Issue Brief

Wired for Success

Why wired keyboards shouldn't be overlooked as school districts race to prepare for Common Core and other online assessments.

Ready or Not ...

To date, 43 states have adopted the Common Core State Standards, and for many school districts, preparing for this as well as online assessments in general has proven difficult. In fact, if your district isn't fully ready to implement Common Core, you aren't alone. According to a survey in late 2013, 78 percent of school districts had not completed plans to support Common Core technology goals, much less implemented the technology itself.[1]

Challenges are many and varying. They range from the difficulty of providing a wireless network with bandwidth sufficient to accommodate large numbers of students simultaneously accessing the Internet to cash-strapped institutions that struggle to provide enough devices for online assessments.

Both the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (Smarter Balanced) provide a list of hardware requirements[2] for school districts in states that are implementing Common Core. While there are many types of devices identified as suitable for online assessments as long as they meet minimum specifications, the physical keyboard is one requirement both PARCC and Smarter Balanced note is a necessity,[3] as Common Core emphasizes typing as a critical skill needed for both college and the workforce.

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Typing: An Underrated 21st-Century Skill

Regardless of whether a student works on a smartphone, tablet, laptop or desktop computer, nearly all devices in the U.S. still employ the QWERTY keyboard. Proper keyboarding is a primary building block for learning — essential for digital literacy and absolutely necessary in a 21st-century workforce.

K-2 students' largest challenges with devices are typing skills, dexterity and attention span. Touch-and-swipe tablet interfaces are a good tool for this age group, but schools must ready even the youngest students to use a keyboard, so that by the time Common Core assessments begin, their typing skills are well developed. Common Core requires all students taking assessments to demonstrate ability to type on a keyboard, manipulate a mouse, and "drag and drop" items on a screen to demonstrate competency. Keyboarding is an anchor skill of Common Core. Students are expected to develop solid keyboarding skills as part of their education, translating to superior techniques and a minimum keyboarding speed of typically 40 words per minute with 90 percent accuracy.

Tablets and the Importance of Keyboards

While keyboard-free tablets have found enormous success at many schools engaged in bring your own device (BYOD) or 1:1 programs across the country, as students get older and are expected to deliver more writing-intensive work, the need for a physical keyboard increases. A recent article in *The Atlantic* noted that while administrators, teachers and students endorse tablets as an excellent tool for engagement and exploring digital curriculum, the limitations of working without a physical keyboard is becoming an issue for Common Core and secondary school students.[4]

Both PARCC and Smarter Balanced require a physical keyboard so there is enough screen space available for assessment content. As noted by PARCC, "Due to the onscreen space occupied by a tablet's virtual keyboard, PARCC assessments will require external keyboards for test takers using tablets so as not to limit or obscure the view of test item content and related functionalities when text input is required."[5]

As school districts and students invest in tablets and smartphones, it's important to remember that colleges and careers require creation of content and production — not simply consumption of information. The starting place for this is an external, physical keyboard.

Choosing Wired or Wireless Keyboards

While consumers may choose wireless keyboards for the convenience of portability and the streamlined appearance that comes from being cord-free, other factors weigh more heavily in classroom and testing environments. Educators and IT leadership need to consider the following before making any large-scale purchases of keyboards for their districts.

Reliability: Continuous access, particularly during Common Core online assessments, is critical. School districts that have spotty network coverage know if an online assessment is interrupted, that test is rendered void and the student must start over. Without the continuous assured power of an electric cord, a wireless keyboard is just one more factor that could go wrong — and in an online testing environment, that's something no student or educator can afford.

> Once the curriculum of middle school or even high school, keyboarding has now become a staple in grades as early as kindergarten, with students learning how to type before they have fully mastered printing in pencil.

Keyboarding Integral to Common Core

Skills related to media use are integrated throughout Common Core, including keyboarding. In fact, Common Core State Standard W.CCR.6 cites keyboarding as an anchor standard:[6]

- **Grade 3:** With guidance and support from adults, use technology to produce and publish writing (using keyboarding skills) as well as to interact and collaborate with others.

- **Grade 4:** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.

- **Grade 5:** With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.

- **Grade 6:** Use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.

The Smarter Balanced Assessment Consortium Technology Strategy Framework[7] states that any type of external keyboard that disables the on-screen virtual keyboard will suffice for Common Core assessments, including mechanical, manual, plug-and-play and wireless (e.g., Bluetooth) keyboards — but it should be noted that high-density implementation of wireless keyboards and mice can wreak havoc with one another or the wireless network during assessments.

Wired keyboards eliminate that problem and offer a number of advantages that are critical in testing environments — or under any circumstances where reliability, security and cost count. Whether your state has adopted Common Core or utilizes its own assessment tools, a keyboard that offers optimal readiness for online assessments is a common denominator — and something no student should do without.

Security: Some technology products, such as Bluetooth-enabled keyboards, have demonstrated security risks such as remote fingerprinting of devices or denial of service. For example, most Bluetooth devices are shipped fully active. As soon as they are powered on, they broadcast their device name, making their presence known to anyone with a highly directional antenna and a laptop within a radius of up to half a mile.[8] Utilizing wired keyboards connected to a secure network eliminates or minimizes such problems.

Cost: The need to deliver online assessments is pressing school districts across the country to earmark special funds for compliance, and let's face it: If you're a school district, every dollar counts. Wired keyboards are a more cost-effective solution given they are powered by the computer's electrical system and the need to purchase, replace or recharge batteries isn't part of the equation. Although some wireless keyboards are able to run for months before the need for such measures, eventually that expenditure of time, money and labor — when totted up over years over hundreds or thousands of devices — is a cost schools must factor into their IT plans.

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Efficiency and Ease of Use: One of the main draws of going the wired route is superior responsiveness: Wired keyboard commands experience low latency and minimal lag compared to the potential delays of wireless. Well-spaced, full-size keys with a slender design are particularly desirable in a classroom environment. Keyboards that come with a separate stand for tablet placement offer comfortable, convenient access, and plug-and-play simplicity enables easier setup and use.

Design and Function: It is important to differentiate between manufacturers that design and develop keyboards specifically for the education market rather than those that sell BYO sourced from other manufacturers which are *repurposed* for the education market. Experienced instructors can spot the difference in quality and construction immediately.

Keyboard Optimization: Best Practices

- **One size does not fit all.** Be sure to pick a keyboard for education that is lightweight but standard-sized, equal in dimensions to what you would find on a laptop or desktop, with well-spaced, full-sized keys. Non-slip rubberized feet, a sturdy enclosed frame, ergonomic construction and convenience keys for auto-functions are recommended for ease of use.
- **Care of devices and peripherals** can be a challenge for K-12 students, meaning durability is a key consideration. Pick a keyboard that is both sturdy and easy to clean.
- **Select peripheral plug-and-play keyboards that don't require software installation**. By foregoing the updates and maintenance required by that feature, your IT team will save time and money.
- **Choose keyboards with traditional power cords.** In a classroom that deploys wireless keyboards, dozens of users accessing the network at once can cause timing delays and possible security risks.
- **One-touch access keys make keyboard usage more productive.** Find keyboards with integrated multimedia controls that provide swift, one-touch access to volume, mute, play/pause, fast-forward, rewind and screen lock, among other features.
- **Consider MFi certification for your school's iPad program** to ensure enduring investment value via ongoing access to emerging technologies.

Investing in a Wired Keyboard: Beyond Common Core

Although Common Core is an impetus for school districts to invest in keyboards, the benefits go far beyond online assessments. For example, it's important to consider peripherals when planning a K-12 IT strategy. While IT directors and educators usually focus on the device when they set about planning, peripherals such as keyboards are often an afterthought. This is a mistake, because they can significantly add to the effectiveness of mobile devices, while those of poor quality and design can detract from them.

Students in districts with BYOD policies will bring a variety of devices to the classroom. The advantages of mobile devices can significantly decrease if they include inappropriate peripherals, or worse, none at all. Assessments aside, if a tablet doesn't have a keyboard, a student may find writing a book report or a term paper more difficult. Permitting students to utilize wired keyboards that can adapt to any device provides them with an equitable learning experience — and, particularly for school districts that have implemented a 1:1 program, wired keyboards provide added value.

School districts that have invested in tablets should take advantage of hardware that complements them best. Utilizing state-of-the-art keyboards can optimize tablets and enable schools and students to get additional value from them. Keyboards enhance users' experience and productivity, enabling students to produce high-quality documents and presentations.

Waiting to plan for peripherals is a mistake, as they can significantly add to the effectiveness of mobile devices, while those of poor quality and design can detract from them.

Conclusion

A wired keyboard can be a critical ingredient to ensure test validity, eliminate Bluetooth vulnerability, increase network security and enable a better computer learning environment. In addition, it's an essential investment as school districts prepare for and implement Common Core and other online assessments. Most importantly, it's a part of the technology foundation that will help school districts prepare students for higher education and the workforce. By choosing carefully, education leaders can ensure they are spending dollars wisely and providing a tool that will enhance — not hinder — student learning.

Endnotes

1. Implementing Wireless Infrastructure for Common Core Testing in Schools, Xirrus, Inc., January 2014, www.xirrus.com/cdn/pdf/Xirrus_CCSSinSchools_WP_v4_010714
2. Detailed guidelines for the technology specifications for PARCC can be found at www.parcconline.org/technology and Smarter Balanced can be found at www.smarterbalanced.org/smarter-balanced-assessments/technology/.
3. www.smarterbalanced.org/test-taking-devices-approved-secure-browsers/
4. www.theatlantic.com/education/archive/2014/08/whats-the-best-device-for-interactive-learning/375567/?single_page=true
5. www.parcconline.org/sites/parcc/files/PARCC_TechnologyGuidelines-V2dot1_FAQ.pdf
6. www.corestandards.org/ELA-Literacy/W/introduction/
7. www.smarterbalanced.org/wordpress/wp-content/uploads/2011/12/Executive_Summary_Tech_Framework.pdf
8. http://searchsecurity.techtarget.com/tutorialLearning-guide-The-five-steps-of-baseline-Bluetooth-security