

# Mobile Devices and the Common Core

Effectively choosing the right  
classroom technology to meet  
new learning standards



## Introduction

Labeled as a “transformative trend,” proponents of mobile devices in education are touting them as a way to engage all learners, spur student achievement and increase teacher effectiveness.

As app-laden tablets and smartphones join the ranks of ever-powerful and increasingly light-weight laptops and netbooks, the buzz around mobile devices has transitioned to more of a roar. Anecdotes abound around the implementation of these devices, such as this one from Katy Independent School District CIO Lenny Schad: “We have had veteran teachers — 20-year teachers — saying that they had never seen engagement in their classes like they saw when they used Web 2.0, or when they saw the kids using the mobile learning devices.”<sup>1</sup>

But all the buzz surrounding mobile devices can sometimes cloud the true purpose: improving student outcomes. Integrating technology into the classroom should be viewed as a learning initiative, not a technology initiative. The ultimate goal is to personalize learning by transforming instruction, and effectively utilizing technology is one of the tools to achieve this. This point is further clarified by Amanda Reed, instructional supervisor for LaRue County School in Kentucky: “We see this initiative [laptops to students] as 100 percent a learning initiative, not a technology initiative,” says Reed. “Technology is a tool to help the learning happen, but this is not about technology. First, teachers need to practice the skills they want to foster in their students. Then they need to learn to use certain tools. Finally, they need to put it all together to build

a collaborative environment for 21<sup>st</sup>-century education.”<sup>2</sup>

While the promise and rewards of adopting mobile devices in the classroom to improve learning can be substantial, joining the digital revolution effectively requires strategy and careful planning. A specific trouble spot? *Implementation.* Education leaders must ensure that they consider learning objectives, establish a digital curriculum strategy, choose their management style, are aware of available funding, choose the most appropriate learning devices and features, ensure the adopted devices match school needs, and — some say most importantly — provide teachers with an abundance of professional development to effectively integrate technology tools into the curriculum.

Another layer added to the transition to a digital learning environment is the implementation of the Common Core State Standards (CCSS), which guide instruction and ensure that educational leaders across the nation have a consistent set of requirements in core subjects to prepare students for college and careers in the future workforce. Forty-six states and the District of Columbia have already adopted the standards, and educators and administrators are enthused by the prospect of using new technologies to help students meet these benchmarks of learning. However, this adds additional complexity to an already overwhelming task.

One thing is clear, mobile devices are becoming increasingly popular, and education is feeling the full force of impact. How schools and institutions ultimately absorb the impact, however, is still up in the air. The purpose of this document is to help those considering mobile adoption to bridge the “implementation gap” and avoid the pitfalls while enjoying the benefits. A carefully planned and executed transition can reap significant rewards for everyone involved — students, teachers, administrators and in-house IT specialists. We will begin with an examination of the steps to take when undergoing a mobile device implementation, and follow with a roadmap to integrating devices with the Common Core standards and ultimately meeting learning objectives.



## Going Mobile

### Assessing the Environment and Establishing Learning Objectives

Every educational decision in a school and system should flow from an agreed-upon target of outcomes for students. Schools need to have a vision and a strategic plan before purchasing technology tools. For instance, a district may implement a 1:1 computing initiative, but not know how to align technology use with the instruction in the classroom (unless teachers receive training in technology integration). Establishing these objectives for using the technology tools and planning a digital content strategy is part of an effective process. Below is what Union County Public Schools in North Carolina describes as its goals. Note that the emphasis is on creation and application.

Students will be engaged in next-generation learning that will:

- Apply critical thinking, research methods and communication tools to create original work
- Collaborate effectively beyond the classroom to create original work
- Use multiple resources to plan, design and execute real-world problems
- Use technology to collaborate and solve authentic problems
- Develop and answer open-ended questions using higher-order thinking skills
- Initiate communication in real-world time
- Communicate and collaborate with learners of diverse cultural backgrounds
- Form collaborative teams to solve real-world problems and create original work
- Select appropriate digital tools to assemble, evaluate and utilize information
- Apply varied research skills to find and evaluate resources
- Use information and resources to accomplish real-world tasks

Potential “digital revolutionaries” must also ask themselves several important questions about the learning environment:

**1 Will the devices help students reach their learning objectives? (Or, will the devices help students learn better than existing tools?)** It is not enough for a device to deliver a learning experience equal to, or even marginally better than that offered by non-mobile tools and methods like

textbooks and worksheets. Given the cost of going mobile, device choice depends heavily on the specific grade level, classroom and subject in question. Video capability may be useful in physics class, but not as much in English literature. It comes down to what the students will be learning, and what learning advantages the device(s) can provide over traditional, existing tools. If a device looks promising but has uncertain practical utility, it is important to research options and find the device that is best suited for the task.

**2 Do students have the maturity and ability to use the device(s) effectively?** Providing high school seniors with laptops to better conduct research, participate in online class discussions remotely, create unique audio/visual content for presentations and explore in-depth topics creatively makes sense, but providing the same technology to lower grade levels may not. Before introducing a mobile device in the classroom, the students’ maturity and technical proficiency must be assessed.

## MOBILES ARE ON THE MOVE – AND HERE TO STAY

- In 2011, a Boston Globe report predicted that by the end of that year, “some 50 million tablets are expected to be sold worldwide [in 2011], and that could double to as many as 100 million [in 2012].”<sup>3</sup>
- The 2011 Horizon Report — a report identifying emerging education technologies — listed mobile devices as “on the near-term horizon,” meaning it expects such devices to enter the classroom mainstream within the next 12 months.<sup>4</sup>
- The Nielson Company stated that by the end of 2011 there would be more smartphones in the United States than traditional feature phones.<sup>5</sup>
- The Speak Up survey from Project Tomorrow reported that nearly 50 percent of middle and high school students carried some type of smartphone by the end of 2010 — a nearly 47 percent increase from fall 2009.<sup>6</sup>



### 3 Can equal access to the device(s) be ensured?

A truly effective mobile device strategy requires a 1:1 student-to-device ratio. Sharing devices can lead to inefficiency and conflict, slowing down the pace of instruction. According to Wesley Fryer, a digital learning consultant and executive director of StoryChasers Inc., “The real tipping point is when every student has a device. ... Until then, you can’t scale any kind of digital curriculum across the nation.”<sup>7</sup> Device access is an especially important consideration for cash-strapped districts operating on tight budgets. BYOD (bring-your-own-device) programs can pass along some (or all) of the device cost to parents and guardians, but this raises serious concerns about fairness and equality, as students from disadvantaged backgrounds likely won’t have a device of their own to bring. Schools will need to provide students with devices who cannot provide their own.

**4 Can the school/district afford it?** Technology requires investment. Failing to accurately determine the cost of device adoption can be detrimental. It is critical to consider total cost of ownership (TCO), taking into account the cost of devices over their lifecycle. This includes accounting for software licensing, peripherals, device management tools and ensuring that new devices will be interoperable with existing technology. For example, if the devices of a 1:1 deployment have a different operating system than the one already in use, additional infrastructure costs will need to be factored into a purchasing decision.

**5 Does the school/district have the resources to support it?** Mobile devices make heavy use of the Internet. Thin- and zero-client notebooks run applications accessed entirely over the Web. This makes a robust, fast IT infrastructure absolutely critical to coordinating a successful roll-out of devices in the classroom. It must be able to handle hundreds, if not thousands, of devices connecting to the network at the same time, and must be able to manage quick spikes in usage as all students in a class or department “boot up” and attempt to access the network simultaneously. Significant time and money must also be invested in teacher and students readiness to use devices. There should be a plan for professional development long before devices are implemented to ensure teachers can successfully integrate devices into curriculum.

The bottom line: Choosing to “go mobile” requires a thorough examination of the benefits and risks of adoption, and an honest assessment of whether or not any particular device will help fulfill the ultimate goal of any school or educational system — educating students effectively.

## Choosing and Using Mobile Devices

Before looking at specific device capabilities, it is important to determine your management strategy. A district or school that chooses to manage devices centrally will choose different devices than if classrooms were to manage devices individually.

Considering what students will actually use a device for is critical. You will want to determine the features needed by grade level or subject before determining devices. While some devices are ideal for consumption activities — i.e., watching a video, reading a blog post or viewing a presentation — they may not be the best choice for a creation activity such as developing a multi-media historical timeline. Laptops have more processing power, memory and are more durable making them well-suited for creation, while tablets and smartphones are faster to boot up, lightweight for added mobility and have touch screens, which makes them well-suited for consumption.

Union County Schools in North Carolina finds that netbooks are suitable for middle school and having an input device (such as a keyboard) is important for students to be producers of content. For high schoolers, the district says that the device requires a full-sized keyboard, making a laptop the most appropriate choice for all functionalities that students need.

A general breakdown of devices is listed in the table below:

General knowledge creation and production	Laptop, netbook, tablet with dockable keyboard, camera (document, video and still)
General consumption	Smartphone, tablet, e-reader, MP3 player
Specialized education use, such as for science, math, geography, physical and special education	Devices with I/O ports to interface with third-party connections: microscope, probe, camera (document, video and still), consumer game systems, GPS/GIS, assistive technology

The ultimate usefulness of a device depends, in large part, on how well a teacher can implement it and play to its particular strengths. Katy Independent School District CIO Lenny Schad says that teachers can incorporate all devices into lesson plans in different ways.

“In an English class, a student won’t use a smartphone to type up a paper,” Schad says. “But a smartphone can be applicable in an English setting if there is a blog and a wiki and teachers tell their kids, ‘We’re studying this book, and here are three questions that I’m going to post and we’re going to have answers and then you can respond to different answers in this blogging situation.’ This helps create deeper understanding of these three leading questions that the teacher might ask.”

According to Schad, providing multiple options is about giving students more flexibility to complete assignments in ways that best suit their skills and learning styles. “Once we allowed children to do their homework in multiple avenues, that’s when we started to tap into these different shaded learning styles,” Schad says. “We saw creativity go through the roof, and we saw engagement go through the roof because these kids had multiple avenues to do their homework.”<sup>8</sup>

## FOR MORE IN-DEPTH INFORMATION

about device considerations and potential uses in the classroom, download the supplemental poster “Connecting the Dots: Tying Technology to the Common Core Standards” at [www.convergemag.com/paper](http://www.convergemag.com/paper).

### Providing Professional Learning Opportunities to Teachers

The real challenge of integrating technology into the classroom is smoothly and effectively using devices to aid and improve learning. This is the make-or-break point for device adoption. To overcome this hurdle, professional learning is critical.

Technology can be a powerful addition to a teacher’s instructional arsenal when properly used. This makes teacher development a vital component of any effort to implement mobile device usage in the classroom. Without proper training, teachers will be hard-pressed to adopt the devices in their own classrooms effectively. This risks frustration, disillusionment and ultimately abandonment of the device entirely.

Additionally, when funding for new or “voluntary” initiatives like device adoption is in short supply, some schools and districts might be tempted to cut corners on professional learning, assuming that teachers will

be able to figure the devices out on their own, and be able to apply that knowledge to the classroom setting. We’ve learned enough about going mobile to know that this strategy rarely ever works. Teachers must be trained both how to use the device personally, and — even more importantly — how to integrate the device’s capabilities into the curriculum.

Attention must be paid to preparing teachers well before mobile learning technology is brought into the classroom. Katy Independent School District in Texas, for instance, spent two years preparing teachers for the devices it brought in as part of its BYOD program.<sup>9</sup>

Professional learning communities and ample time for collaboration help teachers learn ways to use technology to implement the curriculum — and lose any fear or reluctance they may have. Mentor teachers — the tech-savvy among the staff — can be a good step toward bringing the less-tech-oriented along with tech tips, tricks and techniques.

Another way to encourage enthusiasm by faculty: Invite them to visit a Tech Petting Zoo — a term coined by Jennifer LaMaster at Brebeuf Jesuit Preparatory School in Indiana for a popular professional development activity she arranged. “We had every mobile device we could get our hands on,” she says. “The idea was to ‘pet’ the technology and really see what it could do.” After teachers had a chance to experience firsthand what mobile devices could do, they became much more excited about the upcoming device implementation.<sup>10</sup>

Lastly, teachers need access to continuous learning programs. Technology is constantly changing and shifting the day-to-day tools used by teachers and students in the classroom. These are not small changes, and teachers need help improving their skills, expanding their pedagogical approaches, and accessing new digital tools and content. Ongoing professional learning that is flexible for the constant change in technology is a must.

Helping teachers integrate mobile device usage into curricula is especially important today, due to the adoption of the Common Core State Standards. The following will go into more detail about what the standards are and how they impact the adoption of mobile devices in the classroom.



## The Common Core and Mobile Devices: Effective Integration

The Common Core State Standards are a set of standards for mathematics and language arts instruction for grades K-12, first put forth in 2010 and, as of today, adopted by 46 of the 50 states, as well as the District of Columbia. The Common Core, as it is more widely known, seeks to increase math and language arts performance. It does this by decreasing the overall number of math and language “standards” in which students are expected to demonstrate competency, while increasing the time and energy spent mastering each of the remaining standards. In short, the Common Core seeks to promote “depth” of knowledge, rather than “breadth” of knowledge.

The premise of the Common Core appeals to educators who appreciate the ability to spend more time ensuring that students understand concepts fully, and not just on a surface level. “Some of the kids that [met] the standard at the surface level were missing some pieces,” says Nena F. Hupp, a teacher in the Baltimore, Md., area. The Common Core’s emphasis on depth meant that “you could start picturing what their [the students’] knowledge of that skill is, whether it was just memorization or whether they had it.”<sup>11</sup>

Implementing the Common Core, however, is proving to be a challenge. Much of the difficulty stems from a lack of guidance for teachers on how best to translate the Core’s standards into practical instruction.

The good news is that the Common Core is being put into practice at the same time mobile devices are beginning to proliferate in the classroom. This provides an opportunity for simultaneous training and development — as teachers adjust to the Common Core, they can also learn how to leverage mobile devices to help students reach the Core’s benchmarks. Progress in the curriculum (from traditional standards to the Core) can

come hand-in-hand with progress in the methods used to cover the curriculum (from traditional learning tools to mobile devices).

The concurrent adoption of Core standards and mobile devices further underlines the need for those considering classroom mobile devices to thoroughly assess the strengths and capabilities of a device, and see if they line up with the demands of the Core. This is attainable, as Core standards and technology complement each other well.

The integration of technology with the Core standards can be seen in the text of the Core itself. Here are some Core anchor standards for Language Arts:

- Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.<sup>12</sup>
- Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.<sup>13</sup>
- Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.<sup>14</sup>
- Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.<sup>15</sup>

Achievement of Core standards mastery, therefore, appears to be impossible without the use of technology. The Common Core is tailor-made to accommodate the rise of mobile device usage in the classroom and technology advancements in society at large. This means that whether or not students end up reaching the Core’s standards will depend greatly on how well schools and districts execute the roll-out of the devices, and whether or not teachers are given the training they will need to leverage the devices’ capabilities in the classroom. Instructional and administrative leaders will have to make sound decisions that correctly align device strengths to the skills required to meet the demands of the Core.

For more information about the Common Core State Standards, visit [www.corestandards.org/](http://www.corestandards.org/).

### Coordinating Technology with the Common Core in Des Moines, Iowa

Iowa’s Des Moines Public Schools, home to 63 schools, 36,000 students, 5,000 staff members and 3,000 teachers, is just one of the districts across the country working to integrate technology with standards as smoothly as possible.

“I’m a huge technology fan and a big techie person myself,



but one of the things I think we need to caution people on sometimes is that technology is a tool, but it's not the end-all-be-all," says Curriculum Coordinator Stephanie Rosenberg Wager. "Just putting a laptop in a student's hands doesn't necessarily equate to high-level learning."

Instead, the district's technology committee has been adding a sidebar to the standards to show what they would look like in the classroom. In that sidebar, they're including technology tools that can help students meet a standard. For example, if the standard says "to write an informational essay," the committee provides teachers with ideas about how to meet it through the use of a technology tool. And since the history, science and technical subject connection in the English Language Arts Standards are approximately 70 pages long, they need examples from district staff. "If I just hand teachers this huge document and say go forth and conquer, they're going to be overwhelmed," Wager says.<sup>16</sup>

Wager and Technology Trainer Katie Shearer say the district is continually working on its Technology Resources website, which includes the continuum of tools used in the system and provides help in using them. The site assists the district in keeping its school communities up to date and helps manage the myriad bits of information available to them, in one repository. It can be accessed at <https://sites.google.com/a/dmps.k12.ia.us/dmps-support-videos/home>.

**VIEW THE POSTER** "Connecting the Dots: Tying Technology to the Common Core Standards" for even more in-depth information about using technology to meet the learning objectives of the Common Core. Download at [www.convergemag.com/paper](http://www.convergemag.com/paper).

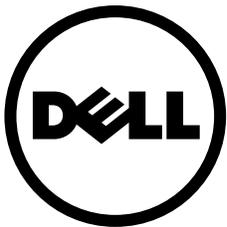
## The Short Version: Four Key Points

The parallel rise of mobile devices and the Common Core provides a unique opportunity for educators to merge technological and methodological advancement and meet learning objectives. Indeed, this merging is all but required, since the Core standards mandate proficiency in technology and device usage. When considering and making the transition to mobile devices within the context of the Common Core, it is important to take into account the following points:

- 1 Learning objectives and a digital content strategy need to be clearly defined from the very beginning. Additionally, the technical proficiency of students must be assessed when budgeting for both the cost of the devices and the time to be spent training teachers and students on proper usage.
- 2 Adopting a device for the classroom will only be effective if it is the right kind of device for the age and content in question. Determining your device management style and the features needed will help in this process. Use the poster featured with this paper to help determine which device is right for your school or classroom.
- 3 Professional learning is critical. Educators must be trained in two areas: 1) how to integrate the device's capabilities into the curriculum; and 2) how to operate the device(s). This first point is especially important, given the technological demands put forth in the Common Core standards.
- 4 The Common Core State Standards mandate that students receive training and demonstrate proficiency in the use of technology. Integrating mobile device usage into the classroom is no longer a novel idea, it is necessary to achieve CCSS benchmarks. Therefore, adopters must be careful when deciding which mobile devices should be introduced to the classroom, taking into account all the factors mentioned above: learning objectives, digital content strategy, device capabilities, cost of purchase, IT infrastructure capability and time/budget available for professional learning.

## Endnotes

1. Center for Digital Education interview with Lenny Schad, conducted on Sept. 16, 2011.
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5. <http://blog.nielsen.com/nielsenwire/consumer/smartphones-to-overtake-feature-phones-in-u-s-by-2011/>
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11. [www.edweek.org/ew/articles/2012/04/25/29cs-math.h31.html?tkn=OMMFa8t7srlel1Vnv2zPtL0MSiwVGCsIYasl&cmp=clp-edweek&intc=EW-CC0412-EWH](http://www.edweek.org/ew/articles/2012/04/25/29cs-math.h31.html?tkn=OMMFa8t7srlel1Vnv2zPtL0MSiwVGCsIYasl&cmp=clp-edweek&intc=EW-CC0412-EWH)
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13. Ibid.
14. College and Career Readiness Anchor Standards for Writing
15. Ibid.
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