

The Rise of K–12 Blended Learning

Michael B. Horn and Heather Staker With contributions from Alex Hernandez, Bryan Hassel, and Joe Albeidinger
07 April 2011

Online learning is sweeping across America. In the year 2000, roughly 45,000 K–12 students took an online course. In 2009, more than 3 million K–12 students did. What was originally a distance-learning phenomenon no longer is. Most of the growth is occurring in blended-learning environments, in which students learn online in an adult-supervised environment at least part of the time. As this happens, online learning has the potential to transform America’s education system by serving as the backbone of a system that offers more personalized learning approaches for all students.

In *Disrupting Class*, (Christensen, Horn, and Johnson, 2008) the authors project that by 2019, 50 percent of all high school courses will be delivered online. This pattern of growth is characteristic of a disruptive innovation—an innovation that transforms a sector characterized by products or services that are complicated, expensive, inaccessible, and centralized into one with products or services that are simple, affordable, accessible, convenient, and often customizable. Think personal

computers, the iPod and mp3s, Southwest Airlines, and TurboTax. At the beginning of any disruptive innovation, the new technology takes root in areas of nonconsumption—where the alternative is nothing at all, so the simple, new innovation is infinitely better. More users adopt it as the disruptive innovation predictably improves.

Online learning fits the pattern. It started by serving students in circumstances where there is no alternative for learning—in the advanced courses that many schools struggle to offer in-house; in small, rural, and urban schools that are unable to offer a broad set of courses with highly qualified teachers in certain subject areas; in remedial courses for students who need to recover credits to graduate; and with home-schooled and homebound students.

Nearly all of these instances tended to be in distance-learning environments initially—outside of a traditional school environment and removed from an in-person teacher. A simultaneous explosion in home schooling—from roughly 800,000 students in 1999 to roughly 2 million today—was fueled by the rise of online learning and full-time virtual schools.

There is a limit, however, to the number of students in America who have the ability to be home-schooled or attend a full-time virtual school. The same analysis that shows that 50 percent of all high school courses will be

delivered online by 2019 reveals that home schooling and full-time virtual schooling will *not* substitute for mainstream schooling, as their rapid growth flattens out at around 10 percent of the K–12 schooling population.

Home and full-time virtual schooling requires significant parental involvement. Given the socio-economic condition and family structures for most K–12 students, 10 percent is likely the maximum number of students who could even contemplate a home-schooling experience. The majority of students in America need school—or a supervised place to learn. Various societal stakeholders “hire” schools to do many things for their children, just one of which is learning. A custodial job—keeping children safe—is equally important for many. From the perspective of many children, having a place to have fun with friends is also vital.

In classic disruptive fashion, online learning is expanding beyond distance learning. Educators and entrepreneurs are increasingly creating blended-learning environments—where rather than doing the online learning at a distance, students learn online in an adult-supervised school environment for at least part of the time. At the outset, this occurred in areas of nonconsumption, such as credit-recovery labs and dropout-recovery schools. A small but growing number of schools, however, are now starting to introduce blended learning into their core programming for mainstream students.

Bleak budgets coupled with looming teacher shortages amidst an increasing demand for results are accelerating the growth of online learning into blended environments. U.S. Secretary of Education Arne Duncan recently described a “new normal,” where schools would have to do more with less. Blended learning is playing a vital role, as school operators begin to rethink the structure and delivery of education with the new realities of public funding.

The growth of online learning in brick-and-mortar schools carries with it a bigger opportunity that has not existed in the past with education technology, which has been treated as an add-on to the current education system and conventional classroom structure. Online learning has the potential to be a disruptive force that will transform the factory-like, monolithic structure that has dominated America’s schools into a new model that is student-centric, highly personalized for each learner, and more productive, as it delivers dramatically better results at the same or lower cost.

Policymakers and education leaders must adopt the right policies for this to happen. There is a significant risk that the existing education system will co-opt online learning as it blends it into its current flawed model—and, just as is the case now, too few students will receive an excellent education. State elected officials, district superintendents, and school principals must act now to prevent the cramming of online learning into the traditional system

and to foster its transformative potential. As policymakers open the gates for innovation by creating zones with increased autonomy, they must simultaneously hold providers accountable for results so that the adoption of online learning leads to radically better outcomes for students.

Defining blended learning

Defining blended learning

In a field with lots of confusion and multiple definitions around what K–12 blended learning—sometimes called hybrid learning—is, our research suggests a simple, umbrella definition:

Blended learning is any time a student learns at least in part at a supervised brick-and-mortar location away from home *and* at least in part through online delivery with some element of student control over time, place, path, and/or pace. This definition is from the perspective of a student. For example, in the self-blend model below, because a student is taking some courses online remotely and some courses in the traditional brick-and-mortar format, that student is experiencing blended learning.

Just as a hybrid car can be either efficient or a clunker but still be a hybrid car, blended learning can be both good and bad. Some blended-learning programs save money;

others are more expensive. Some blended-learning programs produce stellar results; others do not.

Definitions that preclude certain programs that clearly meet the eyeball test of being a blended-learning program erroneously narrow the term.

In the fall of 2010, Innosight Institute, with backing from the Charter School Growth Fund, conducted a market survey of this emerging blended-learning environment. From interviews with operators of blended-learning programs in the K–12 field, Innosight Institute pieced together some of the characteristics of this nascent segment. Innosight Institute started with an overview of 60 organizations (including states, districts, schools, for-profits, charters, start-ups, and independent schools) that were starting to blend online learning into schools. From this list, it interviewed 38 operators, representing 44 distinct programs, and created in-depth profiles. These 44 programs were not an exhaustive representation, rather a sample of emerging early adopters. The profiles unearthed clear patterns.

The programs profiled in this study, which will be released in its full form in the spring of 2011, were highly varied in the way that students experienced their learning across several dimensions, including teacher roles, scheduling, physical space, and delivery methods. The models fell into six distinct clusters, however, with each sharing design elements that distinguished them from the others. **Figure 1** offers brief examples of these models. As innovators

develop new versions of blended learning, the contours of these clusters will continue to evolve. For now, blended learning is gravitating toward six models (Note: this is a first cut at creating a more precise typology of blended-learning models than has existed before. It is still imperfect, as readers will note. We invite other researchers to conduct further research to improve upon these typologies.):

Model 1: Face-to-Face Driver

The programs that fit in the face-to-face-driver category all retain face-to-face teachers to deliver most of their curricula. The physical teacher deploys online learning on a case-by-case basis to supplement or remediate, often in the back of the classroom or in a technology lab.

Model 2: Rotation

The common feature in the rotation model is that, within a given course, students rotate on a fixed schedule between learning online in a one-to-one, self-paced environment and sitting in a classroom with a traditional face-to-face teacher. It is the model most in between the traditional face-to-face classroom and online learning because it involves a split between the two and, in some cases, between remote and onsite. The face-to-face teacher usually oversees the online work.

Model 3: Flex

Programs with a flex model feature an online platform that delivers most of the curricula. Teachers provide on-site support on a flexible and adaptive as-needed basis through in-person tutoring sessions and small group sessions. Many dropout- recovery and credit-recovery blended programs fit into this model. (Note: Others have introduced their own blended-learning categorization schemes. A few of them cite "dropout recovery" as a distinct model. The problem with these types of categorization schemes is that they confuse model with purpose. Dropout-recovery programs have a clear and uniform purpose, but many use different models to achieve this purpose. Many use the flex model; some are full-time virtual programs; still others utilize the online-driver model, for example.)

Model 4: Online Lab

The online-lab model characterizes programs that rely on an online platform to deliver the entire course but in a brick-and-mortar lab environment. Usually these programs provide online teachers. Paraprofessionals supervise, but offer little content expertise. Often students that participate in an online-lab program also take traditional courses and have typical block schedules.

Model 5: Self-Blend

The nearly ubiquitous version of blended learning among American high schools is the self-blend model, which

encompasses any time students choose to take one or more courses online to supplement their traditional school's catalog. The online learning is always remote, which distinguishes it from the online-lab model, but the traditional learning is in a brick-and-mortar school. All supplemental online schools that offer *a la carte* courses to individual students facilitate self-blending.

Model 6: Online Driver

The online-driver model involves an online platform and teacher that deliver all curricula. Students work remotely for the most part. Face-to-face check-ins are sometimes optional and other times required. Some of these programs offer brick-and-mortar components as well, such as extracurricular activities.

Blended learning's potential

Blended learning's potential

Blended learning has the potential to revolutionize K–12 education in terms of quality and cost, as it allows for a fundamental redesign of the educational model around the following:

- **A more consistent and personalized pedagogy that allows each student to work at her own pace and helps each child feel and be successful at school.** Leveraging technology, blended-learning

programs can let students learn at their own pace, use preferred learning modalities, and receive frequent and timely feedback on their performance for a far higher quality learning experience. As online programs capture student achievement data in real-time across the school, teachers can spend more time helping personalize learning for students.

- **Productive new school models that require fewer, more specialized teachers and use space more efficiently.** Schools can leverage technology to create radically different staffing structures that increase school-wide student-teacher ratios, even as students experience more personalized learning from more effective teachers. Leveraging technology in this way changes the assumptions of the traditional school model, where labor has accounted for 70 to 85 percent of costs and where only a fraction of students have access to great teachers. Teachers shifting to blended-learning models are finding that they have more time to focus on high-value activities like critical thinking, writing, and project-based learning as they spend less time on low-value, manual tasks.

These opportunities to innovate can occur even as providers take advantage of the things that leading brick-and-mortar schools do well, such as creating a strong, supportive culture that promotes rigor and high expectations for all students, as well as providing healthy,

supportive relationships and mentorship.

Seize the potential

The Carpe Diem Collegiate High School (Carpe Diem) in Yuma, Ariz., is one of the schools that we profiled that exemplified these traits. It provides a glimpse into just one way blended-learning models can reinvent themselves to be both more productive and personalized for the betterment of the students, who, in the case of Carpe Diem, perform at high levels. With 60 percent of its students on free or reduced-price lunch and 48 percent minorities, in 2010 Carpe Diem ranked first in its county in student performance in math and reading and ranked among the top 10 percent of Arizona charter schools.

Driving productivity

Carpe Diem began as a traditional, state charter school serving 280 students in grades 6 to 12. But when it lost its building lease eight years ago, Carpe Diem had to slash its budget and question every assumption about what a “school” should look like. It turned to blended learning.

A large room filled with 280 cubicles with computers—similar in layout to a call center—sits in the middle of Carpe Diem’s current building. Students rotate every 55 minutes between self-paced online learning in this large learning center and face-to-face instruction in traditional classrooms. When students are learning online in the

learning center, paraprofessionals offer instant direction and help as students encounter difficulties. In the traditional classroom, a teacher re-teaches, enhances, and applies the material introduced online. Students attend class four days a week, although the days are longer (7:30 a.m. to 4 p.m.). Only students who need extra assistance come to the school on Friday.

Carpe Diem hires only six full-time certified teachers: one each for math, language arts, science, physical education, social studies, and electives. Each teacher assumes responsibility for all of the students in the school for his or her subject expertise; for example, the math teacher alone provides all face-to-face math instruction that the 273 students receive throughout the week, no matter the course. With only six certified teachers plus the support staff of assistant coaches, guidance counselors, aides, and administrators, the savings are substantial, which allows Carpe Diem to pay its teachers at or above district salaries with a better benefit plan than that of other schools in the area.

In addition, Carpe Diem's new building, opened in 2006, only includes five traditional classrooms, which is fewer than half as many as a traditional school requires for a similar enrollment level. The building cost \$2.7 million to build, whereas a nearby school building currently in the planning stages will cost roughly \$12 million and accommodate only 200 more students than Carpe Diem—over 2.5 times more expensive per student (Ogston,

2010).

Rocketship Education, an elementary charter management organization with three schools in San Jose, Calif., has increased productivity in some similar ways as Carpe Diem through its blended model—and it, too, has had stellar results closing the achievement gap for low-income Hispanic students who are predominantly English Language Learners. In 2010, Rocketship's two schools were the highest-performing low-income elementary schools in Santa Clara County and ranked in the top 15 among all California schools with low-income populations of at least 70 percent (86 percent of Rocketship's students were English Language Learners and 88 percent qualified for free or reduced-price lunch in 2010) (Rocketship Education, 2010).

Rocketship has a learning lab in which students use online learning programs in math and reading while paraprofessionals supervise. Students attend one block of "Learning Lab" along with one block of Math/Science and two blocks of Literacy/Social Studies each day. Because Learning Lab does not have certified teachers, Rocketship can reduce staffing by five teachers, which saves resources. It then re-invests those in areas like teacher training, academic intervention programs, and leadership development.

Other blended-learning operators are taking different paths to increasing productivity and efficiency by

disaggregating the role of the teacher. Some, for example, use a mix of online teachers, who are in charge of academic content; in-person mentors who work with students and their families throughout their high-school careers; and in-person “relevance managers,” who help students apply learning in projects or internships. In many cases, blended learning is giving schools opportunities to re-think the role of teachers in profound ways that better serve students and increase job satisfaction.

Personalizing learning

In the Carpe Diem learning center, if a student struggles for more than three minutes with a concept, the e2020 system (e2020 is the online-learning content provider) alerts an assistant coach, who responds with immediate, on-the-spot help. This simple alert motivates students to stay on task and helps resolve problems quickly. Rather than slapping a failing grade on a report card at the end of a course, Carpe Diem’s system helps students experience repeated, frequent successes. Carpe Diem works each day with students to make sure that they master each small increment of learning. Just as in a video game, students do not move on to the next level or unit until they have passed. As students move through each task, the software displays their progress in a bar along the top of the webpage. The progress bar moves from red, to yellow, to green, and then to blue if they are ahead of pace. The software provides continual feedback, assessment, and incremental victory in a way that a face-to-face teacher

with a class of 30 students never could. After each win, students continue to move forward at their own pace.

Other blended-learning programs use different approaches to personalize learning. Some maximize the natural ability of online learning to make time variable and learning constant to allow students to progress at their own pace and work on their individual learning needs. A few programs we profiled use face-to-face teachers to cull together small groups of students struggling with the same content, an approach that allows for learning to be more individualized but still social. Some use online learning to give students access to over a hundred elective courses that before were out of reach. Others offer longer or more flexible hours to accommodate different student and family schedules.

Still needed: technology to support the potential

Still needed: technology to support the potential

In the early days of most new products and services, the leading providers tend to be vertically integrated and offer products with proprietary, interdependent architectures. The reason? The product's components need to be tightly woven together to maximize the immature technology's functionality, which is not yet good enough to satisfy customer needs. This is because the interfaces—that is,

the place where any two components within the product or service fit together—are not yet well understood. Customers are willing to tolerate the product standardization that component interdependence mandates because customization is prohibitively expensive. They are generally willing to conform their expectations and their behavior to accommodate the use of the standard product. Differences in usage patterns—and therefore customers' individual needs—are not obvious during this stage of an industry's evolution.

But as an industry matures and products and services improve, there is a shift. The leaders become those that supply less integrated, more modular products. This shift happens as a product's raw performance becomes good enough to get the job done, so customers start to prioritize the flexibility that modularity offers over the increased performance that integration makes possible—and insist on customized products.

The dominance of companies like K12, Inc. and Connections Academy to this point shows that the K–12 online-learning industry is no different. K12, Inc. is perhaps the most highly integrated, proprietary company in the K–12 education space. It designs much of its curriculum; creates the majority of its content; owns its learning management system, student information system, and grade book; employs many of its own teachers; grants diplomas from its own schools; and employs its own sales force. Many companies that have

tried to do only one piece of this well have struggled or remained smaller players to this point, as there are still too many unpredictable interdependencies between some of these interfaces to allow for reliable modularity. For example, the interdependence between teachers and content has made controlling both of these parts important historically in putting forth a consistently strong product. Melding multiple sources of open content to fashion a coherent, high-quality, trusted curriculum has been even more difficult for the most part.

Our interviews with the emerging blended-learning operators make it clear that the raw functionality they need from online products is still lacking. Even more problematic is that the available offerings and different systems are not well integrated; as a result, the different products don't "talk to" and sync well with each other.

One possible reason the K–12 online learning industry is still in this immature state, where operators cannot yet snap in different modular pieces of technology easily and create great solutions, is that the historically inhospitable climate of the public K–12 education system for start-up companies has scared away private investment capital. Long, complicated, and political district sales cycles make it hard to create a profitable education startup, which has held back the evolution of this industry. There are early signs that this may be changing. With the success of K12, Inc. and others who have followed disruptive paths, there has been an increased flow of private capital as of late

into education-technology businesses. This, along with the potential for new funding models that allow more patient capital to enter, may propel education technology forward in the coming years.

Across the board, operators stated their desire for education-technology solutions that provide:

- **Integrated systems** that support the seamless assimilation of online content from different sources into the student experience, while allowing student achievement data to flow easily across the school in real-time. School operators want a data dashboard that integrates academic progress, attendance, behavioral data, college planning, and so forth all in one place in an *actionable and simple* format.
- **Hundreds of hours of high-quality dynamic content** aligned to standards such that students can stay powerfully engaged during the school year and across years. Early online content often resembled paper textbooks and was not dynamic. Content providers are moving toward more engaging student experiences, but adaptive learning technology is still at a nascent stage and true individualization does not yet exist.
- **Analytics** that allow operators to provide more effective learning experiences for networks of students. As blended learning rapidly increases the amount of student achievement data available for analysis and shortens assessment cycle times,

entrepreneurs will likely create analytic and adaptive software that begins to do this.

- **Automation** to simplify educators' lives by eliminating low-value manual tasks like attendance and student assessment data entry.
- **Enhanced student motivation** through applications that engage and incentivize students in their own learning through social networks, games, and rewards.

Policy to support blended learning's transformational promise

Leaders at all levels seeking to transform the education system through blended learning must establish autonomous spaces where they can deploy innovative models in the right regulatory context.

In the absence of this autonomy, there is a significant risk that the existing education system will co-opt online learning as it blends it into its current, antiquated model. If this happens, then education technology will be, at best, an intriguing add-on. Because chartering legislation in theory gives innovative educators the freedom to step outside the departmental structure of district schools and create new architectures for learning, new charter schools, along with new independent schools, should initially be in the best position to pursue this opportunity. Caps that limit these autonomous spaces in any realm—such as those often created for charter schools—will be

detrimental to improving these blended-learning models.

If the regulatory structure demands the right things from these autonomous zones—affordable quality focused around each individual student—then education technology companies and school operators will chase the right goals. After all, demand drives innovation, as suppliers focus on nailing the jobs that paying customers—in this case society through the government—prioritize. Policymakers must seek to create a better framework for blended-learning models in every realm of public education—from charters to traditional districts—that, broadly speaking, escapes the current input-focused rules, in exchange for higher accountability around outcomes. Strong charter laws that already do some of this by allowing exemptions from class-size restrictions and certification requirements, for example, in exchange for tough accountability requirements make new charter schools ripe for this innovation.

Representatives from Innosight Institute, the Charter School Growth Fund, and Public Impact participated recently in the creation of “Digital Learning Now!” Headed by former governors Jeb Bush and Bob Wise, Digital Learning Now! offers a policy framework for states to use digital learning to transform the American education system. Its “10 Elements of High-Quality Digital Learning” sets the stage for a new approach to education that rewards excellence, leverages teaching talent, and personalizes the educational experience for students at all

levels.

There are several important components of this policy that states must get right to maximize blended learning's transformational potential, including:

- Eliminating the cap on the enrollment of students in online or blended-learning programs or courses;
- Eradicating rules that restrict class size and student-teacher ratios;
- Abolishing geographic barriers to what online courses students may take;
- Removing "school site" definitions that limit blended-learning models where a portion of student learning occurs in traditional school buildings and the rest occurs offsite;
- Moving to a system where students progress based on their mastery of academic standards or competencies as opposed to seat time or the traditional school calendar;
- Lifting the rules around certification and licensure to let schools slot para-professionals or capable but non-state-certified teachers into appropriate assistive or instructional roles and enable schools to extend the reach of great teachers across multiple, geographically disparate locations;
- Allowing schools to adopt staffing arrangements and redefine teacher roles according to teacher effectiveness and student needs;
- Enabling operators to design staffing, pay,

curriculum, scheduling, budgets, student discipline, and school culture to meet the needs of their students;

- Facilitating assessments that can be taken at any time;
- Creating funding models that allow fractional per-pupil funds to follow students down to the individual course, not just the full-time program;
- Tying a portion of the per-pupil funds to individual student mastery, whereby states pay bonuses when students achieve mastery at an advanced academic level or students realize the biggest gains between pre- and post-assessment (so as to incentivize programs to serve students who have historically struggled the most);
- Holding operators to strict accountability measures that allow state and district officials to identify and intervene rapidly in struggling schools and close those that fail repeatedly to meet achievement targets.

There should also be incentives for providers to achieve high-quality outcomes at a lower cost—and for students and their families to prefer those providers. As a starting point, all programs, regardless of their legal structure, should have access to equivalent funding. But if a program is able to achieve student mastery at a lower cost than the per-pupil funding provides, the program should have the option to invest some of the difference in

education savings accounts for its students, who can spend the funds on education-related goods and services, such as college tuition and tutoring. Given that the U.S. spends more per pupil than nearly any other country in the world and that its real per-pupil spending has doubled over the past 40 years with no commensurate gain in outcomes, policy along these lines is vital, particularly as budgets continue to decline over the coming years.

The future of blended learning

As online learning continues its disruptive growth and school operators increasingly introduce mainstream blended-learning options, the field will remain fluid. Entrepreneurs will begin to scale some of the school typologies profiled in this report, as others will create new models that push the envelope and re-imagine what school looks like. Technological advances both in and outside the United States should fuel these efforts. And though some states have policies in place that are conducive to digital learning, no state stands out as of yet for having organized to ignite a massive blended-learning transformation that brings about a high-quality, student-centric, more productive education system. If states climb on board with policies that incentivize outcomes and free up operators to create new schools with more flexibility, the transformation could be breathtaking.