Buying Guide for Education

How to assess technology needs and purchase right-fit technology

Education IT leaders are faced with the formidable task of making sense of today's complex ed-tech environment. The pace of innovation has accelerated with new devices, new usage models, increasing security risks, and expanding requirements for staff, infrastructure, and support. Increasing demands to work with dwindling budgets—while increasing opportunities for improved student learning—make education IT investments critical.

The role and function of student learning devices continues to evolve in education. Security, mobility, tablets, 1:1, and BYOD models are all moving targets that must be carefully considered and understood. The goal is to promote an environment that is efficient from a cost and usability standpoint, but adaptable and accommodating to rapidly changing technologies on the horizon.

This guide provides the IT decision maker with a five-step framework to help with complex buying decisions.

Step One: Define Your Device Strategy

Step Two: Assess Your Environment

Step Three: Analyze Workloads

Step Four: Determine Platform Requirements

Step Five: Define a Best Value Procurement Specification

Your IT strategy should take into account the full spectrum of your learning devices, infrastructure, and user requirements. Many schools are moving toward multi-device environments (such as BYOD) and the multiple usage models enabled by mobility. IT support may happen internally through a school's own infrastructure, externally (e.g., via a third-party cloud provider), or through a combination.

STEP ONE
Define Your Device Strategy

There are mandatory minimum requirements for online testing devices. Check with your stat and district assessment systems to determine what the minimum technology requirements are. These will include requirements for:

- Hardware

- Processor

- Operating System

- Internet Browser

- Networking

- Device Type

- Screen Size/Resolution

- Peripherals

STEP TWO
Assess Your Environment
Infrastructure

It's important to consider the effect of ever-increasing student, teacher, and administrator demand on bandwidth, along with the LAN and WAN infrastructure. Assess your immediate and projected bandwidth requirements and infrastructure configuration, so that you can select the type of learning devices that have the performance and capabilities to meet your needs. You may find it useful to graph previous, current, and projected bandwidth requirements.

Bandwidth

Determine if LAN links, WAN links, Wi-Fi connections, and the supported infrastructure meet current education needs. Determine what the current bandwidth requirements are today, as well as how these needs might change. Video, VoIP, virtualization, social media, and collaboration tools will impact infrastructure responsiveness. Remember to include management applications and protocols, as these also consume network bandwidth.

Device Fleet

Distributed computer model: In this model, operating systems and applications are distributed, installed, and executed locally on the devices. This device environment has minimal impact on the infrastructure, but does require a more solid management structure.

Centralized device model: In this configuration, the majority of the workload moves from the device, such as with Chromebooks: placing operating systems, applications, and computing resources in the cloud. Here, network infrastructure becomes more critical as all information is utilizing the network. While centralization can bring cost efficiencies that reduce total cost of ownership (TCO), the necessary addition of software and hardware infrastructure can offset gains.

Keep in mind that a centralized device model cannot accommodate all applications and workloads. Processor- and resource-heavy applications, such as graphics, video, VoIP, real-time collaboration, engineering, immersive, and visual applications, may need robust and local device capabilities.

Hybrid model: Many school districts combine models to suit their evolving needs, with centralized devices in the classroom for everyday tasks and distributed devices for more demanding lab work and online testing needs, for example.

The combined architecture brings the benefits of both central and distributed compute models, along with the capacity to change as new applications, usage models, and requirements evolve.

You will want to choose devices that have the performance and capabilities to support your current workloads, as well as enough performance for future trends, such as major shifts in applications or cloud-computing security.

STEP THREE
Analyze Workloads
Operating System

Consider the level of performance you'll need to meet the baseline requirements of your operating system (OS). Baseline requirements are typically in the technical specifications on the OS vendor website. If a vendor roadmap is available, it can help you to predict if an OS upgrade will require additional performance. If you are running multiple operating systems, you can follow the same process for each one: checking the vendor requirements to establish a baseline and projecting the demands of upgrades that may take place during your technology lifecycle. Be sure to purchase sufficient performance to cover your immediate and projected OS needs. Shorter PC refresh lifecycles require less headroom for future growth (and allow you to more rapidly adapt to change in OS and application requirements).

Applications

Consider the types and quantity of applications you want to run on your OS.

Some types of applications are more performance-intensive than others. The more applications you run in your school or district, the more performance you will need.

IT/administration applications: Used for management and security, including anti-virus protection, hard disk encryption, firewalls, and management agents. If you are running these types of applications, they will impact your overall infrastructure performance. If you are not currently using them, but intend to add them to your application mix, you will definitely see a performance impact after deployment on a lower-end device.

Productivity applications: Used for basic tasks such as word processing, email, calendar, spreadsheets, presentations, as well as file and print sharing. More feature-rich upgrades may require more platform performance. There are many apps and cloud-based solutions that, while not yet as feature-rich as software, are becoming more sophisticated and may well meet your school's needs.

Content creation applications: Used for advanced teaching and learning; 3-D modeling; as well as graphical, musical, or video content creation. These are the more performance-intensive specialty apps that need to run well to support these activities.

Remember that increasing grade levels typically require more application performance while teachers and school administrators will need a baseline of productivity applications.

STEP FOUR
Determine Platform Requirements
Security

Social media, third-party services, apps, the cloud, and more diverse delivery models and applications can increase security risks. Stringent regulatory requirements for data used by education organizations make security a top priority when making any infrastructure purchase decision.

Manageability

As schools and districts grow, so do their technology needs. This is why it is critical to factor in the need for more extensive management and automation solutions. This will have a direct impact on the total cost of ownership; management technologies help keep overall fleet management costs down.

Hardware

You will also want to ensure that the device platforms you purchase have the hardware features to support your organization. Checking ports and peripherals, display features, and suitability for mobile deployments can help ensure the platforms you choose will stand up to expected use.

Ports and Peripherals

Consider ports, peripherals, and user needs for the device platforms. USB ports can be used for printing and accessories, including any peripheral devices. They support the following:

- Locally attached printers

- Teaching and learning accessories including digital cameras, webcams, digital microscopes, and microphones

- Specialty devices

- Storage devices

- Network connections

Keep in mind that different groups with varying needs over time may use the same device. For example, school laptops may need to accommodate additional peripherals as students reach middle school science classes. Planning for all expected usage models will ensure you are covered across the spectrum.

Display

Consider display preferences, including touch or input requirements. Young students have different display needs than teachers or power users. Some digital interactive content designed for learning relies on touch capability; some on use of a digital stylus or other input device. Students and instructors using multiple applications at once, or performance-intensive applications, such as graphics or video software, will likely need a larger screen and higher resolution. The display features you'll want to consider include the following:

- Size

- Resolution

- Touch or input

Mobility

Supporting mobile use can bring about anytime/anywhere learning and collaboration benefits; as well as enhance teaching by providing greater presentation and interaction opportunities. Mobile devices—whether laptops or tablets—can often provide a lower-cost option for school IT departments as well: they consume less power and are often less expensive to service. When choosing a mobile platform, look for rugged or hardened form factors. Schools providing laptops or tablets to students can protect their investments from drops and spills by choosing rugged devices.

Purchase a standardized platform that will meet the needs of your student, teacher and administrator population to simplify administration and deployment, and attain better overall total cost of ownership (TCO). Maximize your purchasing power by choosing the lowest common denominator across all users and usage models.

STEP FIVE
Define A Best Value Procurement Specification

How much performance do various users (students, teachers, administrators) or need?

- CPU Utilization

- Average Memory Consumption

- Average Applications Used

- Average IOPS (I/O per second)

- Network Usage (Mbps)

- Graphics Requirements

What level of devices do users need?

- Tablets

- Netbooks

- Chromebooks

- Ultrabooks

- 2-in-1s

- Laptops

- Desktop PCs

Which level offers the best investment for my school or district?

- Performance

- Lifecycle

- Manageability

- Security