Introduction To Blended Learning For Elementary Schools

Personalizing Math Instruction in the K–5 Classroom

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INTRODUCTION
Blended Learning—the method of using multiple media and methods of instruction to teach—has been around for decades. Only recently, however, has it come to mean combining face-to-face learning with technology-based learning. Blended Learning has evolved significantly in the last 20 years, and with increasing pressure on schools to ensure all students achieve higher standards of learning with fewer resources it has never been more important. Online and real-time interaction is a powerful combination that makes the most of every moment for both student and instructor. In an increasingly competitive domestic and international environment Blended Learning can help ensure that every elementary school student receives the education—and specifically the foundational math understanding—to succeed both now and in the future.
THE NEED FOR A NEW APPROACH

MEETING THE DEMANDS OF THE 21ST CENTURY

U.S. Secretary of Education Arne Duncan has stated that “The factory model of education is the wrong model for the 21st century. Today, our schools must prepare all students for college and careers and do far more to personalize instruction and employ the smart use of technology.”

The importance of creating personalized learning environments for students was underscored by the US Department of Education (USDOE) listing this criterion as its “Absolute Priority 1” in the Race to the Top—District competition. The USDOE encourages applicants to create “Student centered learning environment(s) that are designed to: significantly improve teaching and learning through the personalization of strategies, tools, and supports for teachers and students … increase the effectiveness of educators, and expand student access to the most effective educators in order to raise student achievement; decrease the achievement gap across student groups; and increase the rates at which students graduate from high school prepared for college and careers.”

THE ECONOMIC NEED FOR MATH PROFICIENCY

Charles Vest, former president of the Massachusetts Institute of Technology, has warned, “America faces many challenges … but the enemy I fear most is complacency. We are about to be hit by the full force of global competition. If we continue to ignore the obvious task at hand while others beat us at our own game, our children and grandchildren will pay the price. We must now establish a sense of urgency.”

Based on Program for International Student Assessment (PISA) testing, the U.S. Class of 2011 performed respectably in reading. They trailed only 10 other nations by a statistically significant amount when compared to peers abroad. However, U.S. performance in math is seriously disappointing and significantly trails that of 22 countries. According to a recent Harvard University study, the United States could enjoy a remarkable increase in its annual GDP growth per capita by enhancing the math proficiency of U.S. students to the levels attained in Canada and Korea.

That increase would lift growth rates by 30 to 50 percent. By calculating these percentage increases as national income projections over an 80-year period (and providing for a 20-year delay before any school reform is completed and the newly proficient students begin their working careers), research suggests achievable gains of nothing less than $75 trillion over the period. That averages out to around a trillion dollars a year. The bottom line: student math performance matters, not only to individual students, but to the nation as a whole. Blended Learning has been identified as a promising remedy.
The adoption of a Blended Learning strategy helps meet student needs in real-time, and provides timely and regular feedback to the students, teachers, and administrators.

What exactly is Blended Learning? The International Association for K–12 Online Learning (iNACOL) describes it as:

- A shift from lecture to student-centered instruction in which students become active and interactive learners
- Increases interaction between student-instructor, student-student, student-content, and student-outside resources
- Integrated formative and summative assessment mechanisms for student and instructor

The goal of implementing a Blended Learning model is to move teachers away from using a “standard” or “canned” curriculum to one that is personalized and focused on increased student understanding and continued learning.

Although teaching is not an easy profession, technology allows teachers to deliver instruction and content more efficiently to better serve all students.
BLENDED LEARNING BENEFITS
According to a recent study from the Gates Foundation, Blended Learning benefits both educators and students. In summary, Blended Learning provides:

- Access to high quality, relevant, and engaging content in a variety of forms
- More flexible class time and structure
- Ability to adapt to the learning needs of students
- Student access to multiple sources of instruction and assessment, and diagnostic tools to help direct the pace and format of their learning
- Capability for teachers to tailor their instruction and guidance to ensure progress and mastery for all students, with a focus on those who have historically been underserved

The availability of programs that support Common Core aligned lessons, which promote ingenuity, innovation, and creativity, will allow teachers to spend more time with each student, “personalizing” their educational experience and becoming more efficient.

Teachers implementing research-driven Blended Education models will be able to understand how to address the seven educational issues outlined below:

Doing More With Less
Many schools and districts are reluctantly cutting staff and dropping courses to respond to tighter budgets. Ultimately, the overriding reason to adopt a Blended Learning school model isn’t because of its cost savings, but because of the benefits that result from its implementation.

Early Intervention
Against a backdrop of a complex and ever-changing regulatory settings, a consensus view has emerged that education must support all students in meeting grade level proficiency standards, even in an environment with diminishing resources to address those needs. Current research has documented that early preparation in mathematics is the most significant predictor in later school achievement.

Blended Learning overcomes many of these constraints by combining strong alignment to math proficiency goals and advances in technology to deliver truly individualized instruction.

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By definition, Blended Learning creates some level of learner control. For many students, the ability to make some choices about what to study—or having the sense that they are directing their own progress—can make a huge difference in their academic progress. With the right online program—especially one that seamlessly and uniquely adapts—students who learn differently, are at different levels of conceptual understanding, or have different interests can interact with instructional material presented in a way that is engaging and meaningful to them.

Efficacy
A recent study indicates that intelligent tutoring systems now achieve comparable results to those of human tutors. As educators make choices about the resources they use to advance their students’ learning, they should use criteria established in their instructional materials selection policies to make a technology selection and evaluate its efficacy by pedagogy, developmental appropriateness, and alignment to standards.

Improved Communication and Relationships
The “anytime, anywhere” availability of online programs, when combined with ongoing reporting of student progress to both educators and teachers, can foster a closer home/school connection between elementary school administrators, teachers, students, and parents. Programs that offer online parent dashboards and communications regarding student academic progress can provide a useful starting point for teacher and parent communications regarding the academic achievements and needs of students. By accessing the online resources, parents gain more insight into how the topics are taught, and are thus better prepared to help their children understand concepts and complete assignments.

Continuous Progress Assessment
Academic progress reporting facilitated with software provides access to insights about student proficiency as well as data needed to review participation and progress of students in your school or district. By continuously assessing student achievement, individually and in the aggregate, instruction can be differentiated and overall performance evaluated for greater effectiveness. Such robust reporting can also be accomplished without the traditional pencil-and-paper diagnostic assessments that consume class time and create anxiety for students.
Parental Preferences
Given that 41 percent of parents cite large class sizes as their primary concern about their child’s school, it makes sense that parents are eager for schools to adopt technology solutions that would provide a way for individualized instruction. For example, 57 percent of parents see online learning as a way for their child to work at his or her own pace. And when asked to evaluate the importance of the effective implementation of technology within instruction to their child’s future success, 87 percent of parents rank it as important; 50 percent rank it as extremely important. 

GROWING ADOPTION IN ELEMENTARY SCHOOLS
The advantages detailed above are driving more schools and districts to adopt a Blended Learning instructional model. The International Association for K–12 Online Learning notes that a “blended approach combines the best elements of online and face-to-face learning. It is likely to emerge as the predominant model of the future—and to become far more common than either one alone.” The Evergreen Education Group reports that K–12 online learning enrollments are growing substantially every year: 50,000 in 2000; 2 million enrollments in 2008–2009; 2.5 million in 2011.
BLENDED LEARNING BASICS

DIGITAL CURRICULUM SELECTION CRITERIA

The Blended Learning model that educators choose to employ should be supported by an online program that meets administrative and student needs. The following are some important selection criteria, factors, and questions that elementary school educators should consider when starting a Blended Learning math initiative.

**Curriculum and Instruction**

First and foremost, the online curriculum must be aligned with the relevant standards for your district and state.

Questions to consider include:

- Does the program provide instruction on new concepts or simply practice on concepts a student already knows?
- What pedagogical approaches are supported?
- What age and skill levels are targeted?
- How much scaffolding and adaptive capability are built into lessons?
- Does the online program develop the Standards for Mathematical Practice?
Personalization, Assessment, and Adaptation
Selecting an instructional program with the ability to customize a child’s mathematics instruction and provide differentiated instruction based on real-time student data is incredibly important in accelerating student achievement. Real-time data and ongoing assessment also provide teachers and administrators with timely insights about student growth and proficiency to enhance and inform instruction.

Questions to consider include:
• Does the program integrate assessment and instruction or are teachers required to place students into the correct level?
• Is the scope and sequence of available content delivered in a rigid, linear sequence or in an adaptive manner based on assessed student needs?

Ease of Adoption
The technology needed to support this new model must be simple to use. Technology that requires a steep learning curve or is time-consuming to implement is a barrier to adoption and creating a strong partnership with teachers. Look for a program that is intuitive and makes their efforts more immediately productive.

Technology Integration
Technology should simplify tasks so that they can be completed quickly, resulting in more time that can be spent analyzing the outcomes.

Questions to consider include:
• Is content available in the cloud and delivered online or does it require server installation?
• Does the program work on all operating systems and/or platforms?
• How is content delivered?
• How are the data elements reported?
• Are there minimum computer and bandwidth requirements?
• Is there an ability to customize content and reporting?

Student Reporting
In a rich Blended Learning environment, student performance data can be automatically brought together with attendance data, student performance data on benchmarks and state assessments, and personalized goals so that students, teachers, parents, and
administrators can quickly and easily monitor a complete view of each student’s learning progress. The personalization of this content is crucial to the success of the child and the program; it cannot be a one-size-fits-all model, but must be a one-size-fits-one solution.

**Administrative Reporting**
Elementary school administrators need to understand exactly where student proficiencies stand at the concept, grade, or individual classroom levels on any date in time. Educators can compare classroom designs and achievement to monitor student learning and uncover both best-practices as well as challenges. They can gain new visibility into the time their students are spending learning—both during and outside of school hours.

**BLENDED LEARNING MODELS**

**A MODEL PRIMER**
Innosight Institute has defined six emerging hybrid and online models:

**Face-to-Face Driver**
The teacher decides when to implement online learning on a case-by-case basis, to help supplement the curriculum.

**Rotation**
In this model, students move on a fixed schedule between online learning (which is most often self-paced) and traditional teacher instruction in a classroom.

**Flex**
With this method, the online platform dominates student instruction. On-site teachers provide support as needed through tutoring or small-group sessions.

**Online Lab**
Courses are taught entirely online. Labs rely heavily on software modules, but online teachers are also available.

**Self-Blend**
Most often seen in high schools across the country, the self-blend model lets students take online courses to enhance traditional classroom learning.

**Online Driver**
This program is designed so that an online platform delivers the entire curriculum. Check-ins with a teacher are often optional; occasionally they are mandatory.
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THE BLENDED LEARNING ELEMENTARY SCHOOL MATH CLASSROOM

Blended Learning provides an exceptional way to implement best practices and support effective, standards-based elementary math lessons. The right online learning programs (particularly those that are game-based) keep student engagement at a high level while ensuring improved learning. It should also be designed to provide tasks that are built upon a student's prior knowledge, while helping the student make connections to concepts, procedures, and understanding. During face-to-face time in classrooms or in small group sessions, students can then explain thinking and meaning, as well as work on rich problems and tasks in the school's curriculum. With Blended Learning, students are guided to devote the correct amount of time to tasks and can receive the remedial instruction or advanced lessons if necessary.

Two of the six Blended Learning models have been shown to be particularly effective in elementary school settings. This is backed up by research by Innosight Institute and in the practice experience of schools across the country.

The Rotation Model

Students rotate on a fixed schedule within a given subject between online- and offline-learning stations. The Rotation model in particular is a natural outgrowth of existing activity-center classroom models that lend themselves to adding an online-learning station. Teachers can make use of the data that emerges from the time spent online to strategically select students for small group instruction as well as develop a deeper understanding of each student’s prior knowledge when engaging in whole-class instruction. Elementary school classrooms often incorporate the Rotation model with computers in the classroom or by visiting the computer lab in the school on a fixed schedule.
Blended Learning models level the playing field and allow access to the world-class education every student needs in the 21st century.

The Face-to-Face Driver Model
A teacher delivers most of the curriculum in person, but integrates online learning in individual student cases for remediation, enrichment, or supplemental support as needed. Often this involves students working on computers in a lab or in a specifically designated area in the classroom during regular class periods.

These models serve as the “template for success” with Blended Learning in the elementary classroom.

Educators have had the opportunity to see many “reforms” in education. It is common to hear “We tried this. It didn’t work.” This new model of innovative learning may resemble previous technology models on the surface, but it is deeply different. The difference is that “disruptive innovation” will make classrooms—as well as all education—driven by the needs and learning patterns of the individual learner. This is a revolution in education that, although it may be uncomfortable for some, is what is needed to foster and sustain the growth of children, teachers, and administrators in a highly competitive world.

BLENDED LEARNING EMPOWERS EVERYONE IN THE LEARNING ECOSYSTEM
Blended Learning offers strategic, data-empowered opportunities for everyone in your elementary learning community. For administrators, an effective Blended Learning program affords the administrator greater insight into the overall progress of each student and the collective performance of each classroom. For teachers, differentiation is simplified; it’s much easier to know where and how to intervene, thereby making one-on-one math instruction more meaningful. Parents can more fully engage with their student to provide support. And most importantly, Blended Learning models level the playing field and allow access to the world-class education every student needs in the 21st century.
About the Author
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Jeff Piontek consults with at-risk school districts across the nation on effecting educational change and reform. Jeff’s experience includes posts as Head of Schools, Hawaii Technology Academy; Director of Instructional and Informational Technology for the NYC Department of Education; President of Educate 4 the Future; and State Science Specialist for the Hawaii Department of Education.

About DreamBox Learning
DreamBox Learning was founded in 2006 in Bellevue, Washington, and is transforming the way students learn mathematics through its groundbreaking combination of Intelligent Adaptive Learning™, rigorous elementary mathematics curriculum, and motivating learning environment. DreamBox Learning Math is designed to teach and reinforce key mathematical concepts through effective, individualized instruction in an engaging and fun manner and is aligned with the Common Core State Standards. The platform has won more than 20 top education and technology industry awards and is in use in all 50 states. Learn more about DreamBox Learning at www.dreambox.com.

Endnotes

For more information, contact Client Care at 877.451.7845, email schools@dreambox.com or visit dreambox.com.