



GAMING LAB SETUP 101: Getting Started



In this guide, we will help you determine how to build an esports lab for your school and outline requirements for several types of labs, including single and multi purpose labs. We will also provide a few suggestions for setup, furniture, and layout.

In order to begin constructing your lab, you'll need to determine what type of lab you want and find a space that supports it. The space you have available can determine if you choose to create a multi-use desktop computer lab, a console based pure gaming lab, or a hybrid which can be the most versatile choice.

Console Lab:

For a console based gaming only lab, we recommend a combination of the big 3 consoles (Playstation, Xbox, Nintendo), ideally half a dozen of each as most team sizes in games max out at half a dozen players. A console based lab can usually be easily set up and torn down as needed, requires very little space, and will play the majority of the games we offer.

- Playstation and Xbox currently offer both diskless and disk based models, we recommend only sourcing disc based models for your labs as digital only models limit game licences to one single



account whereas discs can be considered a transferable license/physical game license that can be used by multiple accounts.

- For the Nintendo Switch, we recommend the standard switch with a dock since the switch lite cannot be connected to an external display.

Pros: Affordable, versatile, space saving, very little maintenance

Cons: Smaller game library, gaming only, allows for less STEAM learning, cannot upgrade hardware, requires online subscriptions

PC Lab:

For an exclusively PC based lab, we recommend 6-18 similar PCs to the midrange or high end PCs linked in this guide. A medium sized well-lit, clean and not dusty room is ideal, with decent spacing between desks and computer systems. Gaming desktops are powerful machines and need room for airflow and need to stay clean so they don't overheat. Keep at least 8 inches of space open on all sides of the machine. Monitors should be set up on desks or tables with enough room for students to sit back at least 2 or 3 feet from the monitor and have at least 1 square foot of movement space for the mouse.

Pros: Fairly affordable, allows for STEAM learning, hardware can be upgraded, does not require online subscriptions

Cons: Inability to play console exclusive titles, PC hardware shortages, more maintenance than a console, more gaming knowledge required

Hybrid Lab (Console & PC):

For the hybrid lab set up we recommend a minimum of six consoles and six PCs. Consoles are easy to choose based upon the games your school plays, but in a hybrid lab we recommend the Nintendo Switch as nearly any games offered by HSEL on Playstation and Xbox are also available on PC, while Mario Kart and Super Smash Brothers are Nintendo Switch exclusives. Building PCs can be more daunting than choosing a console and sourcing parts will be the biggest hurdle you may face. In a hybrid lab, consoles and PCs can be set up as work stations with everything in one place and one display for a console and PC, or separate stations for everything which will allow the most students to use the lab at once.

Pros: Extremely versatile, extremely suited to STEAM learning and game development, suited to anything gaming or STEAM learning based



Cons: Expensive, more maintenance, needs a larger space, requires online subscriptions for consoles

Recommended Hardware Specifications:

Below is a list of recommended specifications for several tiers of PCs, and following that, tips that may allow you to upgrade your potentially existing hardware.

The recommended lowest hardware specifications are as follows:

These hardware specs will play games at a lower graphical quality to achieve higher frame rates. Lower quality for higher frame rates is in general a standard recommendation for all competitive play, regardless of hardware. These specifications will also be capable of light CAD (computer aided design) and programming, as well as basic digital art and content creation.

- Processor (CPU): Quad Core Intel Core i5/Quad Core AMD Ryzen 5
- Motherboard: For a small form factor PC, Mini ITX, for a full tower Standard ATX size. Make sure the Motherboard you choose is compatible with your processor using a tool such as "PCpartpicker.com"
- Memory (RAM): 16GB
- Graphics Card (GPU): Nvidia 1660 ti or 1660 super, AMD 5500XT 4GB or 8GB
- Storage: 512GB NVME Solid State Drive (SSD) (Mechanical hard drives as a boot drive are strictly not recommended, but as an alternative a 128GB SSD and 1TB mechanical drive can be more economical in rare cases, and provide a much larger amount of storage at the cost of application and game speed.)
- Power Supply (PSU): minimum 650 watt fully modular

An example of a build following this set of guidelines is available [here](#).

The recommended mid-range hardware specifications are as follows:

These hardware specs will be able to play games at medium-high graphics, but we still recommend lowering some settings to maximise framerates, these will be much better for teaching software development, graphic art, autocad, and content creation.

- CPU: Minimum 8 core Intel Core i7 or AMD Ryzen 7
- Motherboard: Any compatible motherboard for the processor you choose
- RAM: 16GB-32GB
- GPU: Nvidia RTX 3060ti, Nvidia RTX 3070. AMD 5700XT or 6700XT
- Storage: 1TB NVME SSD
- PSU: Minimum 750 watt full-modular power supply



An example of a build following this set of guidelines is available [here](#).

The recommended high end hardware specifications are as follows:

These hardware specs will easily play games at high graphics with high frame rates, however lowering settings to maximise frame rate for esports is always recommended. These machines will be fantastic for engineering, programming, art, and content creation.

- CPU: Intel Core i9 or AMD Ryzen 9
- Motherboard: A higher end compatible motherboard
- RAM: 32GB-64GB
- GPU: Nvidia RTX 3070, 3080 or 3090, AMD 6900XT.
- Storage: 1TB-2TB NVME SSD
- PSU: Minimum 750 watt full-modular power supply

An example of a build following this set of guidelines is available [here](#).

Steps to Assemble PC/ESD Safety:

ESD stands for Electrostatic Discharge. Static electricity is an electrical charge that is at rest. This is mainly created by an imbalance of electrons that stay on a specific surface, or in the environmental air. The imbalance of electrons (*in all cases, is caused by absence or surplus of electrons*) causes an electrical field that is capable of interacting with other objects at a distance. Electrostatic Discharge can therefore be defined as a transfer of electric charge between two different objects charged to different electric potentials. This happens when the two objects are brought in contact with each other. Electrostatic Discharge can also happen when two objects with different electric potentials due to static induction are brought together either intentionally or unintentionally. Electrostatic Discharge can cause damage/defects to electronic products, **electronic components** mainly **SMD components** and failure of **PCB** and equipment that can lead to further damage and accident. When assembling a PC it's always a good idea to use an **ESD-safe mat** as well as a grounded wrist strap to protect the individual assembling the computer.

If you've never assembled a PC, we recommend watching a few videos about how it's done. [This video shows a first person perspective of PC assembly](#). When assembling a PC it is easiest to assemble the components on the motherboard outside of the case prior to installing components inside of the case. A good practice prior to putting the motherboard and all components in the case, is to briefly plug the motherboard with all components assembled into power and connect it to a monitor to ensure it can "POST" which stands for "power on self test". Once you've tested it, follow the instructions from your case



manufacturer to properly install the components in the case, double check everything is mounted properly, and power it on!

Existing Hardware:

If your school already has existing hardware it may meet minimum requirements or be easy to upgrade your existing hardware to meet those requirements. We've put the [minimum system requirements](#) for all of our titles in one handy place. If your existing systems meet these specs you'll already be able to compete, if they come close it may be easy and cost effective to upgrade.

Gaming Lab Furniture:

A good esports lab will have a mix of ergonomics and aesthetics. Comfortable ergonomic chairs are a must, as well as desks large enough for students to move around during intense games and matches. Ergonomic chairs from [Autonomous](#) and [Herman Miller](#) and gaming chairs from [Mavix](#) are always fantastic in any computer lab, and are much better for posture than a traditional "gaming chair". When choosing desks you can choose something as simple as a basic computer desk from Ikea or to enhance the "gamer aesthetic" [Gamdias](#) is always fantastic. For further inspiration in designing your lab space we recommend looking at the books "The Space: A Guide for Educators" and "The Space: A Guide for Leaders" by Dr. [Robert Dillon](#).

[Find Dr. Robert Dillon's website here.](#)