Using Glowforge in your Classroom

The Glowforge 3D laser printer is an incredible tool for inspiring your students to create their world.

We know that student and educator safety is one of the most important factor as you're considering purchasing new technology for your classroom. We're here to answer the most frequently asked questions to make sure you have all the information you need to choose Glowforge for your classroom.

Glowforge Pro

How does a Glowforge 3D laser printer work?

Traditional 3D printers use additive fabrication, slowly building up layer by layer of material. Glowforge 3D laser printers use subtractive fabrication, starting with a piece of raw material and carving, engraving, and sculpting the final form. Because of this, it works with hundreds of materials, and prints much more quickly - prints can be finished in as little as two minutes.

How does the laser technology inside a Glowforge printer work?

Glowforge printers use a beam of infrared light the width of a human hair. The glass tube inside your Glowforge operates like a neon sign, glowing when electricity is applied. Specially tuned mirrors amplify that light and create the laser beam that prints the designs you and your students create together.

Are Glowforge products safe for schools?

Yes! The Glowforge printer, Air Filter, and materials were designed from the ground up to be safe to use in educational environments. The instructions explain how to operate the laser safely and reliably, including having children supervised by an adult. And this results in real-world success: Glowforge printers have created tens of millions of prints and are in use in schools in all 50 states.

To ensure safety, Glowforge products have been designed and tested to exacting standards. Glowforge printers are certified to UL/ANSI/IEC 60950-1-07 and CAN/CSA-C22.2 NO. 60950-1-07 (R16) by TUV Rhineland.

FC C E TÜVRheinland   **All Glowforge hardware is tested & certified**

Is the laser safe?

The Glowforge printer is designed like a microwave. The case and glass completely contain any harmful emissions, so it is safe to operate and watch. If the lid is opened even slightly, the laser is immediately disabled.

The Glowforge laser system is regulated by the US Food and Drug Administration (FDA) through their CDRH division, and Glowforge meets or exceeds all CDRH safety standards.

How does Glowforge safety technology work?

[Research at the NIOSH](#) has demonstrated that traditional 3D printers can release harmful toxins to which children are especially sensitive. To ensure safety, Glowforge designs and tests the printer, Proofgrade materials, and Air Filter together to ensure that, when operated according to the instructions, your Glowforge is safe to operate.

To further ensure safety, there are more than 40 safety sensors that monitor conditions of the printer. Dual interlock switches shut down the printer instantly if the lid is open. Multiple temperature sensors, infrared detectors, acceleration sensors, and tachometers constantly monitor print conditions and halt the system if something unexpected should occur.

To prevent problems before they occur, Glowforge systems use its patent-pending Printscan™ software technology to analyze each print and ensure it can be performed without damaging the machine or the materials.

The United States Patent Office has recognized the innovation designed into Glowforge safety systems with US patents [10,509,390](#) and [10,551,824](#).

How do I use my Glowforge safely in the classroom?

When used properly and with proper monitoring, Glowforge can be used safely by learners of all ages! Like with other tools and technology, two things are key to your students' safety:

• A teacher/adult monitoring students and their Glowforge when in use; and
• Following the guidance of the Glowforge user manual while using Glowforge

When your class has those two things, Glowforge is safe for all students to use. For the Glowforge Pro, the most popular model for schools, we provide a few extra safety features. With every Glowforge Pro, educators get Pro Shields to securely cover the Passthrough Slot. You'll want to

make sure that the Pro Shields are installed when not using the Passthrough slot to make infinitely long prints.

With the purchase of a Glowforge Pro, we also provide a free Laser Safety Course for educators to make sure you and your classroom can be safely up and printing right away!

Does my Glowforge require safety glasses or other safety gear?

No. Safety glasses and gear aren't required for you or your students when using your Glowforge according to the user manual.

What materials are safe to use with Glowforge?

There are hundreds of materials you can use with Glowforge! There are hardwoods, plywoods, acrylics, paper, cardboard, fabric, leather, mylar, rubber, stone, foods, glass, coated metal, and marble from various vendors that are compatible with your Glowforge.

However, all materials must be compatible with CO_2 lasers. Like any of the electronics we all have in our homes, printers like Glowforge can cause damage if they're not used properly. It's like a microwave. If the wrong thing is put in, and the automatic settings aren't used, and it's left unattended, it can cause damage. Check with the material manufacturer to be sure before using a material in your Glowforge.

To simplify printing and ensure safety, we provide Proofgrade materials that are specially designed to be used with Glowforge. They've been extensively tested for easy, automatic, safe operation with your Glowforge printer.

Garden Planters made with Proofgrade.

What about ventilation?

You have a two options to ventilate your Glowforge:

- Every Glowforge comes with the connectors you need to vent through a window; or
- You use the Glowforge Air Filter to operate your Glowforge from anywhere.

Glowforge Air Filter & replacement cartridge

Most educators use the Glowforge Air Filter because it lets them use Glowforge anywhere in their school. The Air Filter sits on the floor next to your Glowforge and contains both high-flow activated carbon and certified HEPA filtration. In fact, the filtered air from the Air Filter is generally cleaner than indoor air. The Glowforge Air Filter conforms to applicable CE requirements, UL STD standards, CSA STD C22.2 No.113 and RoHs.

Glowforge was built with schools in mind

We built Glowforge so that students can create their world in a safe and easy to learn environment that fosters creativity and engagement in the classroom.