



# TRANSFORMING EDUCATION THROUGH DIGITAL AND BLENDED LEARNING

*By Don Soifer*



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## EXECUTIVE SUMMARY

**T**he growth of innovative new personalized learning models is fast becoming the most compelling story in American elementary and secondary education. These instructional models are underway in most parts of the country, utilizing and refining new pedagogical approaches to produce powerful outcomes for an ever-increasing range of settings and challenges.

But while technology and interactive digital content are essential to supporting personalized learning, educational choices, and not procurement decisions, will be most impactful in determining their ultimate success.

This paper analyzes several factors which may prove pivotal in providing this support broadly, including measuring program effectiveness and prioritizing professional development needs. Examples drawn from personalized learning's early exemplars include South Carolina's Horry County Schools and the Pennsylvania Hybrid Learning Institute.

Also discussed are two prominent Virginia Department of Education initiatives to dramatically expand students' access to digital instructional content through statewide partnerships to offer new, interactive digital content aligned with state standards, and to upgrade schools' broadband internet connections.

While charter school early adopters of personalized learning have been producing powerful results for several years, impressive results are beginning to accrue for students in blended learning classrooms in traditional school districts. Education Elements, a leading designer of these models, tracked progress of 5,000 students in nine partner school districts, and found their growth to be 54 and 25 percent above national norms in reading and math, respectively.

Details follow.

## INTRODUCTION

High quality, personalized learning models are demonstrating powerful gains in student outcomes in a wide range of settings around the country. A proliferation of digital learning programs and interactive content offers educators diverse foundations upon which to design these models.

As the transformative benefits and outcomes these programs can deliver are receiving greater attention from media, policymakers, and others, a growing share of the most impressive progress can be found in traditional school districts that are adopting models created around their own educational needs.

*As personalized learning's transformative benefits and outcomes are receiving greater attention, traditional school districts are adopting models created around their own educational needs.*

While many of these blended learning models were originally designed in the laboratories for innovation that charter schools can provide, often centered around California's Silicon Valley, newer versions are now developing a growing track record.

These can be found in sites as disparate as large urban districts (District of Columbia Public Schools), expansively diverse districts (South Carolina's Horry County Schools), and a collaboration of smaller and mid-sized school districts in Pennsylvania called the Pennsylvania Hybrid Learning Institute; each is discussed in this paper. In August 2014, the Rhode Island Department of Education announced that it was undertaking an initiative to pursue blended learning across schools statewide.<sup>1</sup> Ohio's Blended Learning Network has grown to include 47 member schools, serving 234,000 students in varying diverse school districts.<sup>2</sup>

The importance of these developments derives largely from the potent student growth gains these models are demonstrating across different settings, which many believe have the potential to move the needle on the overall productivity of America's public education sector, addressing an urgency of need to be discussed later in this paper.



*Students can learn at their own pace with personalized learning models.*

## GETTING TO TRANSFORMATIONAL CHANGE

The rapid growth of digital learning has vast potential to transform education in the United States for those students who have access. Examples abound that illustrate the impact of technology on learning, as with other functions of daily life, and these examples continue to grow as rapidly as the digital resources available to educators.

But the mere fact of new technology's availability will not produce transformation change on its own. As Salman Khan, founder of the popular Khan Academy online learning destination, cautioned in his 2012 book *The One World Schoolhouse*, "It's not enough to put a bunch of computers and smartboards into classrooms. The idea is to integrate the technology into how we teach and learn; without meaningful and imaginative integration, technology in the classroom could turn out to be just one more very expensive gimmick."<sup>3</sup>

Effective digital learning content takes many forms, and new ones are becoming available every month. Innovative educators seeking to meet the educational needs of the students they serve are becoming the early adopters of powerful new instructional models that integrate these tools.

Course access policies created in a number of states now permit students in traditional schools to participate in a wide catalog of approved online classes. Texas, Louisiana, Wisconsin and Minnesota have implemented new policy systems allowing local districts to make the classes available to their students that include both electives and core content choices.<sup>4</sup>

Blended learning may be the ultimate culmination of these efforts. Leading chroniclers Michael B. Horn and Heather Staker put forward a three-part definition of blended learning in their 2014 book, *Blended*:

First, blended learning is any formal education program in which a student learns at least in part through online learning, with some element of student control over time, place, path and/or pace.

Second, the student learns at least in part in a supervised brick-and-mortar location away from home.

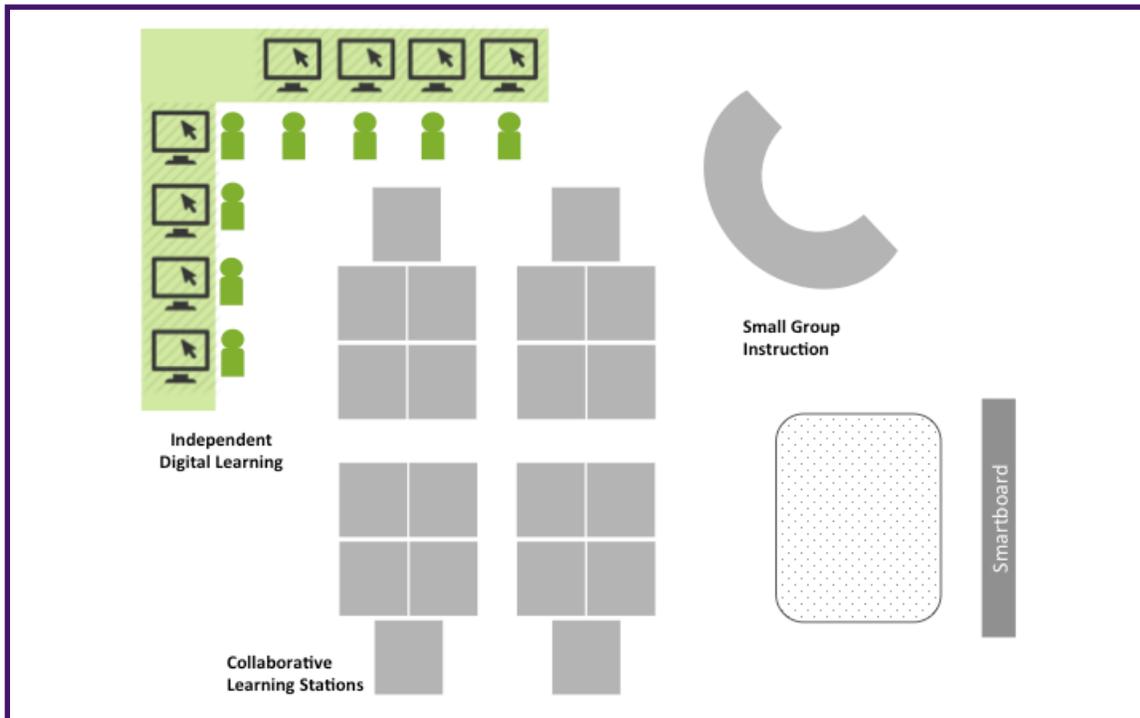
Third, the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience.<sup>5</sup>

*"Blended learning allows teachers to cater to different levels in one classroom – differentiation, the hardest part of teaching."*  
– Kaya Henderson, Chancellor, DC Public Schools

Horn and Staker caution against the temptation to use the term blended learning either too broadly, including all education technology that a classroom can hold, or too narrowly, “to point to only the types of blended learning they like best.”<sup>6</sup> They outline four main categories of blended learning models, noting that the broad parameters allow for various combinations and variations.

Perhaps the most thorough catalog of blended learning models underway today is the *Blended Learning Universe*, a compendium of descriptive information submitted by blended learning operators and published by the Clayton Christensen Institute for Disruptive Innovation, a California-based nonprofit organization founded on the ideas and writings of Harvard Business School professor Clayton M. Christensen, led by Horn.<sup>7</sup>

Another valuable resource illuminating specific attributes of blended learning’s various forms can be found in a 2014 report published jointly by Education Elements, widely thought of as the nation’s pre-eminent designer and implementer of blended learning models, and the International Association for K-12 Online Learning (iNACOL). The report details five domains of blended learning teaching practice, recommended by the authors as a rubric addressing what they describe as the most essential attributes of blended classrooms:<sup>8</sup>



One popular model for a blended learning classroom model with three learning stations.

1. Classroom Culture
2. Classroom Management
3. Planning and Delivery
4. Assessment and Analysis
5. Classroom Technology

This guidebook for “Understanding and Supporting Blended Learning Teaching Practices” offers a decidedly narrower path to success than Horn and Staker. It identifies skills and pedagogical methods present in high-quality blended learning classrooms that are designed and implemented to meet specific educational needs of students served.

These preferred models “couple adaptive digital curriculum with powerful data-driven teaching to better address the varied needs of learners in schools today.”<sup>9</sup> While this approach could be seen as illustrative of Horn and Staker’s caution against overly narrow definitions, it is decidedly focused on maximizing instructional effectiveness and delivering on “the promise of blended learning.”

*On digital platforms that encourage group discussion, often students are more willing, or more confident, when it comes to substantive expression.*

In their 2014 *Policy Playbook for Personalized Learning*, analysts Carolyn Chuong and Sara Mead elaborate on blended learning’s transformative educational potential with, “entirely new models of education organization

and delivery.” Their articulation of the optimally personalized education experience for students is largely based on an evolution of classroom roles where, “the same tools that enable customized learning for students can also enable teachers to use their time more efficiently and to achieve greater success in meeting students’ needs, making their job more enjoyable and sustainable.”<sup>10</sup>

“Blended learning allows teachers to cater to different levels in one classroom – differentiation, the hardest part of teaching,” explained DC Public Schools Chancellor Kaya Henderson in 2014.

To leaders of many top-performing blended learning schools, one of the most essential components of blended classrooms is the regular use of timely, actionable information about student progress to support classroom teachers in their personalization of instruction.

Students of the most effective classroom teachers have long enjoyed educational benefits from some personalized teaching. But the support that this feedback loop, found in many high-quality blended learning classrooms, offers teachers seeking to increase personalized instruction can be invaluable.

## EDUCATION ELEMENTS:

### DELIVERING ON THE PROMISE OF BLENDED LEARNING

The San Carlos, California-based Education Elements (<http://www.edelements.com>) has designed and guided implementation for many of the nation's highest-performing blended learning schools in traditional school districts, public charter schools, and private schools around the country. In 2014, they published a study of student outcomes across 9 partner school districts, serving 5,000 elementary and secondary education students.

Included among the student outcomes:

- 25 percent growth in math on NWEA Measures of Academic Performance (MAP) above national norms.
- 54 percent growth in reading on NWEA MAP above national norms.
- 87 percent of teachers provide more differentiated instruction.
- Students in blended classrooms completed 1.5 years of course content in one year.
- In one Education Elements partner district, students in blended classrooms met growth targets in reading (35 percent gain) and math (47 percent gain) above students in non-blended classrooms.



*Los Angeles 5th grade teacher Steve Gutierrez, "Interacting with his students as readers."*

Personalization happens in different ways in blended learning. Students working on digital content work at their own pace, so that starting shortly after the school year begins, a classroom of students in the same chronological grade can be spread broadly across a wide range of sequential lessons.

Educators note a host of other, related benefits of personalized learning through digital instruction to this self-pacing. Particularly in urban settings, digital learning avoids stigmas associated with the act of raising your hand in class, "acting smart," or the more subtle examples indicated by education research around gender and bias. On digital platforms that encourage group discussion, often students are more willing, or more confident, when it comes to substantive expression.

Opportunities for teachers to personalize learning compound in blended classrooms that rotate students in groups between instructional stations (two- and three-station rotation models are increasingly common). Students in small-group, facilitated settings can be divided according to their individual progress, and re-grouped frequently.

These small-group settings offer smaller class-sizes, with more opportunities for individual interaction with teachers.



*Australia's Learningfield initiative, powered by Copia, is the first of its kind to deliver all of the content libraries of different, leading publishers synthesized in one interactive digital learning platform.*

Often, blended classrooms that use three learning stations also allow teachers to target lessons in the direct instruction station to where students are academically at a particular time. This minimizes the need for “teaching to the middle” from a large range of varied progress in a traditional direct instruction classroom.

“It can allow for learning to be individualized so kids can go as fast as they need to, or as slow as they need to,” describes Chancellor Henderson.

The capacity for blended and digital learning models to involve classroom teachers in the selection of curricular content is largely unprecedented in public school classrooms. This is important: in recent years, surveys of teacher satisfaction in U.S. public schools has registered at deteriorating levels.

One telling indicator relates to teachers reporting unsatisfactory involvement in selection of teaching materials, and extremely low involvement with colleagues in selection of classroom content. Studies published by the OECD show U.S. teachers among the lowest internationally in their satisfaction with these indicators.<sup>11</sup>

Addressing a prevalence of reported dissatisfaction with professional development is another valuable opportunity for blended and digital learning. U.S. public school teachers

have consistently reported less positive impact of their professional development on their teaching than their international peers.<sup>12</sup>

Often, educators are themselves not aware of the high-quality teaching materials that may be available online. A 2014 study by Digital Promise found that only 50 percent of educators have any involvement with their school's purchasing of educational technology, and thus many are unlikely to be aware of new options.<sup>13</sup>

Dedicating substantial professional development toward the success of blended and digital learning is prominent among the consistently-identified strategies among high performers. In fact, prioritizing professional development to the success of these models is widely identified as crucial by principals and school leaders in both traditional school districts and charter school settings.

## THE PENNSYLVANIA HYBRID LEARNING INSTITUTE

The Pennsylvania Hybrid Learning Institute is a consortium of ten Pennsylvania school districts committed to implementing personalized learning. During the 2013-14 school year, the program utilized 31 different instructional programs. Because these different approaches were implemented over different timeframes and with varying degrees of program fidelity, measured results varied widely.



*Students in the Los Angeles Unified School District working on a social e-reading platform from Copia Interactive.*

Schools of the future will need instructional content, just as schools of the past did. But it would be fallacy to believe that they will need to select, and procure, this content via the same, tired textbook adoption processes that have supplied classroom textbooks for much of the 20th century.

The Spring-Ford Area School District chose Spring City Elementary to pilot blended learning because it faced socio-economic and academic achievement challenges as home to the district's largest population of students in poverty, notes Dr. Keith Floyd, District Director of Curriculum and Instruction. Once the program was underway, teachers observed that the individualized instruction permitted them to get to know their students better than at any other time in their careers.

Principal Mitch Edmunds describes his school as the first public elementary school east of the Mississippi River to utilize a fully hybrid approach, which he defines as, "the integration of traditional teaching with digital instruction to help deliver the core curriculum at school."

The results were encouraging for the first full year of implementation. The percentage of students scoring proficient and advanced on the PSSA statewide standardized assessment increased 20 points in reading, 24 points in math, and 27 points in science, as indicated on the state school performance profile. Some of the students improved their reading scores by 50 percent, report school officials.

The Spring City hybrid model places students at one of three stations within a classroom, rotating approximately every 20 minutes. Students work individually at computers at one station, collaboratively in small group or individual instruction at the second, and in traditional direct instruction at the third.

The school day includes a 120-minute language arts instructional block, an 80-minute math block, and 20-minute daily blocks for social studies and science. Teachers have flexibility to modify schedules at their discretion.

Teachers use Compass Odyssey education software in all four core areas. The school switched to the ST Math program this year, and also utilizes Achieve 3000 software to build reading comprehension. Students and teachers regularly use desktop computers, smartboards and iPads.

To prepare for the full-building implementation of hybrid learning, teachers participated in nine days of professional development over the summer that was specifically dedicated to the new program.

A short video explaining the Spring-Ford model is available online: <http://vimeo.com/61266982>.

## WHO NEEDS TRANSFORMATION?

Transforming education with the latest technology is not a new idea – far from it. In the 1840s, when railroads transported slate blackboards to schoolhouses in the Great Plains and prairie states, many believed this powerful new tool would change education forever. In fact, those changes that slate blackboards brought to teaching practices still largely define many American classrooms today.

The notion of widespread changes in education practices looming may not seem appealing to some stakeholders with deep roots in our present education system. But the need for change is rooted in educational urgency.

To be certain, some important progress in student achievement is not difficult to find over the past decade. On the National Assessment of Educational Progress (NAEP), the test administered in all states known as the Nation's Report Card, the rate at which students in grades four and eight have scored at Proficient levels or above in reading and math have improved steadily since 2003.

But a closer look at these results underscores the reasons for the urgency of improvement. The gaps between how white students perform on the test nationally compared with their black and Latino classmates, while improving, remains particularly troubling.

On the 2013 reading test, 39 percent of black eighth graders scored at Below Basic levels, the lowest possible rating. White eighth graders scored Below Basic at a rate of just 14 percent, as did 21 percent of Latino eighth grade students.<sup>14</sup>



*Third grade students at Saint Anne School in Santa Monica (CA) work on Differentiated iReady content*



*Improved vocabulary and pronunciation, and increased frequency of participation in classroom discussions are both outcomes of personalized, digital learning.*

Delving deeper into these results to consider student performance at the state level, two states deserve particular attention. Only Florida and Texas currently, of those states with the largest elementary and secondary student populations, also appear on the federal Department of Education's rankings of states with the largest projected growth in student populations over the next ten years.

In Texas, the rate at which black and Latino eighth graders score at Below Basic in reading in 2013, 33 and 32 percent respectively, is three times higher than the 11 percent rate for their white classmates.<sup>15</sup>

In Florida, 16 percent of white eighth graders scored Below Basic in 2013, as did 34 percent of black and 27 percent of Latino eighth graders.<sup>16</sup>

These outcomes paralleled results for high school seniors in 2013, which showed virtually no improvement over results four years earlier. "We must reject educational stagnation in our high schools," said U.S. Education Secretary Arne Duncan of these results. "We must do better for all students, especially for African-American and Latino students."<sup>17</sup>

In light of present trends in elementary and secondary education budgets, it seems unlikely that significant changes in funding can be expected to drive measurably

improved results. Today, U.S. taxpayers spend at least 5.4 percent of the nation's gross domestic product funding elementary and secondary education. Indeed, improved outcomes that address the urgency of these achievement gaps and others will need to be found in improved productivity. Digital and blended learning are arriving at just the right time.

## DEMONSTRATING QUALITY

One particularly valuable feature of blended learning comes as a byproduct of the wealth of information generated by digital learning in real time to indicate student proficiency and growth – this information can be used to measure their progress in many different ways.

Increasingly, state accountability regimes include measures of the growth of individual students over time. This can prove especially useful in high-poverty neighborhoods where students have historically been underserved by the educational options available to them.

Rewarding schools for both achievement and improvement (i.e., longitudinal growth) can promote innovation and achievement. In addition, digital learning generally integrates easily with competency-based learning approaches.

Schools use different, valid ways to demonstrate success. Increasingly, official school accountability systems have come to focus not just on snapshot proficiency as measured on an annual state test, but on the growth of individual students over time. When based



*Los Angeles Unified high school reading teacher Nick Deligencia, "I have students who routinely come in and talk to me about having read the book while they were on the bus, and they'll show me their phone."*



*Reading with an interactive digital learning platform allows students to interact in ways not available with just reading and worksheets.*

on standardized test outcomes, such longitudinal growth measures can balance, or even neutralize, the likelihood that a school will score higher simply because it serves students better prepared for academic success.

Results on official state exams, administered annually, can provide useful, objective perspectives not just on students' educational (and socio-economic) backgrounds, but on the very growth outcomes that distinguishes high-quality blended learning models.

Such growth measures need not be limited to official standardized test regimes. Cynthia Ambrose, Chief Academic Officer at the Horry County Schools, lends this idea valuable context, observing that, "Teachers are literally working in one world built on old, outdated paradigms while trying to transition to a new instructional world that better meets the needs of their students – but one that, while better for students, may not align perfectly with the accountability systems."<sup>18</sup>

As the nation's charter school movement has grown and matured in more jurisdictions around the nation, its schools have earned a reputation for their ability to demonstrate their value to students in many different ways. Whether making their case to their oversight authorities, funders, or prospective new students and families, many charter school leaders have proven adept at using quantitative and qualitative indicators of their performance, with a premium on outcome measures. Because most blended and

digital learning models have origins in charter schools, that landscape becomes a natural greenhouse for applicable measures.

For example, the rate at which students meet or exceed their growth targets can also include:

- Growth on NWEA-MAP assessments, when administered 3-4 times / year, for reading and math (this is one popular way of showing students make a year-and-a-half worth of gains in a single school year). NWEA can also demonstrate growth normed against verified national average;
- Number of units each student advances within each subject;
- Improved vocabulary and literacy pronunciation;
- Pass rate on state exit exams (in states that have them);
- Frequency of participation in classroom discussion;
- Number of teacher and student interactions throughout the day; and
- Most books read per semester.

While measuring outcomes is essential for any school accountability system in general education, some measures of progress inputs hold some educational value. High quality blended learning programs can typically be expected to excel in such metrics as:

- Percent of time on whole-group instruction reduced, percent in small group or individual instruction increased;
- Percent of teachers who provide differentiated instruction;
- Number of digital content providers; and
- Teachers more involved in selecting curriculum.

## **EXPANDING HIGH-QUALITY OPPORTUNITIES**

The number of schools currently exhibiting outcomes that can be considered high-quality blended learning is currently quite small – experts estimate fewer than 300 schools nationally. With the increased attention it has received over the past couple of years in education trade publications and even mainstream media, the number of schools seeking to adopt blended learning will likely increase in the coming years.

There has also been an increase in education policy proposals at both the state and federal level designed to support the growth of blended learning. In 2014, U.S. Representative Cathy McMorris Rodgers (R-WA), chairman of the House Republican Conference, introduced HR 5303, the 21st Century Classroom Innovation Act, specifically designed to support high-quality blended learning.

Previous Congressional proposals to support the growth of charter schools had included explicit funding preferences for blended learning charter schools. And legislative proposals in Virginia, Utah and other states have sought to support the growth of blended learning in various ways.

But in order for schools to be positioned to implement blended learning, two necessary elements must be present: robust broadband internet access sufficient to support digital learning, and an abundance of digital content options, aligned with state content standards.

Federal leadership has an important role to play in expanding school broadband access. The Obama Administration's ConnectED initiative, launched in June 2013, was a high-profile effort to address the "digital divide" between schools with adequate internet and digital capabilities, and those without.

The Federal Communications Commission (FCC) in December 2014 finalized measures to modernize its 18-year old E-rate program. The changes, including some \$1.5 billion in additional funds being made available to schools and libraries, should have long-term impact on school broadband access, but the full cost and scope to complete the job remain rough estimates.

Today, the number of students with access to digital devices capable of supporting learning – smart phones, tablets, desktop computers, laptops – is growing rapidly. Effective learning tools, either free, made available by schools or available for purchase for those that can afford them, have proliferated. Every student should also have access to content, approved by state and local education agencies and aligned with state content standards, more than they had last year, and certainly more than they had a decade ago. Sadly, a statewide solution like this is only now being offered in Virginia.

## **VIRGINIA'S SUPPORT FOR DIGITAL LEARNING**

Virginia has two important initiatives underway that can advance digital learning dramatically over the coming decade.

In 2014, the Virginia Department of Education announced a new contract that it expects to dramatically expand schools' access to digital instructional content.

The elementary and secondary education textbook industry has changed very little over the past several decades. A similar observation can be made regarding the textbook adoption process by which local school districts make their textbook purchasing decisions. Districts typically select a single textbook publisher, or at most a small number of different publishers, and enter multi-year contracts to purchase their textbooks exclusively, at least within particular subjects and grade levels.

*Virginia's new digital content initiative holds substantial promise to support classroom teachers and student learning by offering unprecedented choices in the delivery of instructional content.*

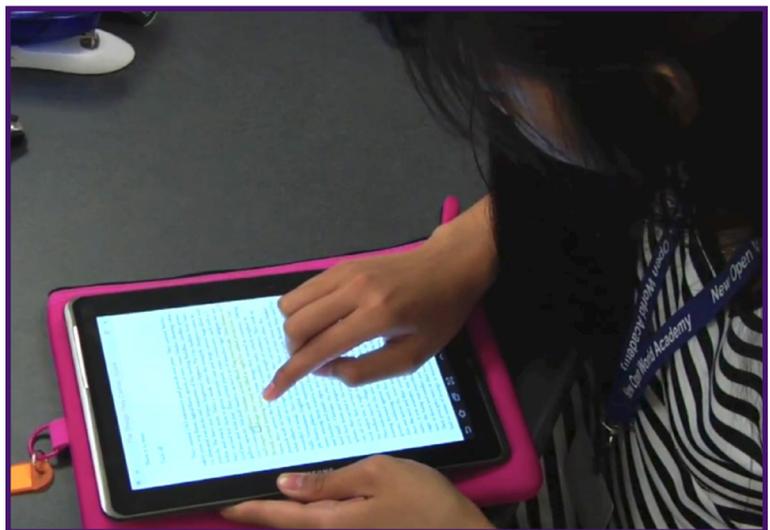
This new Virginia initiative holds substantial promise to change this system in ways that support classroom teachers and student learning by offering unprecedented choices in the delivery of instructional content, including by the classroom teachers responsible for teaching that content.

The statewide contract with educational technology provider Copia Interactive establishes a new system, by which textbook publishers enter into partnerships with Copia to digitize their proprietary textbook content, and to make it available to school districts in an entirely new business model.

Once the plan is fully underway, school districts will be able to contract with Copia to allow their teachers to purchase from among a range of pre-approved textbooks on a unit-by-unit basis unprecedented for American public education. If a classroom teacher chooses to use one textbook for a chapter or lesson, they could then select a different textbook, from a different publisher, for their next lesson.

In order to take advantage of this opportunity, schools will need an adequate number of devices to allow students to access the digital content, and also sufficient broadband to support the devices.

It is noteworthy that for schools located in states administering the Partnership for Assessment of Readiness for College and Careers (PARCC) or Smarter Balanced standardized tests, both



*Providing students, including English Language Learners, access to complete texts with features like dictionary and pronunciation tools is another advantage of interactive, digital learning.*

designed for online test taking, the device and broadband needs are more immediate. Many schools giving the PARCC test are expected to elect for the pencil-and-paper version this year, as they explore possible long-term solutions to address their needs.

It is often possible for digital content to be first downloaded, and then accessed while devices are offline, as Copia's work in Los Angeles, New York City and Australia has shown. This can help increase access for students in different settings where broadband connections are less reliable.

Virginia's Governor Terry McAuliffe has also led an aggressive push to improve high-speed broadband access for public schools. Working in partnership with the nonprofit Education Superhighway, commonwealth officials determined that one-third of schools, serving one-fourth of Virginia students, ended 2014 with sufficient bandwidth and connection speeds to support digital learning.

A speed of 100 Megabits per second of access per 1,000 students is the generally accepted minimum requirement, as defined by the FCC.<sup>19</sup> Industry experts predict that this minimum requirement will grow, perhaps by as fast as a factor of ten, within the next few years, as content becomes more sophisticated, adaptive and interactive.

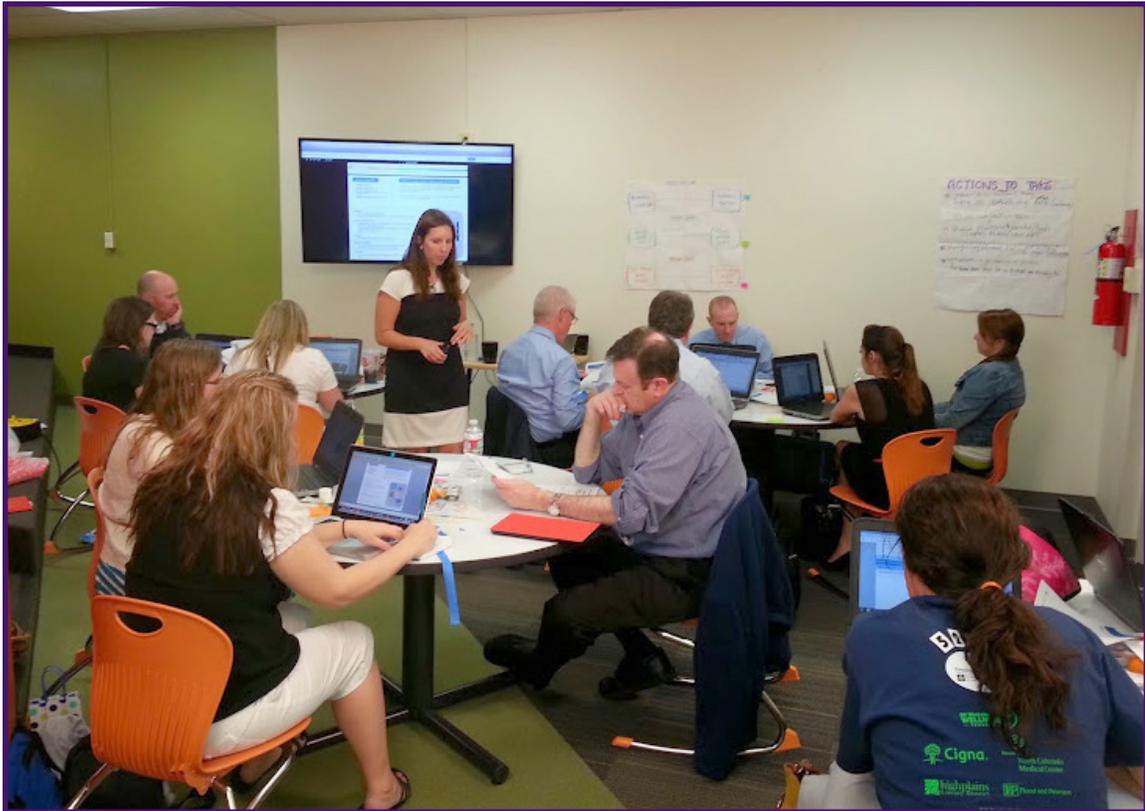
In three subsequent phases, the partnership will engage with school districts, apply best practices, and offer technical expertise to help widespread adoption statewide by the start of the 2018-19 school year.<sup>20</sup>

These two programs will each help support a third undertaking, the Virginia E-Learning Backpack Initiative, which seeks in its first phase, "to provide every ninth grade student attending a public school that is not fully accredited with a tablet computer, digital content and applications."<sup>21</sup>

For the past three years, the nonprofit has partnered with state education agencies to conduct "internet speed tests" to determine broadband capacities and needs. In December, it published a guidebook, "Network Essentials



*Blended learning models support teachers' personalizing of instruction for each student.*



*Teachers in Colorado's Greeley-Evans School District engage in a design-thinking exercise.*

for Superintendents," addressing strategies and requirements for ensuring that school infrastructure is ready to support digital learning.<sup>22</sup>

By working in partnership with different states (a similar effort is underway in Arkansas), government, nonprofit, philanthropic and corporate partners are on track to make substantial progress laying the infrastructure required for significant growth of blended and digital learning opportunities.

## CONCLUSION

What does the future look like for digital and blended learning? This landscape contains too many variables to be certain. In fact, debate has emerged surrounding the recognition of Best Practices in these spaces, simply because exemplary programs consider themselves very early adopters.

Many of today's leading practitioners adhere to commitments to continued innovation and improvement in their instructional models. Such commitment to ongoing progress is essential in allowing the new pedagogy of personalized learning to realize its broad potential.

Schools of the future will need instructional content, just as schools of the past did. But it would be fallacy to believe that they will need to select, and procure, this content via the same, tired textbook adoption processes that have supplied classroom textbooks for much of the 20th century.

In the pedagogy of personalized instruction, schools will need to support teachers in new roles and functions. Technology procurement decisions, while important, cannot be permitted to outweigh educational decisions about how the basic educational needs of students can best be met.

Virginia's education leaders have undertaken a valuable path with their two-pronged approach, focusing on the next model for providing classroom instructional content and equipping schools with the robust internet access required to access it. Hopefully other states will follow suit in the coming months and years.

Over the next 5-10 years, critical next steps will include improving access in these ways, and preparing educators for the specific challenges of personalized learning models that rely on actionable information from student performance, in as close to real-time as possible, and without burdening teachers with tedious data analysis that distracts from their work.

To policy decisionmakers, these should pose distinct challenges about how the most effective solutions can best be supported. These solutions will be essential to the next wave of early exemplars of digital and blended learning. To realize their truly transformative potential, these instructional models must evolve and grow. Supporting these processes may represent the most valuable, and most challenging, contributions yet in preparing our present educational landscape for success in the future.

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