Choosing the Right Device for Digital Learning

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Just a few years ago it would have been hard to imagine all of the choices school leaders have when it comes to devices. These are high-stakes decisions in the truest sense!

Schools must choose among five different operating systems, Windows,* MacOS,* Android,* iOS,*, and Chrome.* There is an equally long list of form factors, such as laptops, desktops, tablet-laptop convertibles, as well as tablets of various sizes. Some are made specifically for institutional use, while others were designed for individual consumer use. It's no wonder that districts are struggling with how to choose the right device and easy to understand why some are making ill-informed decisions that will adversely impact learning and drain district budgets for years to come.

Making matters more difficult is the high-stakes nature of this technology decision. Increasingly, technology is a critical part of teaching and learning. For those districts implementing Common Core, technology is essential. Digital content and tools, as well as online assessments are here and expanding rapidly in use. Just as most of us take for granted the ubiquity of mobile phone access, we'll soon take for granted mobile devices in our schools.

There are two certainties when it comes to choosing a device for digital learning. The first is that there is no shortage of choices. The second is that there is no shortage of opinions on which is the right device. But let's be honest, there are clear choices, good and bad. The fact is that some devices and their operating systems, such as the iPad* and Android-based tablets,* have been designed for simple apps and activities primarily for home consumer use. Others, such as devices based on Windows and MacOS, have been designed for a wide range of activities and can make use of sophisticated software, as well as new apps designed specifically for tablet use. New to the mix are Google's Chrome OS-based laptops,* which I call "cloud-tops." While resembling a laptop in appearance, these devices generally require Internet connectivity and rely solely on less feature-rich cloud-based applications.

There are 4 factors that must be considered when choosing a device for digital learning;

1. What is the complete range of learning activities that students will engage in?
2. What content, applications, and resources (e.g., peripherals) will students require?
3. How will the devices be managed?
4. What is the true cost of the device?

What Learning Activities Will Students Engage In?

Students engage in a wide range of tasks and activities. Some are simple tasks that require simple tools and can be performed on a variety of devices, including a smartphone, tablet, or laptop. Some tasks require more powerful tools. For instance, creating and editing a product with multiple media, such as text, graphics, sound, and video are much more easily performed on a laptop computer.

This is where it is important to distinguish between a true laptop and the "cloud-top" devices I referred to previously. Because cloud-top devices depend on cloud-apps, network

bandwidth can be an issue, particularly for more complex tasks. Most districts report having insufficient wireless capacity, so relying on a device that is really only useful when you have a strong network is risky. Laptops with significant local processing power, memory, and storage capacity still offer the best performance for students.

Because display and keyboard size are typically driven by the device form factor, uses such as writing for extended periods of time and reading long texts should also be considered. While many people can accomplish some writing on an undersized wireless keyboard connected to a tablet, most admit that a full-size keyboard and larger screen offer a far better experience.

This is a particularly important issue to consider as it relates to online assessments, whether Common Core or other assessments. The compatibility of the device and its OS with online assessments is a non-negotiable and because the online assessment landscape is changing rapidly, this is an area that can trip you up if you don't do your homework. The catch here is that when considered among the range of activities students engage in, online assessments offer a very low bar for technology requirements. While a device, such as a tablet, may meet the technology requirements of an assessment provider that in no way implies the device will be the best choice for digital learning. On the other hand, a device well-suited for more complex tasks will almost certainly be a good choice for online assessments.

What Content, Applications, And Resources Will Be Required?

Determining what content, applications (i.e., software), and resources, such as peripherals that require a USB connection is the next critical step. These are based directly on what students will be required to do. Most districts have made significant investments in curriculum content, software, and peripherals. While an increasing amount of content is accessed on the web that still can limit your choice of devices. The use of Adobe Flash*-based content remains very high in schools, so much so that this one factor alone can rule out a tablet such as the iPad.

Continuing to leverage past purchases of instructional software makes good sense, both educationally and fiscally. It might sound fun to start with new apps, but consider the amount of professional development that could be required to get teachers up to speed and to align those apps with the curriculum.

There is also the issue of Internet browsers. Tablets designed primarily for consumer use, such as the iPad and Android-based tablets, are optimized to use apps that have been developed specifically for those operating systems. A browser experience may be sub-optimal, and can be downright unusable. Many web sites do not have mobile versions. If you expect students to rely on browser-based applications or content, test extensively before making a decision. Because the Windows 8 OS* is designed for tablet and laptop use, the browser experience will generally be significantly better.

While there are many issues regarding peripherals, the one that cannot be ignored is USB connectivity. Most districts have invested heavily in printers, scanners, document cameras, interactive whiteboards, digital microscopes, and many more valuable peripherals. Some tablets, such as the iPad do not have USB ports. Do you really want to throw away valuable instructional tools? And for those Android tablets that do support USB, driver compatibility with the peripherals can be a big challenge.

How Will The Devices Be Managed?

Efficient device management is essential. This is not merely a convenience for IT, more importantly it insures greater uptime and stability for the students, teachers, and other end users.

While device management can include a wide range of functions, installing software, and installing software updates/patches and security are by far the most important. Many districts have made significant investments in back-end systems that allow them to install software, security updates, and perform other management and security functions remotely. Tablets designed primarily for consumer use have limited management capabilities built-in and may require new investments. Where management solutions do exist for these consumer tablets, they are relatively immature and can require significant time for teachers to implement on an ongoing basis.

When updates are not applied regularly, devices can become unstable and the security of data on the device and data passed through a browser, such as usernames and passwords, can become vulnerable. Security of data in K12 is critical, particularly with applications such as online assessments, as well as to protect the privacy of students. Infrastructure built with tools and systems intended for institutional use have end-to-end security features, while those intended for consumer use may not.

What Is The True Cost Of The Device?

Total Cost of Ownership (TCO) is not only important to IT leaders and budget officers. Unnecessarily spending precious funds in one place means there will be less to spend on other instructional resources. Unfortunately, TCO can be overly-complicated, making it difficult to calculate. The true cost of a device can also be deceiving. Initial purchase price may seem low, but if the required peripherals and apps are expensive or if maintenance and repair are high, the total cost over time may be much higher than other devices.

Making the cost issue even more tricky today is the quickly changing, highly competitive market. For example, when consumer tablets, such as the iPad, initially came to market, perceived low cost was a significant factor for many districts. Chromebooks* based on Google's OS also appeared to be much cheaper than fully-functioning laptops based on Microsoft Windows OS. Price cutting moves by Microsoft, as well as aggressively priced hardware components have changed that dramatically in just the past few months. Today, districts can find extremely competitive options for powerful, light-weight full laptops with very long battery life. There is no longer a need to choose a lesser device due to cost.

When considering TCO, school leaders should consider the following five factors:

The purchase price of the device itself – What is the lifecycle? Will it last 4-5 years or will it wear out or become obsolete in 2-3 years?
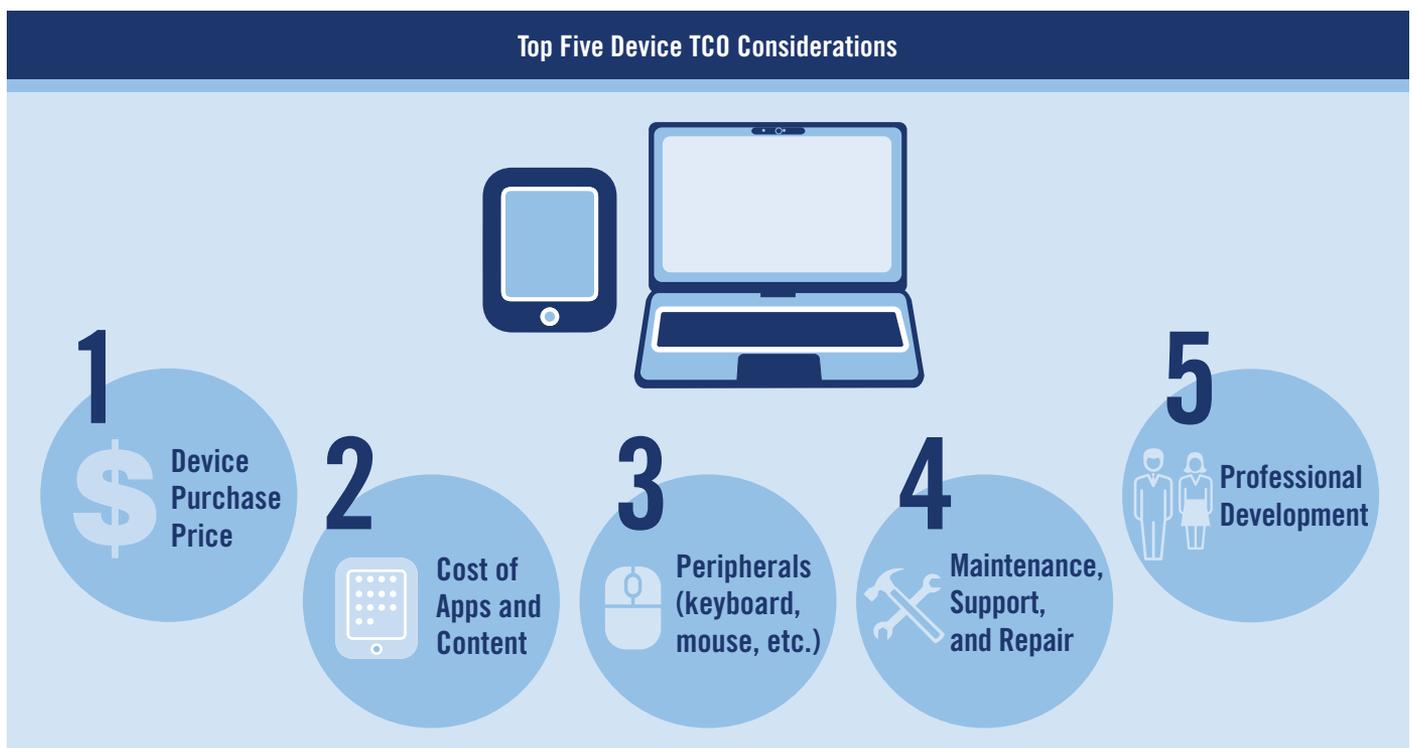
The cost of software, apps, and content – Can you continue using instructional software and content or do you need to purchase new?

The purchase price of peripherals, such as keyboard and mouse – Does the device come with these or do they need to be purchased as add-ons?

The cost to support, maintain, and repair the device and peripherals, including the cost of extended warranties – Can you leverage existing device management tools or will the district need to buy new ones?

The cost of professional development – Is this evolution from previous, older, yet similar devices and applications or is the device platform and applications entirely new?

Top Five Device TCO Considerations

1 Device Purchase Price

2 Cost of Apps and Content

3 Peripherals (keyboard, mouse, etc.)

4 Maintenance, Support, and Repair

5 Professional Development

While selecting devices for student digital learning is one of the most difficult technology-related decisions that districts will face, there are very specific criteria that can be considered that will lead to clear choices. How the device will be used, how it will be managed and what is true cost of the device are all important questions that must be answered. If a device cannot be used effectively for the entire range of tasks and activities that students encounter, then it should not be selected. Devices designed and intended for simple app use and content browsing on mobile web sites are not ideal tools for students. While they may seem "cool" and "21 century," they are intended for consumer home use, not large-scale school district deployment. Devices that always require network connectivity are not practical in schools without robust wireless networks and when used in take-home 1:1 programs, may only emphasize the digital divide that exists among district families because the devices will be of little use in homes without broadband.

The bottom line is that a true laptop computer remains the best device to meet all of the needs that students have. Powerful, lightweight, with long battery life and the ability to be used fully even when not connected, it's hard to argue that this is not the right device for students at most grade levels. With schools under considerable pressure to prepare students with skills for college and career, it only make sense to provide them with professional-grade digital tools, rather than those intended for consumer use at home.

NOT ALL DEVICES ARE EQUAL

	iPad*	Android Tablet*	Chromebook*	Full-Featured Laptop Windows 8*
Supports Full Range of Tasks Students Require			✓	✓
Can Install Full MS Office Productivity Suite				✓
Is Fully Functional When Not Connected to Internet				✓
Runs Flash*-Based Content		✓	✓	✓
Fully Supports USB Peripherals and Related Drivers		USB, but limited driver support	USB, but limited driver support	✓
Apps Available in App Store	✓	✓	✓	✓
Extended Battery Life	✓	✓	✓	✓

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