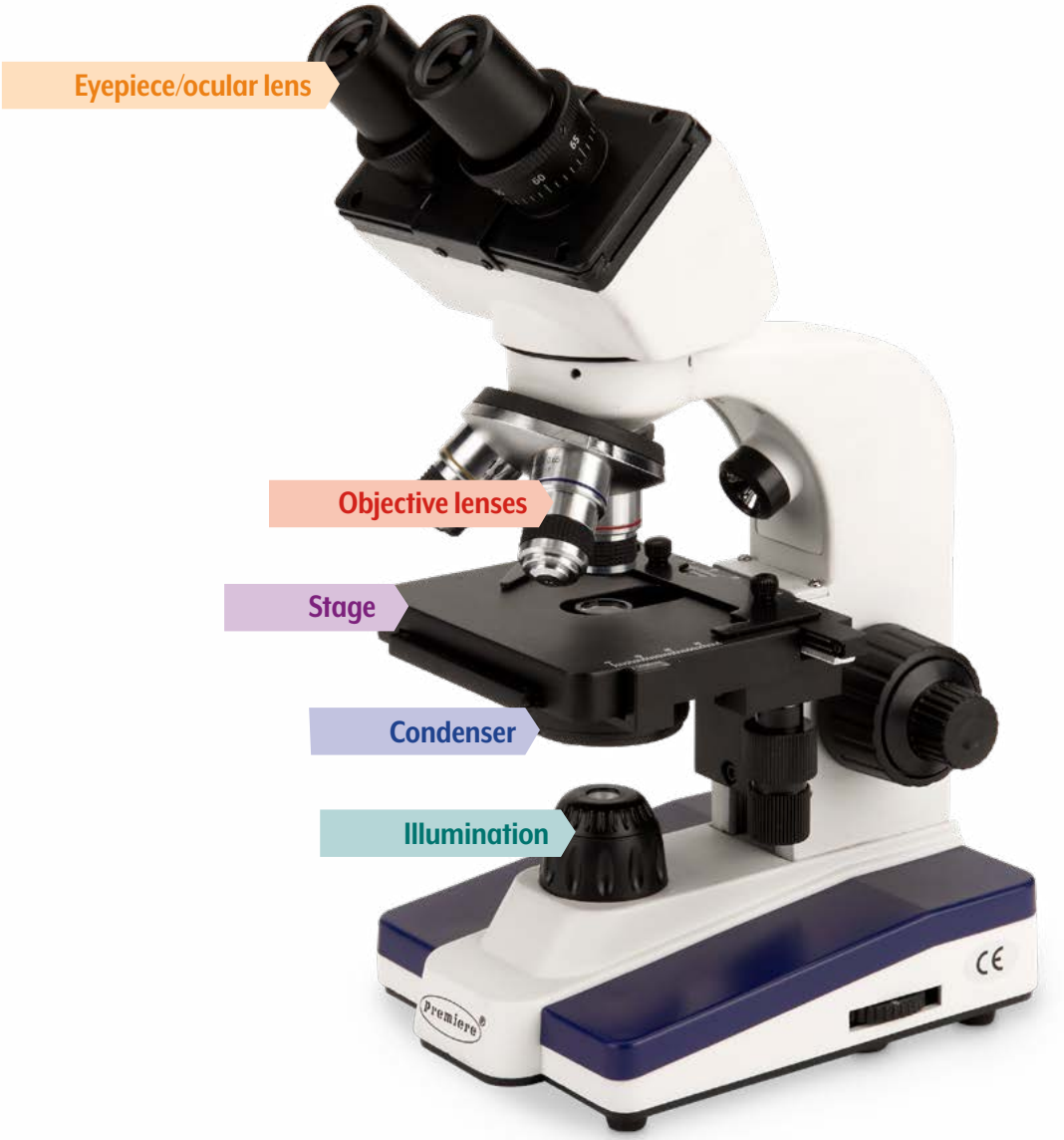
Compound microscopes are the most commonly used type of microscope. They are used for viewing small objects at high magnifications. Light is passed through the specimen and transmits the image through the objective lens and into the eyepiece. The image appears upside down and reversed from left to right.

Stereo microscopes

Stereo microscopes have less magnification but are designed to view larger objects, such as rocks or insects. They have separate optical systems for each eyepiece, which is why they are often called dissecting microscopes. The image is oriented the same way (not rotated or flipped), so it is easier to manipulate and adjust.

Digital microscopes

Some educators like to see what their students are seeing and digital microscopes make it easier. They also allow students to take images and identify key components with digital software. This type of microscope has become increasingly popular for K–12 classrooms as technology has advanced.



Eyepiece/ocular lens

- **Monocular:** One ocular tube is placed at a 90° or 45° angle. Most can be rotated 360°.
- **Binocular:** Two ocular tubes for looking with both eyes. Ideal for long viewing sessions.
- **Trinocular:** A binocular microscope with a third eyepiece set at 90° for mounting a camera.
- **45° dual:** Two ocular tubes set at different 45° angles so that two people can view at the same time.
- **90° dual:** Two ocular tubes, one set at 45° for viewing and one at 90° for mounting a camera.

Objective lenses

Some microscopes feature these auxiliary lenses to increase or decrease the magnification.

Stage

- **Plain:** User manually moves the slide around.
- **Mechanical:** Slide is moved by turning two knobs in the y-axis and x-axis.
- **Built-in mechanical:** The entire stage moves when the knobs are turned.

Condenser

This mechanism collects and focuses the light that will pass through the slide. It is often used with a diaphragm, which controls the amount of light reaching the sample.

Illumination

- Light can come from the top (incident), bottom (transmitted), or both (dual).
- A variety of illumination sources are available:
  - **LED:** Bright white light. Generates the lowest amount of heat.
  - **Fluorescent:** Bright white light. Produces a minimal amount of heat.
  - **Halogen:** Produces the brightest light but gives off more heat. Found in most advanced microscopes.

Power

Corded and cordless microscopes are available. Cordless microscopes need to be charged before use, but they are convenient if you want the option to use them anywhere in the lab, move them between classrooms, or take them outside.

Elementary microscopes

At the elementary level, your classroom is likely to be students' first exposure to scientific microscopes. As beginners, they need to be taught the basics of what a microscope is, how it works, how to use it, and what it is used for. You don't need anything too technical to help build students' observational skills. For basic magnification, the objective lens doesn't need to be greater than 40X. Elementary microscopes are usually smaller and easier to store. Most are monocular, which is easier for students to see through.

Middle school microscopes

Middle schoolers are starting to do more serious scientific investigations with microscopes, including looking at comparative slides and creating their own slides. They can learn about and use more technical features, such as the mechanical stage and fine adjustment. At this level, there are a greater variety of features and options available, so you can base your selection on the specific ways you and your students will use the microscopes.

High school microscopes

The greatest variety of options are available for this level. The most advanced options come at a higher price point, so it's worth evaluating which features you need before settling on a microscope. Most high school AP labs utilize scopes with at least 100X magnification. Other features that will create a better image are condensers and diaphragms. Advanced microscopes are an investment, but with their high-quality construction, they will last for many years.

Digital microscopes

There are a variety of ways that educators use digital microscopes to enhance lessons and build technological literacy. At all levels, they make it easy to do demonstrations before students start the lab. One benefit is that you can ask students to capture an image and label it as part of assessment. Images and videos can also be shared digitally, which is a great way to model communication within the scientific field.

You'll see "Accessory" options in the "Use type" column to the right. These cameras and imagers can be used with a non-digital microscope to turn it into a digital one. If you're interested in this option, use the Nasco Microscope and Digital Imaging Compatibility Chart to ensure that your tools work properly together.

Elementary microscopes

Product No.	Description	Microscope type	Ocular lens type
SB37503	Elementary Co-Axial Compound Microscope	Compound	Monocular
SB50625	MicroMax LED™ Pocket Microscope	Compound	Monocular
SB26447	Nasco Standard Stereo Microscope — 30X Magnification	Stereo	Binocular
SB27572	Nasco Elementary Compound Microscope	Compound	Monocular
SB37662	Nasco Cordless Rechargeable Monocular Microscope	Compound	Monocular
SB52272	National Elementary Standard Microscope	Compound	Monocular

Middle school microscopes

Product No.	Description	Microscope type	Ocular lens type
SB37509	Nasco Middle School LED Standard Microscope - Corded	Compound	Monocular
SB37662	Nasco Cordless Rechargeable Monocular Microscope	Compound	Monocular
SB37674	Nasco Middle School Standard Microscope – LED Cordless	Compound	Monocular
SB24173	Nasco Middle School Standard Microscope – LED Corded	Compound	Monocular
SB25252	Nasco Middle School Standard Microscope with Add-on Mechanical Stage Side Adjustment – LED Corded	Compound	Monocular
SB26447	Nasco Standard Stereo Microscope	Stereo	Binocular
SB42834	National Middle School Standard Monocular Microscope	Compound	Monocular

High school microscopes

Product No.	Description	Microscope type	Ocular lens type
Z48549	Nasco High School Advanced Binocular Microscope	Compound	Binocular
SB45405	Intermediate Student Microscope with LED	Compound	Monocular
Z48550	Nasco High School Advanced Trinocular Microscope	Compound	Trinocular
SB46630	Nasco High School Binocular Microscope	Compound	Binocular
SB29118	Nasco High School Microscope (Video/Dual)	Compound	90° dual
SB25253	Nasco High School Microscope – Monocular/0.65 NA Condenser	Compound	Monocular
SB48590	Nasco High School Microscope – Monocular 4X, 10X, 40XR	Compound	Monocular
SB25255	Nasco High School Monocular Microscope – Monocular/1.25 Focusable Abbe Condenser	Compound	Monocular
SB50599	Nasco QZF Zoom Stereo Microscope	Stereo	Trinocular
SB52648	Premiere® Cordless High School Standard Microscope	Compound	Monocular

Digital microscopes

Product No.	Description	Use type	Recommended age
SB49688	Celestron® Handheld Digital Microscope Pro	Handheld	Elementary
SB51159	Celestron® InfiniView LCD Digital Microscope	LCD Screen	Elementary
Z52098	Moticam S3 3MP Digital Eyepiece Camera	Accessory	Middle school
NE30395	Moticam Digital Microscope Cameras	Accessory	Middle School
SB41027	National Oil Immersion Microscope with Built-In Digital Camera	Digital	Middle/ High school
Z52095	LED Monocular Compound Microscope	LED Screen	High school
SB49573	Celestron® LCD Digital Microscope II	LCD Screen	High school